

## **Chapter I**

### **INTRODUCTION**

#### **Background of the Study**

The effective learning depends upon the appropriate activities of the teacher and the proper reinforcement techniques adopted to the classroom that motivate the learners to learn through active participation. It is said that practice makes a man perfect. Behind this saying, there must be logic and truth. It is sure that the role of practice in learning is important. Practice helps to bring the mastery and accuracy in the subject matters into memory and adds quality. On the other hand, it is more useful in skill learning and it helps to consolidate the learnt skills and behaviours. Nowadays, every human discipline is interpreted through mathematical models. Therefore, there is a significant need of mathematics to the everybody's daily life and also for the base of further studies. In the field of education of school, the whole achievement of the student significantly depends upon mathematics achievement and motivation plays an important role to increase mathematics achievement.

Motive is the root word of motivation and according to oxford advance learner's dictionary motive means "that which causes somebody to act in a particular way". Further, The Free Encyclopedia explains "Motivation is a word used to refer to the reason or reasons for engaging in a particular behaviour, especially human behaviour as studied in psychology. These reasons may include basic needs such as food or a desired object, hobbies, goal, state of being, or ideal".

The famous word “motivation” has been derived from the ancient Latin word “movere” which means “to move” or “to activate”. In this sense, the fact which initiates a person to move or to activate towards some need is called motivation.

Motivation is a psychological feature that arouses an organism to act towards a desired goal and elicits, controls, and sustains certain goal-directed behaviours. It can be considered a driving force; a psychological one that compels or reinforces an action toward a desired goal. For example, hunger is a motivation that elicits a desire to eat. Motivation is the purpose or psychological cause of an action. Motivation has been shown to have roots in physiological, behavioural, cognitive, and social areas. Motivation may be rooted in a basic impulse to optimize well-being, minimize physical pain and maximize pleasure. It can also originate from specific physical needs such as eating, sleeping or resting, and sex. Motivation is an inner drive to behave or act in a certain manner. "It's the difference between waking up before dawn to pound the pavement and lazing around the house all day." These inner conditions such as wishes, desires, goals, activate to move in a particular direction in behaviour.

Motivation can be divided into two types: intrinsic (internal) motivation and extrinsic (external) motivation. Intrinsic motivation refers to motivation that is driven by an interest or enjoyment in the task itself, and exists within the individual rather than relying on external pressures or a desire for reward. Intrinsic motivation has been studied since the early 1970s. Students who are intrinsically motivated are more likely to engage in the task willingly as well as work to improve their skills, which will increase their capabilities. Students are likely to be intrinsically motivated if they: attribute their educational results to factors under their own control, also known as

autonomy, believe they have the skills to be effective agents in reaching their desired goals, also known as self-efficacy beliefs are interested in mastering a topic, not just in achieving good grades

Extrinsic motivation refers to the performance of an activity in order to attain an outcome, whether or not that activity is also intrinsically motivated. Extrinsic motivation comes from outside of the individual. Common extrinsic motivations are rewards (for example money or grades) for showing the desired behaviour, and the threat of punishment following misbehaviour. Competition is in an extrinsic motivator because it encourages the performer to win and to beat others, not simply to enjoy the intrinsic rewards of the activity. A cheering crowd and the desire to win a trophy are also extrinsic incentives. Richard M. (Ryan and Edward L. Deci;2000)

Social psychological research has indicated that extrinsic rewards can lead to over justification and a subsequent reduction in intrinsic motivation. In one study demonstrating this effect, children who expected to be (and were) rewarded with a ribbon and a gold star for drawing pictures spent less time playing with the drawing materials in subsequent observations than children who were assigned to an unexpected reward condition. While the provision of extrinsic rewards might reduce the desirability of an activity, the use of extrinsic constraints, such as the threat of punishment, against performing an activity has actually been found to increase one's intrinsic interest in that activity. In one study, when children were given mild threats against playing with an attractive toy, it was found that the threat actually served to increase the child's interest in the toy, which was previously undesirable to the child in the absence of threat.

For those children who received no extrinsic reward, self-determination theory proposes that extrinsic motivation can be internalized by the individual if the task fits with their values and beliefs and therefore helps to fulfill their basic psychological needs. Motivation for school learning depends primarily on the interaction of students with teachers and of students with the tasks. Traditional approaches to motivation typically either attempt to make learning fun or to rely on grades and other extrinsic rewards and punishments to pressure students to put forth the necessary effort. Recent research on students' motivation has moved well beyond these traditional conceptions to establish a richer, more balanced depiction of motivation, allowing the identification of effective motivational strategies that apply to teaching of all subjects, including mathematics. Students' motivation depends on both expectation and value. That is, *expect* to be able to perform the task successfully if they apply themselves and the degree to which they *value* the task or the rewards that performing it successfully will bring. Therefore, teachers can motivate students to strive for mathematical proficiency both by supporting their expectations for achieving success through a reasonable investment of effort and by helping them appreciate the value of what they are learning.

Motivational techniques are the most powerful tools to increase the achievement in mathematics. If we see the score of mathematics in our school, highest scores are in mathematics as well as very least scores also are in mathematics. Why do these variation occurs in mathematics?, researcher thought that this variation occurs due to mathematics techniques promoted by mathematics teachers in their classroom. So researcher tried to study under this matter.

## **Statement of the Problem**

Most of the students are not interested to learn mathematics and teachers have not sufficient knowledge, So it is believed that Mathematics is a difficult subject and the school result shows that most of the students are failed in Mathematics even today. There are many factors which impact in Mathematics. Among them motivation is one of the most influencing factor in achievement of Mathematics. The Mathematics learning is not effective in our classroom. For effective Mathematics learning the teacher should select effective motivational techniques because it plays a vital role to reinforce students in order to learn and understand the problems of Mathematics. This research mainly concern to study on motivational techniques promoted by mathematics teachers in teaching mathematics at secondary level. So based on the above context, the researcher developed the following research questions:

- ) what is the current status of motivational techniques promoted by mathematics teachers in teaching mathematics at secondary level?
- ) Is there difference between the status of motivational techniques promoted by public schools mathematics teachers and private schools mathematics teachers?

## **Objective of the Study**

The following were the objectives of this study:

- ) To find out the current status of motivational techniques promoted by mathematics teachers in teaching mathematics at secondary level.

- ) To compare the status of motivational techniques promoted by public schools' mathematics teachers and private schools' mathematics teachers.

### **Hypothesis of the Study**

The study attempted to seek the result of following research hypothesis and statistical hypothesis.

#### **a. Research Hypothesis**

There is no significant difference between the status of motivational techniques promoted by the teachers in teaching mathematics at secondary level from public and private schools.

#### **b. Statistical Hypothesis**

i.  $H_0: \hat{\mu}_1 = \hat{\mu}_2$  (Null hypothesis)

ii.  $H_1: \hat{\mu}_1 \neq \hat{\mu}_2$  (Alternative hypothesis)

Where,  $\hat{\mu}_1$  and  $\hat{\mu}_2$  are the corresponding parametric means of the observed scores of motivational techniques of private school mathematics teachers and public school mathematics teachers respectively.

### **Significance of the Study**

Mathematics is the important and core subject for school level. The objectives of any mathematics curriculum includes promoting favorable feeling towards mathematics as well as importing cognitive knowledge. Mathematics is used to solve

daily life problems as well as in the field of advance science and technology. But most of the students are not interested to learn mathematics, Do they use instructional materials in actual classroom practice?, Do they aware about motivation on their instruction? Can they use reinforcement in real classroom practice? etc.. Mainly this study will have following significance:

- ) This study helps to understand role of motivation on teaching and learning mathematics.
- ) It provides feedback for teacher and students to develop interesting atmosphere in the classroom.
- ) It suggests to develop motivational techniques, skills and knowledge for teacher training program.
- ) This study helps to the mathematics curriculum designers and educational planners, providing the knowledge about motivation in the mathematics classroom.
- ) This study is helpful for further researcher about motivational techniques.

### **Delimitation of the Study**

Any study cannot overcome all the fields. It is impossible to study about all secondary level teachers in Kathmandu district. So, this study was limited to grade X within the 20 schools of Kathmandu district. The result was generalized on the basis of these schools. The other determination of this study were as follows:

- ) This study included ten secondary schools in Kathmandu district.

- ) Due to the lack of financial resource, manpower and time this study was limited on only the Kathmandu district of Nepal.
- ) The data sources of this study was limited at most one mathematics teacher from each sampled school.
- ) This study was based on motivational techniques used by mathematics teachers in classroom.
- ) Classroom observation, In-depth interview were used as tools for the study.
- ) The study included only twenty math teachers of secondary schools from Kathmandu district.

### **Definition of the Related Terms**

#### ***Technique***

A practical method or art applied to some particular task or, The basic method for making or doing something, such as an artistic work or scientific procedure.

#### ***Motivation***

Motivation is that which gets a behavior started & keeps it going, or a need or desire to reinforce a behaviour to orient it towards a goal.

#### ***Motivational Techniques***

In this study, The researcher considered the following techniques as the motivational techniques promoted by mathematics teachers in classroom teachings: classroom decoration, discipline, cleanliness neatness of the classroom, smiling face of the teachers and students, relation between teachers



and students, arousing curiosity, eye contact, use of appropriate materials to the lesson, flexibility, organization of lesson, teachers role for active participation of students, use of appropriate concrete and understandable examples, belongingness, verbal rewards, self confidence, questioning answering, assignment, feedback, observation of students behavior, class work, summarizing the lesson, positive ending, achieving objectives, evaluation of the lesson & thanking the students while leaving the class.

***Public school***

It refers to the schools controlled and financed by the government of Nepal.

***Private school***

A school founded, conducted and maintained by an individual or small group of individual but legally registered.

