CHAPTER I

INTRODUCTION

1.1 Background of the Study

Mathematics has become essential part of human life. It is the logical study of shape, arrangement, quantity, and many related concept. Gauss says that mathematics is the queen of Science. Hillbert says, it is nothing more than a game played according to certain simple rules with meaningless marks on paper. Mathematics was born with the development of human beings. It was developed with the need of contemporary society of human beings. “For five millennia, mathematics has developed and been shaped by being institutionalize in schools. All civilizations as they have developed methods for symbolizing ideas have also developed their own mathematical system, which have then had to be taught to the next generation.” (as cited in T.H. &T.N., 1995, p. 3643).

Regarding the origin and development of mathematics, H. Preston (as cited in Upadhyay, 2064, P.2) has expressed his view that mathematics was developed from the need of organized society of people. For instance the primitive tribes living by hunting and collecting the natural harvest of forest and field, they needed rudimentary knowledge of counting to communicate numbers to the tribes. This may be the number of animals in a hand or the numbers of people in a hostile tribe. Also needed were the measure of size, strength, distance and time, however crudely

formulated they might be. Present in effort to duplicate arrowheads and implements, and it is also important, which, later developed into mathematics. From the above discussion very simple evidence about the origin of mathematics, was according to the need of human being in the process of civilization and has been an essential comp orient of human civilization. So, the history of mathematics is a part of the history of human civilization. This view is further justified from the history that mathematics was originated in the river valley civilizations like the Tigers, the Nile, the Euphares, and Hwong Ho, the Yangtze etc.

Mathematics and its studies seem to be more important in our day to day practice. Our each and every tasks are somewhat related to Mathematics. So the ministry of education of Nepal gives emphasis on the subject mathematics from the primary level of the school. In our schools either private or public use mathematics curriculum from basic to secondary level as compulsory and in higher level as optional. But the teaching strategies applied in the mathematics classes are not so effective due to which our students take the mathematics as dread subject.

Our school teachers show less interest in using different kinds of teaching methods and different types of teaching materials though they have such kinds of facilities and techniques. Most of the secondary teachers may now that, by addressing the students need and their interests we can teach our content effectively and can conceptualize the mathematical terms and identities easily. They know that, teaching can be conducted effectively and meaningfully if the proper teaching approach is selected and appropriate teaching materials are used. While determining the teaching

strategy/approach, the teacher always should consider “how to motivate students in mathematics learning? How to make proper planning for instruction? How to use appropriate methods and medium of instruction in Mathematics? ”.

In Nepal, the educational institutions (schools) do not provide expected knowledge to our child. In our country two types of educational institutions are running. One is private which provide somewhat so called good education and another is public schools which provide less quality education compare to the private schools. So, there is difference in education which is taking from our child though they are within the same country. If we talk about the mathematics class and its achievement of secondary level students’ then we can see the result of every year SLC result. Most of the students were failed in Mathematics (as cited in CERID, 2007). There may be different reasons but among them one prominent reason is the teaching methods applied in the mathematics class room by the teacher. Student centered teaching method (SCTM) in mathematics class is more important to give more conceptual meaning to the student. Primarily, teacher do not give any attention to the student how they feel? What are their interests and even teacher do not think about it. But in the development of different teaching method, on the behalf of the student, ‘student centered teaching’ method is more emphasized. Even though we have such kinds of teaching methods still teacher do not know or do not try for it.

Similarly, student centered method is accepted by most of the mathematics teachers but they could not apply it properly or apply some extent. I would like to find what the practices are and the perceptions of

teacher regarding the student centered teaching method. How they were practice in their mathematics class and how they think about it? With the student centered method there are different approaches like problem solving, guided discovery etc. and how they think and know about such approaches?

When I go through different papers I found that student centered learning is synonymously used for active learning, problem based learning etc. and some writer's shows some differences between them as well. But it is sure that these terms are used to show the students or learners as the key concern area. That is "problem-based learning, Active Learning (AL) and Student-Centered Learning (SCL) are all used in the literature to indicate the shift of emphasis from the teacher to the student as the heart of the learning process" (as cited in Hesson & Shad, 2007, P. 628).

Mathematics teachers generally go to the class and solve the problems in the black/white board. But they don't try to think about student's interest and how they construct the mathematical knowledge in their mind? And so our final result is not come as our expectation. There are highly contested debates about the perceptions and practices of student centered approach of mathematics teaching. Still there are knowledge gaps in the issues of practicing the so-called student centered teaching approaches. The reasons may be the lack of practices, irrelevant perceptions, and lack of practical applications in classroom. Some misunderstanding and some misconceptions regarding the student centered teaching method. That's why I would like to find such gaps or misunderstandings or misconceptions of the secondary mathematics teacher.

1.2 Statement of the Problem

The study was mainly concern with the study of secondary level teachers' perception and practices in mathematics teaching. The following questions are intended to be solved by the study:

1. How do the secondary mathematics teachers perceive the notion of student centered teaching method?
2. How do they practice it in their mathematics class?
3. Is there any gap between teachers' perceptions and their practices? Why?

1.3 Significance of the Study

The importance of my study is to know perceptions and practices of mathematics teachers towards student-centered teaching methods. If they are aware about this teaching method then, how they implement in the classroom. Do they can properly implement in their classroom? Or they may have knowledge about it but due to the different difficulties they couldn't apply in their class. There is a knowledge gap between the issues of teacher's perception; student centered teaching method and their practices in the mathematics classroom. In specific manner, this study contribute to know how do mathematics teacher implement SCTM in classroom or what are the underlying causes if they are not able to implement it is the focused area of this study. Thus this will be helpful for the following.

i. This study intends to explore the causes, effects, facts and reasons suffering the knowledge gaps between perception and practices.

ii. This study was contributed to the knowledge body of SCTM.
iii. It tries to explore the teacher perceptions and their practices, difficulties associated with their practices and applicability regarding to the student centered teaching methods in mathematics class.
iv. The result of this study was help those who are involved in the mathematics teaching profession and those interested groups who love to know the perceptions and practices of Mathematics' teacher about their teaching method.

