

Chapter I

INTRODUCTION

Background of the study

The importance of teaching learning mathematics, in school is not an exaggeration. Mathematics is considered to be the important subject of school curriculum. It is however considered very difficult subject for students. The difficulty is blowing in our surrounding that; students are also getting uncomfortable to learn mathematics. In my observation, even the experienced teachers do not accordingly teach how the students can learn for they do not want to break the tradition in teaching learning mathematics. Most of the teachers like to teach the mathematics through the method which is convenient to him rather than to students. besides this there are several teachers associated with students to make learning and teaching mathematics difficult. But the need of better communication and interactive method in teaching learning mathematics is coming into sight to the teachers and students.

In context of teaching method used in Nepalese schools, interactive approaches can play a vital role for the students in learning. Learning of mathematics by interaction is necessary to achieve greater success in mathematics. For the meaningful learning of mathematics, peer discussion and interaction with the teachers are important activities. Students must discuss with friends in the classroom and they must interact with the teachers- They should provide students with meaningful opportunities to learn mathematics through the discussion and interaction.

As we approached in the twenty-first century, we begin to see a major paradigm shift in instructional methods to reflect on the challenges present in today's society. The development of interactive approaches was informed by researches about how normally children and infant learn best; how children and infants with learning

difficulties learn best about teachers' creative responses to challenging situations and research about how teachers' understand these situation and their responses. (Hewett, 1995)

In interactive approaches, the teachers and students must interact and students should be given the greater opportunities to participate to learn mathematics and teachers should create such environment in such a way that students will be curious to interact with the facilitator.

There are many methods which has been incorporated here as interactive are: collaborative learning, cooperative learning, discovery based learning, engaged learning, problem solving, and project based learning. Among them, engaged discussion and communication are one of the most effective methods of learning mathematics as interaction learning approach. Interaction can provide the ownership to the learners in the learning of mathematics. Learner themselves are the supreme source of knowledge .The task or responsibility of a good students is not only on study in proper manner and they have to be careful on several things as participated in their own learning very actively; ask questions to the teachers and friends and share the ideas as well. Towards this view (Weimer, 2002) has given some points as "A good learner is someone who

1. Actively participate, interact with other students, is good listener and creative, able to challenge assumed knowledge.
2. Should be very curious, aware, and focused on his/her mission, tries to apply what they are learning, tries to cultivate "beginner's mind.

In interactive method of teaching learning instructor helps students to solve the problems involving actively in their work. According to Nepal "Learners make the group discussion in each topic make their understanding by themselves" (Nepal,

2008). Learning comes through interaction and dialogue among students and between faculty and students, in given social setting. The dialogue with peer and teachers help students to learn mathematics is authentic and permanent rather than learning lonely. "Group learning is more authentic because it is more closely / approximately to work place activities and adult learning" (Tobin 1993), Piaget emphasized that learning is the active participation of the learner not the passive receiving facts (as cited in Nepal, 2008).

In interactive approach to the education of pupils with severe learning difficulties, Mc. Conckey (1987) teased out some of the beneficial educational elements of interactive games; feedback; activity which is child initiated and child maintained; and a context that is friendly; meaningful, and simultaneously safe exciting. The definition of interactive approaches is these learners are active modifier of the information they receive.... In most cases, this will mean engaging with other people but it can also mean actively engaging with things. It is vital that the learners' brain is actively engaged in a given task. Interactive approaches can encourage students to show self-regulatory behavior through enabling them to confront problems themselves with understanding and active decision making. Teachers need to begin by providing much of the regulation but their aim is to pass this over to students so that they are eventually taking control themselves. The teachers' style and role become one of enabling students to become active in their own learning.

The effective implementation of good teaching method of mathematics is becoming a circle. Most of the mathematics teachers believe in the transferring the knowledge and emphasize on rote learning rather than conceptual understanding. But studies have shown that group learning will be more effective regarding this "students learning together co-construct more powerful understanding than they could construct

alone." (Linn and Burbules, 1993). The process of learning cooperatively in a group through interaction actually improves the acquisition and retention of content and skills throughout the curriculum and kids learn better when they learn cooperatively" (Dockteraman, 1990, as cited in Linn and Burbules, 1993).

Group learning is more important which can foster cognitive skills take two forms; some argue that group performs certain cognitive skills such as problem solving or discussion making better than individuals other assert that group learning helps students to develop certain cognitive skills. Group learning motivates students to persist a task and interactive learning could be used to encourage students to persists at tasks that are known to be beneficial, tasks such as reflection and knowledge integration (Cohen, 1986, Phelps and Damon, 1989). From this we can conclude that interactive teaching learning motivates some students to identify the needed information, integrate it and reflect on it.

Nepalese teachers by tradition are the supreme source of knowledge and they are more active instead of providing a chance to the students to learn on their own place. (Songer 1998) says "much mathematics and science instruction emphasizes memorization rather than knowledge construction" (As cited m Tobin 1993) through the interaction between students and teachers; and among the learners can give the ideas about the problems which are inherent on them.

In the interactive learning students can divide the problems in groups and peer and perform in different activities simultaneously. Learners can compare their learning or result with the other groups and can achieve the knowledge and make this knowledge personal.

Group interaction can draw on the knowledge of all participants to locate ideas that help to construct knowledge and their success depends in the knowledge

available. (Tobin 1993). Having these advantages with the interactive learning in our existing practices many of our students are not getting opportunities to participate on their own learning, this problem born to my heart and tried to seek the role of interaction in the learning of mathematics.

But in the context of Nepal, it is accepted that" the teaching method is still characterized as traditional approach of teaching focusing more and more on memorization of facts conveyed to the students by me teachers" (Nepal 2008). In teaching, teachers have to create good environment to learn to the students. Due to the teaching method, students cannot understand the mathematical problems. So, they take it as burden subject and students are getting failed in examination. Students interactive participation in the learning of mathematics is not visible due to the use of traditional rote memorization method.

It should be frankly admitted that in the present day mathematics learning and teaching is far from being satisfactory. This is not due to drawbacks of any single agencies at work. In remote areas of Nepal students fail in mathematics and frightened of this subject. From the analysis of many years study reports of SLC results it can be about 60% students fail in the school leaving certificate examination(SLC). Most government school of Nepal is seen as conventional factories of producing and reproducing the culture of failing in the mathematics year after year due to teaching of mathematics (Pandit. 1997). In the contest teachers of government school in Nepal need to think to bring change in how teaching of mathematics to become effective in reference to learning

In mathematics teaching, teaching techniques are such aids which are used to make the lesson interesting, to explain the content and to remember it by heart during teaching techniques. Teaching and instructional strategies refer to a pattern of

teaching acts that serve to attain certain outcomes and to guard against other. There are several methods of teaching mathematics. Some of which are emphasizing in the supreme sources of mathematical knowledge as a teacher and other are emphasizing students interaction facilitated through teachers guidance and direction. Inductive method, discovery method, field trip method, discussion method, heuristic method, project method etc. are the students centered method. It always emphasizes on the active participation of the students.

