

## Chapter I

### INTRODUCTION

#### Background of the Study

The training is the process of behavior shaping because training makes the teacher perfect in his/ her teaching. The aim of training is to improve the teacher ability. Training refers to the acquisition of knowledge, skill and competencies as a result of other teaching of vocational or practical skill and knowledge that relate to specific useful competencies. The international Encyclopedia of adult education and training (1996:519) defined training as the provision that is aimed at creating intentional learning process that contributes to improving the performance of workers in their present job.

Decenzo and Robbins (1998) mentioned in their book 'personnel/ Human Resource Management', "training is a learning experience that seeks a relatively permanent change in an individual that will improve his or her ability to perform on the job. We typically say training involves the changing skills, knowledge, attitudes or social behavior. It may mean changing what employees know how they work their interaction with their co-worker or their supervisor". Thapa (2007) stated, "The term training is often interpreted as the activity when an expert and learner work together to effectively transfer information from the expert to the learner (to enhance a learner's knowledge, attitudes or skills), so the learner can better perform a current task or job. Agrawal (2000) gave emphasis, "Training involves positive changes in knowledge, skills, and attitudes of employees to increase their efficient and effectiveness on the job.

To minimize the big gap of trained and untrained teachers in primary education level NCED had been conducting both 10 months pre-service and in – service teacher training programme as alternative certification system through its Educational Training Centers (ETCs), selected FOE campuses and Higher Secondary Schools. Along with these efforts, the GON to further enhance the professional roles of teachers and there by promoting access to quality primary education, has introduced and implemented various interventions like Basic and Primary Education Program (BPEP), Primary Education Development Project, Education for All (EFA), and Teacher Education Project.

Thomas (1987) stated, “A trained teacher is supposed to have knowledge of a variety of teaching strategies such as applying different methods for different areas of knowledge, recognizing different learning preferences of the students, regulating access to the students for grabbing learning opportunities”. Trained teachers transforming the teaching modalities from the traditional teacher-centered to child centered and activity-based joyful learning, implementation of continuous assessments for feedback and reinforcement, individualized instruction irrespective of gender, caste, ethnicity, and geographical locations and economic status. The trained teachers possess strong communication and analytical skills and have the ability to extract, interpret and present relevant information and advice to management. The trained teachers uses aids math lab, smart board etc. to give concrete idea of the mathematical concepts to the student, concentrates on feedback from students and keep good relation with the students. The trained teachers have strong interpersonal abilities, with the ability to communicate and work with personnel from a wide variety of professional disciplines and nationalities.

From the researcher view trained teachers used no cost and low cost materials, tackling students answer and providing constructive feedback and summarizing the main points of the lesson. Trained teacher should be addressed to recent trend, new innovations and skills in mathematics teaching in their training program. Many primary school teachers still lagged behind in proficient used of visuals or other teaching aids even after teaching training.

Attitude is mental and neutral state of readiness, organized through experience, exerting a directive or dynamic influence upon, the individual response to all object and situation with which it is related (Allport in Kulm 1980). The attitudes of primary level trained teachers are of particular importance because of their potential influence on pupils. Although the research evidence is certainly, not conclusive, it has been sufficient to suggest that positive teachers attitude contribute to the formation of positive pupils attitude. Some studies have indicate that teachers attitude towards a subject and teaching of that influence the instructional techniques they employ and that these, in turn, may have an effect on pupil attitudes (Williams 1988). Although there are some hard evidence that holding positive attitude towards mathematics actually beneficial, it is difficult to argue at primary, secondary and higher level. Most studies on the relationship between attitude and achievement have revealed a low but significant correlation.

The potential of teachers course to change the negative attitude of pre- service teachers towards mathematics needs to be considered. Sullivan (1987) found that almost half of the students entering a teachers training course possessed negative attitude towards mathematics. He states " The course improved their attitude overall, but those who start with negative attitude still had the most negative attitude at the end" (Sullivan 1987).

Classroom practice is the most important aspect of learning. The success of learning and ultimately the success of educational plans and progress depend on classroom practice. Classroom practice refers to thing that goes on the classroom. It includes the relationship, interaction and communication between teachers and students and among students. Although classroom is very much like, there are many differences too; practice differs from teachers to teachers.

Trained teachers attitude towards teaching mathematics itself includes linking, enjoyment and interest in mathematics, teachers confidence in his or her own mathematical abilities: the teacher's mathematical self concept and the teachers valuing of mathematics (Ernest, 1989). Recent research with primary teachers has begun to reveal a series link between mathematics attitude, the choice or avoidance of mathematical studies, self- concept and attitude toward the teaching of mathematics. It's appear that students (male and female) with low self- concept in teaching mathematics are less likely to pursue mathematical studies, not surprisingly then, studies have revealed that most pre- service teachers who exhibit negative attitude towards mathematics have not chosen to study mathematics in their final years of high school. Some study have gone as far as to recombine that appropriate minimum levels of mathematics study may need to become course entry requirements in order to raise the attitude levels (Mansfield, 1981, Relichet al, 1991).

Finally the trained teacher is supposed to have knowledge of a variety of teaching strategies such as applying different methods for different areas of knowledge, recognizing different learning preferences of the students, regulating access to the students for grabbing learning opportunities. Trained teachers transforming the teaching modalities from the traditional teacher-centered to child centered and activity-based joyful learning, implementation of continuous

assessments for feedback and reinforcement, individualized instruction irrespective of gender, caste, ethnicity, and geographical locations and economic status. Although most of the teachers are trained in Mathematics, but learners do not learn properly and learners fail in mathematics is the hard fact of the current school mathematics education at school level.

### **Statement of the Problem**

Mathematics is taught from primary level to university level and the importance of mathematics is increasing day by day. Teacher training plays a vital role for the purpose of meaningful and effective mathematics teaching. It is also said that training is an ornament of teachers. The teacher training is needed for preparing respective teacher is upgrading the capacity of in service teacher for refreshing. Better instruction has become essential to understanding the basic structure and function of mathematics concept and ideas at primary level. Teachers do not respect all children within school. Teachers favors some students bias some of them which cause the high dropout in primary school. Therefore school and government have failed to achieve the international educational goal. Most of the students take mathematics a difficult subject, and they do not understand mathematics where most of the teachers are trained, but achievement of their students is very low in mathematics at grade V. teachers are teaching mathematics or not as they get training. So "Attitude of trained teachers in teaching mathematics" was taken as research problem. This study would be focused on to give answer to following questions:

- ) Do the trained teachers have positive attitude towards teaching mathematics?
- ) What relation exists between attitude and classroom practices of trained teachers in teaching mathematics at grade V?

### **Objectives of the Study**

The objectives of the study were:

- ) To find out the attitude of trained teachers towards teaching mathematics.
- ) To explore the relationship between attitude and classroom practices of trained teachers in teaching mathematics.

### **Significance of the Study**

In the context of Nepal, Mathematics is taught from primary level to secondary level as compulsory subject. It is generally agreed that everyone needs the fundamental knowledge on mathematics in daily life. Mathematics provides an outlook and a means of understanding. There are important aspects of the world which only mathematics can interpret to the citizens, " Mathematics affords on a mode of thinking about many aspects of life and very general of knowledge " (Bulter and wren, 1941). The teachers who are teaching primary level should have trained to prepare good children who can be great person of the nation. The training of teachers would make the teacher confidence in teaching mathematics. This study would find that positive attitude of teacher towards teaching mathematics improve mathematics achievement of their students. Thus produce high quality of manpower in our country, which enable to solve national needs. Also finding of this study would helpful for teachers, education, curriculum planners and educational administrators. Thus this study has following significance.

- ) This study would provide valuable information for teacher training program designer and those people who are interested in the teaching learning field.

- ) It informs whether the trained teachers have used student center teaching method, instructional materials and continuous evaluation system in classroom teaching or not.
- ) It would help to improve teaching learning situation in the context of negative attitude of trained teachers towards teaching mathematics.
- ) It would help to produce well trained manpower in primary level.
- ) It would help to improve the relationship between attitude and practices of teachers towards teaching mathematics.
- ) Identify the usefulness and applicability of teacher training program.

### **Hypothesis of the Study**

There is positive attitude of primary level trained teachers towards teaching mathematics.

### **Delimitation of the Study**

The study would be delimited to the following aspects:

- ) This study was limited to the Saptary district.
- ) This study included 30 community schools.
- ) This study was based on observation of classroom practices and attitude of trained teacher who taught mathematics at grade V.
- ) Questionnaire, opinionnaire and observation tools were used for collecting data.
- ) This study was limited to the mathematics teachers who taught at grade V.
- ) There were 40 trained teachers selected by the simple random sampling for this study.

## **Definition of Related Terms**

### **Teacher**

The person who taught mathematics at grade V and appointed on teacher.

### **Community school**

The school conducted by the government known as community school. They should provide free education.