1.4 Objectives of the Study

The objective of this study was:

i. To find the teachers' perception on student centered teaching method in mathematics classroom.
ii. To find the practices on student centered teaching method in mathematics classroom.
iii. To find the gaps between perception and practice of teachers' on student centered teaching method.

1.5 Definition of the terms

Perception:

The act or faculty of apprehending by means of the senses or of the mind; cognition; understanding.

Practice:

Repeated performance or systematic exercise for the purpose of acquiring skill or proficiency

Public school:

The school which receive regular financial support from the government

Private school:

The school established by individual or community which does not yet regular financial support from government.

1.6 Limitation of the Study

The study had the following limitations:

i. This study was limited in ten secondary level in Kaski district.
ii. It was limited in ten Secondary Level School's of Pokhara Valley.
iii. Five private and five public secondary schools was selected for the study.
iv. This study was based on secondary level mathematics teacher
v. The data of this study was generated through the interview and class observation.

CHAPTER II

LITERATURE REVIEW

2.1 Review of Related Literature

The main purpose of review of the related literature is to find out what works have been done in the area of the research problem under study and what has been done in the field of the research study being under taken. This chapter deals with some related literature, which reviewed from different books and reports related to this study.

When we want to look back about the student centered views we cannot forgot the Confucius and Socrates about fifth to forth centuries B.C. Before the seventeenth century John Locke introduce experimental education. And after two hundred years back European educator Pestalozzi, Hegel, Herbart, and Forebel designed and popularized experience based learner centered curricula. In twentieth century Russian sociologist Lev Vygotsky, Swiss psychologist Jean Piaget and American philosopher and educationist Jon Dewey shaped the existing learner-centered education into a program called constructivism. To understand learner-centered teaching, it is necessary to begin with the teacher-centered approach, which is closely related to the behaviorist tradition. It assumes that learners are passive and that they become active by reacting to stimuli in the environment. Therefore, the teacher's role is to create an environment which stimulates the desired behavior and discourages those that are believed to be undesirable. This role makes the teacher the focus of attention.

The term 'Behaviorism' is coined by the first American psychologist John B. Watson. It is seen to come in existence as learning theory from Aristotle's essay "Memory" which focused on associations being made between events such as lightning and thunder (Mergel, 1998).The basics of behaviorism is "Learning is the change in behavior directly observable to actual life. Trial and error makes a man perfect". That is it is based on observable changes in behavior. Behaviorism focuses on a new behavioral pattern being repeated until it becomes automatic. For further

clarifications Good and Brophy in 1990 said that, “the theory of behaviorism concentrates on the study of overt behaviors that can be observed and measured” (as cited in Mergel, 1998). On the other side it totally neglects the thought process in the mind as it explains the mind as “black box”. So I found some axioms or principles that are identified by Kaufman (1979) as follows:

1. The environment may be unambiguously identified in terms of stimuli.
2. Behavior may be unambiguously identified in terms of responses.
3. A class of stimuli exits which applied contingently and immediately following a response, increase or decrease it in some measureable fashion. These stimuli may be treated as re-enforcer.
4. Learning may be completely characterized in terms of various possible couplings among stimuli, responses and re-enforcers.
5. Unless there is definite evidence to the contrary, classes of behavior may be assumed to be learned by the environment, extinguishable and trainable. (as cited in Upadhyay, 2064, p.2)

The main so called behaviorists who contribute to develop the behaviorist theory were Pavlov, Watson, Thorndike and Skinner. They did different experiment on animals and humans and find the theory of behaviorism. Pavlov (1949 -1936) a Russian psychologist did an experiment on a hungry dog and gets meaning of classical conditioning. Edward Thorndike (1874 -1949) another

psychologist did an experiment on a cat and fined the relation between stimulus and response in learning. In the same context he generates three laws: “law of effect”, “law of exercise” and “law of readiness”. Similarly, Watson and Skinner also did experiment to find the learning habits and process of human child. Watson did an experiment on a child named Albert and finalized that the role of conditioning in the development of emotional responses to certain stimuli. Likewise, Skinner tried to know the operant behavior (voluntary behavior used in operating on the environment) of the learner. That means learner do some action with its environment then it gets some reward for certain behavior. (as cited in Upadhyay, Pp. 1-2)

Cognitivism comes from cognition that means awareness or perception or insight. It may be defined as the process of reflection and reproduction of reality in human thought, conditioned by the laws of social development and inseparably linked up with practice. The aim of cognition is the achievement of objective truth. So the cognitive assume that, learning is the change of cognitive structure of mental maps that may be used in future rather than at present. Rehearsal is necessary for retention. One of the psychologists David Ausubel explains “The most important single factor influencing learning is what the learner already knows. Ascertain this and teach accordingly”. So the cognitivist seems to more students centric. On the other side Good and Brophy (1990) said that, "Cognitive theorists recognize that much learning involves associations established through contiguity and repetition. They also acknowledge the importance of reinforcement, although they stress its role in providing feedback about the correctness of responses over its role as a motivator. However, even

while accepting such behavioristic concepts, cognitive theorists view learning as involving the acquisition or reorganization of the cognitive structures through which humans process and store information" (Mergel, 1998).The principles of Cognitivism are:

1. The prior knowledge is a pre-requisite to effective learning.
2. That learning is helped by meaningful association.
3. That learning requires a mix of generalization and examples.
4. That rehearsal is usually necessary for retention.
5. That automaticity is essential to higher skills.
6. That complete instruction of the beginners is usually less effective. (as cited in Upadhyay, 2064, pp.2-3)

There seems to be a great deal of talk about “constructivism” these days. Any one of we may heard this word from any sources. But, what really it is? “Construction of knowledge” may be the meaning of it in simple word! That means humans construct or make the meaning through his/her self practice and experience. Constructivism is both a philosophy and a theory of learning. The key concept of constructivism is that learning is an active process of creating, rather than acquiring, knowledge. For the same context Resnick (1989) said that, “the general sense of constructivism is that it is a theory of learning or meaning making, that individuals create their own new understandings on the basis of an interaction between what they already know and believe and ideas and knowledge with which they come into contact” (as cited in Richardson, 2003, Pp. 162-164). Davis (1984) has described constructivism in relation to how knowledge is represented in a person’s mind. Each person

consructs his/her personal knowledge representation structures by assembling particular components. The raw material for building process comes from an individual's prior experience (as cited in Maher, 1998, Pp. 29-30).