Statement of problems

Use of discussion method in teaching and learning of mathematics can be helpful to construct the conceptual understanding of mathematics. In the context of Nepal like in other society mathematics is considered as the subject of elite person- Many students are afraid of mathematics. They felt that the barrier of success in school education or to pass exam is mathematics. The problem behind this scene of big number of students fail on mathematics rests on lack in teaching and learning of mathematics. In teaching of mathematics, there is one way flow from the teacher and students are the receiver of knowledge and facts that's why learning mathematics is going to be difficult.

There are different causes for this reason and there is the less involvement of interaction in the learning of mathematics that is making mathematics difficult. There are many questions that why students feel anxiety? Why they could not like mathematics as their daily life activities? Why the different teachers could not create the interest of students in learning mathematics? What are the hidden and viable factors which are affecting to create mathematical anxiety? To create interest in learning mathematics, several factors may play role as teaching method, use of materials, and teachers' perception.

There are several problems towards the interactive teaching learning. When we talk about the education of Nepal about interactive process mostly there are four areas in which we can get the problems as Imala-ong(2007) discussed in his study. In his study Imala-Ong claims that "First one is the problems of learners, second problem is related to teacher, third problems arises from subject matter and the final problem is caused due to the surrounding (Imala-ong, 2007)

Thus this study explores the enhancement of interaction in the teaching learning of mathematics. This study may seek the answer of different questions as: Do our teachers make interactive teaching if not why? Do students interact with their friends and with their problems to learn mathematics if not why? Do our teacher are making the suitable environment where students can interact with their friends or not, if not why? And what are the problems to manage such learning environment in Nepalese context? The main focus of these above questions rests on "what is the place of interactive teaching, learning in secondary level mathematics classroom and does interaction helps to increase the mathematics knowledge and skills of students." Principle research questions of this study is what is the place of interactive teaching learning in secondary level mathematics classroom and how interaction helps to increase the mathematical knowledge and skills of secondary level students. The subsidiary research questions based on the principal questions are:

1. How do secondary level teachers/students perceive the role of interactive approach teaching learning mathematics?
2. How far is mathematics classroom necessarily interactive in secondary level?

Objective of the study

The main purpose of this study is to explore the teachers' and students'

perception on interactive teaching approach. To reach this focal mission, the following specific objectives have been set up

- I. To examine the level of interactivity in mathematics classroom.
- II. To explore the teachers and students perception on interactive teaching learning approach.
- III. To explore how interactive teaching learning helps to improve mathematics teaching and learning.

Significant of the study

Mathematics is taught is an essential and important component of school level curriculum. It has been taught as compulsory subject at all levels of school education and optional subject at secondary level. Although, school mathematics has been given an important place in the curriculum at all level of school education it is believed that most of the students are weak, and afraid of mathematics and considered as one of the most dislike subject. Results of all levels of students are poor in mathematics. It proves that students do not practice more and they do not pay their interest in mathematics.

The significance can be written on the value of the research, implication of the results and contribution of new knowledge claim.

Delimitation of the Study

Any study cannot overcome all the fields. Two secondary schools in Kanchanpur district were taken in accordance with resource convenience and the study results are based on responses of the teachers and students of those schools. Only Kanchanpur district is selected as a sample district due to time bound, economic constraint and other hindering materials even though the result of this study can represent all the schools in other part of country .The result cannot be fully

generalized. The delimitation of this study are as follows:

-) This study is a case study related to the mathematics teaching learning at secondary level through interactive method.
-) The case secondary school had been selected according to the researcher's convenience.
-) The case was limited only in Kanchanpur District.

Definition of Operational Definition

Interactive Approach: interactive approach is a hands-on approach to helping students become more engaged and retain more materials. It actively engages students in wrestling with the materials. It reinvigorates the classroom for both students and faculty. Lectures are changed into discussion and students and teacher become partners in the journey of knowledge acquisition.

Discussion Approach: Discussion Approach is a pedagogical approach that incorporates the students to involve in classroom activities. It can be discussed as a student centered method as well.

Chapter II

REVIEW OF THE RELATED LITERATURE

Review of related literature is an exactly task calling for a deep insight and clear perspective of overall fields. In this Chapter, different literatures relevant to causes of difficulties in mathematics learning have been reviewed in order to know about their causes and different types of pedagogies used in teaching and learning mathematics. The main purpose of the review of the related literature is to find out what works have already been done in the area of study being undertaken. It provides pertinent issue to conduct the new research in particular field. Mainly, the literatures have been collected from previous dissertation, books, and journal and e-sources and reviewed. The results of the review are presented below:

Empirical Literature

Neupane (2001) did an experimental research on a study on the effectiveness of play way method in mathematics teaching at primary level with the aim to explore the effectiveness of the play way method of teaching mathematics at primary level and compare the achievement of students taught by play way method verses traditional method. Pretest, post-test equivalent group design was used. The researcher developed an achievement test. The test was applied in, analyzed the score and concluded that the play way method resulted significantly better method over traditional teaching at primary level.

Budhathoki (2004) did an experimental research on effectiveness of cooperative learning method in teaching mathematics at secondary level. His objectives were to find out whether the cooperative learning method was more useful than traditional method in teaching probability. Thirty two students were sampled and divided into two equivalent groups. They were taught for two weeks. The test was

administered in the two groups of students, analyzed the score and concluded that cooperative learning method was better than the traditional approach of teaching probability.

Poudyal (2006) conducted his study entitled a study of the effectiveness of activity centered teaching method on mathematics achievement of third grade students in Syangja District with the objective to investigate the effectiveness of activity centered teaching method in teaching mathematics at third grade to compare traditional method of teaching mathematics and interactive approach of teaching. He prepared achievement test as a main tool and other tools were observational form (school observational form and classroom observational form) and administered them to four hundred students of the selected schools. He used pre-test, Post-test experimental group design to draw conclusion. He applied ANCOVA (Analysis of Covariance) and concluded that activity centered teaching method was effective method in teaching learning mathematics at third grade students.

Shreshtha (1972) had done a research; the purpose of this study was to test the effectiveness of inquiry method of teaching mathematics to selected class of Nepal. From the statistical analysis of the collected data, the researcher concluded that the performance of students taught by the inquiry method of teaching mathematics to a selected elementary class is more effective than larger searching studies must be designed, and carried out before the ultimate effectiveness of this teaching method to be grade level pupils at the laboratory school and the duration of instructional phase was six week period.

