

Chapter I

INTRODUCTION

Background of the Study

Mathematics is an essential discipline to all sciences as a powerful tool. It remains as an integral part in every phase of human life and infrastructure for the scientific development and technology. It is also defined as the science of abstract from. According to Locke "Mathematics is a way to settle in the mind a habit of reasoning" and Roger Bacon believed that; "Mathematics is the gate and key to all sciences'. It is being broadly used in physical sciences as well as social sciences. With this regard sentman stated about importance of mathematics as follows:

Mathematics is a part of the experiences of all people regardless of how far they have gone in school. It is very foundation of a scientific technological world as we live in today. The great advance which civilization has made in science and technology could not have been made without the advancement of mathematics.

The materials which are used by teachers and students in the period of teaching and learning are called teaching materials. The teaching materials not only make teaching learning attractive and effective but also give the learners real knowledge and these knowledge being permanent. There is a Chinese statement, "I hear, I forget, I see, I remember, I do, I understand".

Some importance of Instructional materials in teaching learning process is given as follows:

) To clear mathematical concepts

-) To motivate students to learn and teacher to teach
-) To give abstract form of new mathematical concepts and finding
-) To make learning permanent
-) To make teaching learning process effective

The objective of any materials used in teaching learning is to make mathematical concept simple and to help in mathematics learning. These materials are measuring cylinder, scale, geometry box, pencil, circle board, block, model, chart, pictures, films, overhead projector, slides, radio, cassette, video, graph board, papers and publication related to mathematics. With reference to use, these can be classified into four categories as follows:

-) Audible materials
-) Visual materials
-) Audio- visual materials
-) Printed materials

Education materials are considered as powerful means for renewing the educational system. They can be seen as indispensable in facilitating the introduction of innovation and promoting change at the level. Moreover, instructional materials are strong weapons for motivation. The students are motivated by the use of teaching aids. It also assists teacher to be more direct, accurate and explicit. Teaching aids give the realistic picture on theory and practice. In this context, Johnson speaks of the importance of instructional materials in the following lines.

Instructional materials are essential for the mathematics teacher as spokes are for the chief. They are the necessary learning mathematics pleasant satisfying excellence. Models, pamphlets, films given that would be difficult to obtain in any other way.

In this context Dienes has following words to say about the use of materials:

"The use of concrete materials in the classroom to build up mathematical imagery. Such imagery once builds up, can be manipulated without the aid of any concrete objects."

This historical development of instructional materials in Nepal beings along with the establishment of 'Nepal National Education Planning Commission' (NNEPC) in 1954. Prior to this only a few textbooks and blackboards were used as the main instructional materials. The commission created by His Majesty's Government of Nepal with the task of making baseline study of education system and giving suggestions for the improvement of education played a vital role in the field of education. The commission among other things, realized the shortage of instructional materials in educational process and in its report suggested the following view points.

Next to the shortage of teacher the most of serious handicap to good educational experiences in the school of Nepal, today is the lack of instructional materials. In almost every classroom, below the high school level the only teaching and found are a few paper back well warm pamphlets frequently not in the Nepali language. Some states and small chalkboard in the high schools classroom some bond textbooks may be found. But rarely in Nepal libraries are seldom found in the schools encyclopedias reference books, fictions, attractive and illustrated textbooks, modern map and globes. And pictures collections simply do not exists.

The commission point out the shortage if instructional materials as major problems in developing national education. The commission recommended for the appointment of an instructional aids commission under the ministry of education.

The second phase of the history of instructional materials started with the establishment of "Janak Educational Materials Center" in 1961-1962. It was government institution for the production and distribution of teaching materials for the school level.

The third phase of the history of instructional materials started with the introduction of "National Education System Plan" in 1971. It realized the importance of instructional materials in teaching learning process. The HMG has established "Janak Education Centre" responsible to produce and distribute teaching aids.

According to ministry of Education and sport in "Nepal in Educational figures 2006" the number of full trained teachers was only 30,967 in 2004 at lower secondary level. The standard ratio set by ministry of Education and sports in 1:30 for lower secondary level.

Moreover, the National Education System Plan (1971-76) has emphasized in making mathematics life oriented and practical by introducing revised content and textbooks. It seems that most of the schools of Nepal are still using the traditional methods characterized by mastery of subject matter through drill, repetition and memorization. The subject matter is presented with limited teaching aids. A study indicates that only 7 percent of the total school budget was allocated for education materials which include both stationary and instructional materials. In this situation, it is evident that the use of instructional materials in the school is extremely limited.

Attitude towards instructional materials is a fundamental concern on teaching and learning of mathematics. The attitude of teachers and students towards instructional materials play vital role in its proper use. It largely effects either positively or negatively what students learn. Thus, the researcher aims to investigate the attitudes of teachers and students of lower secondary level instructional materials in teaching mathematics.

Statement of the Problems

Education plays vital role for leading a person, society and nation to the way of progression. Education is the preparation for life because it helps to solve the various problems of life. To manage such education on the out land, curriculum should be organized as per the need of contemporary society and on the other hand, the knowledge of curriculum should be transferred to target group with effective teaching by using accessible instructional materials.

Most of the school of Nepal is still using the traditional method characterized by mastery of subject matter through drill, repetition and memorization. This method is subject-centered, teacher dominated and in this method the subject matter is presented with limited teaching aids.

According to Baidya (1974) only seven percent of total school budget is allocated for educational materials which include both stationary and instructional aids.

In this context, knowledge and awareness of the use of audio-visual aids is essential for every concerned person and agency. Present study emphasizes on the attitudes of lower secondary school students and teachers on instructional materials in teaching learning mathematics of Rautahat district. The problem intends to answer the following questions:

-) Is there positive attitude of teacher towards instructional materials in lower secondary level?
-) Is there positive attitude of students towards instructional materials in lower secondary level?
-) Is there difference in attitude between student and teacher towards instructional materials?

Objectives of the Study

This study was intended to accomplish the following objectives.

-) To find the attitude of lower secondary level students towards instructional material in learning mathematics.
-) To find the attitude of lower secondary level teacher towards instructional material in teaching mathematics.
-) To compare the attitude of students and teachers towards instructional material in teaching mathematics.

Significances of the Study

Mathematics is considered as essential components of school and higher education. The need of mathematics apparent for everyday life as well as for higher studies in the field of science and technology.

Different works on mathematics education have different significance. This work simultaneously help to visualize the ideas of mathematical concept and concretize the physical world.

Curriculum should be related to the capability, interests and attitudes of the students. This study would intend to determine the attitudes of lower secondary level

mathematics teacher and student towards instructional materials and to find the relationship between student and teacher attitudes towards instructional materials. This would direct teachers for their effective teaching by using instructional materials and students for meaningful learning. This also helps to improve the mathematics curriculum planners, educationists of lower secondary level. The main significance of this study were as below;

-) This study helps the teacher to their thinking towards instructional materials and administrator to manage the materials to use for teaching.
-) This study helps the governmental agencies to make policies and optimum use f materials in teaching.
-) This study helps in providing more information and to understand its importance.

Statement of Hypothesis

A. Research Hypothesis

The hypotheses for the study were as follow:

-) There is a positive attitude of lower secondary school students towards instructional material in teaching learning mathematics.
-) There is a positive attitude of lower secondary school teachers towards instructional material in teaching learning mathematics.
-) There is a significance difference between students and teachers attitudes towards instructional materials.

B. Statistical Hypothesis

-) H_1 : There is a positive attitude of student towards instructional materials
-) H_0 : There is no positive attitude of students towards instructional materials.
-) H_1 : There is a positive attitude of teachers towards instructional materials.
-) H_0 : There is no positive attitude of teachers towards instructional material.
-) $H_1: \hat{\mu}_1 = \hat{\mu}_2$ (null Hypothesis)
-) $H_0: \hat{\mu}_1 \neq \hat{\mu}_2$ (alternative Hypothesis)

Where $\hat{\mu}_1$ and $\hat{\mu}_2$ are parametric means of the attitude of student and teacher respectively.