### **Trained Teacher**

One who holds a certificate of normal training and ten months training provided by the government in different period. Also who passed I.Ed., B.Ed. and M.Ed.

### **Attitude:**

Attitude is a mental and neural state of readiness, organization through experience, executing a directive or dynamic influence upon the individual's response to all objectives and situation with which it was related.

### **Belief**

Belief is the state of mind in which a person thinks something to be the case, with or without there being empirical evidence to prove that something is the case with factual certainty.



### **Content Knowledge**

Content knowledge refers to the knowledge of a teacher towards the respective subject. It helps a teacher to identify the nature of subject, structure of knowledge, pattern of knowledge and presentation of knowledge.

### **Curriculum Knowledge**

The curriculum knowledge means the knowledge about curriculum. Curriculum is main part of education system. It provides guidance and appropriately ways to achieve intended objectives. Therefore, teachers have knowledge about curriculum. Curriculum contains objectives, instructional materials, teaching learning procedures and evaluation system.

## Chapter II

### REVIEW OF RELATED LITERATURE

It is essential to review the related literature to compare the study which provides the strong knowledge about the related topic. The reviewed literature provides the basic information about the study related with present research and it also helps to remove the unnecessary duplications.

#### **Empirical Literature Review**

Bhattarai (2071) carried out a research on "Attitude of university teachers towards semester system" with objectives to find out the university teachers attitude towards semester system and to compare teachers attitude towards semester system by their discipline. The research design of this study was survey. The collecting data tools were questionnaire and interview. 60 university teachers (20 from education, 16 from humanities, 14 from science and 10 from management) were taken as sample of the study. The  $\chi^2$  test was used to find the attitude of university teachers towards semester system. He concluded that most of the teachers' were not satisfied with the policy and practice adopted by the authority and there was no significant difference between the attitude of university teachers towards semester system.

Rai (2004) carried out a research on "Attitude of secondary school level students, trained and untrained teachers towards mathematics" with objectives to find out the trained and untrained teachers attitude and with each of their student attitudes with achievements towards mathematics. The research design of this study was survey. The collecting data tools were questionnaire and interview. In this study the population was limited to ninth grade students and their mathematics teachers of Dhankuta district. The study was limited to student sample 240 from 20 public

secondary schools(10 schools have taught by trained teachers and 10 by untrained teachers) at the rate of 12 students in each selected and 20 mathematics teachers are selected one from each of the same sampled schools by random sampling. He concluded that attitude of trained and untrained teachers had similar while teaching mathematics. But achievement of students of trained teachers was better than achievement of students of untrained teachers.

Mallick (2009) did research on " A study on attitude of secondary level students and teachers towards set theory " with objectives to find out the attitude of secondary level mathematics teachers towards set theory, to find out the attitude of secondary level students toward set theory and to compare the attitude of secondary level students and teachers towards set theory. The research design of the study was quantitative and survey type. The collecting data tools were opinionnaires. The opinionnaire for teachers consisted 32 statements and opinionnaire for students consisted 30 statements. The sample of this study included 25 teachers and 200 students in total from 20 schools of Kathmandu district. The  $\chi^2$  test was used to find out opinion of teachers and students and t- test was used to compare the opinion of boys and girls student and to compare the opinion of teachers and students. Both the tests were applied at 0.05 level of significance. She concluded that there was positive attitude of secondary level students and teachers towards set theory and there was no gender wise difference in attitude among students towards set theory.

Lamichhane (2011) did his research on "A study on mathematics achievement of secondary level students taught by trained and untrained teachers" with objectives to compare the opinion of trained teachers and untrained teachers towards some instructional practice. The population of this study was all the students at grade X and all schools mathematics teacher teaching at grade X in Kavre district. From selected

sample school five trained and five untrained teachers were chosen for classroom observation and interview. His research design was survey. He used t-test and  $\chi^2$  test to compare the opinion of trained and untrained teachers. He concluded that the maximum numbers of trained teachers accepted the statement in positive sense whereas dilemma occurred on untrained teachers and by classroom observation. He also found that all five trained teachers were used student centered teaching method, instructional materials and continuous evaluation where as five untrained teachers were use traditional teaching method.

Four empirical literatures are reviewed related to attitude of teachers and their classroom practice while teaching mathematics. From above mentioned studies it is found that attitude of trained teachers and untrained teachers were similar. But mathematical achievement of students of trained teachers was better than mathematical achievement of students of untrained teachers. All the literatures reviewed showed that attitude did not match with their classroom practice.

Shrestha (2009) did research on " training need assessment of secondary schools mathematics teachers" with objectives to assess the training needs of secondary mathematics teachers. The research design of the study was qualitative and descriptive survey type. The collecting data tools were questionnaire and classroom observation. The questionnaire contained 31 competencies in 17 different need areas of the secondary school mathematics teacher. The questionnaire was administered to 40 secondary school mathematics teachers and five mathematics teachers of Dhading district. He concluded that identified needs of teacher should be addressed and recent trend, new innovations and skills in mathematic teaching to be incorporated in serve training program.

Bisht (2011) did his research on "Transfer of training skills in the classroom delivery at primary level mathematics teaching" with objectives to analyze the current status of transfer of primary teacher training skill in the actual classroom provided by NCED. He used checklist and structured question with mathematics trained teacher and head teacher of the sample school to collect primary data from five school of Kathmandu district. He concluded that the trained teachers use no cost and low cost materials, tacking students answer and providing constructive feedback and summarizing the main points of the lesson.

Department of Education Research and information management Section  
 Sanothimi (2006) did research on "Effectiveness of Primary Teacher Training in Nepal". The result of classroom observation of both trained and untrained teachers reveals that teachers are found to be aware of lesson preparation. 58% of the trained teachers were found well in preparation whereas only 20% untrained teachers come in this category. Major problem in untrained teachers is the lack of preparation of lesson plan. Trained teachers go to class with some preparation. The trained teachers were found introducing the lesson in an effective way so that they could motivate their trainees. Untrained teachers lagged behind in this skill. They started the lesson directly. Many of them are unwire of introducing skills. Most of the trained teachers performed content delivery effectively whereas only 46% of untrained teachers have these competencies. However, both trained and untrained teachers have problem in presenting information in sequential order. The study results show that around 57% of the trained teachers are capable of using teaching methods effectively and efficiently and 38% of trained teachers use them in acceptable level. Many primary school teachers still lagged behind in proficient use of visuals or other teaching aids even after teaching training. Among them 375 of trained teachers are found poor in this

skill. In conclusion that the trained teachers are better off in questioning skill compared to untrained teachers. Trained teachers are found to be better than untrained teachers regarding the use of evaluation techniques.

From the researcher viewed there were three national empirical literatures reviewed related to teacher training. From above mentioned studies it is found that trained teachers used no cost and low cost materials, tackling students answer and providing constructive feedback and summarizing the main points of the lesson. Finally teacher should be addressed and recent trend, new innovations and skills in mathematics teaching to be incorporated in serve training program.