Nepal (2008) conducted his study entitled learning mathematics through collaboration learning mathematics. Finally, he concluded that the achievement of the students of collaborative approach of teaching is significantly better achievement man

the performance of students taught by traditional approach. He has also asserted that knowledge is discovered by students and transformed into concepts. Students can relate reconstructed and expended through new learning experiences. Learning consists of achieve participation of students verses passive acceptance of information presented by an expert. Learning comes about traditional and dialogue among students and between faculty and students in a social setting. Students learn to understand and appreciate different perspective through a dialogue with their peers. So, peer group influence is also as an influential factor of learning through collaboration.

Theoretical Literature Constructivist Assumption about Learning

In me field of mathematics learning constructivist philosophy advocated more active learning role among students. The essence of this philosophical paradigm is that students are accepted to engage in discussion related to mathematics with their peers and their teachers. Constructivism is a theory of learning based on mental activity. Learners are considered to be active organism seeking meaning. In fact, learning should be taken as a continuous process of life to construct new ideas from the interaction, discussion. John Jonassen (1991) noticed that many educators and cognitive psychologist have applied constructivism to the development of learning environment. From these applications, he has isolated a number of designed principles.

1. Create real world environments that employ the context in which learning is relevant.
2. Focus on realistic approaches to solving real world problems.
3. The instructor is a coach and analyzer of the strategies used to solve these problems.

4. Stress conceptual interrelatedness providing multiple representation or perspective on the context
5. Provide tools and environments that help learners intercept the multiple perspective of the world.
6. Learning should be internally controlled and mediated by the learner.

Experiential learning theory can be defined as the process of creating and transforming experiences into knowledge, skills, attitudes, values, emotions, perspectives, beliefs and sense. I understand that this theory believes that experience is the foundation of stimuli for the learning and learners' activities construct their own experience through the personal and interpersonal integration.

People come to every situation with their own autobiographies and they intercept the situation and they share the ideas within the group and consequently construct their experiences. This theory has become a major element in recent learning theory in mathematics. Constructivism believes that learner can construct their own reality or at least at intercept the based upon their perception of experiences. So, an individual's knowledge is function of one's prior experiences in the mental structure and beliefs that are used to interpret object and events. What someone knows is grounded in perception of the physical and social experiences which are compared and handed by the mind.

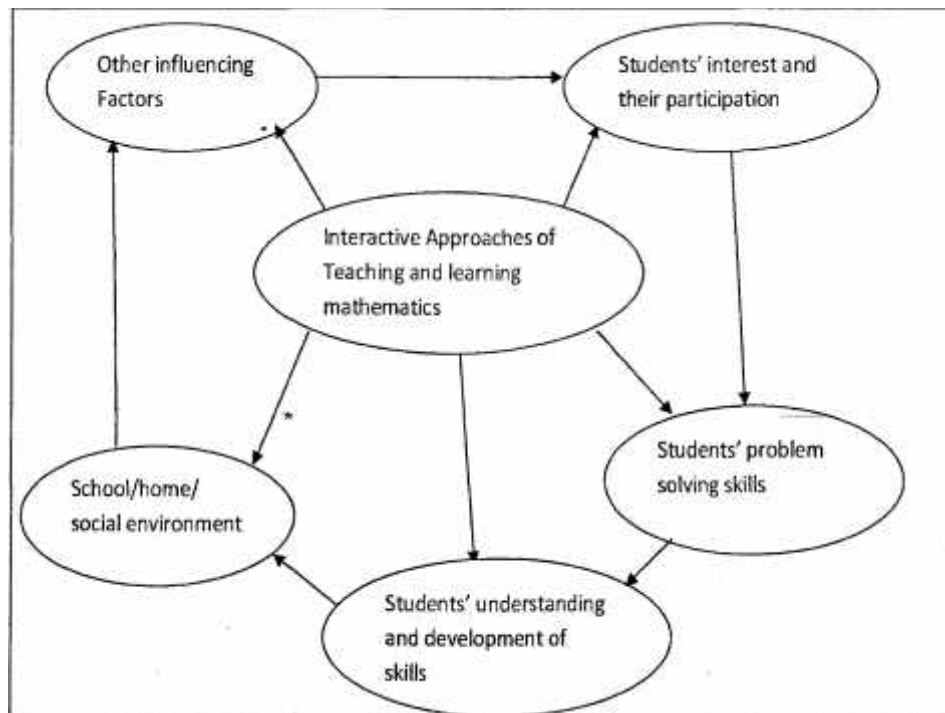
Constructivism and Interactive Teaching Learning

When I went through Taylor (1997) I found that there are various approaches to interactive learning and all of them use students' past or recalled experiences to provide primary and or artificial experiences from which they may continue to learn. For example, in many forms of problems based on learning, the teacher selects an actual problem for real life and presents it in the artificial content of the classroom to

be solved by the class. I understood that in the artificial content of the classroom to be solved by the class. I understood that in the role play the teacher in the artificial content of the classroom provides an actual primary experiences is related to the type of experiences that the role players may have in real life. Sometimes, the teacher may ask me students to recall actual experiences and focus on them. In order to share with their classmate and peer group what they have learnt from their previous experiences.

I found that the glimpse of learner centered philosophy in Hanson (2003), in his paper, constructivist learning approach is dealt. He has described constructivism as the latest catchword in the educational circles. He says that the term refers to the idea that learners construct knowledge from themselves. Each learner socially and individually constructs meaning as he or she learns. When I went through Tobin (1993), learning and teaching researcher based method. I got gist that constructivism is view of learning in which learners use their own experiences to construct understanding that makes sense of this world rather than having understanding delivered by their teachers. Learning activities based on constructivism put learners in the content of what they already know and applying their understanding to authentic situations. I found that the basic ideas of this theory as knowledge cannot be instructed by teachers, it can only be constructed by a learner. I think this means to say learning is not just a direct result of learning to a teacher but the students have organize and develop what they hear and read, they has also said that constructivism is an example of cognitive applied to teaching and opposite approach to constructivism is instructive. After reading about constructivism, I realized that it is highly related with interactive teaching.

Conceptual Framework:



Students often lose interest during lecture style of teaching. Interactive approach of teaching learning promotes on atmosphere of attention and participation make interesting, exciting and fun and focuses on encouraging student's participation, Use questions that stimulate response, discussion and a hands-on experience. Use teaching aids that press for answers, and capture and hold the student's attention. Set up a work group environment.

On the basis of above review of literature studies, the researcher has constructed the above conceptual framework to carry out the research work. Different researches show that effectiveness of interactive approach affected the students learning. The above conceptual framework shows that students related factors, teacher related factors and environment related factors affect the students' low achievement on optional mathematics. Furthermore, the geographical factors, family backgrounds, socio economic status of the family and other factors are also taken as the major factors which directly influence the achievement of mathematical education.