Formalization of the theory of constructivism is generally attributed to Jean Piaget, who articulated mechanisms by which knowledge is internalized by learners. He suggested that through processes of *accommodation* and *assimilation*, individuals construct new knowledge from their experiences. When individuals assimilate, they incorporate the new experience into an already existing framework without changing that framework. This may occur when individuals' experiences are aligned with their internal representations of the world, but may also occur as a failure to change a faulty understanding; for example, they may not notice events, may misunderstand input from others, or may decide that an event is a coincidence and is therefore unimportant as information about the world. Here are some assumptions regarding on constructivism by Merrill (1991);

1. knowledge is constructed from experience
2. learning is a personal interpretation of the world
3. learning is an active process in which meaning is developed on the basis of experience
4. conceptual growth comes from the negotiation of meaning, the sharing of multiple perspectives and the changing of our internal representations through collaborative learning

5. Learning should be situated in realistic settings; testing should be integrated with the task and not a separate activity, Merrill, 1991, in Smorgasbord, 1997. (as cited in Upadhyay,2064, P.3)

This shows that constructivism itself is not a method rather it is a theory describing how learning happens so give more focus on the learner. It also talks about multiple perspectives with collaborative learning and the context of the learner. In one sentence it gives more emphasis on active learning or learning by doing method.

There may be several researches in the field of “student centered method”. I am trying to collect some findings regarding to this field which helps me to know the student centered method and its perceptions and practices in the different context. It’s also helpful to me to find out the way of my research.

When I go through the M. Phil. dissertation titled “Learner Centered Teaching: Teacher Perceptions and Practices" done by Bishwo Udhir Poudel Gharti (2006), I find some important conception of teachers’. This research tries to answer the question “how teachers perceive about the learner centered teaching?” I want to mention some lines from it:

> “…they joined the profession because of their high passion towards teaching and they enjoy the job. From this it made me easy to believe that the teachers are dedicated towards teaching, which is a basic characteristic of a learner-centered teaching.”

He found that, teachers were not paying attention to circular or square arrangements of the seats which are not effective as per learner centered teaching. But they prefer posters and project works relevant to the text to be hung on the walls. This too has been strongly recommended in learner-centered teaching. Their view about the humming noise in the class room was against the belief of learner-centered teaching.

According to Gharti (2006) our schools teachers regarding to the teaching materials believed that project works, audio-visual aids, reference books, library stuffs, current news, pictures and field learning could be used in addition to the text books. This view is in favor of the learner centered teaching. But their tone could be commanding rather than polite and teacher should be at the front or at the center of the class.

In the response to the implementation of student centered teaching method in class, this study claims that teachers totally depend on books to impart the knowledge. They use lecture method and more teacher center teaching method. There is no consideration of individual difference among the students was found.

CERID (2004) did a research on “Effective Classroom Teaching Learning Phase III: School Based Assessment”. On this research 19 schools of 5 districts (Chitwan, Dadeldhura, Kaski, Morang, and Rasuwa) were included. This study has covered school based assessment, one of the major aspects in the classroom teaching learning process. The study examined assessment practices, use of outcomes of assessment, and linkage of school based assessment with stated objectives of national

curriculum. It has also been attempted to discuss and relate assessment practices to the vision of child-centered education as stated in the education documents. They find that classroom delivery was dominated mainly by teachers' teaching than students' learning. Child-centered education, continuous assessment, individualized instruction seem to have been embraced at the visioning level.

Similarly, CERID (2007) on FRP (Formative Research Project) in the “Classroom Transformation for Better Conditions of Pedagogical Processes and Student-Centered Learning” did the study focusing on quality in education. This study is an attempt to look closely at innovative cases that are intended to improve classroom teaching-learning process in line with the child-centered approach. The basic framework used for the analysis and interpretation of data/information is related to three elements of success in reform - shared vision, shared knowledge and understanding, and change process. On the other hand, the pedagogical emphasis of the program includes requirements for classroom transformation and involvement of local stakeholders. In this study the major findings are classroom learning dominated by teacher; emphasis on rote learning; repetition of textual materials; lack of instructional materials; restricted movement of the teachers and students in the classroom etc. Some of the good practices observed in the innovative programs were: focused training; discuss-demonstrate-practice training; use of materials; incremental/ stepwise development; stakeholders' awareness. These aspects were also suggested in the previous FRP studies. This indicates that the suggestions provided in the FRP studies

for the improvement of classroom teaching learning were useful and relevant ones.

Stoker (2003) did a research to find the mathematics teachers belief and practices with constructivist principles. The main purpose of Stoker's study was to investigate the beliefs and related classroom practices of a selected group of in-service teachers within the context of a mathematics professional development intervention for primary school teachers in the Eastern Cape of South Africa. The research finds that the beliefs of teachers' influence the class room teaching.

As I talk about student centered instruction then I have not to forget to talk about democratic education because learner-centered instruction urges students to actively construct meaning and understanding during every phase of the learning process, it can serve as an invaluable tool to help realize the vital goals of democratic education (Yilmaz, 2007). In the article *Learner-centered instruction as a means to realize democratic education: The problems and constraints confronting learner-centered instruction in Turkey*; Yilmaz (2007) operationalized Dewey's notion of democratic education. It is based on the following definition by Dewey:
"…the goal of education is to create civic unity and democratic citizenship characterized by mutually shared interests. Schools are expected to play a central role in realizing democracy and democratic ends by enabling the teacher to engage "not simply in the training of individuals, but in the formation of the proper social life." (as cited in Yilmaz, 2007, Pp. 15-16)

As my concern is mathematics and mathematics classes; the class is also a small society and the mathematics is "…as real – and only as real – as ordinary social life" (Restivo & Bauchspies, 2006, P. 198). So when we mathematics teacher's do not understand this very nature and reality of mathematics we couldn't change the strategies of mathematics teaching, we couldn't realize and make feel of mathematics to the student.