## **Chapter II**

### **REVIEW OF THE RELATED LITERATURE**

Literature review is the process of locating, obtaining, reading and evaluating the research literature in the area of the search. It helps the researcher to know they worked carried out in the area of his/her research project. The main purpose of review related literature is to develop some temperature in one's area to see what new contribution can make and receive some idea for developing a research design. There are different research studies concerning motivational techniques and reinforcement that help to draw necessary conclusion. In this chapter different types of literature to the reinforcement have been reviewed. It helps to conduct the new research in a systematic manner by proving the general outline of the research study and eliminate the unnecessary duplication realizing the importance of literacy review.

Thapa (1989), in this research paper, submitted to University of Alberta on the topic "motivational level of primary school teachers in Nepal" studied, major administrative problems related to primary education exist in Nepal a result of teachers dissatisfaction and low level of motivation. Inadequate training, insufficient supervisory support, poor facilities, such as the physical condition of the class and school buildings, lack of adequate and appropriate teaching/learning materials, and the inadequate classroom sizes, lack of appropriate reward and punishment are the basic problems which affect teachers motivation in teaching.

Shrestha (2005) studied on the topic "A study on the mathematics teachers teaching performance of secondary level in Rauthahat district" with the aim to study

teachers classroom teaching performance of secondary level on Rautahat district. Out of 34 public secondary schools, 17 public secondary schools were selected as sampled school by lottery method. And all the secondary level mathematics teachers of those sample schools were taken as the sampled teachers for the study. A classroom observation from having 20 items was used as the tool for the study. It was a quantitative descriptive study but no statistical tool except mean weightage was used to analyze the study. He concluded that, Most of the teachers clarified the content of the lesson, arranged the class properly, based the lesson on the pervious lesson and created a conducive environment for the students to make them ready to learn. However, a few teachers failed to clarify the objectives of the lesson and arouse interest in the students, Most of the teachers did not use the instructional materials, Most of the used lecture method. Some used problem solving, recitation ,discussion, induction/deduction methods. None of the teachers used demonstration and discovery method, Teachers activities like: asking questions, answering to the students, listening the students opinion, justifying authority, seatwork, encouraging listing to students, non verbal communication and solving disciplinary problem were not up to the rank. But they clarified the students point in a good way, Most of the teachers neither used the positive nor the negative reinforcement. However, a few used positive reinforcement in the form of words spoken. A few teachers used negative reinforcement for the reason: Refuse to learn, Some of the teachers applied the transfer of learning which includes providing many practice opportunities for transfer-task and making the classroom situation as similar to the real world situation, and Most of the teachers did not summarize the lesson but evaluated the lesson. Most of the teachers gave the homework From the textbook only.

Subedi (2006) did a research on the topic “Behaviour of trained teacher in classroom practice in mathematics” with the objectives to identify the entering behaviour of the trained mathematics teacher in the classroom practice. He selected 30 trained secondary level mathematics teacher of Kaski district by purposive sampling method and classroom observation form and questionnaire for teacher were used as the tools for collecting the data of the study. The study was quantitative descriptive but only table and percentage was used to analyze the data. He concluded a limited number of trained teacher were used their skills in planning, also to manage materials, to use grouping techniques and creating environment to interact among students. Similarly, an optimum number of the trained teachers were using their skills to discuss about subject matter, to make students participate in teaching learning process, to use feedback mechanism, to evaluate students and to provide assignment.

Also he found about the motivation techniques promoted by trained mathematics teachers that they motivated their students by telling history and development of subject matter (10 percentage) by telling utility of subject matter in daily life (56 percentage) by linking the subject matter with previous one (133percentage) and rest of them by making a jock and short stories related to the lesson.

Acharya (2007) has studied the mathematics learning strategies in community based school by selecting one community based school and ten student of that school from Kathmandu valley by purposive sampling method to that identify the method used in teaching environment for mathematics learning in community based school . An interview schedule and a classroom observation form were used to collect the

required data. It was a case study and descriptive method was used to analyze the collected data. He concluded that the mathematics teacher was qualified and high experienced. But lecture cum practice method was used by teachers mostly. Sometime the discussion method was also used. The student's number was little bit more but they were actively participated in mathematics learning. The physical condition of the school was satisfactory but there wasn't mathematical lab. There was sound relationship between students and teacher.

Shrestha (2007) did a research on "Teaching Learning activities used by mathematics teachers taking for weak training course at secondary Level" with the objectives to find out the causes that make unable to apply training matter in classroom practice and to assess the impact of in service training. Applying stratified random sampling method 10 mathematics teachers 15 teachers with taking four week training and 5 teachers without taking four week training and 200 students (100 students taught by trained teachers and 100 students taught by untrained teachers) were selected from Kathmandu valley. A classroom observation form having 55 points and a semi-structured interview schedule were used as tools to collect the required data. The collected data were analyzed by the mean, standard deviation and two tailed t-test at 0.05 level of significance. And concluded that the classroom size, furniture management, teaching materials, numbers of student, workload of the teacher, teachers laziness etc were the causes of making unable to apply training matters in their classroom teaching.

Sapkota (2008) studied a case entitled "A cause study of mathematics teaching and learning practices at effective school of Parbat district." The purposes of this case

study were :( i) To describe the learning practices of mathematics teachers in the effective schools. (ii) To identify the teaching/learning environment for mathematics teaching and learning in an effective school. (iii) To analyze the teacher and student work in the classroom activities of the effective school. (iv) To identify the instructional strategies promoted for the mathematics learning in an effective school.

Out of 10 effective schools of Parbat district, one school was chosen purposively. Students, parents, mathematics teacher and head teacher of that school were selected as respondents by convenient sapling method. Interview schedule and class observation form were used to collect the required data. The design of this case study was quantitative in descriptive nature. The study concluded the following points:

The physical facilities of the school desk-bench, such as blackboard etc. Were sufficient for classroom. Classrooms were properly arranged with clean, tidy and peaceful environment but the number of students was more, also school lacks of good library, teaching materials and computers., The mathematics teacher had mostly emphasized on class-work and extra work on mathematics practice., The mathematics classroom was attractive and welcoming there arranged furniture in two columns so that teacher meets every students at bench., There were extra classes for low performer in mathematics learning with additional teacher, extra practice books were used for practice, & Teachers did not have sufficient time to provide personal feedback, supervising the assignment, only the monitoring had provided study habits to the other students.

Pokherel (2008) did a case study on topic “Classroom behaviours and low achievement in mathematics” with the objectives to explain the classroom behaviour of the teacher that effects the achievement of the students in mathematics. One school of Kailali district was selected as the case school and six students of class five having high attendance in class but low achievement in mathematics and the related mathematics teacher were selected as the sample by purposive sampling method. Classroom observation form, interview guidelines for the students and interview guidelines for the teacher were used as the data collection instruments. The study was qualitative descriptive in nature. It is concluded that in the classroom there was negligible condition of getting positive reinforcement by the weak students but could get punishment easily that is why they had negative attitude toward their mathematics teacher and looked him as a punisher, which had direct impact upon learning process.

The weak student need extra guidelines but they had not getting the chance of extra guidance at school. Due to unsatisfied teacher and at home due to illiterate pro guardians.

The use of motivations during the observation period, it was observed that the students were not listening carefully to the teacher appeared busy to copy from the blackboard.

Pandey (2013) did a research on the topic “Motivational Techniques used by Head Teachers of secondary schools" with the objectives to examine the view of mathematics teachers about the motivation techniques used by their Head teachers & to identify the student's opinion about the performance of teachers requesting from

motivational techniques used by the head teachers. The descriptive survey research design was adopted to conduct the study. To achieve objectives, the researcher maintained some Literatures that were related to the study. The related theories and some previous study of research were taken as a guide to the study. Data were collected by visiting sample secondary schools then collected data were organized, analyzed and interpreted . For the analysis of data the statistical tools like mean, standard deviation and t-test was also used.

In this study, the result revealed that no respondents were highly agreed about the motivation techniques used by the head teachers . Majority of the respondents showed that motivation techniques were not used sufficiently and frequently by the head teachers.

But no research has been conducted ties now related to motivational techniques promoted by mathematics teachers at secondary level in the context of Nepal. Therefore, this study intends to answer the above gap.

### **Theoretical Literature**

In this sub -section, the researcher introduced the theoretical discussions which are relevant for the interpretation of the findings of the study. There are various motivational strategies related to motivational techniques recommended by different educationists and psychologists.

Researcher have begun to identify those aspect of the teaching situation that enhance students self motivation (Lowman 1984, Lucas ,1990, Weiner & Kluwe,



1987, Bligh 1971). To encourage (1) students to become self-Motivated in depended Learners, instructors can do the following: Give frequent, early positive feedback the supports students' beliefs that they can do well, Ensure opportunities for students success by assigning tasks that are neither too easy nor too difficult, Help students find personal meaning and value in the material, Create an atmosphere that is open and positive, Help students feel that they are valued members of learning community.

Students learn best when incentives for learning in a classroom satisfy their own motives for controlling in the course. Some of the needs your students may bring to the classroom are the need to learn something in order to complete a particular task or activity, the need seek new experiences, the need to perfect skills, the need to overcome challenges, the need to become competent, the need to succeed and do well, the need to feel involved and to interact with other people satisfying such needs in rewarding in itself, and such rewards sustain learning more effectively than do grades. Design assignments in-class activities, and discussion questions to address these kinds (McMillan & Forsyth, 1991).

Make students active participants in learning. Students learn by doing making, writing, designing, creating, solving passivity dampens student's motivation & curiosity pose questions. Don't tell students something when you can ask them. Encourage students to suggest approaches to a problem or to guess the result of an experiment. Use small group work (Lucas, 1990)

Sass (1989) reports; the some eight characteristics encourage as major contributors to student motivation: (I) Instructor's enthusiasm (II) Relevance of the

material (III)organization of course (IV) Appropriate difficult level of the material (V) Active involvement of students (VI) Variety (VII) Rapport between teacher & students (VIII) Use of appropriate, concrete and understandable example.