Chapter III

RESEARCH METHODS AND PROCEDURE

This Chapter is the heart of the research. This Chapter describes the design procedures of the study which has been carried out to achieve the objectives of the study. The researcher followed the qualitative and descriptive paradigm to represent the affect/influences of interaction in learning mathematics. It explains the design of the study, sample and method of sampling, tools, and data collection procedure and data analysis. It also describes the method of analysis and interpretation.

Design of the Study

Research design is the most important part of research. The research plan which is developed before starting the research work is a research design. This is a study of effectiveness on interactive approach in secondary level school. This study is based on the descriptive case study design. Because the research is based on inquiry that explores phenomena in its natural setting and uses to interpret, explain, understand and bring meaning to them. It is explanatory because the study has tried to investigate the role of mathematics teachers and students through interaction in interactive learning.

Study site selection

The study is conducted in two schools of Kanchanpur district. There are many schools in Kanchanpur district and selected particularly Mahendranagar as study because Mahendranagar is neither totally remote and nor village area of Kanchanpur district. The researcher has been founded the characteristics of both village and city area and it can be representative part of both types of area. In order to find the right study area for the study, there are different secondary schools they may either institutional or governmental, selected on availability of trained teacher ,teacher

development school and informed to the teachers, students, and associated other persons about the research objectives. The researcher has selected one institutional and one governmental secondary school from Kanchanpur district from Mahendranagar.

Tools for the Study

For the collection of data, semi-structured interview schedule and observation form have been used the following ways:

a. Semi structured Interview Schedule

The semi structured interview has the feature of both structured and unstructured interview. The researcher has been developed different interview schedules to collect the information from mathematics teachers and students on the basis of objectives of this study. The main theme of the interview guidelines are learning environment in the school, learning strategies in the school, and teachers and students activity in the classroom. The interview guidelines are given in appendix A.

b. Observation Form

As a data gathering device, direct observation makes an important contribution to descriptive research. Observation may be participant and non-participants. Participant's observation is that in which the observer is familiar and participants with the objectives of study.

The direct class observation is used to collect the information about the student's attendance in the class, teacher student interaction, teaching strategies, classroom management, and other related information for four days. Via this observation form, the mathematics teaching learning through interaction is re-valued. Hence, class observation form (Appendix II) was used in this study.

For the secondary data, the school documents related to the study such as

students SLC result sheet and by using the environment created in the mathematics class were used.

Classroom environment and students and teachers behave, the researcher has been maintained the validity of information in the classroom.

Reliability and Validity

Apart from the expert judgment of the tools, data validation through cross verification from more than two sources was entertained. There are different perspectives (students and teachers) from different sources and with the different tools. In this study, the researcher used data triangulation where the data has obtained from the classroom observation and interview with mathematics teachers and students.

Data Collection Procedure

To collect the required qualitative data, mathematics class were observed by the researcher for four days. The researcher participated with students and teachers in classroom every day. The researcher observed class of nine and ten and recorded the behavior of students and teachers on the observational form. This work was done carefully and noted the special behavior. Five students selected randomly and math teacher were interviewed with the help of semi structured interview schedule. Teachers and students were interviewed for about five minute each about their interest and participation, interpersonal skills, social environment and other influencing factor on mathematics teaching/learning.

The interview with mathematics teachers, students was taken with the help of semi structured interview schedules. The conversation with the respondents has been carefully listened and noted by reviewing the school records and documents. The records of focused students and teacher's behavior and participation on teachers and

students are used in interaction on mathematics classroom.

Data Analysis and Interpretation

The response of sampled respondent were collected and sorted separately as teachers and students and analyzed. The response was cross matched with observation form and explained descriptively. Cross match and data interpretation were adopted to consider result.

Chapter - IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of the collected information derived from the semi structured interview and the observation form. This is a qualitative study. The main focus of this study is to explore the effectiveness of interactive approach in teaching learning mathematics at secondary level. It also tries to explore the ground reality of the teaching learning activities and method used in the secondary level in Nepal. The collected data were interpreted and analyzed according to the objectives of the study. The collected information analyzed and interpreted by using data triangulation technique.

The semi-structured interview has taken to the focused students and teachers. The responses of the respondents during face to face interview have carefully noted. The learning environment in the school learning strategies and students activities in the classroom were keenly evaluated by the researcher with me help of interview schedule. There were some limitation of responses for respondents. There were some pre structured questions and the extra questions asked in the interview time.

The observation form has been also used in this study. Via the observation form, the' researcher has collected the data of the students and teachers interaction in the classroom by keenly observe the class. It also focuses on the interaction between teachers and students in the classroom which has helped to gain the objective of the study.

The descriptive method was mainly used in this research. The researcher had attempted to calculate the study by describing and analysis the information in the research process. The collected information has analyzed and interpreted in the perspective under the following topic:

-) Analysis and interpretation of Students' interest and their participation
-) Analysis and interpretation of Interpersonal interaction
-) Analysis and interpretation of Students problem solving skill
-) Analysis and interpretation of Students understanding and development of skills
-) Analysis and interpretation of School/home/social environment
-) Analysis and interpretation of Other influential factors

Analysis and interpretation of Students' interest and their participation

While increasing participation is an obvious goal in courses must include frequent discussions and small-group work, it is also important in a lecture course. In short, if only a few students participate by volunteering answers, asking questions, or contributing to discussions, class sessions become to some extent a lost opportunity to assess and promote learning

Ideally, the goal of increasing participation is not to have every student participate in the same way or at the same rate. Instead, it is to create an environment in which all participants have the opportunity to learn and in which the class explores issues and ideas in depth, from a variety of viewpoints. Some students will raise their voices more than others; this variation is a result of differences in learning preferences as well as differences in personalities. For example, some students who do not speak often in class are *reflective learners*, who typically develop ideas and questions in their minds before speaking; others are shy students who feel uncomfortable speaking in front of groups (at least initially). Many students who frequently volunteer to contribute are *active learners*, who typically think while they speak. The instructor's goal is to create conditions that enable students of various learning preferences and personalities to contribute. To reach this goal, you will need to take extra steps to

encourage quiet students to speak up and, occasionally, ask the more verbose students to hold back from commenting in order to give others a chance.

In this topic, the researcher asked with the respondent the questions related to the students' interest and their participation in mathematics classroom. The questions, like how do you find your mathematics class? Is it interesting for you? ; Do you find any role of your in mathematics class? And does your teacher encourage the students' participation in class? are asked with students. The students' response is especially focus on their effort to make themselves interested to learn in mathematics in classroom.

Some of the student responses on these questions are presented below:

Our mathematics class is so much interesting for me. The teacher is a best teacher who encourages us to learn more and more. The teacher does not only teach us, he helps us to learn more and wve discuss with teacher without any hesitation.