Delimitations of the Study

This study had some limitations which are as follows:

-) This study was limited to public schools of Rautahat district.
-) Only the students and math teachers of grade VI to VIII included in this study.
-) Extraneous variables such as environments, background of students, age etc. of the sampled students effects the attitude which were not examined.

Definition of Related Terms

Attitude scale: An inquiry form or scale used to obtain the measure of an attitude or belief of an individual or individuals towards some phenomenon (Best, 1959).

Instructional materials: Instructional materials are the tools used by teacher in the teaching learning situation to motivate students as well as to concretize mathematical concept.

Attitude: A set of pre-dispositions on instructional materials possessed by the respondents (students/teachers) interacted with one's perception of instructional materials affecting the individual's responses towards it.

Chapter II

REVIEW OF THE RELATED LITERATURE

This chapter deals with the review of related literature for the study. It will be clear for this study and helps to make the concept clear for the study.

Empirical literature

A brief summary of the previous researches and writing of recognized experts provides evidence that the researcher is familiar with what is already known and untested. Since effective research must be based upon past knowledge, this step helps to eliminate the duplication of what has been done. That provides useful suggestion for significant investigation. Several types of related literature were reviewed in this study which helps to make the concept clear for the study and also direct to analyze and interpret the data with this assumption some related literature were reviewed as follows:

Amatya (1978) did a research on "A Study of the Effectiveness of Teaching Mathematics with and without the Use of Instructional Materials" with the aims to find out whether instructional materials are helpful to develop the mathematical concepts and to measure the difference in concept development among students in the experimental and control group of grade III. Sixty students from Lalitpur Nagrpanchayat were selected by using systematic sampling and the experiment was conducted for four weeks. The t-test was applied to conclude that the mean difference was significant at 0.05 levels. The conclusion was that the performance of the students taught with the use of instructional materials was significantly better when compared with the performance of the student taught without the use of instructional materials.

Yadav (1985) did a research entitled "A study on the use of visual aids in the instructional mathematics in the primary schools of Dhanusha District" with the aims to get information about the use of teaching aids, needed for mathematics teaching in the primary schools of Dhanusha District. questionnaire was used as a tool of research. Out of one hundred eighty schools sixty primary schools were chosen at random. One hundred three teachers were selected from the selected schools for the sample. He concluded that the trained teachers used teaching aids more frequently than the untrained ones and more than 80 percent students locked the essential teaching aids such as geo-board geometric and cubic square models, balance meter scale, liter scale etc. He further concluded that in some of schools even the available materials are not used since teachers were not given training along the line. And no permanent educational agency exists in the district to provide the teaching aids regularly.

Baral (2000), did a research entitled "Study of the Problems faced by Mathematics Teachers in Implementation of Compulsory Mathematics Curriculum in Grade IX" with the aims to identify the actual problems of mathematics teachers teaching compulsory mathematics in grade IX and to compare the problems of the mathematics teachers teaching at government and boarding schools. He took forty-four teachers from sixty five secondary schools of Chitwan district. His development questionnaires of sixty six items and analyzed the data by using t-text. He concluded that the objective of curriculum seem to be highly idealistic; hence they cannot be fulfilled in present context of Mathematics teaching learning situations. He did find the test book for this level as inadequate. He came up to the conclusion that only paper pencil test was in use. He also wrote that he had difficulty to evaluate student's achievement fairly.

CERID (1984), conducted a research on "Determinants of Educational Participation in Rural Nepal" with the aim to identify factors that determine the education participation of rural children and the regular attendance of school going children. A multi stage stratified sampling procedure was followed in selection of districts and school-age children to ensure a representative sample of rural school age population of the entire the kingdom. The multiple regression tools were applied to identify the factors. The analytical design included four major regressions pertaining to the effects of three major blocks of variables (i.e. child, household and school) and of a composite of all these variables. The conclusion was on the school related variables as (i). The proportion of qualified and trained teachers in a school has been found to have a strong positive effect on educational participation (2) the availability of instructional material in schools had a significant positive effect in educational participation (3) forty-six percent of the schools served under the study did not have adequate space for the classrooms.

Shrestha (1991) did a research on "A Study of Sex Difference in Achievement in Mathematics of Ninth Grade Students in Gorkha District" with the aim to investigate whether sex influences achievement in mathematics as well as to find out some possible reasons that might be responsible for the difference in the achievement. He prepared two sets tools achievement test and questionnaire and administered them to two hundred eighteen students of five schools, he applied t-test to conclude that boys devote more time than girls at home study hours for mathematics together with all subjects and boys favoured mathematics more and felt less difficult than girls.

According to Baroody (1987), all teacher hold beliefs about mathematics, mathematics teaching and mathematics learning that influence their teaching strategies. Brown and Borko (1992) suggest that teacher who are initially have non-

traditional beliefs about mathematics teaching, tend to employ traditional teaching when faced with constraints in their actual teaching. Over the last 15 years, there has been much research that has been taken many directions involving the study of the relationship between mathematics teachers' attitudes and practice (Raymond,1997). Thompson(1992) suggests that research should more closely examine the relationship between conceptions of mathematics and instructional practice.

Pandit (1980), in his study entitled "Attitudes of Secondary School Students and their Parents Towards Mathematics and Other Subjects of Instruction" and concluded that the students demonstrated positive attitudes towards mathematics as a subject of study at school level. Furthermore, the mean measure of boys attitudes towards mathematics as a school subject was greater than that of the girls.

Bhandari (2005) did a study "A Study on Use of Instructional Material in Teaching Mathematics of Secondary School of Lamjung District". With aim to find out use of instructional material in teaching mathematics at secondary level. Forty-five schools of Lamjung district were randomly selected. Forty five teachers teaching secondary level mathematics has taken opinionative. That report concluded that most of the teacher had not use instructional materials in their teaching.

Ernest(1989), refers to the teachers attitude to the teaching of mathematics, these include liking, enjoyment and enthusiasm for the teaching of mathematics and confidence in the teachers own mathematics teaching ability. Influencing teachers' beliefs, therefore, are essential to changing teachers' classroom practices.

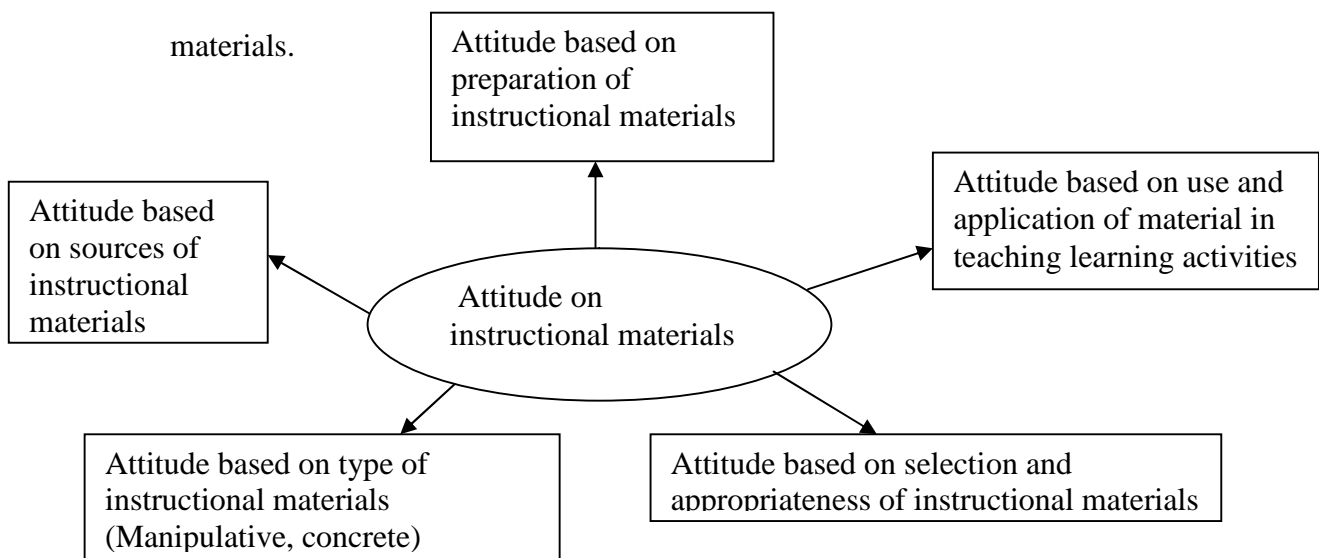
The teachers, who hold more learner-centered, socio-constructivist orientated beliefs, would translate into their classroom practices greater enthusiasm toward