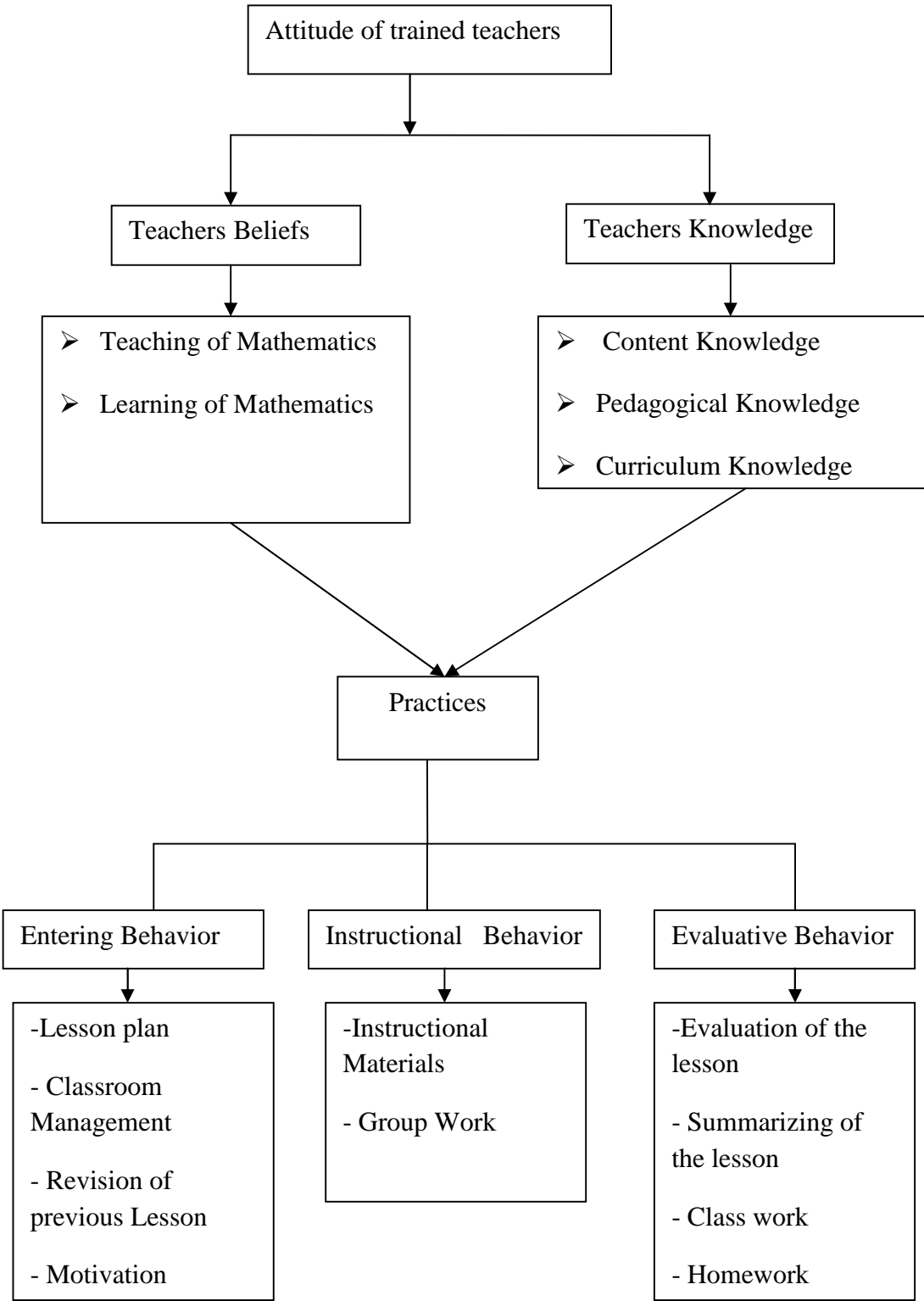
### **Theoretical Literature Review**

Johan William (2005) did his research of Doctor of Philosophy on "Classroom Assessment in Malawi: Teachers Perceptions and Practices in Mathematics". This study investigated teachers perceptions of classroom assessment in mathematics and their current classroom assessments practices. Specifically, the study sought to gain an understanding of the extent to which teachers use different classroom assessment methods and tools to understand and to support both the learning and teaching processes. There were three questions guided in the study. They were how do primary school teachers perceive classroom assessment in mathematics? What kinds of assessment methods and tools do teachers use to assess their students in mathematics? And what is the influence of teachers' perceptions of classroom assessment on their classroom assessment practices? The study used a questionnaire to establish the teachers' perceptions of classroom assessment in mathematics, a lesson observation protocol, and pre-lesson and post-lesson observation interview protocols as main sources of data collection. The data collected through observations and interviews helped to map out patterns between perceptions of classroom assessment and the

teachers classroom assessment practices. Document analysis was used to descriptive analysis the information collected through observations and interviews. In addition, document analysis provided first hand information on the kind of written feedback students get and the nature of activities they do. A total of six teachers (three male and three female) were drawn from two primary schools in Malawi. He concludes that teacher experience and teacher education program did not seem to contribute much to teachers' perceptions of classroom assessment; however, teachers academic qualification seemed to influence teachers' flexibility to accept new ideas.

### **Conceptual Framework**

A conceptual framework is the representation of the understanding of the theories by the researcher in his/her own conceptualization of the relationship of different variables. According to Miles and Huberman (1994, p.18 ), conceptual framework is a written or visual representation that “explain either graphically or in written form, the main things to studied – the key factors, concepts or variables and the presumed relationship among them”.



Research framework on mathematics teacher behavior: Kohler and Grouws'

framework revisited, NJ, USA, 2007.



From above conceptual framework there were three domains of attitude of trained teachers in teaching mathematics. They were teachers belief, teachers knowledge and practices.

### **Teachers Beliefs**

In above framework, teachers beliefs were the first domain of attitude of trained teachers in teaching mathematics. There were two sub domains of teachers beliefs, namely: teaching of mathematics and learning of mathematics.

Teachers beliefs about the teaching of mathematics include linking, enjoyment and interest for the teaching of mathematics, and confidence in the teachers own mathematics teaching abilities (Ernest, 1989). Teachers belief system of the learning of mathematics consists of the teachers view of the learning process, behaviors and mental activities on the part of the learner, and appropriate and prototypical learning activities, in particular the aims, expectations, conceptions and images of learning activities and process of learning mathematics in general (Ernest, 1989).

### **Teachers Knowledge**

In above framework, Teachers knowledge was the second domain of attitude of trained teachers in teaching mathematics. There were three sub domains of teachers knowledge, namely: subject content knowledge, pedagogical knowledge and curriculum knowledge.

Subject content related knowledge refers to the content knowledge of a teacher towards the respective subject. It is main body of knowledge. It helps a teacher to identify the nature of subject, structure of knowledge, pattern of knowledge and

presentation of knowledge. It helps to organize other component of teachers knowledge. The pedagogical knowledge refers to the knowledge about presentation of subject knowledge effectively and meaningfully. It is the main functioning body of teachers knowledge. Teacher can present the content knowledge for the student teach he have good pedagogical knowledge. It incorporates the arrangement of instructional materials organization of content, presentation of content and evaluation of achievement. These essential aspects of teaching might be influenced by training of teachers. Teacher training enforces teachers to manage these aspects effectively. The curriculum knowledge means the knowledge about curriculum. Curriculum is main part of education system. It provides guidance and appropriately ways to achieve intended objectives. Therefore, teachers have knowledge about curriculum. Curriculum contains objectives, instructional materials, teaching learning procedures and evaluation system. Thus teachers have knowledge about these aspects of curriculum. This knowledge enables teachers to achieve the desired goals and objectives of curriculum. Without knowledge of these aspects teaching procedure will be lame. So teachers training might play a significant role to provide such knowledge to teachers.

### **Practices**

In above framework, practices were third domain of attitude of trained teachers in teaching mathematics. To evaluate the teachers practices three different behaviors were identified namely, entering behavior, instructional behavior and evaluative behavior.

In entering behavior, different sub domains namely, lesson plan, classroom management, revision of previous lesson and motivation were identified and an

opinionnaire and classroom observation form are prepared to measure teachers practice. Similarly, in instructional behavior, different sub domains namely, instructional materials, group work and feedback were identified and an opinionnaire and observation form are developed on the basis of these sub domains to measure teachers practice on this behavior. Finally, in evaluative behavior, different sub domains namely, evaluation of the lesson, summarizing of the lesson, class work and homework were identified and an opinionnaire and observation form are developed on the basis of these sub domains to measure teachers practice on this behavior.

## **Chapter III**

### **METHODS AND PROCEDURES**

This chapter was designed for describing the methodology. Research methodology is a useful bridge to solve the research problems in a systematic way. In this chapter, design of the study, population and sample, data collection tools, data collection procedures and analysis and interpretation of data are presented in detail.

#### **Design of the Study**

This study was designed mainly to investigate the trained teachers attitude towards teaching mathematics and their classroom practice. So, the study followed the quantitative techniques in the research, in which numerical data was analyzed by using statistical techniques. The researcher developed the questionnaire, opinionnaire and classroom observation form to collect data about attitude and classroom practice about teaching mathematics. So, the research design of this study was descriptive survey.

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

The population of this study included all the primary level mathematics trained teachers who taught in community school in grade V in Saptary district.

#### **Sample of the Study**

The sample of this study was selected from Saptary district. Thirty community schools were selected through simple random sampling procedure and then forty trained teachers who taught mathematics at grade V were selected as the sample from the selected schools. There were only fifteen trained teachers from forty

selected trained teachers be selected for the opinionnaire and classroom observation by the simple random sampling.

### **Data collection tools**

It is an important part of the study. To fulfill the objectives, some necessary data should be needed so, there are many data collection tools. In this study, the researcher used the different data collection tools which are described as follows:

#### **Questionnaire**

The questionnaire was a data collection tool for first objective. The researcher used the questionnaire for all selected mathematics trained teachers who taught mathematics at grade V. The questionnaire was developed along with the attitude scale of F. H. Bell under the guidance of research supervisor which is based on Likert's five point scale. The questionnaire consisted 25 statements. All statements were related to teachers belief according to teaching of mathematics and learning of mathematics and teachers knowledge according to content knowledge, pedagogical knowledge and curriculum knowledge. Each statement had five option of Likert's scale. They were Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). The main purpose of questionnaire was to measure the attitude of trained teachers toward teaching mathematics at grade V.

#### **Opinionnaire**

The opinionnaire was a data collection tool for second objective. The researcher used the opinionnaire for fifteen trained teachers who taught mathematics at grade V. The opinionnaire was developed along with the attitude scale of F. H. Bell under the guidance of research supervisor which is based on Likert's five point scale.