Mifflin (1997), in his Teaching Concept (Suggestions for teaching in your classroom: Motivating students to learn) has suggested seven points about motivational techniques to instructors in this way: (i) Use behavioural techniques to help students exert themselves and work toward remote goals. (ii) Make sure that students know what they are to do, how to proceed, and how to determine when they have achieved goal. (iii) Do everything possible to satisfy deficiency needs physiological, safety, belongingness, and esteem. (iv) Enhance the attractions and minimize the dangers of growth choices. (v) Direct learning experiences toward feelings of success in an effort to encourage an orientation toward achievement, a positive self-concept, and a strong sense of self efficacy. (vi) Try to encourage the development of need achievement, self-confidence, and self-direction in students who need these qualities. (vii) Try to make learning interesting by emphasizing activity, investigation, adventure, social interaction and usefulness.

Becker and Schneider (2004) studied on the topic "Motivation students" and suggested eight simple rules for teachers motivating their students as:(i) Emphasize the most critical concepts continuously. Reiterate these concept in lecture & assignments throughout the course (ii) Provide students with a "visual aid" when possible to explain abstract concepts . A significance proportion of today's students are visual learners. (iii) Rely on logic when applicable. point out to students which information is merely "Fact" that must be memorized and which course material is

based upon "Logic". (iv) use in class activities to reinforce newly presented materials . After a new concept a subject has been presented via text reading lecture, or class discussion, allow the students to put the concept into action by completing an in class assignment . (v) Help students create a "link" when teaching something new. If then students can "link" the new material to something already learned, the odds of learning the new material are greatly increasing. (vi) As subjects are presented, new and/or confusing terms should be identified and introduced to the students. Present "real-world" definitions and alternative terminology, in addition to text book definitions. (vii) Treat student with respect patronizing behaviour may be expected in primary school teachers and "drill sergeant" strategies maybe effective in military boot camps. However most college students. will not respond were to these techniques. Give students their identify and they will give you their best efforts. (viii) Hold students to a high standard. If students are not required to maintain a specified level of learning & performance, only the most highly motivated students will devote the time and effort necessary to learn.

### **Incorporating Instructional Behaviours that Motivate Students**

Hold high but realistic expectation for your students. Research has shown that a teacher's expectations have a powerful effect on a student's performance. If you act as though you expect your students to be motivated, hardworking, and interested in the course, they are more likely to be so. Set realistic expectations for students when you make assignments, give presentations, conduct discussions, and grade examinations. "Realistic" in this context means that your standards are high enough to motivate students to do their best work but not so high that students will inevitably be frustrated

in trying to meet those expectations. To develop the drive to achieve, students need to believe that achievement is possible—which means that you need to provide early opportunities for success (Bligh, 1971; Forsyth and McMillan, 1991; Lowman, 1984).

Strengthen students' self-motivation. Avoid messages that reinforce your power as an instructor or that emphasizes extrinsic rewards. Instead of saying, "I require", "you must", or "you should", stress "I think you will find..." or "I will be interested in your reaction" (Lowman, 1990).

Avoid creating intense competition among students. Competition produces anxiety, which can interfere with learning. Reduce students' tendencies to compare themselves to one another. Bligh (1971) reports that students are more attentive, display better comprehension, produce more work, and are more favourable to the teaching method when they work co-operatively in groups rather than compete as individuals. (Eble, 1988; Forsyth and McMillan, 1991).

Be enthusiastic about your subject. An instructor's enthusiasm is a crucial factor in student motivation. If you become bored or apathetic, students will too. Typically, an instructor's enthusiasm comes from confidence, excitement about the content and genuine pleasure in teaching. If you find yourself uninterested in the material, think back to what attracted you to the field and bring those aspects of the subject matter to life for your students. Or challenge yourself to devise the most exciting way to present the material, however dull the material itself may seem to you (Sass).

## **Structuring the Course to Motivate Students**

Increase the difficulty of the material as the semester progresses. Give students opportunities to succeed at the beginning of the semester. Once students feel they can succeed, you can gradually increase the difficulty level. If assignments and exams include easier and harder questions, every student will have a chance to experience success as well as challenge (Cashin).

Vary your teaching methods. Variety reawakens students' involvement in the course and their motivation. Break the routine by incorporating a variety of teaching activities and methods in your course: role playing, debates, brainstorming, discussion, demonstrations, case studies, audio-visual presentations, guest speakers, or small group work (Forsyth and McMillan).

## **De-emphasizing Grades**

Emphasize mastery and learning rather than grades. Ames and Ames (1990) report on two secondary school math teachers. One teacher graded every homework assignment and counted homework as 30 percent of a student's final grade. The second teacher told students to spend a fixed amount of time on their homework (thirty minutes a night) and to bring questions to class about problems they could not complete. This teacher graded homework as satisfactory or unsatisfactory, gave students the opportunity to read their assignments, and counted homework as 10 percent of the final grade. Although homework was a smaller part of the course grade, this second teacher was more successful in motivating students to turn in their homework. In the first class, some students gave up rather than risk low evaluations of

their abilities. In the second class, students were not risking their self-worth each time they did their homework but rather were attempting to learn. Mistakes were viewed as acceptable and something to learn from.

Avoid using grades as threats. As Mckeachie (1986), points out the threats of low grades may prompt some students to work hard, but other students may resort to academic dishonesty, excuses for late work, and other counterproductive behaviour.

### **Motivating Students by Responding to their Work**

Give students feedback as quickly as possible. Return tests and papers promptly, and reward success publicly and immediately. Give students some indication of how well they have done and how to improve. Rewards can be as simple as saying a student's response was good, with an indication of why it was good, or mentioning the names of contributors: "Cherry's point about pollution really synthesized the ideas we had been discussing" (Cashin 1979).

Both positive and negative comments influence motivation, but research consistently indicates that students are more affected by positive feedback and success. Praise builds students' self-confidence, competence, and self-esteem. Recognize sincere efforts even if the product is less than stellar. If a student's performance is weak, let the student know that you believe he or she can improve and succeed over time (Cashin; Lucas).

Introduce students to the good work done by their peers. Share the ideas, knowledge, and accomplishment of individual students with the class as a whole (Barbara 1999).

Avoid giving in to students' pleas for "the answer" to homework problems. When you simply give struggling students the solution, you rob them of the chance to think for themselves (Fiore, 1985).

### **Motivation Towards Mathematics Through Homework**

Homework provides an opportunity for the students to work in their own speed freely and individually. It helps to ready for further lesson, to accomplish the incomplete class task and to up to date the done work. In this context, Posamntier and Stepelman (1990) state in this way:

*"Classroom instruction may serve as a forum for exposure to new materials, whereas, the time spend on homework provides the genuine learning experience".*

### **Motivation Through Questioning Techniques in Math Class**

Questioning techniques will help make your lessons more engaging and effective. Using good questioning techniques in the classroom can help to promote positive student learning. When utilizing questions in your daily lessons, you will allow the students to direct their own learning. Learning something through discovery is a more effective method of learning that will lead to improve memory and greater student involvement. Consider how to include questions in each lesson you teach. In this context, Wagaman (2008) reports:

*“When teaching math, make an effort to question students answers whether they are correct or incorrect. Consider having the students start a math journal, where they are allowed to write down the questions they come up with, and make time each week to discuss student questions. This will allow students to feel like they are a part of the learning process by directing your teaching towards their interests. In addition, always respond positively to student questions during your lessons. Telling them that their question is excellent and responding to it respectfully will encourage more students to ask questions.”*

### **General Principles of Motivation**

According to the Weller(2005), the following Basic principles of motivation exist that are applicable to learning in any situation.

*The environment can be used to focus the student's attention on what needs to be learned.*

Teachers who create warm and accepting yet business-like atmospheres will promote persistent effort and favorable attitudes toward learning. This strategy will be successful in children and in adults. Interesting visual aids, such as booklets, posters, or practice equipment, motivate learners by capturing their attention and curiosity.

*Incentives motivate learning.*

Incentives include privileges and receiving praise from the instructor. The instructor determines an incentive that is likely to motivate an individual at a particular time. In a general learning situation, self-motivation without rewards will not succeed.



Students must find satisfaction in learning based on the understanding that the goals are useful to them or, less commonly, based on the pure enjoyment of exploring new things.

*Internal motivation is longer lasting and more self-directive than is external motivation, which must be repeatedly reinforced by praise or concrete rewards.*

Some individuals -- particularly children of certain ages and some adults -- have little capacity for internal motivation and must be guided and reinforced constantly. The use of incentives is based on the principle that learning occurs more effectively when the student experiences feelings of satisfaction. Caution should be exercised in using external rewards when they are not absolutely necessary. Their use may be followed by a decline in internal motivation.

*Learning is most effective when an individual is ready to learn, that is, when one wants to know something.*

Sometimes the student's readiness to learn comes with time, and the instructor's role is to encourage its development. If a desired change in behaviour is urgent, the instructor may need to supervise directly to ensure that the desired behaviour occurs. If a student is not *ready to learn*, he or she may not be reliable in following instructions and therefore must be supervised and have the instructions repeated again and again.

*Motivation is enhanced by the way in which the instructional material is organized.*

In general, the best organized material makes the information meaningful to the individual. One method of organization includes relating new tasks to those

already known. Other ways to relay meaning are to determine whether the persons being taught understand the final outcome desired and instruct them to compare and contrast ideas.

None of the techniques will produce sustained motivation unless the goals are realistic for the learner. The basic learning principle involved is that *success is more predictably motivating than is failure*. Ordinarily, people will choose activities of intermediate uncertainty rather than those that are difficult (little likelihood of success) or easy (high probability of success). For goals of high value there is less tendency to choose more difficult conditions. Having learners assist in defining goals increases the probability that they will understand them and want to reach them. However, students sometimes have unrealistic notions about what they can accomplish. Possibly they do not understand the precision with which a skill must be carried out or have the depth of knowledge to master some material. To identify realistic goals, instructors must be skilled in assessing a student's readiness or a student's progress toward goals.