When I go thoroughly in this paper I found the similar context which are matches to our context too. For example, the centralized education system, less emphasis on teacher education less budgeting in education, irrelevant text books and curriculum etc. are the main issues raised in the context of Turkey's education system and I believe that these are the issues of Nepali context too.

Finally, Yilmaz recommendation for the successful learner centered instructions are; decentralized education system, the class size of schools should not be more than 30 students; new textbooks and other curriculum materials compatible with learner-centered instruction should be developed; the curricula of teacher education programs should be more relevant to the culture of society; educators need to focus their attention on how to design a coherent, pedagogically meaningful, and culturally sensitive curriculum; school teachers need to be assisted, through workshops and other means of in-service training, to make a change in their teacher-centered conception of teaching and instructional practices; teacher's efforts to practice learner-centered instruction should be recognized and rewarded; students should be trained in such learner-centered activities as doing research, preparing investigation report,

giving presentations, engaging in discussions etc.; students need to be taught how to take responsibility for their own learning via scaffolding.

One of the approaches in student centered learning is active learning (Froyd & Simpson). As I have gone through Kyriacou (1992, P. 309), I came to know the nature of active learning. Different people describe it differently. For example Waterhouse (1990) has identified two basic characteristics: an emphasis on learning by doing and an emphasis on pupil decision-making. Similarly, writer mentions the Barnes's seven key principles of active learning. They are;

a) Purposive: The task is seen by the learner as relevant to his/her concerns.

b) Reflective: The learner reflects on the meaning of what is being learnt.

c) Negotiated: The teacher and learner negotiate the goals and methods of learning.

d) Critical: The learner appreciates different ways of interpreting learning.

e) Complex: The learning tasks reflect real life complexity.

f) Situation-driven: The learning tasks arise out of the needs of the situation.

g) Engaged: The learning activities reflect real life tasks.

Kyriacou highlighted on student's ownership and control over the learning activities used, learning experience is open-ended rather than tightly predetermined and primary focus on learning activities rather than learner's mental experiences.

This study concluded that the marked shift towards greater use of investigational and problem-solving activities is seen but due to the curriculum and the teacher's perceptions, active learning is in less practice. Regarding to the child friendly teaching Osher, Kelly, Tolani-Brown, Shors, & Chen (2009) did evaluation of UNICEF Child Friendly Schools Programming. In this evaluation report researchers try to describe how Child Friendly School (CFS) models have been implemented in multiple contexts to provide data on the extent to which the key principles of CFS-- child-centeredness, inclusiveness, and democratic participation—are being realized, to identify challenges, and to provide a baseline and create tools to monitor future progress. This report highlighted that the child friendly teaching method gives more improved result of the student's achievement but due to the lack of trained teachers it is less effective. It is noted that there has been a shift from teacher-centered to student-centered, active learning with the implementation of the CFS model. However, traditional notions of effective instruction persist.

CHAPTER III

METHODOLOGY

3. Methodology

This chapter describes the design of the plan and procedures of the study carried out to achieve the objectives of the study.This study employs qualitative research method, since this research intends to find and know the perceptions of teacher on student centered teaching method and their practices on the basis of qualitative elements. The major procedure for this study was as follows:

3.1 Design of the Study

The design of the study was based on qualitative research and descriptive in nature.

3.2 Population of the Study

The population of the study was consisting of target participants or group for observation and interview of secondary level mathematics teachers in Kaski district.

3.3 Sample of the Study

Purposive sampling: one of the most common sampling strategies, group's participants according to preselected criteria relevant to a particular research question. My sampling was purposive; because the participants were choose for specific purpose i.e. to identify the practice and perception of the secondary mathematics teachers. For my study the rich informants are secondary mathematics teacher because they are only able to provide me in-depth information about learner centered teaching method.

For this study only ten, secondary schools were selected. In this sampling I selected a secondary mathematics teacher from each school. The detail name and address of schools are given in Appendix-A. Similarly their academic qualification, teaching experiences and gender are also presented in Appendix-A.

3.4 Tool of the Study

Interview guidelines and observation checklist was used for this study. The interview guidelines and observation checklist was developed by the researcher with the help of supervisor. Before developing interview guidelines and observation checklist researcher consulted with mathematics export and experienced teachers. The detail of the interview guidelines and observation checklist are presented in Appendix-B and C respectively.

3.5 Data Collection Procedure

Interview and class observation of secondary level mathematics teachers of different schools are the basis of the study. First, I observed each of the math class of 10 different sampled schools and then took semi structured interviews with them by the help of observation form (Appendix-C), and interview guidelines (Appendix- B).

It is believed that performance of the class was usual because I convinced them that my objective of observing the class is purely academic and similarly the participants' respondent freely without hesitation what ever they said was really truth.

3.6 Data Analysis Procedure

Based on principles of student centered teaching method, I did my data analysis within the interpretive inquiry. First, data was collected, categorized thematically and then interpreted in a direct and narrative

form. Observed data and interviewed data were analyzed and comparative thematic analysis was done. Conclusions were being drawn after comparative thematic analysis and the interpretation of data.

CHAPTER-IV

ANALYSIS AND INTERPRETATION

Unquestionable data analysis is the most complex and mysterious of all of the phases of a qualitative project, and the one that receives the least thoughtful discussion in the literature. There are three major sources of data for a qualitative research study-interviews, observations, and documents. The data collection strategy used is determined by the question of the study and by determining the sources of data will yield the

best information with which to answer the question. Often there is a primary method of collecting data with support from another. I list the main points and extracted the themes to analyze on the basis of data collected and relevant literature review. In this study I used interview and observation.