The opinionnaire consisted 15 statements. All statements were related to entering behavior (lesson plan, classroom management, revision of previous lesson and motivation), instructional behavior (instructional materials, group work and feedback) and evaluative behavior (evaluation of the lesson, summarizing of the lesson, class work and homework) of teachers'. Each statement had five option of Likert's scale. They were Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). The main purpose of opinionnaire was to measure the relationship between attitude and classroom practices of trained teachers in teaching mathematics.

### **Observation Form**

The observation form was a data collection tool for second objective. Classroom observation form was developed and used to collect factual information from the mathematics trained teachers about their classroom practice towards mathematics teaching. It was based on peer observation form of Department of Education given in appendix III. The observation form was developed on the basis of professional qualities of teacher concerned with presentation of subject matter and transformation of knowledge. There were two scales in each point of classroom observation form. The researcher had chosen any one of the two scale (Yes and No), if expected behavior of teacher was seen in classroom then Yes otherwise No. The researcher visited the sample schools with observation form and observed the classroom of trained teachers who taught mathematics at grade V.

### **Development of the Tools**

The questionnaire was developed along with the attitude scale of F. H. Bell under the guidance of research supervisor which is based on Likert's five point scale. The opinionnaire was developed along with the attitude scale of F. H. Bell under the

guidance of research supervisor which is based on Likert's five point scale. Classroom observation form was based on peer observation form of Department of Education given in appendix III. The observation form was developed on the basis of professional qualities of teacher concerned with presentation of subject matter and transformation of knowledge.

### **Reliability and Validity of the Tools**

The basic idea of reliability is summed of by the word consistency (Huck and Cormtery 1996 in Addie, 1999). Test- retest reliability method was used to estimate the reliability of the attitude scale. Test retest reliability asks whether the tools measure consistently over time. A pilot study was implemented to assess the reliability of the tools. The pilot study was conducted at the primary school in Saptary district not included in the study. Each person first and second responses were matched for each scale item to see whether the rating were the same on the five point Likert scale. Every item was evaluated on its own merit. The responses from the first administration were correlated with the responses from second administration. Pearson's correlation coefficient was calculated. The test retest reliability coefficient for the subsection on the pilot test was found 0.84. It is significance at 0.05 level of significance.

A test or scale is valid for a particular purpose and for a particular group. For this reason, the attitude scale was constructed to measure the attitude of trained teachers towards teaching mathematics at grade V. It was not possible to adopt any statistical produces for the estimation of validity of this attitude scale. In the process of development of the scale, school teachers and researcher supervisor were

approached. Therefore, it may argue that the scale is valid for measuring the attitude of primary level mathematics teachers towards teaching mathematics.

### **Data Collection Procedure**

The researcher visited selected sample school to collect data. Before administering the standardized questionnaire for teachers, researcher met the head master and mathematics teachers of respective school. The researcher had taken permission with head master and mathematics teacher. The questionnaire provided to the teachers individually and they were requested to tick on one of SA, A, N, DA, SDA where SA was Strongly Agree, A was Agree, N was Neutral, DA was Disagree and SDA was Strongly Disagree. For positive statements SA, A, N, DA and SDA implied 5, 4, 3, 2 and 1 respectively and for negative statements the scoring process was reversed.

After that the researcher has given opinionnaire to trained teacher before taught mathematics classroom. The opinionnaire provided to the teachers individually and they were requested to tick on one of SA, A, N, DA, SDA where SA was Strongly Agree, A was Agree, N was Neutral, DA was Disagree and SDA was Strongly Disagree. For statements SA, A, N, DA and SDA implied 5, 4, 3, 2 and 1 respectively, and collected data obtained from opinionnaire. Then researcher had observed their classroom with observation form. And collecting the data obtained from classroom observation form. At last the researcher tabulated all the collecting data.



### **Analysis and Interpretation Procedure**

After collecting the data obtained from questionnaire, at first, significance of each statement was tested by computing corresponding chi-square value and comparing them with tabulated chi-square value 9.488, the value of chi-square at 0.05 level of significance with four degree of freedom. If the calculated chi-square value is greater than tabulated chi-square value then the statement is significance and if the calculated chi-square value is less than tabulated chi-square value then the statement is insignificant.

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The data obtained from classroom observation was analyzed from two scales in each point of classroom observation form. The researcher had chosen any one of the two scale (Yes and No), if expected behavior of teacher was seen in classroom then Yes otherwise No. Percentage score was used to identify the presented behavior of teacher in teaching mathematics. Descriptive analysis was done to explore the relationship between attitude and classroom practice of trained teachers towards teaching mathematics.

## Chapter IV

### ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of data obtained for the study. The data collected from the teachers were analyzed and interpreted to find out the attitude of trained teachers towards teaching mathematics. It has been already mentioned that there was a set of questionnaire with five alternatives; strongly agree, agree, neutral, disagree and strongly disagree with the rating 5,4,3,2 and 1 respectively in each statements. Total score in each statement were calculated from chi- square value with 0.05 level of significance.

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This chapter presents the results of analysis with their interpretation. The interpretation of collected information was carried out under the major heading corresponding to objectives of the study.

-Attitude of trained teachers towards teaching mathematics.

-The relationship between attitude and classroom practices of trained teachers in teaching mathematics.

### Attitude of Trained Teachers towards Teaching Mathematics at Grade V

The community school teachers were asked twenty five statements in a questionnaire (Appendix–I) to assess their attitude towards teaching mathematics at grade V. This questionnaire was related to teachers belief and teachers knowledge. There were forty community primary level mathematics teachers who taught mathematics at grade V considered for the study .Table 4.1 represents the  $\chi^2$  - values of all twenty five statements at 0.05 alpha level. Critical point for this level of significance is  $\chi^2_{0.05, 4} = 9.488$ .

**Table- 4.1**

**$\chi^2$  - Value of Statements Included on Questionnaire Form Administered for the Community School Trained Teachers**

S.N	Statements	$\chi^2$ - Value	Decision	Percentage
1	The basic knowledge of mathematics is essential in primary level.	16.900	S	100%
2	Teacher training is needed to teach mathematics.	40.200	S	92.5%
3	The class of mathematics is more interesting than other subjects.	11.000	S	67.5%
4	The problem of mathematics is solved by using different rules.	44.600	S	82.5%
5	Mathematics is applied in other discipline.	16.200	S	60%

6	The subject mathematics is appropriate at primary level.	32.600	S	95%
7	The content of mathematics should be limited.	69.750	S	82.5%
8	The curriculum of mathematics of grade V is appropriate.	20.600	S	77.5%
9	The understanding of mathematical knowledge is affected by the lack of teaching materials.	47.000	S	92.5%
10	The pedagogical knowledge is obtained from teacher training for teaching mathematics.	13.000	S	72.5%
11	Mathematics is useful for daily life.	19.400	S	90%
12	The allocated time is sufficient to teach mathematics.	37.000	S	75%
13	The low achievement of mathematics is due to teacher training.	19.000	S	65%
14	Every teacher can teach mathematics by various methods.	28.000	S	70%
15	Greater priority should be given to teach mathematics.	28.250	S	70%

16	Students are able to solve the problems of mathematics by instruction given by trained teachers.	37.400	S	92.5%
17	Particular method is equally affected for all levels of students.	65.500	S	72.5%
18	Mathematics can be taught by any methods.	15.000	S	65%
19	The teachers want to teach mathematical concept got in training.	18.600	S	67.5%
20	The teachers use appropriate teaching method, got in training.	7.550	NS	82.5%
21	Mathematical content should be equivalent to other facilities.	29.000	S	90%
22	The present mathematics should be revised.	43.850	S	87.5%
23	Instructional materials are essential for teaching of mathematics.	17.800	S	80%
24	The teachers uses mathematics lab while teaching mathematics.	13.800	S	60%
25	Continuous evaluation of students helps to improve the students' performance in mathematics.	11.600	S	70%

Critical region  $\chi^2_{0.05,4} = 9.488$

Where,  $\nu$  is degree of freedom is equal to  $(r-1)(c-1)$

$r$  = number of rows = 2

$c$  = number of columns = 5

So,  $\nu = (2-1)(5-1) = 4$

Note: S stands for significant and NS stands for not significant.

The table 4.1 shows that value of 24 statements out of 25 statements are significant at 0.05 level of significance. This reflects that the positive and significant attitude of trained teachers towards teaching mathematics at grade V.

The statement "The basic knowledge of mathematics is essential in primary level" is significant statement with  $\chi^2$ -value 16.900 at 0.05 level of significance. From the total sample trained teachers, 100% of sample trained teachers are agreed with this statement. Hence majority of trained teachers had positive attitude towards teaching mathematics.