*Because learning requires changed in beliefs and behaviour, it normally produces a mild level of anxiety.*

This is useful in motivating the individual. However, severe anxiety is incapacitating. A high degree of stress is inherent in some educational situations. If anxiety is severe, the individual's perception of what is going on around him or her is limited. Instructors must be able to identify anxiety and understand its effect on learning. They also have a responsibility to avoid causing severe anxiety in learners by setting ambiguous or unrealistically high goals for them.

*It is important to help each student set goals and to provide informative feedback regarding progress toward the goals.*

Setting a goal demonstrates an intention to achieve and activates learning from one day to the next. It also directs the student's activities toward the goal and offers an opportunity to experience success.

*Both affiliation and approval are strong motivators.*

People seek others with whom to compare their abilities, opinions, and emotions. Affiliation can also result in direct anxiety reduction by the social acceptance and the mere presence of others. However, these motivators can also lead to conformity, competition, and other behaviours that may seem as negative.

*Many behaviours result from a combination of motives.*

It is recognized that no grand theory of motivation exists. However, motivation is so necessary for learning that strategies should be planned to organize a continuous and interactive motivational dynamic for maximum effectiveness. The general principles of motivation are interrelated. A single teaching action can use many of them simultaneously.

Finally, it should be said that an enormous gap exists between knowing that learning must be motivated and identifying the specific motivational components of any particular act. Instructors must focus on learning patterns of motivation for an individual or group, with the realization that errors will be common.

## Weller's Model of Instruction

**Table 1: Relation among Motivational Strategies, Motivational Factors and Time Period**

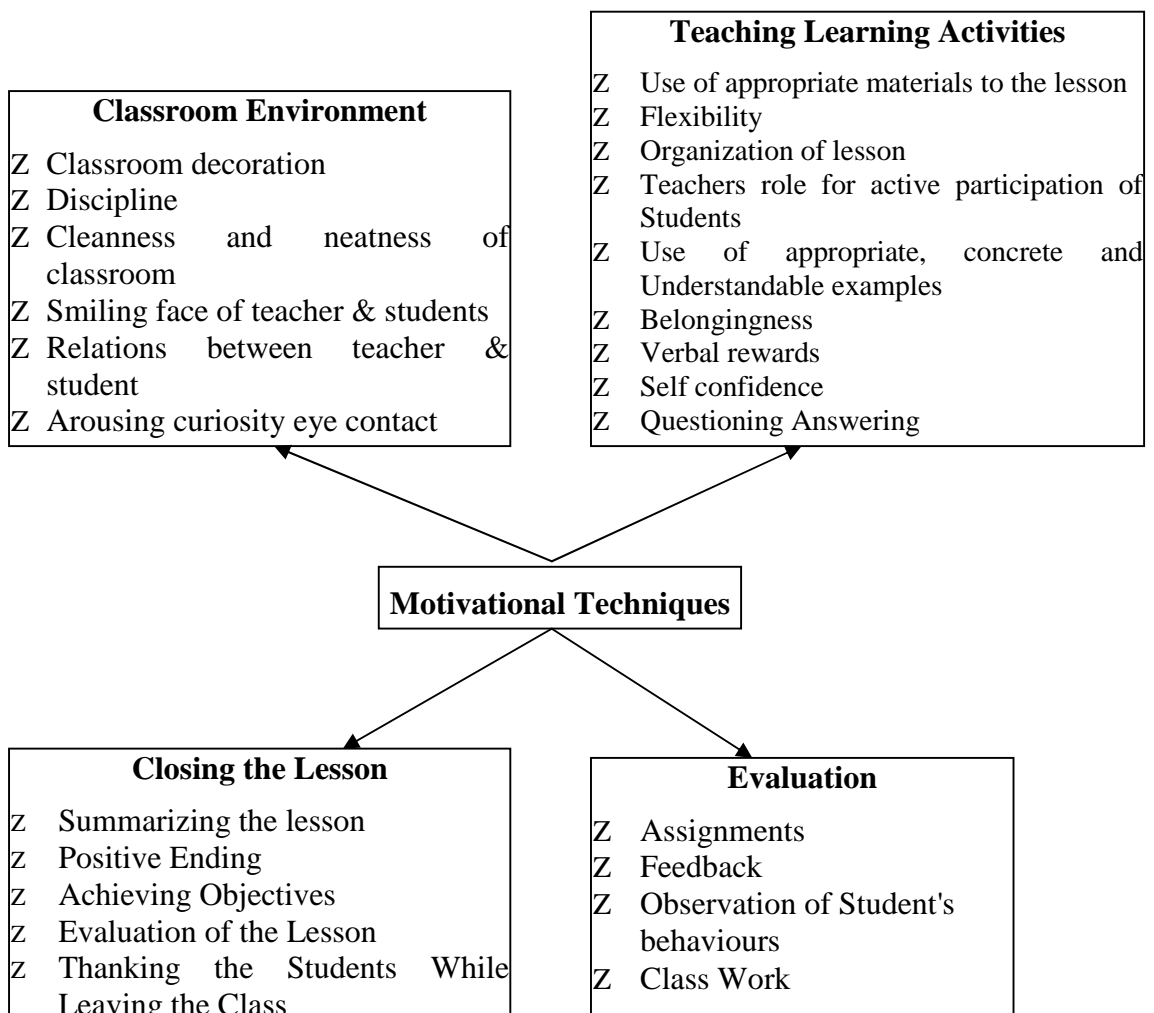
<b>STEP I</b>
<p><b>Time</b>  <b>Beginning:</b> When learner enters and starts learning.</p>
<p><b>Motivational Factors</b>  <b>Attitudes:</b> Toward the environment, teacher, subject matter, and self.  <b>Needs:</b> The basic needs within the learner at the time of learning.</p>
<p><b>Motivational Strategies</b></p> <ul style="list-style-type: none"> <li>) Make the conditions that surround the subject positive.</li> <li>) Positively confront the possibly erroneous beliefs, expectations, and assumptions that may underlie a negative learner's attitude.</li> <li>) Reduce or remove components of the learning environment that lead to failure or fear.</li> <li>) Plan activities to allow learners to meet esteem needs.</li> </ul>
<b>STEP II</b>
<p><b>Time</b>  <b>During:</b> When learners is involved in the body or main content of the learning process.</p>
<p><b>Motivational Factors</b>  <b>Stimulation:</b> The stimulation processes affecting learner during the learning experience.  <b>Affect:</b> The emotional experience of the learner while learning.</p>
<p><b>Motivational Strategies</b></p> <ul style="list-style-type: none"> <li>) Change style and content of the learning activities.</li> <li>) Make learner reaction and involvement essential parts of the learning process that is, problem solving, role playing, and stimulation.</li> <li>) Use learner concerns to organized content and to develop themes and teaching procedures.</li> <li>) Use a group cooperation goal to maximize learner involvement and sharing.</li> </ul>
<b>STEP III</b>
<p><b>Time</b>  <b>Ending:</b> When learning is completing the learning process.</p>
<p><b>Motivational Factors</b>  <b>Competence:</b> The competence value for the learner that is a result of the learning behaviours.  <b>Reinforcement:</b> The reinforcement value attached to the learning experience, for the learner.</p>
<p><b>Motivational Strategies</b></p> <ul style="list-style-type: none"> <li>) Provide consistent feedback regarding mastery of learning.</li> <li>) Acknowledge and affirm the learners' responsibility in completing the learning task.</li> <li>) When learning has natural consequences, allow them to be congruently evident.</li> <li>) Provide artificial reinforcement when it contributes to successful learning, and provide closure with a positive ending.</li> </ul>

(Source: Los Angeles Business Journal, March 2005)

## Conceptual framework for the study

This section deals about the conceptual understanding for the researchers. The conceptual understanding was established on the basis of research topics , possible area to fulfill the objective of the study. This study is mainly based on the above explained Weller’s model of instruction and general principles of motivational techniques which should be promoted by instructors in their instruction.

So on the basis of Weller’s model of instruction and general principles of motivational Techniques the researcher himself his constructed the following model to observe motivational techniques in mathematics classroom teaching:



(Prepaid: On the basis of Weller's General principle of Motivation and his, Model of Instruction)

## **Chapter III**

### **METHODS AND PROCEDURES**

This chapter deals with the plans & procedure related to this study under the different headings, which would be used to achieve the objectives of this study. The major plans and procedures followed in this study are as follows:

#### **Research Design**

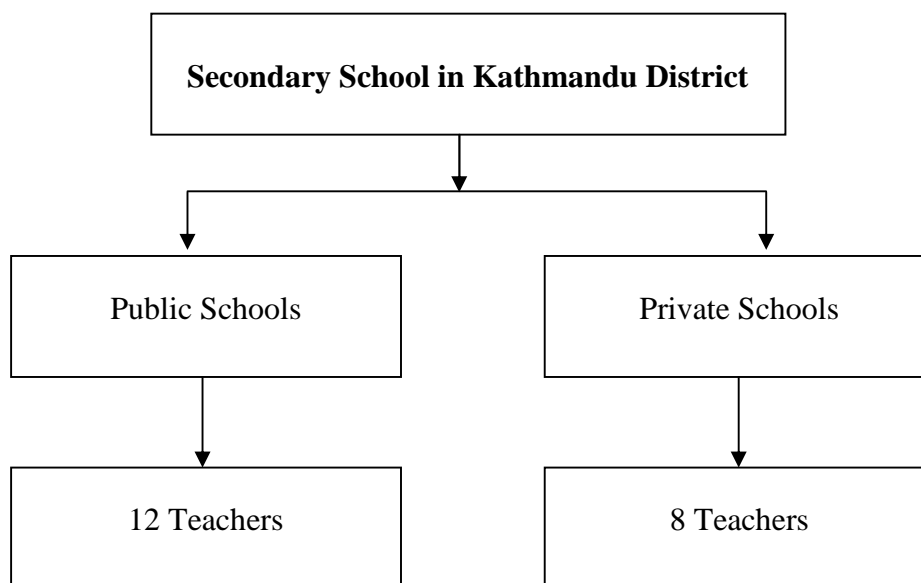
The design of this study was descriptive which is quantitative nature. Also some quantitative data were used to support for this design. the quantitative descriptive method is applied to find out the current status of motivational techniques promoted by mathematics teachers & the quantitative method is applied to find out the comparative status of motivational techniques promoted by public & private schools mathematics teachers in teaching mathematics. So it is a quantitative as well as descriptive type of the research study.