My class of mathematics is neither so good nor bad. We -want to learn more but the time period disturb us. The last period is separated for mathematics. The teacher is not so much interesting to teach in class because he is so tired. We can easily show her tiredness.

Mathematics is my most favorable subject so; I am so much interested in mathematics class. I frequently ask questions with teacher and he solves the question happily.

My mathematics class is so boring. The teacher is so lazy and just solves the question and don't ask with us to solve the questions. We are not so motivated in classroom.

From the above response, the present researcher comes to the conclusion that the response of the students are mixed about the interest of them and participation.

Some of the students are participated with energy and other are neglect. This data shows that the talent students in the class are motivated and interested to learn. So, they participate themselves in the class and teacher's response to them is so good. On the other hand, the students who are not interested to learn, they are not interested to participate in the class due to their laziness and low desire to learn more.

Similarly, the interview has conducted with the mathematics teacher as well. The questions like how much interested and motivated students have you found in mathematics class? Are you enjoyed in your mathematic class? What kinds of teaching method do you applied in your class? What is your opinion about the interactive approach in teaching learning activities? And do you find all the students are actively participated in your class? If not, what are the possible causes? Are asked with them. These questions especially wanted to learn more about the teachers' attitude toward the students' interest and participation in the classroom. Some of the responses of teachers are presented below as a representative.

Most of the students are so curious to learn but few are lazier. Those students who think about their future, they have active involvement inclassroom and I am so much interested to teach them. But on the other hand, there are few number of students who does not think about future and just relax in present situation, they have no any role in the class. They are the silence representation in the classroom.

I am one of the teachers who really enjoyed in the class because most of the students in my class are curious to learn. I also promote active participation of the students in classroom. They are discussed with me if any problem persists. We are just like friends in school. They are ready to cooperate with me to enhance their learning.

These responses of the teachers prove that they have used interactive teaching

method in classroom. This method helps the student to learn more and enhance the active role of students in classroom which is not only beneficial for students but fruitful for teachers as well. The responses of the respondents indicates that the students interest and participation is increased when teachers has used interactive or discussion method.

Analysis and interpretation of Interpersonal interaction

In Cooperative Learning groups, group members have two responsibilities

1. Help each other to achieve the task
2. Help to maintain positive working relationships in the group

Placing socially unskilled students in a group and telling them to cooperate does not guarantee that they will be able to do so. Students need to be taught the skills required for interacting effectively with others and then motivated use these skills if students are to become socially competent. Skill ful team members are made not born. Social skills are like any other skill they can be learned. Social skills are specific observable and describable behaviors which aid the achievement of a task.

The main objective of this section is to find out the reality of development of interpersonal skills of the students via the use of interactive approach in classroom while teaching learning mathematics. The questions related to the development of interpersonal skills have been asked with teachers and students. The first questions "Does teacher provide the opportunity of peer group discussion to the students in the classroom?" is asked with both teachers and students, some of the representative responses of the respondents are presented below:

He does not provide any opportunity to discuss with friends in classroom. He does not separate any time for discussion. If we started, he said "keep quiet" and only listens to him.

Yes, our teacher gives us class work. At this time, we get a chance to discuss with friends for how to solve the problems.

I provide the chance to discuss with friend in the classroom for the problem solving issues. But the students start to chat in different issues. Then I stop them.

Our students are so much curious to learn. They themselves asked with some time for discuss -with friends and solve the problem when I finished a solution of a question as an example.

The next question of this section wanted to know the interactive approach and its contribution to the development of interpersonal skill of the students. The question "does interactive approach develop the interpersonal skill of students?" is asked with both teachers and students respondents. All the respondents are agreed with this statement. Their own experience said that the interactive approach is more appropriate method to teach the students in classroom. And students also agree with this statement.

In a conclusion, many students realize that working together is not always an easy thing to do. They can however list behaviors and actions which make working with others easier and more effective. Most students recognize the talents and skills their colleagues' process. What many students don't realize is that they too can learn the skills to work more effectively with others.

Analysis and interpretation of Students problem solving skill

Problem solving plays an important role in mathematics and should have a prominent role in the mathematics education of secondary level students. However, knowing how to incorporate problem solving meaningfully into mathematics curriculum is not necessarily obvious to mathematics teachers. The term "problem solving" refers to mathematical tasks that have the potential to provide intellectual

challenges for enhancing students' mathematical understanding and development. Fortunately, a considerable amount of research on teaching and learning mathematical problem solving has been conducted during the past 40 years or so and, taken collectively; this body of work provides useful suggestions for both teachers and curriculum writers. The following brief provides some directions on teaching with problem solving based on research.

The questions related to the interactive approach and problem solving skills are asked with the respondents. They all replied that they have the knowledge that the problem solving skill of the students is developed via interactive approach but they are bound in the different constraints. So, it is very difficult for them to implement in classroom. Some of the representative responses are presented below:

I know problem solving skill of the students is developed through the interactive approach though I never get sufficient time to provide a chance to solve the mathematics related problems in classroom.

We have the knowledge about the problem solving skill may strengthen our learning process of mathematics even though we do not get more time for this process. We try our best in home.

These are just the representative lines from the respondents. Due to the lack of sufficient time and time constraint, teachers are not ready to develop this task in classroom. They are bound with the annual plan of the government. So, it is very difficult to them to promote and implement the interactive approach in classroom.

Analysis and interpretation of Students understanding and development of skills

A solid math foundation is vital for students to succeed. Without solid math skills, students will probably have a lot of trouble in school and afterwards.

Students with weak basic math skills find the subject increasingly confusing

and difficult (and get poor grades. When a child develops a solid math foundation, you'll be amazed at how the stress caused by poor math skills disappears. You might even hear your child say that math is fun! Building a solid foundation in math requires a systematic approach. Too many students do not get the broad introduction and ongoing practice that builds confidence and deep understanding. The primary mistakes that parents make in teaching/coaching math are: Having too narrowed a focus. Parents tend to overemphasize arithmetic and overlook the other math areas.

The questions like does an interactive approach of teaching helps to improve the student's learning? is it appropriate in classroom to implement the curriculum via interactive approach? , Is it improving the students' learning?, are asked with the respondents. As the response of these queries, the respondents reply that the understanding skill of the students is developed via the interactive approach. This is because of the familiar and well environment for learning should be created for learning. The problem solving skill and other skills are developed by the interaction method. The following response of a student shows that the way of interaction makes his capacity stronger.

I was so much lazy before. I always think that what times the class is break. When our teacher starts to interact with the students and does the friendly behave with us, I am so much interested to learn something new. Then I am curious to learn. So, I claim that the interactive approach develops my understanding level and other skills are developed gradually.

This shows that interactive approach is so much fruitful teaching learning method those for students and teachers.