The statement "The content of mathematics should be limited" is significant statement with  $\chi^2$ -value 69.750 at 0.05 level of significance. From the total sample teachers, 82.5% of sample trained teachers are agreed with this statement. Hence it shows that content of mathematics in the primary level should be limited.

The statement "Particular method is equally affected for all level of students" is significant statement with  $\chi^2$ -value 65.500 at 0.05 level of significance. From the total sample teachers, 72.5% of sample trained teachers are agreed with this statement. It shows that there should be different methods in different level.

The statement "The understanding of mathematical knowledge is affected by the lack of teaching materials" is significant statement with  $\chi^2$ -value 47.000 at 0.05

level of significance. It was found that 92.5 percent of the sample trained teachers using teaching materials while teaching mathematics at grade V. It shows that the teaching materials are necessary for teaching mathematics and there should be well teaching material for the better understanding of the mathematical knowledge.

The statement "The problem of mathematics is a solved by using different rules" is significant statement with  $\chi^2$ -value 44.600 at 0.05 level of significance. It was found that 82.5 percent of the sample trained teachers were solved the mathematics problem by using different rules.

The statement "The present mathematics should be revised" is significant statement with  $\chi^2$ -value 43.850 at 0.05 level of significance. It was found that 87.5 percent of the sample teachers agreed on this statement.

The statement "Teacher training is needed to teach mathematics" is significant statement with  $\chi^2$ -value 40.200 at 0.05 level of significance. It was found that 92.5 percent of the sample trained teachers were in favors of teacher training on mathematics. It shows that the training for teaching mathematics is essential for mathematics teacher in primary level.

The statements "Students are able to solve the problems of mathematics by instruction given by trained teachers" and "The allocated time is sufficient to teach mathematics" are significant statements with  $\chi^2$ -value 37.400 and 37.00 respectively at 0.05 level of significance. It was found that 92.5 percent sample trained teachers are agreed in these statements. It shows that student was able to solve the problem according to the direction of the trained teacher and the present time allocated for mathematics is appropriate.

The fifth least significant statement "The teacher uses mathematics lab while teaching mathematics" with  $\chi^2$ -value 13.800 at 0.05 level of significance. It was found that only 60 percent of the sample trained teachers were agreed in this statement. It shows that most of the trained teachers do not used mathematics lab while teaching mathematics.

The fourth least significant statement "The pedagogical knowledge is obtained from teacher training for teaching mathematics" with  $\chi^2$ -value 13 at 0.05 level of significance. In this statement only 18 trained teachers were agreed, and 7 teachers were strongly agreed. This shows that the pedagogical knowledge obtained from teacher training.

The next least significant statement "Continuous evaluation of student helps to improve the students performance in mathematics" with  $\chi^2$ -value 11.600 at 0.05 level. It was found that great majority of the sample teachers were in favor of the statement and reveals that continuous evaluation is important of students performance.

The least significant statement "The class of mathematics is more interesting than other discipline" with  $\chi^2$ -value 11.000 at 0.05 level of significances. From the sample teachers, 67.5 percent sampled teachers' are agreed in this statement. It reveals that the teachers feel interest while teaching mathematics at grade V.

The statement "The teachers use appropriate teaching method, got in training" is insignificant statement with  $\chi^2$ -value 7.550 at 0.05 level of significance. It shows that about 82.5 percent of the sampled teachers were disagreed on this statement. It shows that some teachers not used teaching method, got in training while teaching mathematics.



Finally 24 statements were significant out of 25 statements. Most of the trained teachers were agreed in the statement "The content of mathematics should be limited". The trained teachers needed training for teaching mathematics. Most of the trained teachers did not use mathematics lab while teaching mathematics. Some teachers were not used teaching method, got in training. From the above mentioned there were positive and significant attitude of trained teachers towards teaching mathematics at grade V.

### **Relationship between Attitude and Classroom Practices of Trained Teachers in Teaching Mathematics at Grade V**

The second objective of this study was "to explore the relationship between attitude and classroom practice of trained teachers in teaching mathematics. For this, researcher collected the data by opinionnaire given in appendix II and observation form given in appendix III. The opinionnaire contained 15 statements. All statements were related to teaching learning activities in the mathematics classroom.

The relationship between attitude and classroom practices of trained teachers in teaching mathematics is described descriptively as below.

#### **Entering Behavior**

Entering behavior is activity of teacher before entering the classroom. Such as lesson plan, positive attitude, teaching materials are essential components. Entering behavior helps to teacher to teach effectively and manage the time. The entering behavior of teacher mainly depends upon the following factors.

- ) Preparation of lesson plan
- ) Classroom management

) Revision of previous lesson

) Motivation

### Lesson Plan

The lesson plan related to the use of instructional plan for daily classroom teaching. Responses of trained teachers and their classroom practices towards lesson plan are described as below:

**Table 4.2**

#### Attitude of Trained Teachers towards Lesson Plan

S.N.	Statements	Responses					<sup>2</sup> - value	Decision	Percentage
		SA	A	N	DA	SDA			
1.	I always prepare lesson plan	9 60%	5 33%	1 7%	0 0%	0 0%	14.66	S	93%
2.	Lesson plan helps to manage the time	9 60%	5 33%	1 7%	0 0%	0 0%	14.66	S	93%

The statement about lesson plan is significant at 0.05 level of significance.

From the table 93 percent teachers agreed in the statement "I always prepare the lesson plan". 93 percent teachers were developed the lesson plan and it is believed that lesson plan helps them to manage the time. It means that teachers have positive attitude towards lesson plan.

Result of classroom observation of trained teachers towards lesson plan is presented as below.

**Table 4.3**

**Result of Classroom Observation towards Lesson Plan**

<b>S.N.</b>	<b>Statements</b>	<b>Presented Behavior</b>
1	Does the teacher have lesson plan?	13.33%
2	Does the teacher teach lesson according to lesson plan?	80%

From the classroom Observation 86.67 percent teachers did not have lesson plan. Only 13.33 percent teachers had lesson plan. Out of them 80 teachers teaches according to lesson plan. There was high positive attitude of trained teachers towards lesson plan but they did not prepare lesson plan. Only 13.33 percent teachers prepared lesson plan. So the attitude of trained teachers did not match with their classroom practice. So, there was low relationship between attitude and classroom practice of trained teachers towards lesson plan.

**Classroom Management**

Classroom management involved seating arrangement, materials arrangement etc. by which teaching learning situation becomes more favorable and students get more chance to participate in learning process. Attitude of trained teachers towards classroom management is presented as below.

**Table 4.4****Attitude of Trained Teachers towards Classroom Management**

S.N.	Statements	Responses					χ <sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	I'm serious in classroom management.	10 66%	3 20%	2 13%	0 0%	0 0%	16.66	S	86%
2.	The main aspect of classroom management is physical and psychological arrangement of classroom.	11 74%	2 13%	2 13%	0 0%	0 0%	27.66	S	87%

Here, both statements about classroom management are significant. It means that teachers have positive attitude towards classroom management. 86 percent teachers' were serious about classroom management and 87 percent teachers emphasized physical and psychological arrangement of classroom managing. Hence trained teachers have positive attitude towards classroom management.

Result of classroom observation of trained teachers towards classroom management is presented as below.

**Table 4.5****Observation Result of Classroom Management**

S.N.	Statements	Observed behavior
1.	Seating arrangement	93.33%
2.	Materials arrangement	33.33%

The result shows that 93.33 percent teachers emphasized seating arrangement of student for managing classroom. It means they thought that seating arrangement is classroom management. There were 33.33 percent teachers managed the classroom by material arrangement. It was found that attitude of trained teachers match with their classroom practice towards classroom management. So, the relationship between attitude and classroom practices of trained teachers towards classroom management was moderate.

**Revision of Previous Lesson**

The responses of teachers towards revision of previous lesson as follow.

**Table 4.6****Attitude of Trained Teachers towards Revision of Previous Lesson**

S.N.	Statement	Responses					<sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	I always revise the previous lesson before starting the present lesson.	9 60%	4 27%	2 13%	0 0%	0 0%	12.66	S	87%

From the table there were 87 percent trained teachers agreed in the statement "I always revise the previous lesson before starting the present lesson". It means that teachers have positive attitude towards revision of lesson.

Result of classroom observation of trained teachers towards revision of the previous lesson is presented as below.

**Table 4.7**

**Observation Result of Revision of Previous Lesson**

<b>S.N.</b>	<b>Statements</b>	<b>Observed behavior</b>
1	Does he ask about previous lesson	86.66%
2	Only for memory	59.94%
3	For linking previous and present lesson	59.94%

This version was verified by the class observation, it was found that 86.66 percent teachers revised previous lesson either by questioning or discussing. The statement about revised previous lesson is highly significant. It means there was positive attitude of trained teachers towards revision of previous lesson. The result of observation also matched with attitude of teachers. There were 86.66 percent teachers revised their previous lesson for memory and linking the present and previous lesson. So the relationship between attitude and classroom practice of trained teachers towards previous lesson was moderate.