#### **Population of the Study**

All of the secondary level mathematics teachers who were teaching mathematics either in public secondary school or, in private secondary school in the academic year 2071 B.S. on Kathmandu district were taken as the population of the study.

## Sample of the Study

The purpose of selecting a sample is to gain information about a population. In this study 20 secondary level mathematics teachers, each from different sampled schools were selected as the sample by stratified random sampling method. The details about the sample of this study is explained on the following table:



## Tools

Every study has need instruments to collect required data. likewise, in this study classroom observation form were used as the instruments of the study.

## Classroom Observation Form

There are several types of observation according to its nature. In this study , the researcher had followed structured; non-participant; classroom observation.

Observation conducted in natural setting , gave more reliable data for the study. The classroom observation form used in the study having 25 statement measuring motivational techniques promoted by mathematics teachers in teaching mathematics

was constructed according the guidelines of the psychologist Barr, Weller and other under the guidance of research supervisor. The content (motivational techniques) included in the form were collected from theoretical literature. Those motivational techniques were observed on the basis of corresponding bases and were rated according to Guilford's five point numerical rating scale. The research tool of classroom observation form has been given in the Appendix A.

### **Validity and Reliability of the Instruments**

The classroom observation form according to the psychologist Barr, Weller, Sass and Lowman constructed under the guidance of research supervisor. The validity of the used schedules was established by its approval from the subject experts and thesis supervisor. To check the gross defects in language, suitability of the items, appropriateness of the statements, complexity, coverage of content etc. of the tools, the researcher consulted the related experts and lastly with the suggestion of supervisor, some modification were made and finalized.

### **Data Collection Procedures**

At first, the researcher visited District Education Office of Kathmandu and informed the authorities about the purpose of visiting and asked the list of total secondary schools (public and private) of Kathmandu District. On the basis of record of DEO Kathmandu searcher sampled the schools and visited himself, each of the sampled schools one after another. The researcher met the authorities, explained in detail the purpose of visiting and requested for the help.



The researcher observed two mathematics classroom teaching in secondary level of the same mathematics teacher separately one after another with the advance permission of principal and mathematics teacher of those 20 schools. In this way the researcher collected the required data for the study. The researcher had used classroom observation form and bases of rating motivational techniques simultaneously while observing class.

In this study, the researcher followed Guilford's five point numerical rating scale. It is the famous and used rating scale . during the class observation. The collected data were tabulated by using Guilford's five points. Numerical rating scale which is shown below:

**Table 2: Five Points Guilford's Numerical Rating Scale**

<b>S.N.</b>	<b>Statements</b>	<b>Value</b>
01	Very good	5
02	Good	4
03	Satisfactory	3
04	Poor	2
05	Very poor	1

## **Data Analysis Procedures**

At first the data obtained in classroom observation form were tabulated then calculated the mean score of each motivational techniques promoted by mathematics teachers' to analyze in descriptive way. Here, if mean score is less than 3; the result was 'poor', the mean score is 3; the result was 'satisfactory' and if the mean score was greater than 3; the result was 'good' to find out the current status of motivational techniques promoted by mathematics teachers. Similarly, To find out the significance difference between the status of motivational techniques promoted by public schools mathematics teachers and private school mathematics teachers were used mean, variance, two tailed t-test at 0.05 level of significance. The statistical tools used for the study has been given in the Appendix C.

## Chapter - IV

### ANALYSIS AND INTERPRETATION OF DATA

This section deals with the analysis and interpretation of the collected data of the study. Motivating the students to learn is very challenging work for a mathematics teacher. During the study, the researcher administrated class observation to observe the class with the class observation form. At first the data obtained in classroom observation form were tabulated then calculated the mean score of each motivational techniques promoted by mathematics teachers' to analyze in descriptive way. Here, if mean score is less than 3; the result was 'poor', the mean score is 3; the result was 'satisfactory' and if the mean score was greater than 3; the result was 'good' to find out the current status of motivational techniques promoted by mathematics teachers. Similarly, To find out the significance difference between the status of motivational techniques promoted by public schools mathematics teachers and private school mathematics teachers were used mean, variance, two tailed t-test at 0.05 level of significance. The researcher planned to analyze and interpret of the research in the following manner:

#### **Current Status of Motivational Techniques Promoted by Mathematics Teachers**

To find out the current status of motivational techniques promoted by mathematics teachers at secondary level were quantified & scored according to Guilford's five points numerical rating scale separately. The score 5, 4, 3, 2 & 1 were given corresponding to the rating 'very good', 'good', 'satisfactory', 'poor' & 'very poor' respectively.

The Table No. 3 represents the number of teachers and their percentages observed for the five ratings ('Very Good', 'Good', 'Satisfactory', 'Poor' and 'Very Poor') in each motivational technique.

**Table 3: Number of Teachers and Their mean score Observed for the Respective Rating in each Technique**

S. N.	Motivational Techniques	V.G.	G.	S.	P.	V.P.	Q.T.	Me an	Re mar ks
<i>Classroom Environment</i>									
01.	Classroom Decoration	2 (10)	9 (36)	6 (18)	2 (4)	1 (1)	20 (69)	3.45	
02.	Discipline	2 (10)	5 (20)	7 (21)	3 (6)	3 (3)	20 (60)	3.0	
03.	Cleanness and neatness of Classroom	2 (10)	6 (24)	9 (27)	2 (4)	1 (1)	20 (66)	3.3	
04.	Smiling Face of teachers & students	0	6 (24)	9 (27)	5 (10)	0 (0)	20 (61)	3.05	
05.	Relation Between Teachers & Students	1 (5)	6 (24)	11 (33)	2 (4)	0	20 (66)	3.3	
06.	Arousing curiosity	0 (0)	3 (12)	11 (33)	5 (10)	1 (1)	20 (56)	2.8	
07.	Eye Contact	1 (5)	8 (32)	9 (27)	2 (4)	0 (0)	20 (68)	3.4	
	<b>Total</b>							3.18	
<i>Teaching learning activities</i>									
08.	Use of Appropriate materials to the Lesson	1 (5)	8 (32)	9 (27)	2 (4)	0 (0)	20 (66)	3.3	
09.	Flexibility	1 (5)	4 (16)	10 (30)	3 (6)	2 (2)	20 (59)	2.95	
10.	Organization of lesson	1 (5)	7 (28)	9 (27)	3 (6)	0	20 (66)	3.3	
11.	Teachers role for active participation of Students	0	6 (24)	8 (24)	5 (10)	1 (1)	20 (59)	2.95	
12.	Use of appropriate, concrete and Understandable examples	2 (10)	6 (24)	8 (24)	3 (6)	1 (1)	20 (65)	3.25	

13.	Belongingness	2 (10)	6 (24)	8 (24)	3 (6)	1 (1)	20 (65)	3.25	
14.	Verbal rewards	4 (20)	8 (32)	7 (21)	1 (2)	0	20 (75)	3.75	
15	Self confidence	2 (10)	6 (24)	10 (30)	2 (4)	0	20 (68)	3.4	
16	Questioning Answering	4 (20)	12 (48)	3 (9)	1 (2)	0	20 (79)	3.95	
	<b>Total</b>							3.34	
<i>Evaluation</i>									
17	Assignments	0	7 (28)	8 (24)	4 (8)	1 (1)	20 (61)	3.05	
18	Feedback	0	3 (12)	10 (30)	3 (6)	4 (4)	20 (52)	2.6	
19	Observation of students behaviours	0	5 (20)	8 (24)	5 (10)	2 (2)	20 (56)	2.8	
20	Class Work		10 (40)	8 (24)	2 (4)	0	20 (68)	3.4	
	<b>Total</b>							2.96	
<i>Closing the Lesson</i>									
21	Summarizing the lesson	0	8 (32)	8 (24)	3 (6)	1 (1)	20 (63)	3.15	
22	Positive Ending	0	3 (12)	13 (39)	3 (6)	1 (1)	20 (58)	2.9	
23	Achieving Objectives	1 (5)	5 (20)	12 (36)	2 (4)	0	20 (65)	3.25	
24	Evaluation of the Lesson	1 (5)	5 (20)	10 (30)	2 (4)	2 (2)	20 (61)	3.05	
25	Thanking the Students While Leaving the Class	4 (20)	9 (36)	4 (12)	3 (6)	0	20 (74)	3.7	
	<b>Total</b>							3.21	
	<b>Grand total</b>							3.21	

Note: V.G. = 'Very Good', G. = 'Good', S.= 'Satisfactory', P. = 'Poor', V.P.= 'Very Poor'

The researcher had the following discussion on the basis of above mentioned table for each motivational techniques & their result. The mean score or average were calculated to find out the current status of motivational techniques.