problem-solving activities, actively engaging their learners constructing mathematical concepts, developing mathematical thinkers and problem solvers.

Conceptual Framework

In the above section the researcher reviewed different empirical study which are relevant for the study with the help of above literature researcher prepared the fulfill the objective of the study.

Conceptual framework to researcher made different theme to measure the attitude of teachers and students about instructional materials. The following diagram shows the relationship of different elements to make the attitude on instructional materials.



In my opinion, the use of instructional materials is so important for teaching. When we don't use instructional materials the teacher is not interested and the concept of this chapter will not be clear to the students and also teachers. Then we use the instructional materials to clarity of the concept for the mathematics chapter to teachers and students concepts. Hence the attitude of teachers and student towards instructional material is most important for teaching mathematics at lower secondary level

Chapter III

METHODS AND PROCEDURES

This study presents the procedure of the study, to be carried out to achieve the objectives of the study. The chapter describes the design of the study, population, instruments of tools, sampling, data collection and analysis procedure of the purposed study.

Design of the Study

The research adopted the survey method in this study. To explain the term 'survey method', it can be said that it is a form of planned collection of data for the purpose of analyzing the relationship between students and teachers attitude towards instructional materials. The survey method enabled the researcher to find out the correct facts and practices regarding the attitudes of students and teachers towards instructional materials at lower secondary level from the chi-square test.

Population of the Study

This study was conducted to investigate the attitudes of lower secondary level students and teachers towards instructional materials. Thus the populations of the study consisted of two groups.

-) All the lower secondary level students of Rautahat district studying in the academic year 2068-2069 B.S.

-) All the lower secondary level mathematics teachers of Rautahat district.

Sample of the Study

Most educational phenomena consists of a large number of units, and researcher cannot always interviews, test, administer or observe each unit under limitations and controlled condition. Thus, only representative sample of schools selected by quota sampling from Rautahat district. These quota were of urban areas schools and rural areas schools. The students were selected by stratified random sampling method.

The twenty schools out of 136 schools were chosen from urban and rural areas for students' sample. [See Appendix B (i)]. About five percent of the whole lower secondary level students of Rauthahat district were 720 which was the students' sample for the study.

The procedure of selection of the students' sample from each school adapted has been given in the following table.

Table No. 3. 1

Students Sample from One School

Grade	Boys	Girls	Total
6	6	6	12
7	6	6	12
8	6	6	12
Total	18	18	36

Hence 720 students were selected including 36 from each 20 schools randomly. For the sample of the teacher, 50 teachers were selected. Thirty mathematics teachers were from the 20 lower secondary schools considered for the selection of students

sample and other 20 mathematics teachers were selected from the other 14 public lower secondary schools. [Appendix B (II)]

Instruments for Data Collection

The opinionnaires is major instrument for data collection in descriptive survey and is used to secure information from varied and widely sectored respondents in general. In this study, two sets of opinionnaires were used to determine the attitude of teacher and students towards instructional materials in teaching learning mathematics. The opininnare scale consisting of 24 statements for students and 26 statements for teachers which was developed by Sedhain, (2008). The opininnare scale were developed on the basis of Attitude based on preparation of instructional materials, Attitude based on use and application of material in teaching learning activities, Attitude based on sources of instructional materials, Attitude based on selection and appropriateness of instructional materials in teaching learning activities and attitude based on type of instructional materials (Manipulative, concrete). It was finalized through pilot study administered on 36 students of grade 6 to 8 equally on Shree Lower secondary school, Dhanadi Dharpur.

Procedures of the Data Collection

The researcher visited the sampled schools to collect the data by administering the opinionnaires for maths teaches and students. The researcher had informed the students about the way to respond the statements contain in the opinionnare. The set of opinionnaire was distributed to mathematics teaches of the visited schools to collect the data. In the case of teacher researcher distributed the opinonnaires directly. But the students of the lower secondary level are small so, first of all the researcher

reached on the expert and visited all the sampled students and distributed the opinionnaire sake and collected the response of students. The data were tabulated by using the following table.

Scoring Procedure

Table 3.2: Likert-scale point used in technique of scoring

Scale of Ratings	Ratings	
	Positive statement	Negative statement
Strongly agree	5	1
Agree	4	2
Neutral	3	3
Disagree	2	4
Strongly disagree	1	5

Data Analysis Procedure

The researcher was using statistical device χ^2 - test was applied to all statement of opinionnaire scale at $\alpha = 0.05$ level of significance. The chi- square score was also being calculated for each statement and analysis was done according to obtained score and response of each students and teachers in the corresponding statement. Descriptive analysis was also be done for qualitative data obtained from the interview.

Statistical techniques Used

The following statistical techniques were applied to verify the hypothesis of the study:

-) The statistical device χ^2 -test was applied to find the attitude of students and teachers on instructional material in teaching learning mathematics.
-) t-test was used to investigate significance difference between mean score attitude of all students and teachers towards instructional materials.

Chapter IV

ANALYSIS AND INTERPRETATION OF DATA

The data collected from the informants were analyzed and interpreted to find out the attitude of the students and teachers towards instructional material in teaching learning mathematics. It has already been mentioned that there were two sets of opinionnaires with five alternatives extremely agree, agree, neutral, disagree and extremely disagree with the ratings 5, 4, 3, 2 and 1 respectively in each statement. Total scores in each statement were calculated and the mean, standard deviation, χ^2 -value and t-test were calculated for the interpretation of the data.

This chapter deals with analysis and interpretation of data. The analysis of the study was carried out under the following major heading:

-) Lower secondary level students' attitude towards instructional materials in teaching learning mathematics.
-) Mathematics teachers' attitude towards instructional materials.
-) Comparison of lower secondary level students' and teachers' attitude towards instructional materials.

Lower Secondary Level Student's Attitude Towards Instructional Materials

There were altogether 720 students from grade 6-8 considered for the study. The attitude of student were measured by using opinionnaire scale. The opinionnaire scale cauterized into five categories. The χ^2 -values of each statement with their responses is presented in the following subheading.

Attitude based on preparation of instructional material

To identify the attitude of students on the preparation of instructional four statements were included in opinionnaire. The responses of the students and corresponding χ^2 -values as each statement is presented in the following table.

Table No. 4.1.1 Opinion of students on preparation of instructional materials

S.No.	Statement	χ^2 -values	Conclusion
1.	Math lab is needed to use instructional material in teaching and learning mathematics	636.96	S
2.	There are some difficulties to use instructional material in teaching and learning mathematics	584.9	S
3.	Leisure time is used to manipulate instructional material	0.101	NS
4.	Mathematical lab is useful for effective teaching and learning mathematics	408.49	S

The result in the table4.1.1 shows that χ^2 -value of three statements out of four statements are significant at 0.05 level. The first significant statement “ the math lab is needed to use instructional materials in teaching mathematics” with χ^2 -value 636.96 at 0.05 level indicate that 81.94% of the sampled students were in favour of math lab for the proper use of instructional materials in mathematics class further, they suggested that the basic knowledge of instructional materials and continuous lab is essential about to use instructional materials in mathematics class properly.