4.1 Perception of Teachers

Here I have tried to explore how the participating teachers perceive the student centered teaching. For this I used questionnaire and interview techniques. I have started this chapter describing why they chose the teaching profession.

4.1.1 Why they chose the Teaching Profession?

It is believed that teaching in a student centered classroom is more difficult than to teach in a traditional classroom. It requires a special sort of teacher to use informal methods effectively, one who is dedicated, highly organized, able to plan ahead and willing to spend a greater deal of extra time in preparatory work. It seems to me that only dedicated teacher who really enjoys working hard with the students can be effective teacher in student-centered classroom. One theory could be that the degree of dedication towards the profession may also be linked with the reason why they join the profession. That is why I have tried to find out how they come to join the occupation and whether they enjoy or not.

Two teachers, who have more than five years of experience in teaching, said that he they have chosen this field because they found it easily accessible. This shows that they did not join it because of the passion towards the profession but just because it was easy to get teaching job. A question arose to me; can such a person have dedication towards teaching and can be labeled as a student centered teacher? Other three teachers who have been teaching more than ten years said, “The satisfaction that you get when you are able to deliver what you know to the pupil who does not know is incomparable. I am impressed a lot form one of my school days teachers”. At this juncture, one of the teacher ‘B’ said that he gets incomparable satisfaction from teaching yet he wants to go abroad to earn money. A teacher who has thirty three years teaching experience is not satisfied with his earning and profession. He can hardly be dedicated towards his profession.

Similarly, other teachers who also possessed more than ten years of teaching experience said that they chose their profession at first to be interactive, creative but later it became a real profession. Other two teachers expressed that they chose this profession unknowingly.

4.1.2 Enjoying the Profession

In my next question of whether they enjoy the job or not, they again gave assortment of answers. Teacher A and D said “teaching is a dynamic process where we ample of opportunities to learn ourselves. Learning needs things and sharing with enthusiastic students is really enjoyable”.

Similarly, teacher B, F, J and H said they enjoyed the job because they were always around the people who respect them and it made them feel good. Teachers C, E and I said, very much. According to them teachers produce good people. Import good aspects of life. Ultimate thing is satisfaction which the teachers get form this activity. Other teacher also expressed that they are also enjoyed on their job because they feel that this is the platform where we get an opportunity to impart knowledge, to get in touch with many brains and learn something new to the other".

4.1.3 Classroom Walls

When I asked to each participant about the classroom walls, some teachers told that it is helpful for the teaching learning process and some respond it should be strictly prohibited. One of the teachers among ten provided the concept of mathematics lab in the same question. He argued that, "there should be one or two cupboard in each class and those cupboards should be filled with necessary materials and there should be some charts on the wall". Two participants in the same question respond that, "nothing should be kept because if so students give more attention towards the materials then that of the teacher".

4.1.4 Classroom noise and teachers' tone

In the interview process, when interviewer asked, "should the classroom be kept noisy or completely silent?" then most of the participants

answered that, there should not be pin drop silent or noisy but there should be interacted environment in the classroom. When a researcher want to know about the teachers' tone in the classroom four participants express that teachers tone must be respectful or polite while four content that teachers' voice must be commanding. Among ten two teachers responses that, sometimes it should be commanding and sometimes it should be respectful according to the student behavior.

4.1.5 Teachers' Position and Teaching Method

While responding the researcher question, where should be the teacher in the class, most of the teachers view was, teacher should reach in every corner of the classroom but due to the classroom arrangement and students number some time it is impossible, they argue. In the response of this problem, researcher added one more question that, what kind of seat arrangement do you prefer in your classroom? Then two of teachers express that, if possible sets in the classroom must be arranged individually and in rounded table form but, others responses that row / column arrangement is sufficient to the student. In the same question one of the teachers' added more that, it's free to student to choose their sets where they like.

I asked about the teaching method like discovery or memory or through practice. Among ten three participants expressed that teaching through discovery is more important in mathematics class and so we must focus on this method. But other participants provide equal possibility of all others teaching methods.

4.1.6 Questioning

In the process of interviewing, the participants were asked about the questioning of students and teachers. Participant's reaction on this question was different. Most of the teachers prefer to ask questions at the middle of the period while two or three teachers prefer to ask questions frequently in overall classroom activity. Most of the participants response that, due to the large number of students it's impossible to ask question to the students. In the case of students' questioning teachers' answered that, talent students frequently ask questions when they have problem but weak students never ask any questions. Similarly four teachers have their different answers. They feel that we (teacher) did not encourage to students to ask questions.

4.2 Practices of Teachers

4.2.1 Classroom Physical Environment

We know that the environment we create for our students is equally as important as the content we teach and the learning strategies we use. The environment includes the atmosphere, the traditions we set the furniture arrangement, the centers or special areas within the room, and the decoration. All of these things add up to create either a positive or negative environment for students. I understood that in a properly arranged class structure feel welcomed and inspired to learn from the moment they walk through the door. This can be accomplished in a variety of ways. Primary and elementary teachers may want to decorate

their door with a theme. It can be a simple welcome theme, classroom theme, or a unit theme. Middle school and high school teachers may not want to decorate their door with a theme, but can use other items to show students that their room is a place of caring and learning. Some examples can be special art work done by students' artifacts that show student' personality, a welcome statement of some sort, a class slogan, mathematical quote etc. classroom walls and bulletin boards related mathematics can be covered with thought provoking and stimulating materials as motivational posters inspire students. Some other materials that are found in student centered teaching classroom are quotable quotes, birthday board, expected manner posters of famous authors, mathematicians etc. however I found quite different situations in my observations.

Most of the class has only two rows each containing one bench and one desk attached. Around 50 to 60 students were in all the government schools and 25 to 35 students in all the private schools when I conducted this study. Two or three schools have comfortable furniture. There are enough windows and ventilations for fresh air and sunlight. Since the windows are facing towards the main road, some noise could be heard. The classroom walls are covered with curriculum related charts, posters; duty charts students' details along with photographs. Some mathematical formulas and bar graph are also seen in some classes.