## ***Classroom Environment***

According to educationists & psychologists (Weller, Sass & Lowman), motivating the classroom environment is a very important technique to motivate the students. The role of the teachers in the classroom environment is measuring 'classroom decoration', 'discipline', 'cleanness & neatness of classroom', 'smiling face of teachers' & students', 'relation between teachers & students', 'Arousing Curiosity' & 'Eye contact'. Angela Miller (2011) said that classroom environment contains the physical environment, classroom climate and the psychological environment. Similarly, teachers view on Dinesh Malla "*Students cannot learn if they are not ready to learn. So that we have to give prime importance to the environment of the classroom. For that, We should focus on the following motivational techniques Discipline, Arousing curiosity, Relation between teachers and students.*"

It was observed that to follow the motivational techniques, the averages of motivational techniques 'classroom decoration', 'discipline', 'cleanness & neatness of classroom', 'smiling face of teachers & students', 'arousing curiosity' and 'eye contact' were 3.45, 3, 3.3, 3.05, 3.3, 2.80 & 3.4 respectively. The technique 'classroom decoration' was positively remarkable or secured the position 'Good' & the technique 'arousing curiosity' was negatively remarkable or secured the position poor because of the average of this techniques was 2.80 & the current status of other five techniques were satisfactory.

At last the researcher found the averages of each position. It was found that the average of 'classroom environment' was 3.18. Hence it can be concluded that the

current status of motivational technique 'classroom environment' promoted by mathematics teachers in teaching mathematics at secondary level was satisfactory.

### ***Teaching Learning Activities***

Getting students motivated to learn can be hard. No matter what grade level you teach. Sometimes it is because students find the material boring or sureness or sometimes because they are simply there because they are required to be and not because they have not any interest and in the subject matter at hand. Here are many basic ideas or, techniques when motivating your students there are encourage internal motivation, change the style & current, make student reaction & involvement essential parts of the learning process, explore the connection between lesson, don't over teach, present material logically, head by appropriate examples. Be aware of students needs; Ask rhetorical question, Get student involve; good organize, promote open communication & discussion, make your classroom learning oriented; create family, encourage curiosity, encourage student to part pate, Tailor, rewards to the individual etc. So teaching learning activities is a important part of motivational techniques to motivate the students. According to psychologist & educationist (Weller, Sass, Miffin & Beaker & Scarcer) the teaching learning activities is very important motivational techniques. This techniques contains, 'Use of appropriate materials to the lesson', 'flexibility', 'organization of lesson', 'teachers role for active participation of students' "Use of appropriate, concrete & understandable example', 'belongingness', 'verbal rewards', 'self confidence' and 'questions answering' etc. Likewise, teachers view to Janarjan Shrestha "*teaching learning activities is the essential part of teaching. There is a saying that the teacher has not taught if they have not learnt. That`s why to*

*achieve success in teaching and learning process, teacher should apply teaching method either through flexible why or reward and punishment."*

It was observed that the average of the motivational techniques 'use of appropriate materials to the lesson', 'flexibility', 'organization of lesson', 'Teachers role for active participation of students', 'use of appropriate concrete & understandable examples' 'belongingness', 'verbal rewards', 'self confidence' & 'question answering' were 3.3, 2.95, 3.30, 2.95, 3.25, 3.25, 3.75, 3.4 & 3.95 respectively. Motivational techniques, 'Question answering', & 'verbal rewards', were positively remarkable because of their average were 3.95, & 3.75, & the motivational techniques 'Flexibility, 'teachers role for active participation of students', were negatively remarkable because of their mean score were 2.95 & 2.95 respectively.

At last the researchers found the average of the motivational technique 'teaching learning activities'. It was found that the average of 'teaching learning activities' was 3.34. Hence it can be concluded that the current status of motivational technique and Teaching learning activities promoted by mathematics teachers at secondary level was 'Good'.

### ***Evaluation***

Generally speaking there are two main purpose propose of teaching evaluation in higher education, namely for accountability to stakeholders & improvement of teaching is mainly supported by government funding. It is only natural that government would like institution of put in place measure of quality assurance for teaching & learning which together research & social services comprise the three main



function of higher education other than the government, there are also other stake holder in particular students. Who would also like to see the quality of teaching & learning of institution being placed under scripting. The other purpose of teaching evaluation is to provide information & feedback to instructions in order to improve the quality of teaching & learning. Teaching like all other professional practices, has to be continuously & systematically remained, replete on & improved evaluation can help teachers to identify problems in their teaching & learning & hopefully provide why to tackle them & corresponding to the two purpose of teaching evaluation, are two different approaches to teaching evaluation, namely, summative & formative teaching evaluation.

According to psychologist & educationists (Weller, sass & McMillan) evaluating the classroom environment is a very important motivational techniques. This technique contains, assignment, feedback, observation of students behaviour & class work.

Posamnticr & Slepelman express that assignment also motivates the learners. The following factors come under this technique: source of assignment (textbook, reference book any other), appropriateness & amount of assignment, suggestion over assignment, writer/oral assignment, standard of assignment etc. It was observed that the average of the motivational technique assignment was 3.05. which is satisfactory.

Providing feedback is very important motivational technique which is supported by Lowman & Cashin. It gives an opportunity to the learners to improve their faults & to enhance their good work. This technique was avoiding demeaning

comments, Be specific in negative feedback etc. Similarly, to Ramesh Singh

*"Evaluation is one of the best techniques for teaching learning activity to measure the achievement and success of the teaching-learning activating through different ways."*

The researcher found the average current status of motivational technique feedback was 2.6. Which is negatively remarkable or found the position poor. Also the technique observation of students behaviour was negatively remarkable because of the averages of this technique was 2.8 & average of the motivational technique class work was 3.4 which was satisfactory.

At last the researcher found the average of the motivational techniques 'Evaluation' was 2.96 which was poor or negatively remarkable. Hence it can be concluded that the current status of motivational technique evaluation promoted by mathematics teachers at secondary level was poor.

### ***Closing the Lesson***

According to Weller, closing the lesson is also an important motivational technique. It contains that following actions: 'summarizing the lesson', 'positive ending', 'achieving objectives', 'evaluation of the lesson', & 'thanking the students while leaving the classroom' etc. Similarly, to Urmila Dangol *"Recalling and summarizing are sole factors for the teaching-learning activities to make effective teaching learning process. If that is so, student should be provided recalling and summarizing after the completion of lesson."*

Motivational techniques, 'summarizing the lesson', 'achieving objectives' & 'evaluation of the lesson' were 3.15, 3.25, & 3.05 respectively these techniques satisfactory & the technique positive ending was poor because of the average of positive ending was 2.9 & the technique 'Thanking the students while leaving the class' was Good because of their average was 3.7.

At last the researcher found the average of motivational techniques 'closing the lesson' was 3.21, Which was satisfactory. Hence it can be concluded that the current status of motivational technique. Closing the lesson promoted by mathematics teachers at secondary level was satisfactory.

Last the researcher found the average for each motivational techniques & it was observed that the average of all motivational techniques was 3.21. Which is satisfactory. Hence it could be concluded that the current status of motivational techniques promoted by mathematics teachers at secondary level were satisfactory.

### **Status of Motivational Techniques Promoted by Public and Private Schools**

#### **Mathematics teachers**

The second & last objective of the study was to compare the status of motivational techniques promoted by mathematics teachers in teaching mathematics at secondary level from public & private school. In order to achieve this objective the hypothesis were formulated. The research hypothesis was, "There is no significance difference between the status of motivational techniques promoted by public & private school mathematics teacher in learning mathematics at secondary level". And the alternative hypothesis was, "There is significant difference between the status of

motivational techniques, promoted by public & private school mathematics teachers in teaching mathematics at secondary level".

The collected data from public schools teachers & private school teachers were quantified and scored according to Guilford's five points numerical rating scale separately to verify the hypothesis. The score 5, 4, 3, 2 & 1 were given corresponding to the rating 'very good', 'good', 'satisfactory', 'poor' & 'very poor' respectively. The mean & variance for both the groups were calculated & then values were tested by using two tailed t-test at 0.05 level of significance.

The table(Appendix-D) represents the observed scores of public school mathematics teachers promoting motivational techniques and table(Appendix-E) represents the observed scores of private school mathematics teachers in teaching mathematics at secondary level & table 4 shows their statistical results.

**Table 4: Comparison and Statistical Results of Mathematics Teachers Motivating their Students in Teaching Mathematics at Secondary Level from Public and Private Schools**

S.N.	Group Compared	N	Mean	Variance	d. f.	Calculated t-value	Tabulated t-value
01.	Public School Teachers	12	3.09	0.019	18	-5.079	t  2.10
02.	Private School Teachers	8	3.41	0.021			

= 0.05 & d. f. = 18 (i.e.  $N_1 + N_2 - 2 = 18$ )

The above Table 4 shows that the absolute mean difference of private school mathematics teachers and public school mathematics teachers promoting motivational

techniques in teaching mathematics was 0.32. This meant that the private school mathematics teachers had the higher score than the public school mathematics teachers in average for the case & the calculated t-value was greater than tabulated t-value. Thus the null hypothesis  $H_0$  was rejected and alternative hypothesis  $H_1$  was accepted. Hence, it can be concluded that there is significant difference between the status of motivational techniques promoted by public school mathematics teachers and private school mathematics teachers in teaching mathematics at secondary level.

At last the researcher found the average of each position and it can be concluded that the current status of motivational techniques 'classroom environment' was 'Satisfactory', the current status of motivational techniques 'teaching learning activities' was 'Good', The current status of motivational techniques 'evaluation' was 'Poor' and the current status of motivational techniques 'closing the lesson' was 'Satisfactory' promoted by mathematics teachers at secondary level. Hence, it can be concluded that the current status of motivational techniques was 'Satisfactory'. And it can be concluded that there was significance different between the status of motivational techniques promoted by public and private school mathematics teachers.

## **Chapter - V**

### **SUMMARY, FINDINGS, CONCLUSIONS AND SUGGESTIONS**

The purpose of this chapter presents precisely the picture of the study. It deals with the summary of the research, major findings of the research, conclusions and recommends for the further study.

#### **Summary**

A study on motivational techniques promoted by mathematics teachers in teaching mathematics at secondary level had been conducted to find out the current status of motivational techniques promoted by mathematics teachers and to compare the status of motivational techniques promoted by public and private school mathematics teachers in teaching mathematics at secondary level.