Analysis and interpretation of School/home/social environment

Environment is the totality of the educational atmosphere at home and school as well as society for the students. Home is regarded as the first school to all individual. They learn how to behave, how to respect elders, how to cooperate to each other. Home environment reflects the occupation, economic condition and learning opportunities of me students at home.

School is the second home of any child. The teacher, students and parents are the major component of the school. School environment reflects the belief and tradition of the school community delineating and relation among parents, students and teachers. Scholarship to the students, extra class, and appropriate teaching methods are the major aspect of school environment which motivates the students to be regular in the class and also motivate to them to active participate in teaching learning activities. Two representative responses are presented below:

The school environment is so good for study. All the teachers are friendly. I am so much interested to learn at school. My parents are also encourages me for more learning.

I am not good in reading. My parents always said to help them. I don't get more time for reading. School environment is so good but my home environment discourages me.

As we are social being and social environment affects all our activities, the teaching and learning too has no exception to it. In general, while learning family background, friend and other peer groups and so many factors affect it. And so is the case of interactive learning at the secondary level.

Family role plays the vital role in their students' education and their success. If

the parents are educated they compel their students to study anyhow and their students become motivated. So the educated family background has positive impact to lead the students and teachers towards the interactive approaches in the teaching learning activities (Bista, 2004). But those uneducated parents who do not know the meaning and output of the education, they compel their students to do house work. They send them in school but students are not motivated and interested in the learning process. So, they have no any active participation in teaching learning activities.

Home environment reflects the education, occupation, socio-economic status, culture and customs and learning opportunities of the students at home. Some of the teachers focused on the issue of "student's studying environment" and they told;

"School should manage hostel and teacher should guide students in morning and evening."

"There is no good environment to study at students home so there must be create the good environment at student's home."

"Most of the guardians are not educated. Some students have not separate room to study at home. Students go to work in holiday and students don't study at morning and evening at home."

"To improve the students study and achievement, the culture of this society must be improved."

These above views shows that students studying environment is not suitable. There is necessary of good environment to obtain good score in examination.

These above views show that the student's careless about their study. Most of the parents are illiterate and they are not careful about their children. So students do what they want at home. Students do not labor more properly and some of the students don't go school regularly.

Analysis and interpretation of other influential factors

In ways similar to the community, the peer group becomes an agency of enculturation and learning. Even very young students develop a sense of self from their perceptions of important people in their surroundings, including relatives, teachers, and peers. Socioeconomic status, ethnic identity, and parents' occupations affect how families view themselves and the process by which they socialize their students (Bomstein, 2002). Later, as students leave the home setting, their self-perception and socializing skills become influenced by how their peers view them.

When students move out from family to child-care centers, school, and the community at large, they begin to form attachments, and friendships emerge through their play. These relationships influence behavior. Even infants and toddlers are observed reacting to other infants by touching them, by crying when others cry, and later by offering nurturance or comfort. By about age three, early friendships begin to form and students' peers begin to have a more lasting influence (Parke, 1990).

The peer group also influences development of students' socializing skills. These early friendships help students learn how to negotiate and relate to others, including their siblings and other family members. They learn from peers how to cooperate and socialize according to group norms and group-sanctioned modes of behavior. The peer group can influence what the child values, knows, wears, eats, and learns. The extent of this influence, however, depends on other situational constraints, such as the age and personality of students and the nature of the group (Harris, 1998). Socialization is particularly important for students with disabilities, and it is the reason many programs include peers who are typically developing in special education programs or include students with disabilities in general education classrooms.

This section of the study especially focuses on peer group discussion in students' learning process. The questions like what are the other factors which influence the student's learning? And what do you think about the effect of peer group in learning are asked with the respondents. The response obtained from the respondents indicated that the peer group discussion has the most crucial role in the students learning process. The response of a teacher is describes the similar ideas:

Peer group discussion plays the vital role in the students' learning process. They find it is easier/or them to cooperate with friends than the teachers. If the friend started to read, he also gets influence by it. So, I try my best to make a good environment for learning even though it is very difficult of me to provide the time for interaction with friends.

This shows that the interaction method is fruitful for students learning. It also develops the socialization skill of the students. They learn how to cooperate with others, what is the appropriate way to get helping hand in any problems from the peer group discussion. In case of learning mathematics, the students cooperate with those friends who can easily solve the problems and willing to help to other friends.

Analysis of information obtained from class observation.

The researcher has also collected qualitative data from two different secondary schools. To collect the qualitative data, direct class observation done by the researcher for four days in two different schools. The researcher has observed the class size, environment of classroom, teacher-student's interaction, teaching methods and use of teaching materials. The researcher has used the observation form (Appendix-II) to collect the necessary data.

The researcher has visited the governmental school at first and observed the class of grade nine and ten for 2 days. The one day events of grade nine and ten is

presented below:

Episode I

It was the first selected class for class observation. The observed class was grade X. Class observation time -was 11:20 a.m. of the day. The total numbers of mathematics students were 38 in the classroom. When the teacher entered in to the classroom, the students said "Good Afternoon Sir" and teacher also said "Good Afternoon, Sit down". Teacher said that "let me book? to the students and one student gave him Mathematics book. One student's had not mathematic book. Taking books on hand Teacher asked the students "how many problems have you solved?" but students didn't give any response. Teacher wrote one question from the text book on the whiteboard. The question was about "profit and loss". The teacher solved the question with explaining and said "did you understand" but students did not give any response, students also copied the solution on their copy. Teacher also asked "can you solve another problem? " students gave the response "no" and requested to solve the problem. Again teacher wrote the problem and solved the problem. He gave homework to the students and went out.

This researcher found and noted the more situations from this class observation. The size of the class was small. The whiteboard, desk and bench were well-managed. The air condition and lightness of the classroom was good. There were not any charts, pictures and supporting teaching materials on the wall. Teacher didn't use any jokes to attract student's attention. Teacher gave homework but didn't check. Teacher didn't use teaching materials except daily using materials. Teacher used teacher-centered method in the classroom. There was not peer discussion and interaction between teacher and students.

Episode —II

Grade IX was another observed class. The total number of students was 42 in the classroom. Time period was 12:40 p.m. The mathematics teacher entered into the classroom. The mathematics teacher had graph board and marker in hand. When the teacher entered in to the classroom, the student's greeted saying "Good Afternoon Sir" and teacher also greeted and students sat down. Teacher wrote the topic "set". Explaining the some formulae written in the chart paper, teacher wrote some questions. By applying those formulae, he solved a question. He asked with students "did you understand?" One student said "Yes" but other students not gave any response. Two students were talking about something in their own language. The teacher solved this problem explaining, himself. After teacher wrote the problem of book's exercise and solved the problem explaining. The students copy the solution on their copy. Giving homework teacher went out.