According to Kohn (1996) chairs are arranged around the tables rather than in rows in student centered classroom. (as cited in Gharti, 2006). This study shows that these facilities provide interactions among the

students. And furniture is comfortable for learning in student centered class so that they can fully concentrate in all activities. But this was not found in my observation. Rather the chairs were arranged in rows which blocked the students' interactions with each other. Among ten schools one school classes are somewhat different arrangement of seats. That means a little bit difference in the sense that the chairs are arranged individually to students.

4.2.2 Teachers' Accessibility to the Students

From Brades and Ginnis (1986), I came to know that in student centered class teachers is typically working with students so that it takes a moment to find him or her rather than typically front or center as in traditional class. I think that helps the teacher to provide individual care to students and students easily do not get diverted.

Given this theoretical perspective, I found that eight teachers were sitting near the first row most of the time while teaching in the classroom. But in between, he was found frequently moving around the class. In student centered class, teacher is found working with students so that it may even take a moment to find him or her when we enter the class. But in traditional class, the teacher is generally found at front or center. Teacher B tried to give individual care as many students as he could but he failed to reach some silent students. He was not at all bothered by their silence. Caring the students individually in necessary in student centered teaching. I could not observe him encouraging slow learners, in his classes some students were found frequently calling him to ask queries and were not at

all bothered about my presence. Sometime he went up to their seats to answer them.

4.2.3 Teachers' Tone

Here, by the word 'tone', I mean the quality of somebody's tone, especially expressing a particular emotion, for example, a tone of command or a tone of surprise. In this section, I have tried to describe the teachers' tone used in class in dealing with the students. I have understood that in student centered class teachers' tone is found to be respectful, genuine, warm, caring rather than controlling and imperious as in traditional method (Brades & Ginnis, 1986). I did not find teachers A and I to be very polite with the students nor was they rude. They generally show a kind of parental care to the students and sometimes give parental command. They are quite strict with punctuality in assignments but demands in soft but strict language.

I could not see B and J to be polite and respectful towards the students but they were not hard and rough too. I never found them using the words like please, thank you, you did it etc. to students. C, F, K and L had a bit of commanding tone rather than polite and respectful language. D and H were found moderately polite with the students although they did not exactly use any polite words. And similar was the case of E regarding the tone.

The teacher could be effective when he/she able to draw the attraction of the students and be learner friendly in his/her classroom. Comparatively I

found G's tone quite polite. At this point I found a characteristic of student centered teacher in him. He used the words like please, dear children and alike. But he spoke very fast but with low volume. I wondered how students could hear and understand.

4.2.4 Use of Punishment

I came to know form Neill (1962), that when we consider a child's natural interest in things, we begin to realize the dangers of both reward and punishment. Rewards and punishment tend to pressure a child into interest. But true interest is the life force of the whole personality and such interest is completely spontaneous. It is possible to compile attention, for attention is an act of consciousness. It is possible to be attentive to an outline on the blackboard and the same time to be interested on pirates. I understood that though one can compel attention, one cannot compel interest. For example, no man can force me to be interested in, say collecting stamps; or can I compile myself to be interested in stamps, cycling, trekking or rafting? Yet both rewards and punishment attempt to compel interest.

I noticed teacher E, H and J to be acting against the norms of students centered teaching as they were punishing the students. Punishments satisfy the punisher but have little fasting effect on the punished. Research on well-disciplined schools indicates that a student centered environment, incorporating teacher student problem solving activities as well as activities to promote student self-esteem and belongingness is more effective in reducing behavior problems than punishment. Hence E,

H and J's action was counterproductive and it does not help to encourage responsibility in the students, which is not as accord to learner centered teaching.

At this par A and D did not think about the consequence of sending the students out of the class. By the time students have reached the secondary level, some have been lectured to, yelled at, sent out of the class, and kept after school, referred to the office, suspended in school, suspended from school, referred to Saturday school and these students simply no longer case and become more rude and careless(Wayson & Lasley,1984).

4.2.5 Teaching Methodology and Students' Participation

Constructivism focuses our attention on how people learn. Knowledge results from people forming models in response to the questions and challenges that come from actively engaging problems and environments not from simply taking in information, nor as merely the blossoming og an innate gift. The challenge in teaching is to create experiences that engage the student and support his or her own explanation, evaluation, communication and application of the models needed to make sense of these experiences.

But during my observation I found A using lecture method most of the time to deliver the mathematical knowledge to students rather than creating activity in the class. He tried to five individual cares to as many students as he could but he failed to reach some silent students. He was not at all bothered with their silence; I could not observe him encouraging

slow learners. Generally in his class I found some of the students quite active and responding to him but most of them quite silent. He had the habit of going around the class to see what the students are doing.

In B and H classes I observed some students even discussing with each other rather than asking with the teacher. I thought this was the feature of learner centered teaching and the teacher has given that short of environment. In student centered class it is not only the teacher who teachers knowledge but it could also be the students who share knowledge with each other. In student centered class, students often address one another directly with their first name. This indicates closeness among the classmates, which helps in class discussion and interaction (Brades & Ginnis, 1986)

In C and J class, only a couple of students seemed to be participating and they were interested in asking questions. Others were completely silent. Many students remained quiet throughout the period. I could not make out whether it was because they were scared with the teachers or it is due to my presence.

Teachers D and F's class were quite interactive in classes. They were not found to be giving individual care but were almost entirely focusing on blackboard teaching. I could not find them encouraging and focusing slow learners. The students were not found to be so much participative and interested in the classroom. They were just looking at the board with very less response. They did not ask any questions throughout the class. I can't exactly say whether the students were unnecessary scared with the

students or not as they were silently observing the teacher and the black board. They did not show any symptoms of enjoying with students.

Regarding teacher E and I they also used lecture method rather than practical and activities. They could have brought equipments form the mathematical box but did not. But another class I found them doing revision in a interesting way. They organized quiz in the class involving the student actively. Students were highly interested and participative in the class. Here they might have been practicing a different style of involving the students in activity to make the teaching learning effective.