The statement "leisure time is used to manipulate instructional material" with χ^2 -value 0.101 at 0.05 level is least insignificant statement. This showed that 39.86 percent of sampled students had opposite opinion to this statement.

Attitude based on use and application of material in teaching learning activities

To identify the attitude of student on the use and application of instructional five statements were included in opinionnaire. The responses of students and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.1.2 Opinion of student on use and application of materials teaching learning activities

S.No.	Statements	χ^2 -values	Conclusion
1.	Instructional materials are essential in teaching and learning mathematics	699.09	S
2.	The understanding of mathematics is affected by the lack of appropriate instructional materials	505.9	S
3.	I want to know much about instructional material in daily life	379.96	S
4.	There are many applications of instructional material in daily life	607.89	S
5.	Instructional materials are needed for proving geometric theorems.	0.303	NS

The results in the table 4.1.2 shoe that χ^2 -values of 4 statements out of 5 statements are significant. Since the χ^2 -values of 699.09 at 0.05 level of the statement “ Instructional material are essential in teaching mathematics” it showed that 85.56 % Of the student were in favour of necessity of knowledge about instructional material. It also indicated that student were aware of knowledge about instructional material. And the statement "instructional materials are needed for proving geometric theorems" with χ^2 -value 0.303 is second insignificant statement. It is concluded that geometric theorems could be proved without the help of materials.

Attitude based on selection and appropriateness of instructional materials in teaching learning activities

To identify the attitude of student on the selection and appropriateness of instructional materials in teaching learning activities of instructional five statements were included in opinionnaire. The responses of students and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.1.3 Opinion of student on selection and appropriateness of instructional materials in teaching learning activities

S.N.	Statements	χ^2 -values	Conclusion
1.	Instructional materials is used in discussion with one another	4.49	NS
2.	Students attention should be towards the teacher and instructional material	497.55	S
3.	Instructional material is a useful tool of mathematics teacher	251.38	S
4.	Instructional material should be developed by teachers and administrative personnel.	33.49	S
5.	I want to manipulate instructional materials in mathematics class	401.36	S

The result in the table 4.1.3 showed that χ^2 -values of 4 statements out of 5 statements are significant. The first significant statement “student attention should be towards the teacher and instructional material”. The statement is "Instructional materials is used discussion with on another" is last insignificant statement with χ^2 -value 4.49 which showed that 36.80 percent of sampled students had opposite opinion to this statement.

Attitude based on type of instructional materials (Manipulative, concrete)

To identify the attitude of student on the type of instructional materials in teaching learning activities of instructional four statements were included in opinionnaire. The responses of students and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.1.4 Opinion of student on type of instructional materials in teaching learning activities

S.N.	Statements	χ^2 -values	Conclusion
1.	The students and teachers both are curious and active while using instructional materials in teaching mathematics	1144.14	S
2.	The reference materials are needed apart from the textbooks and teaching materials	233.12	S
3.	Concrete instructional materials should be used in teaching	564.84	S
4.	Students themselves manipulate the materials	694.26	S

The result in the 4.1.4 showed that χ^2 -values of all statement are significant at 0.05 level. Since the χ^2 -value of 1144.14 at 0.05 level of the statement. "The students and teachers both are curious and active while using instructional material in teaching mathematics" is highly significant. It revealed that great majority of the student are curious and interested towards instructional materials in mathematics classroom. Least significant statement "the reference materials are needed apart from the textbooks and teaching materials" with χ^2 -value 233.12 indicated that only 56.25 percent sampled students were agree to this statement. It is concluded that student are positive towards the necessity of reference materials except textbooks and other materials.

Attitude based on sources of instructional materials

To identify the attitude of student on the sources of instructional materials in teaching learning activities of instructional five statements were included in opinionnaire. The responses of students and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.1.5 Opinion of student on sources of instructional materials in teaching learning activities

S.N.	Statements	χ^2 -values	Conclusion
1.	Instructional materials in teaching mathematics are sufficient in school	17.24	S
2.	All instructional materials are easily handle by students and teachers	175.93	S
3.	Instructional materials is used only by the talented students	583.12	S
4.	Instructional materials helps to visualize the basic concept of mathematics	397.98	S
5.	All mathematics instructional materials should be cheap and easily available	956.17	S
6.	Priority should be given to instructional material in teaching mathematics	539.46	S

The result in the table 4.1.5 showed that χ^2 -value of all statement are significant at 0.05 level. The first significant all mathematics instructional material should be cheap and easily available with χ^2 -value 956.17 is second highly significant statement. it indicates that 95.83 percent of the sampled students were in favour of

all mathematics instructional material are not expensive. Further, they suggested that the cheap and easily available in local area and developed by himself. The least significant statement "Instructional material in teaching mathematics are sufficient in school" with χ^2 -value 17.24 at 0.05 level revealed that only 34.45 percent sampled students were agreed about to management of instructional material in classroom or school. The second and third least significant statement were "Instructional material should be developed by teachers and administrative personnel" and "all instructional materials are easily handle by student and teachers" it is concluded that student are positive towards the instructional material also developed by teachers and administrative person not only developed by teachers and students. And it is also concluded that some student were able to manipulate the materials with the help of teacher.

Mathematics teacher's Attitude Towards Instructional Material in Teaching Mathematics

There were altogether 50 mathematics teacher from 34 schools of Rautahat district for the study. table 3.1 represents the χ^2 -values at 0.05 level contained in the opinionnaire for teachers to survey teacher's attitude towards instructional materials. The number of teachers on opinionnair administered to them is given in Appendix D.

Attitude based on preparation of instructional material

To identify the attitude of teachers on the preparation of instructional five statements were included in opinionnaire. The responses of the teschers and corresponding χ^2 -values as each statement is presented in the following table.

Table No. 4.2.1 Opinion of teachers on preparation of instructional materials

S.No.	Statement	χ^2 -value	Conclusion
1.	Training is needed to use instructional material properly in mathematics class	44.6	S
2.	Instructional materials are not sufficient in school.	19.4	S
3.	Teacher can properly use the instructional material	24.8	S
4.	Mathematical lab is useful for effective mathematics teaching and learning	70.2	S
5.	Understanding of mathematics is affected by proper presentation of instructional material	63.9	S

The statement No. 3 "Mathematics lab is useful for effective mathematics teaching and learning is highly significant at 0.5 level with χ^2 -value of 70.2. It showed that great majority of the sample mathematics teachers have expressed their opinion about usefulness of mathematics lab. It is also suggested that government and school administration must be responsible for the establishment of mathematics lab. The statement No. 2 is least significant with χ^2 -values of 19.4 it revealed the instructional material were the some the sample teacher were aware to the effectiveness of instructional material in scoring mathematics.