The researcher also noted more situations from this class observation the size of the class were good. The whiteboard, desk and bench were well-managed. The air condition and lightness of the classroom was good. There were not any charts, pictures and supporting teaching materials on the wall. Teacher didn't use any jokes to attract student's attention. Teacher gave the homework and didn't check. Teacher used teaching materials. Teacher used teacher-centered method in the classroom. There was also found the lack of peer discussion and interaction between teacher and student. On the other hand, the researcher also visited the institutional school for the fulfillment of the objectives of the research. For two days, same as governmental school, the researcher observes the grade nine and ten. The obtained resources are given below:

Episode -III

It was the first selected class for class observation. Grade X was observed class. The total number of students was 12 in the classroom. Time period was 1:20 p.m. The optional mathematics teacher entered into the classroom. The Optional mathematics teacher had graph board and marker in hand. When the teacher entered in to the classroom, the student's greeted saying "Good Afternoon Sir" and teacher also greeted and students sat down. Teachers asked with students about yesterday class and remind them and started the new class. Teacher wrote the topic "Co-ordinate Geometry ". Explaining the graph teacher wrote some co-ordinates of the point and taught the plotting 'the points in graph. After writing some point teacher asked students "can you show this point on graph?" all the student said "Yes". The teacher solved this problem explaining. After teacher wrote the problem of book's exercise and solved the problem explaining. The students copy the solution on their copy. And teachers asked with students to solve the .questions themselves with coordinating with friends. Most of the students completed the solution and give to the teacher for check. The teacher randomly checks 4 copies and provide to them. Giving homework teacher went out.

The researcher also noted more situations from this class observation the size of the class were good. The whiteboard, desk and bench were well-managed. The air condition and lightness of the classroom was good. There were charts, pictures and supporting teaching materials on the wall. Teacher used teaching materials. Teacher used interactive or discussion method m the classroom. There was also found the peer discussion and interaction between teacher and students.

Episode IV

Another observed class was grade IX. Class observation time was 11:20 a.m.

of the day. The total numbers of mathematics students were 24 in the classroom. When the teacher entered in to the classroom, the students said "Good morning Sir" and teacher also said "Good morning. Sit down". Teacher asked with students "how are you?" And make themselves comfortable for reading by making laugh in the class. Teacher said that 'let me book? to the students and one student gave him Optional Mathematics book. Taking books on hand Teacher asked the students "how many problems have you solved? " but students didn't give any response. Teacher wrote one question from the text book on the whiteboard. The question was about "function". The teacher solved the question with explaining and said" did you understand" but students did not give any response, then teacher again started to explain slowly. Students also copied the solution on their copy. Teacher also asked "can you solve another problem?" students gave the response "Yes" and requested to solve the problem. They started to solve the problem. If problem persist, they asked with teacher and teacher helped to them. And finally, he gave homework to the students and went out.

The researcher noted the mode of interaction in the classroom. He found the classroom is very well and the interaction between teacher and students is very good. It is friendly environment class for all students. The students are free to ask with teacher about the problems. Teacher started the class with making students more comfortable in reading. This makes the students more creative in learning.

These episodes of class-room observation present many situations of the optional mathematics classroom. From observation, the researcher found that the size of the class was good which is suitable for teaching learning process. The environment of classroom affect the student's learning but the researcher found the good environment of the classroom. Whiteboard, disk and bench were well-managed.

The air condition and lightness of the classroom was good Mathematics is the subject of practical knowledge, so the sufficient use of teaching materials are necessary in the study of this subject. But the researcher found that the lack of using teaching materials in the classroom. The experienced teacher can make his class effective. The students can understand the problems if the teacher use the tricky methods. A trained teacher can attract the students towards the mathematics on the base and different teaching skill in teaching learning process. A trained teacher can use right and appropriately the teaching materials and make the teaching learning easy and interesting.

From the above mentioned discussion, the present researcher reaches in the conclusion that in governmental school, the interaction does not take more. Teachers have, used teacher centered method while teaching. Due to this cause, the students are weak in mathematics and the rate of failure students is so high, while in the institutional school, teachers are friendlier with the students and teachers use the discussion method. So, the students are more curious to learn and the result of these is growing increased per years.

From the analysis of quantitative information obtained from student's response, the researcher found teacher doesn't give and check homework, doesn't use teaching materials properly, doesn't give the problems to students properly in the classroom, doesn't start new lesson by giving pre-knowledge needed for the subject matter, doesn't give advice to the students individually, doesn't take class regularly, doesn't complete the course in time. From the analysis of qualitative information obtained from the classroom observation, the researcher found the teachers teaching style is not good because the teachers didn't use teaching materials, didn't check homework and class work and there were not peer discussion and interaction between teacher and students. The researcher also found the teacher-centered teaching method

in the classroom. Again, from the analysis of qualitative information obtained from the interview with parents, the researcher found same factors obtained from student's response and classroom observation. In, both quantitative and qualitative analysis teacher related factors greatly influences the students achievement on optional mathematics.

From the interview with teachers, the researcher found the parents of students are illiterate so they are not careful about their children study, there is not good environment to study at student's home and society, students don't labor more at home and they don't regular at school and Magar students have language problem.

According to the conceptual framework, student related factors affects students achievement in optional mathematics. Here, from the analysis of both quantitative and qualitative information, the researcher found the students don't study at home and they don't regular at school. They don't do homework and don't practice more. The finding shows that teachers are not anxious about student's low achievement and also seem the weakness of the school administration. Also, the conceptual framework shows environment-related factors affects student's achievement in optional mathematics. Here, from the analysis of both quantitative and qualitative information, the researcher found the environment of home to study is not suitable. Most of the parents are not formally educated so they do not guide their children at home and they can't help their children's problem on mathematics. Most of the students have not separate room to study and not sufficient time at home for mathematics practice and so on.

From the triangulation of conceptual framework, quantitative and qualitative information, the researcher found the many variables such as interest of learner, motivation, self-confidence, practice of learner, teacher's behavior, teacher's teaching

methods, friend's behavior, school environment, classroom environment and home environment are affecting on students achievement on optional mathematics. This kind of improvement of the learner is possible from the discussion method used in the classroom. To enhance the learning of students on mathematics, the environment of home and school must create well; teacher must be active and shouldn't irregular in mathematics class. The researcher also found that the interactive approach used in teaching effect the learning of the students.

Chapter - V

SUMMARY, FINDING, CONCLUSION AND RECOMMENDATION

This chapter deals with the summary, major findings, conclusion and recommendations.

Summary

The purpose of this study is to explore the teachers' and students' perception on interactive teaching approach. It tries to show how interactive approach is beneficial for students and teachers than the other kinds of teaching method.