## Motivation

Motivation is an inner power to do something. Teachers were inquired about motivation mechanism. They replied that it was very appropriate since almost all of the trained teachers used motivation mechanism.

**Table 4.8**

### Attitude of Trained Teachers towards Motivation

S.N.	Statement	Responses					<sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	Motivation is necessary for students before entering towards teaching subject matter.	12 80%	3 20%	0 0%	0 0%	0 0%	27.0	S	100%

Teachers were asked whether or not they motivated the students in the beginning of the class. They said that they did test table showed that motivation is significant at 0.05 level of significance. Table shows that 100 % trained teachers were agreed in motivation while teaching mathematics. It means there was positive attitude of trained teachers towards motivation.

Result of classroom observation of trained teachers towards motivation is presented as below.

**Table 4.9****Observation Result towards Motivation**

<b>S.N.</b>	<b>Statements</b>	<b>Observed behavior</b>
1	Does the teacher encourage formulate creative question?	66.66%
2	Does the teacher encourage students of back benches to ask question?	26.68%
3	What are the techniques of motivation?	33.35%
	- By telling history	40.02%
	- By linking subject matter	59.94%

On the classroom observation it was noted that 26.68 percent teachers motivated student by creative question and encourage to students. They used the mainly two types of motivator technique telling history (40.20%), and by linking subject matter (59.94%). The attitude of trained teachers matches with their classroom practice. It means that relationship between attitude and classroom practice of trained teachers towards motivation was moderate.

**Instructional Behavior**

Instructional behavior is activity of teacher after entering the classroom. Such as instructional materials and group work are essential components. Instructional behavior helps to teacher to teach effectively. The instructional behavior of teacher mainly depends upon the following factors.

) Instructional materials

) Group work



### Instructional Materials

The attitude of trained teachers towards instructional material is described as below.

**Table 4.10**

#### Attitude of Trained Teachers towards Instructional Materials

S.N.	Statements	Responses					<sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	I think that teaching without instructional material is impracticable.	8 53%	3 20%	1 7%	3 20%	0 0%	9.66	S	73%
2.	I always teach with instructional materials.	9 60%	5 33%	1 7%	0 0%	0 0%	14.66	S	93%

From above table, both statements about instructional materials were significant. 73 percent trained teachers were thinking that mathematics teaching without instructional material is impracticable. Also 93 percent trained teachers teach mathematics with instructional materials. So there was high positive attitude towards instructional materials.

Result of classroom observation of trained teachers towards instructional materials is presented as below.

**Table 4.11****Observation Result of Instructional Materials**

<b>S.N.</b>	<b>Statements</b>	<b>Observed behavior</b>
1	Does the teacher explain the subject matter with the help of	Yes
-	Instructional materials	26.68%
-	Examples	80%
-	Figures	53.36%
2.	Does the teacher use the instructional materials	Yes
-	If yes, local	73.37%
-	Commercial	13.2%

The observation sheet shows that 26.68 percent teachers used the instructional materials. The mainly used the instructional materials were local and commercial. 80 percent trained teachers explained the subject matter with the help of examples and 53.36 percent teachers were explained the subject matter with the help of figures. Here attitude of trained teachers match with their classroom practice. So there was highly positive relationship between attitude and classroom practice of trained teachers towards instructional materials.

**Group Work**

Group work is a process where a teacher provides to divide students in separate group according to their ability and interest. The attitude of teachers towards group work is described as below:

**Table 4.12****Attitude of Trained Teachers towards Group Work**

S.N.	Statement	Responses					χ <sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	I make participation of the students by discussion question answer and grouping.	10 66%	3 20%	2 14%	0 0%	0 0%	16.66	S	86%

From above table 86 percent of the sampled teachers were used grouping technique in the classroom while teaching mathematics at grade V. It shows that there was high positive attitude of trained teachers towards class work.

Result of classroom observation of trained teachers towards group work is presented as below.

**Table 4.13****Observation Result of Group Work**

S.N.	Statements	Observed behavior
1.	Does he make group?	13.2%
2.	Does the teacher participate students in group work?	13.2%

The observation sheet shows that only 13.2 percent teachers make group and participated students in group work while teaching mathematics. Attitude of trained teachers about group work was very high positive but their classroom practice was very low. Hence attitude of trained teachers did not match with their classroom practice towards group work. So there was insignificant relation between attitude and classroom practice of trained teachers towards group work.

### **Evaluative Behavior**

Evaluative behavior is activity of teacher after teaching the lesson. Such as evaluation of the lesson, summarizing of the lesson, class work and homework are essential components. The evaluative behavior of teacher mainly depends upon the following factors.

- ) Evaluation of the lesson
- ) Summarizing of the lesson
- ) Class work
- ) Homework

### **Evaluation of the Lesson**

Evaluation is the main part of teaching learning activities. The attitude of trained teachers towards evaluation of the lesson is described as below:

**Table 4.14****Attitude of Trained Teachers towards Evaluation of Lesson**

S.N.	Statement	Responses					χ <sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	It necessary for doing evaluation of students after finished lesson.	5 33%	9 60%	1 7%	0 0%	0 0%	14.66	S	93%

Almost all of the teachers were responded using evaluation technique in classroom in different ways. From the table, the statement "it is necessary for doing evaluation of students after finished lesson" is significant at 0.05 level. 93 percent teachers agreed this statement. This showed that there was positive attitude of trained teachers towards evaluation of the lesson.

Result of classroom observation of trained teachers towards evaluation of the lesson is presented as below.

**Table 4.15****Observation Result of Evaluation of Lesson**

S.N.	Statements	Observed behavior
1.	Does the teacher evaluate students?	100%
	- Orally	80%
	- Written	20%

Class observation revealed that most of the teachers evaluated students either orally or in written form. 80 percent teacher evaluates the students by orally and 20 percent teacher used written form. So attitude of teachers match with their classroom practice. So there was significance relation between attitude and classroom practice of trained teachers towards evaluation of the lesson.

### Summarizing of the Lesson

If a teacher repeated the previous lesson on short form for remembering is called summarize of the lesson. The response of teachers towards summarization of lesson is described as below:

**Table 4.16**

#### Attitude of Trained Teachers towards Summarizing of the Lesson

S.N.	Statement	Responses					χ <sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	I would like to summarize the subject matter.	4 27%	5 33%	4 27%	2 13%	0 0%	2.33	NS	60%

From the table the statement "I would like to summarize the subject matter" is non-significant; it means teachers have negative attitude towards summarizing of the lesson.

Result of classroom observation of trained teachers towards summarizing of the lesson is presented as below.

**Table 4.17****Observation Result of Summarizing of the Lesson**

S.N.	Statement	Observed behavior
1.	Is the lesson summarized?	13.2%

From the table, only 13.2 percent of teachers summarized the lesson and rest percentage of them did not summarize. 86.8 percent teachers did not summarize the lesson. Teachers have negative attitude towards summarization of the lesson. Hence observation result was match with attitude of teacher. So there was significance relation between attitude and classroom practice of trained teachers towards summarization of the lesson.

**Class work**

Recently evaluation in the classroom of student is called class work. It helps to develop encourage towards learning. The response of teachers towards class work is described as below.

**Table 4.18****Attitude of Trained Teachers towards Class Work**

S.N.	Statement	Responses					<sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	I always provide the students to do class work.	12 80%	3 20%	0 0%	0 0%	0 0%	27	S	100%

From the table the statement "I always provide the students to do class work" is highly significant. From table, 100% sampled trained teachers agreed to this statement. It means teachers have more positive attitude towards class work. Almost all the teachers were found that they gave class work in mathematics classroom.

Result of classroom observation of trained teachers towards class work is presented as below.

**Table 4.19**

**Observation Result of Class Work**

S.N.	Statement	Observed behavior
1.	Does he/she give any class work?	86.58%
	- Text book	73.37%

On the class observation, it was found that 86.58 percent of the teachers used this technique and 13.42percent did not use it. Teachers were used textbook question (73.37%) in mathematics classroom. It was concluded that majority of the trained teachers used class work technique while teaching mathematics at grade V. Attitude of trained teachers match with their classroom practice. So there was significance relationship between attitude and classroom practice of trained teachers towards class work.

**Homework**

All subject matter question could not be solved the students at school time. So that some exercise was given by teacher for home that is called homework. The response of teachers towards homework is described below:



**Table4.20****Attitude of Trained Teachers towards Homework**

S.N.	Statement	Responses					<sup>2</sup> - value	Decision	%
		SA	A	N	DA	SDA			
1.	After finishing the lesson, I would like to give homework.	10 66%	3 20%	2 14%	0 0%	0 0%	16.66	S	86%

Here the statement about homework is significant at 0.05 level. 86 percent trained teachers are agreed that homework is necessary for developing study habit. 86 percent teachers were positive about homework. So there was positive attitude of trained teachers towards homework.