Attitude based on use and application of material in teaching learning activities

To identify the attitude of teachers on the use and application of instructional five statements were included in opinionnaire. The responses of teachers and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.2.2 Opinion of teachers on use and application of materials teaching learning activities

S.No.	Statement	χ^2 -value	Conclusion
1.	Students feel easy while teaching mathematics by using instructional material	39	S
2.	Instructional material helps to encourage students and teachers both	52.8	S
3.	Instructional material is a useful to teach mathematics	26.6	S
4.	The teacher encourage the student to participate in the manipulating instructional material in mathematics class	5.69	NS
5.	An appropriate type of teaching instrument should be used for teaching mathematical topic	22.2	S

The result in the table 4.2.2 showed that χ^2 -values of 4 statement out of 5 statement are significant at 0.05 level the second significant statement with χ^2 -value 52.8 at 0.05 level is "instructional material helps to encourage students and teachers both" It depicts that most of the sampled mathematics teachers were positive to this statement. Only two percent teachers have opposite opinion to this statement. It showed from teachers opinion that instructional materials were source of encourage and motivation of students. The statement no. 4 "The teacher encourage the students to participate in the manipulating instructional material in mathematics class." with χ^2 -value 5.6 at 0.05 level is first insignificant statement. It reveals that only 30 percent

sampled teachers were in the favour of this statement. It shows that teachers do not encourage students to manipulated materials due to its lack and lack of knowledge.

Attitude based on selection and appropriateness of instructional materials in teaching learning activities

To identify the attitude of teachers on the selection and appropriateness of instructional materials in teaching learning activities of instructional six statements were included in opinionnaire. The responses of teachers and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.2.3 Opinion of teachers on selection and appropriateness of instructional materials in teaching learning activities

S.No.	Statement	χ^2 -values	Conclusion
1	Knowledge of instructional material is essential in teaching mathematics	43	S
2	The greater priority should be given to instructional materials in teaching Mathematics	48.8	S
3	Understanding of mathematics is affected by the lack of appropriate instructional material	34	S
4	I am in favour of instructional materials	31.4	S
5	Demonstration method is appropriate for teaching mathematics	19.8	S
6	The score of students in mathematics is affected by the ask of instructional material	13.7	S

The result in the table 4.2.3 showed that χ^2 -values of all statements are significant at 0.05 level. The second significant statement “The greater priority should

be given to instructional materials in teaching Mathematics” with χ^2 -values 48.8 at 0.05 level. It indicated that 84% of sample teacher were in favour of this statement

The statement 6 "the score of students in mathematics is affected by the lack of instructional material", is first least significant statement with χ^2 -value 13.7 it revealed the instructional material were the some of the sampled teachers were aware to the effectiveness of instructional material in scoring of mathematics.

Attitude based on type of instructional materials (Manipulative, concrete)

To identify the attitude of teachers on the type of instructional materials in teaching learning activities of instructional five statements were included in opinionnaire. The responses of teachers and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.2.4 Opinion of teachers on type of instructional materials in teaching learning activities

S.No.	Statement	χ^2 -value	Conclusion
1.	Instructional materials helps to clarify the basic concept of mathematical principles	54.2	S
2.	Instructional material is related to mathematical knowledge and concept	32.3	S
3.	Mathematics textbook should be concrete	32.4	S
4.	All mathematical materials should be concrete	23.7	S
5.	Instructional materials is most useful while teaching sets, trigonometry and geometry	37.2	S

The result in the table 4.2.4 showed that χ^2 -values of all statement are significant at 0.05 level. At 0.05 level, the χ^2 -value of 54.2 of the statement

"Instructional materials helps to clarify the basic concept of mathematical principles" is significant. It revealed that teachers were positive to the importance of instructional material for the understanding of mathematical principles. The statement no. 4 "All mathematical materials should be concrete" with χ^2 -value 23.7 is fifth least significant statement at 0.05 level. To teach mathematical concept in effectiveness it is better to use concrete solid teaching aids because it provides long lasting knowledge to the learner.

Attitude based on sources of instructional materials

To identify the attitude of teachers sources of instructional materials in teaching learning activities of instructional five statements were included in opinionnaire. The responses of teachers and corresponding χ^2 -value as each statement is presented in the following table.

Table No. 4.2.5 Opinion of teachers on sources of instructional materials in teaching learning activities

S.No.	Statement	χ^2 -value	Conclusion
1.	Teachers themselves can develop low cost materials in classroom	26.4	S
2.	Instructional material is handled easily only by talented teacher	26.6	S
3.	Instructional material is the favorite subject of teachers	46.6	S
4.	Instructional material should be prepared by teachers	6.6	NS
5.	Instructional materials should be cheap and easily available	61.4	S

The result in table 4.2.5 showed that χ^2 -value of 4 statements out of 5 statements are significant. The statement "Instructional materials should be cheap and easily available" is first highly significant statement with χ^2 -value of 61.4 at 0.05 level. It indicated that 94 percent of sampled teachers were in favor of this statement. Also, they suggested the materials should be concrete and simple. The statement no.64 "Instructional material should be prepared by teachers" with χ^2 -value 6.6 at 0.05 level is second and last insignificant statement. It reveals that only 26 percent sampled teachers were in the favour of this statement and most of the teachers were against to this statement.

Comparison of Students' and teacher' Attitude Towards Instructional Materials in Teaching Mathematics

The first objective of the study was: to compare the students' and teacher's attitude towards instructional material in teaching mathematics. The following hypothesis was formulated in order to achieve this objective.

There is no significance difference between students and teachers attitudes towards instructional material to verify hypothesis, the attitude scores of the students' and teachers' is given in Appendix D and F.

The mean attitude score of students are compared with those of teachers by applying t-test. The results of this analysis are presented in the table no. 4.3

Table 4.3

Comparison of Students' and Teachers' Attitude Towards Instructional Material

Group Compared	Sample size (n)	Mean (\bar{X})	Standard Deviation (S)	t-value	Conclusion
Students	720	3.703	0.59	0.7926	Non-Significant
Teachers	50	3.768	0.56		

The result from the table 4.3 shows that the calculated t-value is significant at 0.05 level. Implies that there is no significant difference between students' and teachers' attitude towards instructional material hence the null hypothesis 3 is accepted. Thus, it is interpreted that the students and teachers have same attitude towards instructional materials.

Chapter V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary of the findings of the study. It deals with conclusions drawn from the findings and recommendations for further study.

Summary with Findings

The researcher collected the data about the attitude of lower secondary level students and teachers towards instructional material. This study was conducted.

- * To find out the attitude of lower secondary level students towards instructional material.
- * To determine the teacher's attitude towards instructional material.
- * To compare the students' and teachers' attitude towards instructional material.

The study conducted was of survey type. The corresponding null-hypothesis were formulated and subjected to the empirical verification.

The population for the study consisted of all the lower secondary level students and mathematics teachers of Rautahat district the academic year 2068-2069. The researcher divided sampled schools into two regions (i.e. rural and urban). The form of students were boys and girls. The students sample for the study were selected from 20 schools of Rautahat district. There were 720 students 12/12 student each class 6 to 8. Total students were 36 from one school. i.e. $36 \times 20 = 720$ from the sampled school. Fifty teachers were chosen from 34 schools of the Rautahat district.

Two sets of opinionnaire were developed as the tools for collecting data for the study. These attitude scales were based on five groups which included statements related to the classroom activities, textbook, and instructional materials. Both sets of

opinionnaires consisted into 5 categories of statements classified into: Attitude based on preparation of instructional materials, Attitude based on use and application of material in teaching learning activities, Attitude based on sources of instructional materials, Attitude based on selection and appropriateness of instructional materials in teaching learning activities and attitude based on type of instructional materials (Manipulative, concrete).

The opinionnaires thus developed were administered on the sample of 720 students and 50 teachers according to the instruction given for each part. The opinionnaires took about 45 minutes to respond for students and teachers and were collected on the spot.

Scores of 5,4,3,2 and 1 were allotted to the scale in favor of strongly agree, agree, netural, disagree and strongly disagree respectively for the opinion of respondents on each statements.

The following statistical techniques were applied to verify the hypothesis of the study.

-) χ^2 -test was used to determine the attitude of students and teachers towards instructional materials.
-) t-test was used to test the significance difference between mean attitude scores of students and teachers towards instructional material.
-) All tests were tested at 0.05 level of significances.