Teacher g also frequently asked questions to the students. I found some students responding well to his questions. But I found a case where a student named Sujan in class ten simply avoiding his question. In his other classes, I found the class to be more interactive but not enough activities. Students were found to be discussing and helping with each other without the involvement of the teacher.

4.2.6 Teacher-Student Relation

What I read from Neill (1962) is that the teacher becomes a facilitator and resource person. This makes the student centered teaching highly demanding. This method indeed requires some special qualities and skills in the teacher, which may be different from those, demanded by deductive methods. A teacher must have a degree of sensitivity and perception in order to clarity and identity student needs. She/he is expected to be capable of divergent thinking and considerable

resourcefulness to find the materials requested by students, which cannot be predicted in advance. Tact, skill, humor, and a willingness to take risks, are needed to facilitate interpersonal communication in a participatory setting.

Teacher A generally went up to the students' seats to answer them. The students were not found to be unnecessary scared with him throughout observation. Generally students were quiet in B, D, E and J classes. They do not response as with other teachers. They frequently bring lots of complaints from nine and ten students that they do not obey them in the class. They say that students are wild because physical punishment is not allowed here. This shows that their relation with the students is not so good.

Teacher C and F has a bit of commanding tone rather than polite and respectful language. In their class students were silent without much interaction. They just listen and follow what the teachers said. To some extent students were scared with teacher. But the teachers can be effective when she/he is able to draw the attraction and be child friendly in their class. Anyway I have found them to be keen in observing the students individually.

In G's class students were found more active and responsive. He has the habit of frequently asking questions to the students while explaining the problems. Students spoke quite informally with him. Students also communicated with each other without much taking care of the teacher. Frequent humming sound of the students could be heard. I have understood that in student centered class there should be frequent hum of

activity and ideas being exchanged rather than silence or teacher's tone the loudest or most often heard. I have come to know that in student centered class, teacher is typically working with students so that it takes a moment to find him or her rather than typically front or center as in traditional class.

In Teacher H's class, students were not found to be unnecessarily scared. Students were found to be talking with him quite easily.

Teacher I looked moderately fresh and lively as he time to time smiled very personally with some students as he reached up to them to check the work. He was quit polite with the students in class but ironically he had been called to the office several times to counsel not to give punishment. Sometimes he even humiliated students in front of the peers.

4.3 Similarities and Contradictions

When I go through the perception and practices of each participant, I totally realized that the theory and practical are different. For example when I analyzed the teacher A, I mentioned his several similarities and contradictions in his perceptions and practices. When A said "teaching is a dynamic process where we get ample of opportunities to learn ourselves, learning nothings and sharing with the enthusiastic students is really enjoyable", I was really impressed. However, I did not find him ready to learn from the students. He did not show any of those symptoms in his classroom practice.

Similarly, in the case of B also I found many similarities and contrast between his perceptions and practices. He frankly said that he has chosen the field because he found it very accessible. This shows that he did not join his profession because of any intrinsic value and drive. At least he did not expect any. And he says he enjoys the job because you are always around the people who respect you and it makes you feel good. I think he is self – centered in his saying. Then I went on analyzing all the teachers. I found a number of similarities and contradictions in their perceptions and practices. I comprehended that it is not easy to practice what one speaks. All the teachers shared their opinion in the side of learner centered education during the interview and in the questionnaires. But during the practice, were entirely against their views, where others were found to be partially consistent with their views.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The purpose of this study was to find the Perception and Practices of Secondary Level Mathematics Teachers Towards Students-Centered Teaching Method. The objectives of the study were: to find the Teachers

perception on student centered teaching method in mathematic Classroom, to find the practices on student centered method in mathematics classroom, to find the gaps between perception and practice of teachers on student centered teaching method. For this study the research questions were: how to secondary mathematics teachers perceive the notion of student centered teaching method, how do they practice it in their mathematics class, it there any gap between teacher's per captions and their practices?

5.2 Findings

From the study reports and data collected through observation of classroom and interview with mathematics teachers on the basis of analysis of data the major findings are presented below.

- Although teachers joined the profession because of their high passion towards teaching and they enjoy in their job, in practice they were not so happy and smiling faces.
- Teachers preferred separate table and chair for each students most of the class furniture for sitting students, were row wise.
- Teachers emphasized on the class wall should be covered with student's projects, but there was rarely use of such materials.
- Teachers preferred polite tone, reward rather than punishment but they were dominator and commanding tone. Students kept quite in class as they were frightened with punishment.
- They wanted to be stayed in all corners of the class but in practice most of the time the teachers had been stayed in the front near the blackboard.

- Their view in equal opportunity, to ask question to the teacher and students where as in the practice, questioning was from teacher but not from students sides.
- Teachers pointed that learning should be through discovery method rather than through memory and practice but thus were rarely used discovery method.

5.3 Conclusion

Finding of this study shows that perception of the mathematics teachers towards student centered teaching method is satisfactory level but in their class room practices was not so toward student centered teaching method there was gaps between perception and practices in mathematics teaching. From the interpretation of dada, the following conclusions were obtained.

1. All the teachers exposed that they joined the profession because of their high passion towards teaching and they enjoy the job it means they are dedicated towards teaching is the basic characteristic of the student-centered teaching method. In practice they are not really enjoying with the students.
2. They preferred child friendly in the class room environment, they preferred posters, project works seat relevant to the text to be hung on the walls, Math labs, well ventilated and well decorated classroom this is in the favor of the SCTM but in practice was against the notion of SCTM.
3. Their view about humming noise in the class is against the belief of SCTM.