Result of classroom observation of trained teachers towards homework is presented as below.

**Table 4.21****Observation Result of Homework**

S.N.	Statements	Observed behavior
1.	Does he give any home task?	93.38%
	From text book	73.37%
	Questions made from teacher	66.7%

The observation table shows that 93.38 percent teacher provide homework to their students. Out of them, 73.37 percent teachers used text book and 66.7 percent teachers used question made from itself for homework. Here attitude of trained teachers match with their classroom practice. So, there was good relationship between attitude and classroom practice of trained teachers towards homework.

Finally 100 percent sampled trained teachers were agreed to the statement "The basic knowledge of mathematics is essential in primary level". The trained teachers needed training for teaching mathematics. Most of the trained teachers did not use mathematics lab while teaching mathematics. Some teachers were not used teaching method, got in training. Most of the teacher had positive attitude that of mathematics problem can solved by using different rule. Teacher have highly positive attitude towards motivation and class work. Primary level mathematics teachers have positive attitude towards lesson plan, homework, feedback, student interaction and instructional materials, but they did not do according to their attitude. 75 percent teachers did not reflect attitude into classroom practice. Classroom practice was very poor towards lesson plan and group work. Hence the primary level mathematics trained teachers had positive attitude towards teaching mathematics. But classroom practices of trained teachers towards lesson plan and group work did not match with their attitude. So, the relationship between attitude and classroom practice of trained teachers was moderate while teaching mathematics at grade V.

## Chapter V

### SUMMARY, FINDING, CONCLUSION AND RECOMMENDATION

After analyzing and interpretation of the data, in this concluding chapter an attempt has been made to derive conclusion. The first section of this chapter presents summary with finding. Second section presents the finding of the study. Third section presents conclusion that derive from the second section. Finally, the last section presents recommendation for the further study.

#### Summary

The study was under taken to the attitude of trained teachers in teaching mathematics. The researcher collected the data about teachers opinion towards mathematics. Specially, the objectives of the study were:

- ) To find out the attitude of trained teachers towards teaching mathematics.
- ) To explore the relationship between attitude and classroom practices of trained teachers in teaching mathematics.

The nature of this study was of descriptive survey type and based on the quantitative data. The researcher collected the data about the attitude of primary level mathematics teachers taking 40 trained teachers as sample from Saptary district. The source of data collection was 40 trained teachers selected by randomly sampling method.

To achieve the objectives of the study, the researcher developed questionnaire, opinionnaire and classroom observation form by taking help of research supervisor. A set of questionnaire, opinionnaire and classroom observation was developed as tools for collecting data. Attitude scale was based on F. H. Bell measure. The five point

Likert scale was adopted in attitude scale with 5,4,3,2 and 1, assigned for strongly agree, agree, neutral, disagree and strongly disagree respectively for positive statements and for negative statements the scoring process was reversed.

The collected data were edited and tabulated with attitude score of teachers.

2- test was used to determine the attitude of trained teachers towards teaching mathematics at 0.05 level of significance. Classroom observation was done with the help of observation form. Percentage was used to notice the presented behavior in the classroom.

### **Finding**

Statistical analysis and interpretation of the obtained data yielded the following result as the finding of the study.

- ) Appendix I shows that value of 24 statements out of 25 statements were significant at 0.05 level of significance and appendix II shows that value of 14 statements out of 15 statements were significant at 0.05 level of significance . This reflects that the primary level mathematics trained teachers had positive attitude towards teaching mathematics.
- ) From appendix I, 100 percent of the sample trained teachers were agreed to the statement "The basic knowledge of mathematics is essential in primary level". Hence the basic knowledge of mathematics is necessary in primary level.
- ) From appendix I, 92.5 percent of the sample trained teachers were agreed to the statement "Teacher training is needed to teach mathematics". Hence the teacher needed training for teaching mathematics at grade V.

- ) From appendix I, 82.5 percent of the sample trained teachers were agreed to the statement "The problem of mathematics is solved by using different rules". Hence the teacher had positive attitude that of mathematics problem can solved by using different rule.
- ) From appendix I, 60 percent of the sample trained teachers were agreed to the statement "The teachers use mathematics lab while teaching mathematics". Hence most of the trained teachers were not used mathematics lab while teaching mathematics.
- ) From appendix II, 93 percent of the sample trained teachers were agreed towards lesson plan and 86 percent of the sample trained teachers were agreed towards group work. Hence the teacher have highly positive attitude towards motivation and class work.
- ) Primary level mathematics teachers have positive attitude towards lesson plan, homework, feedback, student interaction and instructional materials, but they did not do according to their attitude. 75 percent teachers did not reflect attitude into classroom practice.
- ) Classroom practices were very poor towards lesson plan and group work.

### **Conclusion**

The primary level mathematics trained teachers had positive attitude towards teaching mathematics. Most of the trained teachers needed training for teaching mathematics at grade V. I found that most of the trained teachers using different teaching method for solving mathematical problem. But almost teachers were not used mathematics lab while teaching mathematics. Most of the primary level trained teachers had positive attitude towards teaching mathematics at grade V. But

classroom practices of trained teachers did not match with their attitude. So, the relationship between attitude and classroom practice of trained teachers was moderate while teaching mathematics at grade V.

The conclusion of the study was summarized as bellow:

- ) There was positive attitude of trained teachers towards teaching mathematics at grade V.
- ) The attitude of trained teachers towards teaching mathematics does not match with their classroom practices. So, the relationship between attitude and classroom practices of trained teachers in teaching mathematics was moderate.

### **Recommendation**

Due to delimitation of this study the results may not be generalized to all area and all levels. On the basis of the study the following recommendations have been given.

- ) To establish the finding similar study can be carried out region wise and nation wise.
- ) It should also be studied in higher level for the same aspects.
- ) The similar study should be done towards other various educational (pedagogical) aspects.
- ) This study examined only the trained teachers attitude towards teaching mathematics; it should be done over parents as well as students.
- ) Teacher training institution should review such type of study.
- ) To increase the degree of representativeness and reliability, it should be better to increase the sample size as far as possible.

## References

- Bell, F.H. (1978). *Teaching and learning mathematics in secondary school*. USA: W.M.C. Brown Company.
- Best, J.W. & Kahn, J.V. (1999). *Research in education* (7<sup>th</sup> ed.), New Delhi; Prentice Hall of India.
- Bisht, S. K. (2011). *Transfer of Training Skills in the Classroom Delivery at Primary Level Mathematics Teaching*, Master Thesis, T. U.
- Bhattarai, L. N. (2071). *Attitude of university teachers towards semester system*.  
Published thesis.
- CERID (1998). *Teachers Training and its Implication in Classroom Practice*.  
Kathmandu: Author.
- CERID (2002). *Effectiveness study of Teacher Training*. A Research Report.  
Kathmandu: Author.
- Ernest, P. (1989). The knowledge, beliefs and attitude of the mathematics teacher. A model. *Journal of education for teaching*, (p. 13-33).
- Freund, J.E. (2001). *Mathematical Statistics*. (5<sup>th</sup> edition), New Delhi: Prentice Hall of India.
- Good, C.V. (1959). *Dictionary of Education*. New York: Mc-Graw Hill Book Company.
- Kohler, M. S. & Grouws, D. A. (1992). Mathematics Teaching practice and their effects. *Hand book of research on mathematics teaching and learning: A project of the National council of Teachers of Mathematics*. (pp. 115-125).

- Kumar, R. (2008). *Research Methodology* (2<sup>nd</sup> ed.). London: Pearson Education.
- Lamichhane, M. (2011). *A Study on Mathematics Achievement of Secondary Level Students Taught by Trained and Untrained Teachers*, Master Thesis , T. U.
- Mallick, R. (2009). *A study on attitude of secondary level students and teachers towards set theory*, Master Thesis, T. U.
- NCED (2003). *Effectiveness Study of Teacher Training*, A Study Report, Sanothimi: Author.
- Rai, S.M. (2004). *Attitude of teachers and students towards secondary level Math's and students' achievement in Dhankuta District*. Master Thesis, Department of Mathematics Education. T. U.
- Sanothimi (2006). *A Study on Effectiveness of Primary Teacher Training in Nepal*. A Research Report of Department of Education and Information Management Section, Bhaktapur.
- Shrestha, M. K. (2009). *Training Need Assessment of Secondary School Mathematics Teacher*, Master Thesis, T.U., Kirtipur, Kathmandu.
- Upadhyay, H.P. (2061). *Teaching Mathematics*, Kathmandu, Nepal: Ratna Pustak Bhandar.
- William, J. (2005). *“Classroom Assessment in Malawi: Teachers’ Perceptions and Practices in Mathematics”* Doctor Thesis, Blacksburg, Virginia.