Major findings of the Study

Statistical analysis of the collected data yielded the following results as findings of the study.

-) The students study in lower secondary level has a positive attitude towards instructional material.
-) The teachers has also positive attitude towards instructional material.
-) The mean attitude scores of teacher towards instructional material was significantly greater than that of their students.

Conclusions

On the basis of the findings, some very significant conclusions can be drawn for the implementation of instructional material in mathematics class. The conclusions are derived in this section as follows:

There was attitude of lower secondary level students towards instructional material. Since the lower secondary mathematics teacher had attitude towards instructional material, there should be implemented various instructional material in mathematics class and the lower secondary level teachers had better attitude than those of students attitude towards instructional material.

Recommendations for Further Study

The conclusion of the study may no be generalized to all teachers and students due to the limitations contained in the study. On the basis of the study the following recommendations can be suggested.

-) The similar study should be done broadly (regional-wise as well national-wise) in order to establish the findings of the study.
-) It should also be studied in primary and secondary level for the same aspect.

-) This study has limited to only the teachers' and students opinion towards instructional material. It did not tell anything about opinion of school administration and government towards the use of instructional material. Thus, further research is needed in this direction.
-) It should also be further studied: why the students had significantly better attitude than that of teacher's attitude towards instructional material.

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Appendix A (I)

Opinionative for Students

Dear Students,

I am a student like you. I am going to carry out of a small study on the topic "A Study of Teacher's and Student's Attitude Towards Instructional Materials at Lower Secondary Level in Teaching Mathematics".

This opinionnaire is addressed to you. There are 24 statements concerning with attitude. There is no right or wrong answer. The right answer is your own opinion. Please, read the statements carefully and give you own opinion by putting tick () on any one of the given five rating of each statements.

Name: _____ Sex: _____
School: _____ Date: _____
Grade: _____ Address: _____
Roll No.: _____

Attitude based on preparation of instructional materials

S.N	Statement	Ext. Agree	Agree	Neutral	Disagree	Ext. Disagree
1.	Math lab is needed to use instructional material in teaching and learning mathematics					
2.	There are some difficulties to use instructional material in teaching and learning					

	mathematics					
3.	Leisure time is used to manipulate instructional material					
4.	Mathematical lab is useful for effective teaching and learning mathematics					

Attitude based on use and application of materials teaching learning activities

5.	Students feel easy while teaching mathematics by using instructional material					
6.	Instructional material helps to encourage students and teachers both					
7.	Instructional material is a useful to teach mathematics					
8.	The teacher encourage the student to participate in the manipulating instructional material in mathematics class					
9.	An appropriate type of teaching instrument should be used for teaching mathematical topic					

Attitude based on selection and appropriateness of instructional materials in teaching learning activities

10.	Instructional materials is used in discussion with one another					
11.	Students attention should be towards the teacher and instructional material					
12.	Instructional material is a useful tool of mathematics teacher					
13.	Instructional material should be developed by teachers and administrative personnel.					
14.	I want to manipulate instructional materials in mathematics class					

Attitude based on type of instructional materials in teaching learning activities

15.	The students and teachers both are curious and active while using instructional materials in teaching mathematics					
16.	The reference materials are needed apart from the textbooks and teaching materials					
17.	Concrete instructional materials should be used in teaching					
18.	Students themselves manipulate the materials					

Attitude based on sources of instructional materials

19.	Instructional materials in teaching mathematics are sufficient in school					
20.	All instructional materials are easily handle by students and teachers					
21.	Instructional materials is used only by the talented students					

22.	Instructional materials helps to visualize the basic concept of mathematics					
23.	All mathematics instructional materials should be cheap and easily available					
24	Priority should be given to instructional material in teaching mathematics					

Note:

IM=Instructional Material

TM= Teaching materials

Suggestions: 1.

2.

3.

Please Make sure that all items have been attempted. thank you for answering all items.

Appendix A (II)

Opinionnaire for Teachers

Dear Sir/Madam

As a part of the requirements for the degree in Education. I am going to conduct a study on the topic "A Study of Teacher's and Student's Attitude Towards Instructional Materials at Lower Secondary Level in Teaching Mathematics".

This questionnaire is addressed to you in which 26 statements have been adopted. There is no right or wrong answer. The right answer is your own opinion of feeling sought for the sake of study. The validity and reliability of the study will depend on your kind co-operation to have you un-biased responses. Please, read the statements carefully and give your opinion by putting tick mark () on anyone of the five ratings for each statement.

Name:

School:

Date:

Address:

Attitude based on preparation of instructional material

S.N	Statement	Ext. Agree	Agree	Neutral	Disagree	Ext. Disagree
1.	Training is needed to use instructional material properly in mathematics class					

2.	Instructional materials are not sufficient in school.					
3.	Teacher can properly use the instructional material					
4.	Mathematical lab is useful for effective mathematics teaching and learning					
5.	Understanding of mathematics is affected by proper presentation of instructional material					

Attitude based on use and application of material in teaching learning activities

6.	Instructional materials are not sufficient in school.					
7.	Teacher can properly use the instructional material					
8.	Teachers themselves can develop low cost materials in classroom					
9.	Understanding of mathematics is affected by the lack of appropriate instructional material					
10.	Understanding of mathematics is affected by proper presentation of instructional material					

Attitude based on selection and appropriateness of instructional materials in teaching learning activities

11.	Knowledge of instructional material is essential in teaching mathematics					
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12.	Understanding of mathematics is affected by the lack of appropriate instructional material					
13.	I am in favour of instructional materials					
14.	Demonstration method is appropriate for teaching mathematics					
15.	The score of students in mathematics is affected by the ask of instructional material					
16.	Instructional material should be prepared by teachers					

Attitude based on type of instructional materials (Manipulative, concrete)

17.	Instructional materials helps to clarify the basic concept of mathematical principles					
18.	Instructional material is related to mathematical knowledge and concept					
19.	Mathematics textbook should be concrete					
20.	All mathematical materials should be concrete					
21.	Instructional materials is most useful while teaching sets, trigonometry and geometry					

Attitude based on sources of instructional materials

22.	Teachers themselves can develop low cost materials in classroom					
23.	Instructional material is handled easily only by talented teacher					
24.	Instructional material is the favorite subject of teachers					
25.	Instructional material should be prepared by teachers					
26.	Instructional materials should be cheap and easily available					

Note:

IM=Instructional Material

TM= Teaching materials

Suggestions: 1.

2.

3.

Thanks!

Appendix- B (I)

List of Schools Selected for Studnets' Sample

Rural

1. Shree Juddha Higher Secondary School , Mahadev Patti Gaur.
2. Shree Sublal Higher Secondary School, Santapur.
3. Shree Yamuna Higher Secondary School, Jhunkhunwa.
- s4. Shree Jana Jyoti Higher Secondary School, Chandranaigahpur.
5. Shree Rupa Higher Secondary School, Dhamaura.
6. Shree Higher Secondary School Garuda Bairiya.
7. Shree Krishna Secondary School, Balchanpur
8. Shree Saraswati Higher Secondary School, Pipra Bhalohiya.
9. Shree Jaya Kisan Higher Secondary School, Dharhari.
10. Shree Janta Higher Secondary School, Katahariya.

Urban

1. Shree Seecondary School Madhopur.
2. Shree Jana Jagriti Secondary School, Basatpur.
3. Shree Jana jagriti Secondary School, Sidhureghari.
4. Shree Nepal Secondary School, Bishrampur.
5. Shree Shankar Gudar Higher Secondary School,, Samanpur.
6. Shree Saraswati Secondary School. Malahitole.
7. Shree Secondary School, Brahmapuri.
8. Shree Lower Secondary School, Pacharukhi.
9. Shree Shankar Lower Secondary School, Sarmujawa.
10. Shree Janapriya Secondary School, Maidha.