The objectives of this study are to see how mathematics classroom interactive to explore how interactive teaching learning helps to improve mathematics learning to explore the teachers and students perception on interactive teaching learning approach.

The classroom culture, the ways in which students and teachers interact, the kinds of learning experiences students have, and the tasks that students are asked to engage with all greatly influence the opportunities that students have to learn mathematics in any given classroom. We learn through social interaction. Language use is at the root of learning. More specifically, this view-of language calls for any examination of teaching and learning to treat interactions between teacher and learner as crucial. These interactions not only shape students' talk, but they help to construct understanding. Discussions can take place in small groups or as a whole class. When viewing a classroom as a community of learners, it must be remembered that interacting is not optional, but rather it is essential because communication is necessary for building understanding.

Major finding

The major findings of this study are based on responses of teachers and

students of the selected schools of Kanchanpur district. From the interview with selected students and teachers and classroom observation, it is found that the interaction approach is more effective method to teach in the secondary level to improve the teaching learning environment in classroom of Secondary Level. On the basis and interpretation of collected information, the findings of this study are presented as below:

- Teacher's perception towards interactive teaching is good even though they face a lot of difficulty due to the school environment, students' participation and other factors.
- Students' perception towards the interactive learning is not good due to the teaching method used by teachers, their home and school environment.
- Lack of teachers training about new concept, relations, modern techniques and teaching methods are another aspect which 'affected the teaching and learning via interactive approach.
- There is the problem because of examination oriented teaching.
- Difficulties to complete the whole course by using students centered teaching method or interactive approach.
- There is a problem to motivate students towards mathematics learning. The teachers' guidebook is not relevant and available to their needs.
- Difficulties of teaching because of different family environment of students
- The school and classroom environment are not conducive to students growth, both physically and academically to follow the curriculum thoroughly in teaching.
- Unavailability of curriculum and teachers guide on time.

- Lack of opportunity to participate on interaction, workshops ,and seminars related to subject matter and handle the curriculum.
- Lack of sufficient time and interest of the students and teachers.

Conclusion

Due to the lack of interactive approach in classroom, that cause teaching and learning process not at satisfactory level Kanchanpur District.

The researcher has found teachers need to realize the benefits of math discussion and the only way to do that is making more teachers aware. Facilitating math discussions involves engaging students in sharing and listening, questioning and responding, and agreeing and disagreeing. It also gives us, the teacher, an opportunity to really understand the students thinking. This should be occurring within and through the teaching process. Students will also benefit from hearing what others say and see that there is more than one way to analyze and solve a problem. Classroom math discussions also give 'you the chance to clear up any misconceptions the students may have.

It is also found that the effectiveness of classroom discussion in a math classroom is a very important topic to know because many math teachers tend to shy away from listening to what their students have to say. For many, it is easier to talk all period and teach them the teacher's way of doing things. Their work is then easier to grade because they all use the same method— the teacher's method. If a teacher were to open up their classroom to some discussion then they would have to learn other methods and challenge their own thinking.

Not only is classroom discussion important because it offers a platform for math students to share their ideas, but it is critical for understanding as the students work through their thought processes. When the teacher is talking the whole class

period and students offer short answers here and there then the students are lacking the time to actually think through the problem and make their own mistakes. Instead, the teacher is up at the white board guiding them through the problem. In this case, the teacher is not letting them correct themselves or even think for themselves.

As math teachers, s/he should care about this problem because in most other classes students are asked what their opinions are about the topic at hand. In a literature class, for example, they are asked their opinion about the author's thoughts. In social studies classes they are asked to offer their point of view on a time in history. In science they are asked to hypothesize about what will happen next. All too often in math the students are asked to listen and offer short answers as the lesson is given. Rarely is there a math classroom in which students are asked their opinion of what should happen next.

It is a disservice to students to not provide them with the same opportunities many of their teachers have had while working on advanced degrees alongside their peers.

Recommendation

Recommendation has been made to improve the teaching learning situation and way of effectiveness of interactive method of teaching in classroom on the basis of finding. The recommendations by the present researcher are presented below:

- The teachers' training should be conducted time and again to improve the educational system and implement the interactive approach in teaching learning activities.
- The teachers' should be active, energetic, qualified and interested to learn themselves.

- Teachers should make efforts to involve their students in class by convincing them that many types of contributions will help advance the class's knowledge.
- The students anecdotal record should be managed properly and time based examination system should be encouraged.
- The educational policy and formulation of curriculum of Mathematics Nepal should be revisited and revised.

Recommendations for further study

The researcher has been found the following recommendations for the further study:

-) Similar study should be conducted in other level and coverage the wider area.
-) The research should be done by focusing on the practical aspect of Mathematics application in the present scenario with references to the students, teachers and parents.
-) Similar study should be carried out in other area of Nepal like regional.
-) It is well necessary to conduct the research from national level.

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Interpersonal skill

-) Does teacher provide the opportunity of peer discussion to the students in the classroom?
-) Do you ask your friends while persisting any problem related to mathematics curriculum?
-) Does interactive approach develop the interpersonal skill of students?

Students' problem solving skill**For students:**

-) How difficulties do you find your mathematics curriculum?
-) Does your teacher assign any homework for you?
-) Do you find any difficulties in your classroom?
-) Do you complete your assigned homework?

For teacher:

-) What do you find the students' problem solving skill?
-) Are they completed all the homework assigned by you?
-) How do you participated students in your classroom in the problem solving process?

School/ home/ social environment for student:

-) How do you find your parents attitude towards your learning process?
-) Do you face any difficulty due to the social attitude towards the reading and learning process?
-) Does your school environment help in your learning process?

For teacher:

-) Does there is sufficient support to students from their guardian to learn mathematics?
-) How social environment has affected the students in learning mathematics?

Students understanding and development of skill

-) Does an interactive approach of teaching help to improve the student's learning?
-) Is it appropriate in classroom to implement the curriculum via interactive approach? Is it improve the students'" learning?

Other influencing factors

-) What are the other factors which influence the student's learning?
-) What do you think about the effect of peer group in learning?

Appendix II

Class Observation Form

Observation form for the mathematics classroom:

Name of Teacher:.....

Gender:..... Teaching Experience:.....

School's Name:.....

Class:..... Time:..... Period:...

Total number of Students:..... Duration:

Topic:.....

- 1) Does the mathematics class size is good or not.
- 2) Does the environment of classroom is good or not?
- 3) Does teacher start class from jokes or not?
- 4) Does teacher review previous lesson or not?
- 5) Does teacher check homework or not?
- 6) Does teacher use teaching materials or not?
- 7) Which method is used to teach in the classroom?
- 8) Does teacher provide the opportunity of peer discussion to the students in the classroom?
- 9) Does an interact between teacher and students?
- 10) How is the teacher's behavior towards students?
- 11) Does teacher give homework or not?