The design of this study was descriptive which is quantitative nature. Also some quantitative data were used to support for this design. This study was quantitative as well as descriptive approach had been followed to analyze the data. The population for the study consisted of all the mathematics teachers teaching at secondary level in Kathmandu District of academic year 2071B.S. Altogether 20 mathematics teachers each from different sampled schools were selected as the sample by stratified random sampling method. The researcher had developed a classroom observation form having 25 motivational techniques.

The data collected from the informants were analyzed to achieve the objectives of the study. The data obtained by classroom observation form were tabulated first and

then descriptive analysis approach had been followed to describe the current status of motivational techniques promoted by mathematics teachers in teaching mathematics. Further, the data obtained by classroom observation form were translated quantitatively but separately according as the public school teachers and private school teachers and then mean, variance, two tailed t-test at 0.05 level of significance were applied to find the significant difference between the status of motivational techniques promoted by public school mathematics teachers and private school mathematics teachers in teaching mathematics at secondary level.

### **Findings**

The researcher calculated the mean score of each motivational techniques, Based on the analysis of the collected data and the findings of the study were as follows:

- ) The mean score of the motivational techniques ‘classroom environment’ was 3.18. It was seemed satisfactory. Among them no teachers found the position ‘very good’ to arousing curiosity. Its mean score was 2.8 which was poor.
- ) The mean score of the motivational techniques ‘Teaching Learning Activities’ was 3.34. it was seemed well. Among them the motivational technique Question answering was 3.95. It was seemed well.
- ) The mean score of the motivational techniques ‘Evaluation’ was 2.96. It was seemed poor and no teachers found the position very good.
- ) The mean score of the motivational techniques ‘Closing the Lesson’ was 3.21 It was seemed satisfactory.

- ) The mean of observed scores of private school mathematics teachers (i.e.3.41) was higher than the mean of observed scores of public school mathematics teachers (i.e. 3.09)
- ) The calculated t-value (i.e.5.079) was less than tabulated t-value (i.e.2.10) at 0.05 level of significance and 18 degree of freedom. So null hypothesis was rejected and alternative hypothesis was accepted. Hence there was significance difference between public and private school mathematics teachers in teaching mathematics at secondary level.

### **Conclusions**

According to the different psychologist and educationists there are several motivational techniques which help the teachers to motivate their learners in teaching mathematics. Among them the researchers used 25 motivational techniques. The researchers categorized them In to four parts. The motivational techniques classroom environment and closing the lesson was found the position satisfactory, the position of the motivational techniques teaching learning activities was good and the position of the motivational techniques evaluation was found poor. Hence, The current status of motivational techniques promoted by mathematics teachers in teaching mathematics at secondary level was satisfactory and there was significant difference between the status of motivational techniques promoted by public school mathematics teachers and private school mathematics teachers in teaching mathematics at secondary level.



## **Educational Implication of the Study**

In the course of this study, the researcher felt that the following measures would be valuable for promoting the motivational techniques in teaching mathematics at secondary level.

- ) The mathematics teachers should manage their classroom environment effectively mainly focused on discipline, relation between teachers and students and arousing curiosity so that it can help to motivate their students.
- ) Mathematics teachers should choose better teaching methods and flexibility to use methods such that it can be motivated their students.
- ) Mathematics teachers should use students oriented teachings methods to active participation of students in the classroom.
- ) Mathematics teachers should teach confidently.
- ) Mathematics teachers should use more illustrations according to the lesson to clear their student concept mathematics.
- ) Mathematics teachers should use assignment system effectively.
- ) Mathematics teachers should provide positive and frequent feedback to their student in necessary cases.
- ) The mathematics teachers should summarize and evaluate the lesson while closing the lesson.

- ) Workshop seminars and conference of the teachers should be organized for the improvement of teaching activities and promote the appropriate technique with reinforcement.
- ) School management committee should provide adequate physical facilities and teaching aids as per the need and capacity of the school.
- ) School management committee and head of the school should visit and observe mathematics classroom teaching time to time.

### **Suggestions for Further Research**

On the Basis of this study the following suggestions are made for further study:

- ) Since this study was based on mathematics teachers from 20 secondary schools of Kathmandu District, its findings may not be generalized to the wider population of teachers. So, this study should be replicated on a larger sample from schools across the capital city 'Kathmandu'.
- ) Similar studies should be conducted in other grades of secondary level taking samples from different rural schools and regions.
- ) Since this research was only concerned to classroom observation, it could not find the effect of motivational techniques in learning achievement. So, some research for finding the effect of motivational techniques in learning achievement should be conducted.
- ) Similar studies should be conducted in other subject as well.

## BIBLIOGRAPHY

- Acharya, N. H. (2007). *Mathematics learning strategies in community- based school (A case study in kathmandu district)*. Unpublished Master's Thesis, T.U., Kirtipur.
- Ames, C. A. (1990). *Motivation: what teachers need to know*. Teachers College Record.
- Ames, R. & Ames, C. (1990). *Motivation and effective teaching*. Hillsdale, New Jersey: Erlbaum.
- Barbara, G. D. (1999). *Tools for teaching: motivating students*. University of California, Berkeley.
- Barr, A. S., et al. (1947). *Supervision : democratic leadership in the improvement of learning (2<sup>nd</sup> ed.)*. New York: Application Century Crofts, Inc.
- Becker, L. & Schneider, K. N. (2004). *Motivating students*. East Tennessee State University: Magna Publications.
- Brophy, J. (1986). *On motivating students*. Occasional Paper East, Lansing, Michigan: Institute for Research on Teaching, Michigan state University.
- Cashin, W. E. (1979). *Motivating students*. Kansas State University, Manhattan: Center for Faculty Evaluation and Development in Higher Education.
- Dulal, R. P. (2009). *Causes of anxiety in mathematics learning (A case study)*. Unpublished Master's Thesis, T.U., Kirtipur.
- Forsyth, D. R. & McMillan, J. H. (1991). *College teaching: from theory to practice*. San Francisco: Jossey- Bass.
- Guilford, J. P. (1954). *Psychometric methods*. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
- Jabara, S. P. (2004). *Theory and practice of measurement and evaluation in education (2<sup>nd</sup> ed.)*. Kathmandu: Bidyarthi Pustak Bhandar.
- Khanal, P. (2004). *Educational research methodology (2<sup>nd</sup> ed.)*. Kirtipur, Kathmandu: Students Books Publishers and Distributors.

- Lowman, J. (1990). *Promoting motivation and learning: college teaching*. San Francisco: Jossey- Bass.
- Lucas, A. F. (1990). *Using psychological models to understand student motivation*. San Francisco: Jossey- Bass.
- Mandal, R.N. (2010). *A study on motivational techniques promoted by mathematics teachers at secondary level*. of Rautahat district Unpublished Thesis T.U. kirtipur.
- McMillan, J. H. & Forsyth, D. R. (1991). *What theories of motivation say about why learners learn*. San Francisco: Jossey- Bass.
- Mifflin, H. (1979). *Psychology applied to teaching*. Houghton Mifflin Comp.
- Pandey, S.K. (2013) *A study of the motivational techniques used by head teachers at secondary schools at kanchanpur district*, Unpublished Master's Thesis T.U. Kirtipur.
- Pokhrel, R. (2008). *Classroom behaviour and low achievement in mathematics (A case study on grade five of a community school in kailali district)*. Unpublished Master's Thesis, T.U., Kirtipur.
- Richard, M. Ryan & Edward, L. Deci, (2000). *Intrinsic and extrinsic motivations: classic definitions and new directions* University of Rochester, 54-67
- Sapkota, R. S. (2008). *A case study of mathematics teaching and learning practices at effective school of parbat district*. Unpublished Master's Thesis, T.U., Kirtipur.
- Sass, E. J. (1989). *Motivation in the college classroom: what students tell us*. San Francisco: Jossey- Bass.
- Shrestha, B. K. (2005). *A study on the mathematics teachers' teaching performance of secondary level in rautahat district*. Unpublished Master's Thesis, T.U., Kirtipur.
- Shrestha, D. N. (2007). *Teaching learning activities used by mathematics teacher taking four week training course at secondary level (A case practice in kathmandu valley)*. Unpublished Master's Thesis, T.U., Kirtipur.

- Skinner, B. F. (1987). *Upon further reflection*. New Jersey : Prentice Hall, Inc.
- Stipek, D. (1988). *Motivation to learn: from theory to practice*, Englewood Cliffs, New Jersey: Prentie Hall.
- Subedi , U. (2006). *Behaviour of trained teacher in classroom practice in mathematics*. Unpublished Master's Thesis, T.U., Kirtipur.
- Thapa, B. K. (1989). *Motivational level of primary school teachers in nepal*. Unpublished Dissertation, University of Alberta.
- Upadhyay, H. P. (2007). *Teaching mathematics (2<sup>nd</sup> ed.)*. Kathmandu : Ratna Pustak Bhandar.
- Wagaman, J. (2008). *Questioning techniques for teachers: asking questions in the classroom to promote learning*.
- Weller, M. (2005). *General \principles of motivation*. Journal, Published in Los-Angeles Business Journal.