Appendix- B (II)

List of Schools Selected for Students and Teacher's Sample

Rural

1. Shree Juddha Higher Secondary School , Mahadev Patti Gaur.
2. Shree Sublal Higher Secondary School, Santapur.
3. Shree Yamuna Higher Secondary School, Jhunkhunwa.
4. Shree Jana Jyoti Higher Secondary School, Chandranaigahpur.
5. Shree Rupa Higher Secondary School, Dhamaura.
6. Shree Higher Secondary School Garuda Bairiya.
7. Shree Krishna Secondary School, Balchanpur
8. Shree Saraswati Higher Secondary School, Pipra Bhalohiya.
9. Shree Jaya Kisan Higher Secondary School, Dharhari.
10. Shree Janta Higher Secondary School, Katahariya.
11. Shree Secondary School, Tekuliya
12. Shree Lower Secondary School Chikna Jethrahiya
13. Shree Devi Lower Secondary School, Sakhuawa.
14. Shree Lower Secondary School, Mothiyahi
15. Shree Lower Secondary School, Dumariya Matiwon
16. Shree Lower Secondary School, Laxmipur.
17. Shree Lower Secondary School, Harsaha

Urban

1. Shree Seecndary School Madhopur.
2. Shree Jana Jagriti Secondary School, Basatpur.
3. Shree Jana jagriti Secondary School, Sidhureghari.

4. Shree Nepal Secondary School, Bishrampur.
5. Shree Shankar Gudar Higher Secondary School,, Samanpur.
6. Shree Saraswati Secondary School. Malahitole.
7. Shree Secondary School, Brahmapuri.
8. Shree Lower Secondary School, Pacharukhi.
9. Shree Shankar Lower Secondary School, Sarmujawa.
10. Shree Janapriya Secondary School, Maidha.
11. Shree Secondary School, Pathara.
12. Shree Sarada Secondary School, Pipariya
13. Shree Kankali Secondary School,. Jangalshahiya
14. Shree Janata Secondary School, Sonarniya.
15. Shree Secondary School Simra, Bhawanipur
16. Shree Lower Secondary School, Pipariya Dostiya
17. Shree Saraswati Lower Secondary School, Hardiya Paltuwa.

Appendix C

No. of Students on Opinionnaire Administered to Students

S.N	Statement	Ext. Agree	Agree	Neutral	Disagree	Ext. Disagree
1.	Math lab is needed to use instructional material in teaching and learning mathematics	210 (29.16%)	380 (52.75%)	70 (9.72%)	40 (5.55%)	20 (2.77%)
2.	There are some difficulties to use instructional material in teaching and learning mathematics	271 (37.63%)	328 (45.55%)	75 (10.41%)	33 (4.58%)	13 (1.80%)
3.	Leisure time is used to manipulate instructional material	100 (13.88%)	147 (20.41%)	148 (20.55%)	143 (19.86%)	142 (19.72%)
4.	Mathematical lab is useful for effective teaching and learning mathematics	210 (29.16%)	372 (45.41%)	75 (10.41%)	51 (7.08%)	57 (7.91%)
5.	Instructional materials are essential in teaching and learning mathematics	410 (56.94%)	170 (23.61%)	50 (6.94%)	65 (9.02%)	25 (3.47%)
6.	The understanding of mathematics is affected by the lack of appropriate instructional materials	301 (41.80%)	282 (39.16%)	39 (5.41%)	47 (6.52%)	51 (7.08%)

7.	I want to know much about instructional material in daily life	301 (41.80%)	228 (31.66%)	15 (2.08%)	81 (11.25%)	95 (13.19%)
8.	There are many applications of instructional material in daily life	332 (46.11%)	267 (37.08%)	97 (13.47%)	14 (1.94%)	10 (1.38%)
9.	Instructional materials are needed for proving geometric theorems.	150 (20.83%)	140 (19.44%)	149 (20.69%)	139 (19.30%)	142 (19.72%)
10	Instructional materials is used in discussion with one another	63 (8.75%)	78 (10.83%)	159 (22.08%)	140 (19.44%)	156 (21.66%)
11.	Students attention should be towards the teacher and instructional material	255 (35.41%)	321 (44.58%)	33 (4.58%)	53 (7.36%)	58 (8.05%)
12.	Instructional material is a useful tool of mathematics teacher	264 (36.66%)	222 (30.83%)	120 (30.83%)	57 (7.91%)	57 (7.91%)
13.	Instructional material should be developed by teachers and administrative personnel.	195 (27.08%)	162 (22.5%)	117 (24.58%)	135 (18.75%)	111 (15.41%)
14.	I want to manipulate instructional materials in mathematics class	263 (36.52%)	283 (39.30%)	61 (8.47%)	89 (12.36%)	24 (3.33%)
15.	The students and teachers both are	463	232	13	5	52

	curious and active while using instructional materials in teaching mathematics	(64.30%)	(32.22%)	(1.80%)	(0.69%)	(0.97%)
16.	The reference materials are needed apart from the textbooks and teaching materials	150 (20.83%)	225 (35.41%)	210 (29.16%)	60 (8.33%)	45 (6.25%)
17.	Concrete instructional materials should be used in teaching	294 (40.83%)	306 (42.5%)	45 (6.25%)	30 (4.16%)	45 (6.25%)
18.	Students themselves manipulate the materials	234 (32.5%)	375 (52.08%)	23(3.19)	88 (7.91%)	0 (0%)
19.	Instructional materials in teaching mathematics are sufficient in school	120 (16.66%)	135 (18.75%)	129 (17.91%)	153 (21.25)	183 (25.41%)
20.	All instructional materials are easily handle by students and teachers	180 (25%)	227 (31.52%)	66 (9.16%)	195 (27.08%)	52 (7.22%)
21.	Instructional materials is used only by the talented students	60 (8.33%)	45 (6.25%)	15 (2.08%)	270 (37.5%)	330 (45.83%)
22.	Instructional materials helps to visualize the basic concept of mathematics	251 (34.86%)	289 (40.13%)	25 (3.47%)	99 (13.75%)	51 (7.08%)

23.	All mathematics instructional materials should be cheap and easily available	383 (53.19%)	307 (42.63%)	19 (2.63%)	8 (1.11%)	3 (0.41%)
24.	Priority should be given to instructional material in teaching mathematics	290 (40.27%)	301 (41.80%)	69 (9.58%)	36 (5%)	24 (3.33%)

Appendix D

Attitude Score obtained by Students

S.N.	Statement	Ext. Agree	Agree	Netural	Disagree	Ext. disagree	Total Score
1.	Training is needed to use instructional material properly in mathematics class	2050	680	150	130	25	3035
2.	Instructional materials are not sufficient in school.	1050	1520	210	80	20	2880
3.	Teacher can properly use the instructional material	1450	1204	207	72	24	2957
4.	Mathematical lab is useful for effective mathematics teaching and learning	3215	928	39	10	7	3299
5.	Understanding of mathematics is affected by proper presentation of instructional material	1355	1312	225	66	13	2971
6.	Instructional materials are not sufficient in school.	1505	1128	117	94	51	2895
7.	Teacher can properly use the instructional material	600	540	387	306	183	2016
8.	Teachers themselves can develop low cost	750	1020	630	120	45	2565

	materails in classroom						
9.	Understanding of mathematics is affected by the lack of appropriate instructional material	650	540	477	280	156	2103
10	Understanding of mathematics is affectd by proper presentation of instructional material	1275	1284	99	106	58	2822
11.	Concrete instructional material should be used in teaching mathematics	1470	1224	135	60	45	2934
12.	Students themselves manipulate the materials	1170	1500	69	176	0	2934
13.	Instructional material is a useful tool of maths teacher	1320	888	360	114	57	2739
14.	Leisure time is used to manipulate instructional material	700	588	444	286	142	2160
15.	All instructional material are easily handle by students and teachers	900	908	198	390	52	2448
16.	Instructional material	300	180	45	540	330	1395

	is used only by the talented students						
17.	I want to know much about instructional material in daily life	1505	912	45	162	95	2719
18.	There are many applications instructional material in daily life	1660	1068	291	28	10	3057
19.	Instructional material helps to visualize the basic concepts of mathematics	1255	1156	75	198	51	2735
20.	Mathematical lab is useful for effective teaching mathematics	1050	1308	225	102	57	2742
21.	All mathematics instructional material should be cheap and easily available	1915	1228	57	16	3	3219
22.	Teachers themselves can develop low cost materials in classroom	975	648	351	270	111	2355
23.	Instructional material is handled easily only by talented teacher	750	560	447	278	142	2177
24.	Instructional material is the favorite subject of teachers	1315	1132	183	178	24	2832