4. The entire teachers be lived that he /she should be at every where on the class with the students group as per the situation this was the favor of SCTM. In practices it was found mostly on in front of the class, some times in the centre, it is against the SCTM.
5. Regarding to the teacher's tone they preferred that it should be commanding rather than polite it was against the SCTM.
6. Teachers believed that punishment is not an effective way to develop desired quality in the students this perception regarding in favors of SCTM. But in practice most of the teachers were dominator, students kept quite in class and passive and they were frightened with punishment so their practices was in favor of teacher centered method.
7. Teachers view on the questioning has been strongly recommended in SCTM. Where as in the class room practices, there were rarely questioning from students sides there was low level interaction between teachers and students. It was against the SCTM.
8. Teachers pointed that learning should be through discovery because students take part in their own findings depends upon subject matter. Though they use lecture method and more teacher centered teaching method, there is no consideration of individual differences among the students was found.
9. They preferred comfortable furniture but there were found that that they were not paying attention to circular or square arrangements of the seats which are not effective in SCTM.

Hence in the response to implementation of student cantered teaching method this study claims that teachers have satisfactory perception towards SCTM in teaching mathematics but in practice

they totally depend on text books and some practice books to impart SCTM in classroom they often use lecture method and traditional problem solving method.

5.4 Recommendation

5.4.1 Implementation

1. As a teacher he/she must be just a guide but not the preacher of knowledge. Pupils can play an active role an also participate in mathematic curriculum planning. This helps the students to take responsibility and ownership of their education.
2. He/she must not treat the students as the passive listeners. When they simply have to accept what the teachers say, it forces the students to perceive that they are known nothing and the teachers are the solution for everything.
3. He/she must not give emphasis in the memory and practice method of learning nor in the external rewards and punishments rather must he/she use play way method and discovery teachings. This helps to create positive motivation in students.
4. He/she must give emphasis on cooperation group assignment which helps the pupil to develop social life skills. This way he/she can prepare students not just for examination for their life.
5. As far as possible, he/she must arrange the chair around the tables rather than in rows to facilitate interactions among the students. This also helps the students to develop mass communication skills.
6. He/she must manage the class walls to be covered with students' mathematical projects. This creates pleasing environment in the

class and students can remember or refer subject matters easily. This also works as evidence of students' collaboration, which makes them feel proud and participating in class activities.

7. He/she must not take it negatively if there is frequent hum of activity and ideas being exchanged among the students. Some noise is naturally produced during active learning.
8. His/her tone should be respectful, genuine, warm and caring. This makes the learners to accept what the teacher says.
9. He/she must have the ability of listening to the students even when they are wrong. This helps them feel free to express their ideas.
10. He/she must let the students ask questions frequently.
11. He/she must go on observing the activities and give assistance only if needed.
12. He/she must always remember the individual difference between the learners. Learners have different strategies, approaches, and capabilities for learning that are a function of prior experience and heredity. Individuals are born with and develop their own capabilities and talents.

5.4.2 Recommendations for further study

The following study should be carried out in order to make the results of the study complete.

1. Form this study it has been found that the practices of secondary mathematics teachers to words SCTM is poor so similar study can be extended in other subject - teachers as well.
2. Similar study can be done in regional and national level size.

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Appendix A

Public Schools				
Name of Teacher	Academic Qualification	Teaching Experience	Gender	School Name & Address
a.) Mr. Chhabilul Acharya	M.Ed.	33	Male	Vindhyavasini H.S. School, Batulechaur
b) Mr. Sreeram Poudel	B.Ed.	16	"	Barahi H.S.School, Malepatan
c) Mr. Dorn Pd. Bhurtel	Bsc./B.Ed.	8	"	Pardi H.S. School, Birauta Pokhara.
d) Mr. Shivadatta Adhikari	M.Ed.	8	"	Janachetan H.S. School, Nirmal Pokhari
e) Mr. Bal Bahadur Shrestha	B.Ed.	20	"	Indra Rajya Laxmi S.School, Lamachaur

Private Schools

Name of Teacher	Academic Qualification	Teaching Experience	Gender	School Name & Address
f) Mr. Khadak Raj Adhikari	M.Ed.	10	Male	Gandaki H.S.B. school, Lamachaur
g) Mr. Yogendra Basnet	B.Ed.	8	"	Gyanubaba H.S. Bording School, Miruwa Pokhara.
h) Mr. Shiva Lal Regmi	B.Ed.	12	"	West Points B.School, Ranipauwa
i) Mr. Dilli Ram Tiwari	B.Ed.	16	"	Pokhara United Academy, kundahar

j) Mr. Homanath Lamichhane	M.Ed.	9	"	Bidya Niketan S.School, Birauta

Appendix B

Semi Structured Interview Guidelines

1. How long have you been teaching?
2. Why did you choose this profession?
3. How do you enjoy in your job?
4. Mention five things that you like to make change in your classroom setting.
5. What kind of furniture setting do you prefer in you classroom? Why?
6. Should the classroom walls be kept bare or filled up with different materials? Why?
7. If it should be filled up what kind of materials?
8. Should the class be noisy or completely silent? Why?
9. Should the teachers be typically in front part of the classroom or at the center of within the students group so that it takes a moment to find him or her
10. Should the teacher's tone be commanding or respectful? Why?
11. Should the learning be through discovery techniques or through memory and practice?
12. How often do you ask questions while teaching? Why?
13. How often do your students ask questions while teaching?
14. Do you prefer frequent questions being asked by your students? Why?
15. What are the materials that you use in the class besides the text book to explain lesson?
16. In your opinion what should a student do in the class to learn effectively?
17. Are rewards and punishments helpful in teaching-learning process? Explain your logic.

Appendix –C

Class Observation Form

S.N.	What should be found in a students centered class	What was observed in the class
1	The classroom environment is child friendly	
2	Walls are covered with child projects	
3	The teacher gives individual care	
4	The teacher encourages slow learners	
5	The teacher do not show discrimination among students	
6	The teacher looks fresh and lively	

7	The students are not unnecessary scared with the teacher	
9	The teacher is polite and respectful	
10	The Students looks participative and interested	
11	The teacher encourages activity rather than memorizing	
12	The teacher does not use punishment	
13	The teacher frequently goes around the class	
14	The teacher looks confident in subject	
15	The teacher seems to be enjoying with the students.	
16	Arrangements of seats	

17	Methods used in child centered activity according to the lesson.	