## Appendix – A

### CLASSROOM OBSERVATION FORM FOR TEACHERS

School: \_\_\_\_\_ Type of School: \_\_\_\_\_

Teacher's Name: \_\_\_\_\_ Class: \_\_\_\_\_ Period: \_\_\_\_\_

Subject: \_\_\_\_\_ Topic: \_\_\_\_\_ Lesson: \_\_\_\_\_

S. N.	Motivational Techniques	Observed score of public school mathematics							
		V.G.	G.	S.	P.	V.P.	Q.T.	Mean	Variance
<i>Classroom Environment</i>									
01.	Classroom Decoration								
02.	Discipline								
03.	Cleanness and neatness of Classroom								
04.	Smiling Face of teachers & students								
05.	Relation Between Teachers & Students								
06.	Arousing curiosity								
07.	Eye Contact								
	<b>Total</b>								
<i>Teaching learning activities</i>									
08.	Use of Appropriate materials to the Lesson								
09.	Flexibility								
10.	Organization of lesson								
11.	Teachers role for active participation of Students								
12.	Use of appropriate, concrete and Understandable								

	examples								
13.	Belongingness								
14.	Verbal rewards								
15	Self confidence								
16	Questioning Answering								
	<b>Total</b>								
<i>Evaluation</i>									
17	Assignments								
18	Feedback								
19	Observation of students behaviours								
20	Class Work								
	<b>Total</b>								
<i>Closing the Lesson</i>									
21	Summarizing The lesson								
22	Positive Ending								
23	Achieving Objectives								
24	Evaluation Of the Lesson								
25	Thanking the Students While Leaving the Class								
	<b>Total</b>								
	<b>Grand total</b>								

Note: V.G. = 'Very Good', G. = 'Good', S.= 'Satisfactory', P.= 'Poor', V.P.= 'Very Poor'

Q.T. - 'Quantitative Translation'

Q.T. : Very Good = 5, Good = 4, Satisfactory = 3, Poor = 2, Very Poor = 1

.....

Signature of Teacher

.....

Date: .....

.....

Signature of Observer

## Appendix – B

### BASES OF RATING MOTIVATIONAL TECHNIQUES

S.N.	Motivational Techniques	Bases	Recommenders
01.	Classroom Environment	classroom decoration (Photos, Charts, Tables); discipline, cleanliness neatness of the class room smiling face of the teachers and students, relation between teachers and students, arousing curiosity and eye contact etc.	Weller, M. ; Sass; Lowman
02.	Teaching learning Activities	use of appropriate materials to the lesson, flexibility, organization of lesson, teachers role for active participation of students, use of appropriate concrete and understandable examples, belongingness, verbal rewards, self confidence, questioning answering, teaching behaviour, friendly atmosphere, participation in discussion, relevant to the curriculum, audio video manipulative etc.	Weller, M.; Ames &Ames; Lowman; Cashin; Sass; Mcmillan; Schneider
03.	Evaluation	Assignment, feedback, observation of students behavior, class work, appropriateness & amount of assignment, suggestion & standard of assignment, early and positive feedback, time taken for feedback etc.	Sass; posamntier; Stepelman;
04.	Closing The lesson	summarizing the lesson, positive ending, achieving objectives, evaluation of the lesson, thanking the students while leaving the class etc.	Weller, M.; Sass;

(Source: Theoretical literature reviewed in this study)



## Appendix – C

### STATISTICAL TOOLS USED IN THE STUDY

#### 1. Mean

$$\bar{X} = \frac{\sum X}{N}$$

Where,  $\sum X$  = Sum of items

$N$  = No. of items

#### 2. Variance

$$S^2 = \frac{\sum fX^2 - \frac{(\sum fX)^2}{N}}{N}$$

Where,  $\sum fX^2$  = Sum of squares of deviations of mean from each items

$N$  = No. of items

#### 3. t- test (N < 30)

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}; \text{ where, } s_p = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

And,  $\bar{X}_1$  = Mean of the first sample

$\bar{X}_2$  = Mean of the second sample

$n_1$  = No. of items in first sample

$n_2$  = No. of items in second sample

$S_1^2$  = Variance of first sample

$S_2^2$  = Variance of second sample

## Appendix – D

### Observed Scores of Motivational Techniques Promoted by Math Teachers of Public Schools

S. N.	Motivational Techniques	Observed score of public school mathematics teachers						
		V.G.	G.	S.	P.	V.P.	Q.T.	Mean
<i>Classroom Environment</i>								
01.	Classroom Decoration	1 (5)	2 (8)	6 (18)	2 (4)	1 (1)	11 (36)	3.0
02.	Discipline	1 (5)	2 (8)	4 (12)	2 (4)	3 (3)	32	2.76
03.	Cleanness and neatness of Classroom	0	4 (16)	4 (12)	2 (4)	1 (1)	38	3.17
04.	Smiling Face of teachers & students	0	4 (16)	5 (15)	3 (6)	0	37	3.08
05.	Relation Between Teachers & Students	1 (5)	3 (12)	7 (21)	1 (2)	0	40	3.33
06.	Arousing curiosity	0	1 (4)	8 (24)	3 (6)	0	34	2.83
07.	Eye Contact	0	5 (20)	6 (18)	1 (2)	0	40	3.33
	<b>Total</b>							3.05
<i>Teaching learning activities</i>								
08.	Use of Appropriate materials to the Lesson	0	5 (20)	5 (15)	2 (4)	0	39	3.25
09.	Flexibility	0	2 (8)	6 (18)	2 (4)	2 (2)	32	2.67
10.	Organization of lesson	0	5 (20)	5 (15)	2 (4)	0	39	3.25
11.	Teachers role for active participation of Students	0	4 (16)	4 (12)	3 (6)	1 (1)	35	2.92
12.	Use of appropriate, concrete and Understandable examples	1 (5)	3 (12)	5 (15)	2 (4)	1 (1)	37	3.08
13.	Belongingness	1 (5)	3 (12)	5 (15)	2 (4)	1 (1)	37	3.08

14.	Verbal rewards	2 (10)	4 (16)	5 (15)	1 (2)	0	43	3.58
15	Self confidence	1 (5)	3 (12)	7 (21)	1 (2)	0	40	3.33
16	Questioning Answering	3 (15)	7 (28)	1 (3)	1 (2)	0	48	4.0
	<b>Total</b>							3.25

<i>Evaluation</i>								
17	Assignments	0	3 (12)	5 (15)	3 (6)	1 (1)	35	2.92
18	Feedback	0	2 (8)	6 (18)	1 (2)	3 (3)	31	2.58
19	Observation of students behaviours	0	3 (12)	5 (15)	3 (6)	1 (1)	34	2.83
20	Class Work	0	4 (16)	6 (18)	2 (4)	0	38	3.17
	<b>Total</b>							2.87

<i>Closing the Lesson</i>								
21	Summarizing The lesson	0	4 (16)	5 (15)	2 (4)	1 (1)	36	3.0
22	Positive Ending	0	2 (8)	7 (21)	2 (4)	1 (1)	34	2.83
23	Achieving Objectives	0	2 (8)	8 (24)	2 (4)	0	36	3.0
24	Evaluation Of the Lesson	0	3 (12)	6 (18)	1 (2)	2 (2)	34	2.83
25	Thanking the Students While Leaving the Class	2 (10)	6 (24)	2 (6)	2 (4)	0	44	3.67
	<b>Total</b>							3.06
	<b>Grand total Mean</b>							3.09
	<b>Variance</b>							0.019

**Appendix – E**  
**Observed Scores of Motivational Techniques Promoted by Teachers of Private Schools**

S. N.	Motivational Techniques	Observed score of private school mathematics teachers						
		V.G.	G.	S.	P.	V.P.	Q.T.	Mean
<i>Classroom Environment</i>								
01.	Classroom Decoration	1 (5)	7 (28)	0	0	0	33	4.13
02.	Discipline	1 (5)	3 (12)	3 (9)	1 (2)	0	28	3.50
03.	Cleanness and neatness of Classroom	1 (5)	2 (8)	5 (15)	0	0	28	3.50
04.	Smiling Face of teachers & students	0	2 (8)	4 (12)	2 (4)	0	24	3.0
05.	Relation Between Teachers & Students	0	3 (12)	4 (12)	1 (2)	0	26	3.25
06.	Arousing curiosity	0	2 (8)	3 (9)	2 (4)	1 (1)	22	2.75
07.	Eye Contact	1 (5)	3 (12)	3 (9)	1 (2)	0 (0)	28	3.50
	<b>Total</b>							3.38
<i>Teaching learning activities</i>								
08.	Use of Appropriate materials to the Lesson	1 (5)	3 (12)	4 (12)	0	0	19	3.63
09.	Flexibility	1 (5)	2 (8)	4 (12)	1 (2)	0	27	3.38
10.	Organization of lesson	1 (5)	2 (8)	4 (12)	1 (2)	0	27	3.38
11.	Teachers role for active participation of Students	0	2 (8)	4 (12)	2 (4)	0	24	3
12.	Use of appropriate, concrete and Understandable examples	1 (5)	3 (12)	3 (9)	1 (2)	0	28	3.50
13.	Belongingness	1 (5)	3 (12)	3 (9)	1 (2)	0	28	3.50
14.	Verbal rewards	2 (10)	4 (16)	2 (6)	0	0	32	4
15.	Self confidence	1 (5)	3 (12)	3 (9)	1 (2)	0	28	3.50
16.	Questioning Answering	1 (5)	5 (20)	2 (6)	0	0	31	3.88
	<b>Total</b>							3.53

<i>Evaluation</i>								
17	Assignments	0	4 (16)	3 (9)	1 (2)	0	27	3.38
18	Feedback	0	1 (4)	4 (12)	2 (4)	1 (1)	21	2.63
19	Observation of students behaviours	0	2 (8)	3 (9)	2 (4)	1 (1)	22	2.75
20	Class Work	0	6 (24)	2 (6)	0	0	30	3.75
	<b>Total</b>							3.13
<i>Closing the Lesson</i>								
21	Summarizing The lesson	0	4 (16)	3 (9)	1 (2)	0	27	3.38
22	Positive Ending	0	1 (4)	6 (18)	1 (2)	0	24	3
23	Achieving Objectives	1 (5)	3 (12)	4 (12)	0	0	29	3.63
24	Evaluation Of the Lesson	1 (5)	2 (8)	4 (12)	1 (2)	0	27	3.38
25	Thanking the Students While Leaving the Class	2 (10)	3 (12)	2 (6)	1 (2)	0	30	3.75
	<b>Total</b>							3.43
	<b>Grand total Mean</b>							3.41
	<b>Variance</b>							0.021