25.	Instructional material should be prepared by teachers						
26.	Instructional materials should be cheap and easily available						

x₁ X63989

Appendix E

No. of teachers on Opinionnaire Administered to Teachers

S.N.	Statement	Ext. Agree	Agree	Netural	Disagree	Ext. disagree
1.	Training is needed to use instructional material properly in mathematics class	25 (50%)	16 (32%)	8 (16%)	1 (2%)	0
2.	Instructional materials are not sufficient in school.	13 (26%)	20 (40%)	10 (20%)	4 (8%)	3 (6%)
3.	Teacher can properly use the instructional material	3 (6%)	5 (10%)	23 (46%)	11 (22%)	8 (16%)
4.	Mathematical lab is useful for effective mathematics teaching and learning	24 (48%)	25 (50%)	1 (2%)	0	0
5.	Understanding of mathematics is affected by proper presentation of instructional material	23 (46%)	25 (50%)	2 (4%)	1 (2%)	0
6.	Students feel easy while teaching mathematics by using instructional material	7 (14%)	16 (32%)	24 (48%)	3 (6%)	0
7.	Instructional material helps to encourage students and teachers both	24 (48%)	21 (42%)	3 (6%)	1 (2%)	1 (2%)

8.	Instructional material is a useful to teach mathematics	15 (30%)	21 (42%)	8 (16%)	6 (12%)	0
9.	The teacher encourage the student to participate in the manipulating instructional material in mathematics class	7 (14%)	8 (16%)	15 (30%)	7 (14%)	13 (26%)
10.	An appropriate type of teaching instrument should be used for teaching mathematical topic	20 (40%)	16 (32%)	5 (10%)	4 (8%)	5 (10%)
11.	Knowledge of instructional material is essential in teaching mathematics	24 (48%)	17 (34%)	8 (16%)	1 (2%)	0
12.	The greater priority should be given to instructional materials in teaching Mathematics	27 (54%)	15 (30%)	5 (10%)	3 (6%)	0
13.	Understanding of mathematics is affected by the lack of appropriate instructional material	11 (22%)	6 (12%)	25 (50%)	5 (10%)	3 (6%)
14.	I am in favour of instructional materials	8 (16%)	10 (20%)	25 (50%)	4 (8%)	3 (6%)
15.	Demonstration method is appropriate for teaching	17 (34%)	17 (34%)	10 (20%)	4 (8%)	2 (4%)

	mathematics					
16.	The score of students in mathematics is affected by the ask of instructional material	16 (32%)	12 (24%)	10 (20%)	6 (12%)	1 (2%)
17.	Instructional materials helps to clarify the basic concept of mathematical principles	25 (50%)	20 (40%)	4 (8%)	1 (2%)	0
18.	Instructional material is related to mathematical knowledge and concept	13 (26%)	10 (20%)	25 (50%)	5 (10%)	2 (4%)
19.	Mathematics textbook should be concrete	17 (34%)	22 (44%)	5 (10%)	5 (10%)	1 (2%)
20.	All mathematical materials should be concrete	16 (32%)	12 (24%)	6 (12%)	1 (2%)	0
21.	Instructional materials is most useful while teaching sets, trigonometry and geometry	25 (50%)	15 (30%)	5 (10%)	4 (8%)	1 (2%)
22.	Teachers themselves can develop low cost materials in classroom	7 (14%)	7 (14%)	21 (42%)	15 (30%)	0
23.	Instructional material is handled easily only by talented teacher	22 (44%)	14 (28%)	6 (12%)	7 (14%)	1 (2%)

24.	Instructional material is the favorite subject of teachers	13 (26%)	11 (22%)	26 (52%)	0	0
25.	Instructional material should be prepared by teachers	8 (16%)	5 (10%)	11 (22%)	16 (32%)	10 (20%)
26.	Instructional materials should be cheap and easily available	25 (50%)	22 (44%)	2 (4%)	1 (2%)	0

Appendix F

Attitude Scores Obtained by Teachers

S.N.	Statement	Ext. Agree	Agree	Neutral	Disagree	Ext. disagree	Total Score
1.	Students feel easy while teaching mathematics by using instructional materials.	35	64	72	6	0	177
2.	Knowledge of instructional material is essential in teaching mathematics	120	68	24	2	0	214
3.	Training is needed to use instructional material properly in mathematics class.	125	64	24	2	0	215
4.	The greater priority should be given to instructional material in teaching materials	135	60	15	6	0	216
5.	Instructional material helps to encourage students and teachers both	120	84	9	2	1	216
6.	Instructional materials are not sufficient in school.	65	80	30	8	3	186
7.	Teachers can properly use	15	20	69	22	8	134

	the instructional material						
8.	Teachers themselves can develop low cost materials in classroom	35	35	63	30	0	163
9.	Understanding of mathematics is affected by the lack of appropriate instructional material	55	24	75	10	3	167
10.	Understanding of mathematics is affected by proper presentation of instructional material	115	100	6	2	0	223
11.	I am in favor of instructional materials	40	40	75	8	3	166
12.	Instructional material is handled easily only by talented teacher	110	56	18	14	1	199
13.	Instructional material is a useful to teach mathematics	75	84	24	12	0	195
14.	Instructional material is the favorite subject of teachers	65	44	78	0	0	187
15.	Instructional materials is most useful while teaching sets,	125	60	15	8	1	209

	trigonometry and geometry						
16.	Instructional material should be prepared by teachers	40	20	33	32	10	135
17.	Instructional materials help to clarify the basic concept of mathematical principles.	125	80	12	2	0	219
18.	Demonstration method is appropriate for teaching mathematics.	85	68	30	8	2	193
19.	The teacher encourage the students to participate in the manipulating instructional material in mathematics class	35	32	45	14	13	139
20.	Instructional material is related to mathematical knowledge and concept	65	40	75	10	2	192
21.	An appropriate type of teaching instrument should be used for teaching mathematical topic	100	64	15	8	5	192
22.	Mathematics textbook	85	88	15	10	1	199

	should be concrete						
23.	All mathematical materials should be concede	80	48	18	2	0	148
24.	Instructional materials should be cheap and easily available	125	88	6	2	0	221
25.	Mathematical lab is useful for effective mathematics teaching and learning	120	100	3	0	0	223
26.	The score of students in mathematics is affected by the ask of instructional material	80	48	30	12	1	171

x_2 X4899

Appendix G

To computational formula used for calculation of χ^2 -test was:

$$t^2 = \sum \frac{f_o - f_e}{f_e}$$

where f_o = Observed frequency

f_e = Expected frequency

In the case of two normal populations with unknown variance for independent sample, the t-statistic was used to compare the attitude in the form:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Where,

\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 the first sample

S_2^2 = Variance of the second sample

The level of significance was 0.05 which is the probability of rejecting the null hypothesis H_0 , which H_0 is assumed to be true.