## Appendix I

### Number and Percentage of Trained Teachers in Questionnaire Administered to Primary Level Mathematics Teachers

S.N.	Statements	Number of Responses					2- value	Decision	%
		S.A.	A.	N.	D.	S.D.			
1	The basic knowledge of mathematics is essential in primary level.	33 82.5%	7 17.5%	0 0%	0 0%	0 0%	16.9	S	100%
2	Teacher training is needed to teach mathematics.	11 27.5%	26 65%	2 5%	1 2.5%	0 0%	40.2	S	92.5%
3	The class of mathematics is more interesting than other subjects.	13 32.5%	14 35%	12 30%	0 0%	1 2.5%	11.0	S	67.5%
4	The problem of mathematics is solved by using different rules.	5 12.5%	28 70%	6 15%	1 2.5%	0 0%	44.6	S	82.5%

5	Mathematics is applied in other discipline.	4 10%	20 50%	11 27.5%	5 12.5%	0 0%	16.2	S	60%
6	The subject mathematics is appropriate at primary level.	30 75%	8 20%	2 5%	0 0%	0 0%	32.6	S	95%
7	The content of mathematics should be limited.	4 10%	29 72.5%	4 10%	2 5%	1 2.5%	69.75	S	82.5%
8	The curriculum of mathematics of grade V is appropriate.	10 25%	21 52.5%	8 20%	1 2.5%	0 0%	20.6	S	77.5%
9	The understanding of mathematical knowledge is affected by the lack of teaching materials.	9 22.5%	28 70%	1 2.5%	2 5%	0 0%	47.0	S	92.5%

10	The pedagogical knowledge is obtained from teacher training for teaching mathematics.	11 27.5%	18 45%	9 22.5%	2 5%	0 0%	13.0	S	72.5%
11	Mathematics is useful for daily life.	26 65%	10 25%	4 10%	0 0%	0 0%	19.4	S	90%
12	The allocated time is sufficient to teach mathematics.	7 17.5%	23 57.5%	5 12.5%	3 7.5%	2 5%	37.0	S	75%
13	The low achievement of mathematics is due to teacher training.	11 27.5%	15 37.5%	11 27.5%	1 2.5%	2 5%	19.0	S	65%
14	Every teacher can teach mathematics by various methods.	7 17.5%	21 52.5%	5 12.5%	5 12.5%	2 5%	28.0	S	70%

15	Greater priority should be given to teach mathematics.	7 17.5%	21 52.5%	6 15%	4 10%	2 5%	28.25	S	70%
16	Students are able to solve the problems of mathematics by instruction given by trained teachers.	25 62.5%	12 30%	1 2.5%	2 5%	0 0%	37.4	S	92.5%
17	Particular method is equally affected for all levels of students.	1 2.5%	28 70%	7 17.5%	3 7.5%	1 2.5%	65.5	S	72.5%
18	Mathematics can be taught by any methods.	10 25%	16 40%	8 20%	4 10%	2 5%	15.0	S	65%

19	The teachers want to teach mathematical concept got in training.	6 15%	21 52.5%	10 25%	3 7.5%	0 0%	18.6	S	67.5%
20	The teachers use appropriate teaching method, got in training.	12 30%	21 52.5%	7 17.5%	0 0%	0 0%	7.55	NS	82.5%
21	Mathematical content should be equivalent to other facilities.	22 55%	14 35%	3 7.5%	1 2.5%	0 0%	29.0	S	90%
22	The present mathematics should be revised.	2 5%	33 82.5%	5 12.5%	0 0%	0 0%	43.85	S	87.5%
23	Instructional materials are essential for teaching of mathematics.	12 30%	20 50%	5 12.5%	3 7.5%	0 0%	17.8	S	80%

24	The teachers uses mathematics lab while teaching mathematics.	6 15%	18 45%	13 32.5%	3 7.5%	0 0%	13.8	S	60%
25	Continuous evaluation of students helps to improve the students' performance in mathematics.	15 37.5%	13 32.5%	11 27.5%	0 0%	1 2.5%	11.6	S	70%

## Appendix II

### Numbers of Trained Teachers in Opinionnaire Administered to Primary

#### Mathematics Teachers

S.N.	Statements	S.A.	A.	N.	D.A.	SDA	2- value	decision	%
1.	I always prepare lesson plan.	9 60%	5 33%	1 7%	0 0%	0 0%	14.66	S	93%
2.	Lesson plan helps to manage the time.	9 60%	5 33%	1 7%	0 0%	0 0%	14.66	S	93%
3.	I am serious in classroom management.	10 66%	3 20%	2 13%	0 0%	0 0%	16.66	S	86%
4.	The main aspects of classroom management are physical and psychological arrangement of classroom.	11 74%	2 13%	2 13%	0 0%	0 0%	27.66	S	87%
5.	Motivation is necessary for students before entering towards teaching subject matter.	12 80%	3 20%	0 0%	0 0%	0 0%	27	S	100%

6.	I always revise the previous lesson before starting the present lesson.	9 60%	4 27%	2 13%	0 0%	0 0%	12.66	S	87%
7.	I would like to present the objective of class before starting the lesson.	5 33%	3 20%	6 40%	1 7%	0 0%	5.66	NS	53%
8.	I think that teaching without instructional materials is impracticable.	8 53%	3 20%	1 7%	3 20%	0 0%	9.66	S	73%
9.	I always teach with instructional materials.	9 60%	5 33%	1 7%	0 0%	0 0%	16.66	S	93%
10.	I make participation of the students by discussion question answer and grouping.	10 66%	3 20%	2 14%	0 0%	0 0%	16.66	S	86%
11.	I should give creative advice after finishing checking homework and classroom.	8 53%	5 33%	2 14%	0 0%	0 0%	10	S	86%



12.	It necessary for doing evaluation of students after finished lesson.	5 33%	9 60%	1 7%	0 0%	0 0%	14.66	S	93%
13.	I would like to summarize the subject matter.	4 27%	5 33%	4 27%	2 13%	0 0%	2.33	NS	60%
14.	I always provide the students to do class work.	12 80%	3 20%	0 0%	0 0%	0 0%	27	S	100%
15.	After finishing the lesson, I would like to give homework.	10 66%	3 20%	2 14%	0 0%	0 0%	16.66	S	86%

### Appendix III

#### Classroom Observation Form

Teacher's Name:

Class:

School's Name:

Students Number:

**Topic:**

**Time:**

S.N.	Statements	Yes	No	Percentage
1.	Entering behavior			
1.1	Does teacher have lesson plan?	2	13	13.33%
	- Does the teacher teach according to lesson plan?	12	3	80%
1.2	Does the teacher manage the classroom?			
	- Seating arrangement	14	1	93.33%
	- Material arrangement	5	10	33.33%
1.3	Does the teacher look at the whole class?	15	0	100%
1.4	Does he ask about previous lesson?	13	2	86.58%
	- Only for memory	9	6	59.94%
	- For linking previous and present lesson	9	6	59.94%
1.5	Does he announce the objective of the day's lesson?	8	7	53.36%
1.6	Does he motive the students?	11	4	73.37%
2.	Instructional behavior			
2.1	Does the teacher interact with students?	9	4	59.94%

2.2	Does the teacher create an environment to interact among students?  - In pair  - In group  - In whole class	0  2  13	15  13  2	0%  13.2%  86.71%
2.3	Does the teacher explain the subject matter with the help of  - Instructional materials  - Example  - Figures	4  12  8	11  3  7	26.68%  80%  53.36%
2.4	Does the teacher use the instructional materials, if yes  - Local  - Commercial	11  2	4  13	73.37%  13.2%
2.5	Does the teacher the participate the students in teaching learning process?	7	8	46.69%
2.6	Does the teacher encourage formulate creative question?	4	11	26.68%
2.7	Does the teacher encourage students of back benches to ask question?	5	10	33.35%
2.8	What is the technique of motivation?  - By telling history  - By linking students math	6  9	9  6	40.02%  59.94%
2.9	Does he make group?	2	13	13.2%

2.10	Does the teacher participate students in group work?	2	13	13.2%
2.11	Does the teacher provide feedback to students?	5	10	33.35%
	- Sometimes	8	7	53.36%
	- Continuously			
2.12	Does the teacher reviews the previous use before start the present lesson?	9	6	59.94%
3.	Evaluative behavior			
3.1	Is the lesson summarized?	2	13	13.2%
3.2	Does the teacher evaluate students?	15	0	100%
	- Orally	12	3	80%
	- Written	3	12	20%
3.3	Does he give any class work?	13	2	86.58%
	- Text book	11	4	73.37%
3.4	Does he give any home task?	14	1	93.38%
	- From text book	11	4	73.37%
	- Questions made from teacher	10	5	66.7%
3.5	Does he provide creative feedback to students?	10	5	66.7%