

Chapter 1

INTRODUCTION

Background of Study

“Attitude” the term originally used in social psychology, was rarely given explicit definition in pioneering studies (Wu et al. 2017). Even recently debates about the definition of attitude towards mathematics from social and psychological perspective still exist in the literature. According to Zan and Martino (2008), “an attitude is fundamental concern on learning of mathematics”. An attitude can be as positive or negative evaluation of people, objects, event, ideas and activities. It should be concrete, abstract just about any things in our environment. Attitude can be seen as more or less positive. A positive attitude towards mathematics reflects a positive emotional disposition in the relation to the subject and in the similar way negative attitude is towards mathematics related to a negative emotional disposition.

The attitude of students and teacher understanding of mathematics as the large number of teacher who desired or fear of mathematics has become a factor in children attitude towards subjects (Joshi, 2017). In the present century mathematics is essential subject in the field of science and technology, economics, management, business, and many other field. Most of the parents want their children study mathematics and science. They inspire even compel their children to study these subjects. But most of them do not know about various psychological factors, for example their children interest, attitude, ability, and intelligence towards those subjects. They are not even capable to find out whether their children have got a favorable (positive or negative) attitude for the study of particular subject or not.

In Nepal, mathematics has been taught as one of the main subjects in secondary level education. Since beginning of modern school education mathematics

has been given significant place in the Nepalese school curriculum, since implementation of Nepal Education system plan (NESP, 2028-2032).

Since 1993, the scope of the revised curriculum has been elaborated knowledge, skill, comprehension and application types of content are include. There are 100 marks of compulsory mathematics and optional mathematics include in each class nine and ten and there are established class wise objective also. In this study the mathematics which is an optional subject of 100 full marks in secondary school level and which was incorporated from Sharwan 2056 in grade ITEN and from Sharwan 2057 in grade ten and revised in 2063 B.S. of the school in Nepal. “The curriculum has six (Nepali, English, Mathematics, Science, Social, and EPH) compulsory subjects and two subjects chosen from OPT I (Language 23, Humanities and Sociology 7, Optional Mathematics) and OPT II (25) (Structure of present curriculum design, 2071),” these subjects are called optional subjects. Optional mathematics is also one of them optional subjects of OPT I group. The graded contents of optional mathematics are algebra (relation and function, limits, continuity, polynomials, sequence and series, quadratic equation and graph, linear programming), co-ordinate geometry (equation of circle, conic section), vector transformation (translation, rotation, reflection, enlargement, combination of transformation using matrix, inverse of circle), trigonometry, matrices, statistics (mean deviation, quartile deviation, standard deviation) are the content of optional mathematics at secondary level (Pant, 2014).”

Curriculum were changed subject to make vertical curriculum because to introduce the course of class 11 and 12 of mathematics. The curriculum was revised optional the mathematics course of academic year 2075 in class nine and academic year 2076 in class ten. Class nine had one unit change, limit is the present lesson of

class nine course. Class ten present changed lessons are, continuity, co-ordinate geometry (conic section), transformation (inverse of circle) and matrix (cramer rule).

In Nepalese context, no wide research about mathematical attitudes of students towards learning mathematics has been undertaken in the student's level. Some district level researcher and report show that many students are afraid of mathematics and more girl's students have negative attitude of secondary more than boy's students towards this subjects (Ray, 2016).” It is already felt that a favorable attitude of secondary level students towards mathematics is necessary to course them to learn mathematics. So in this study, the researcher had try to find the mathematical attitude of secondary level students under different aspect, view about optional mathematics learning.

Statement of the Problem

Boys and girls had positive attitude towards optional mathematics (Pant, 2014).” Similarly, the secondary level students had positive attitude towards mathematics (Sharma, 2014).” Most of students have positive attitude towards mathematics at grade ten(Joshi, 2017).” The different research show that attitude of secondary level students have positive attitudes mathematics and positive attitude of students towards optional mathematics. But, there are low enrollment of students in optional mathematics.

The participation of students in optional mathematics is very low in the context of Nepal (Ray, 2016). They do not choose mathematics as major subject and also don't get admission in the faculties like Engineering, Science and Technology. For there faculties, it was necessary to have optional mathematics subjects at secondary level. Then what was the attitude students towards optional mathematics at

secondary level present course of optional mathematics. The problem of this study was mainly concerned with the student's attitude towards learning present optional mathematics course at secondary level. So, the study has elicited/explored to answer along with the following research question:

- What is the attitude of students towards present optional mathematics course?
- Do the attitude of boys and girls differ to each other?
- How to increase student's positive attitude towards present optional mathematics course?

Objective of the Study

The objectives of the study were as follows:

- To find out the attitude of secondary level students towards present optional mathematics course.
- To differentiate the attitude of boys students and girls students towards present optional mathematics course at secondary level.
- To explore ways of increasing attitude towards present optional mathematics course.

Significant of the Study

Mathematics was an essential component of school and higher-level education. It has taken a complex learning process because of abstract content nature. But, in present time many research works were complex to identify difficulties and related solution of mathematics learning. This study helps to investigate the student's attitude towards present optional mathematics course at secondary level. This study also opened the door for further research in the field of increasing curriculum of secondary level mathematics. It also helps to the education planner, education

administrators and other concerned person for the further education strategies.

Therefore, the study was relevant contextual present.

Next, it is commonly regarded that students are weak in problem solving skill and application of mathematics in day-to-day life. It has also been found that students have poor background of mathematics to study at higher level for the higher study.

The content included in compulsory mathematics is enough, it is fulfilled by the study of optional mathematics. By thinking that curriculum development center had designed the present curriculum of optional mathematics. Therefore, the significant of this study are as follows.

- The result of this study determines the attitude of secondary level students towards learning present optional mathematics course.
- The result of this study is to help the mathematics curriculum designer, national policy makers, researcher, education administrator, educationists and concerned person to consider about the further works related to it.
- It aims to help the consular to provide the positive attitude towards present optional mathematics course.
- This study helps to improve teaching learning situation in the context of negative attitude towards optional mathematics.
- This study can help to improve student's attitude towards present optional mathematics course.

Delimitation of the Study

Delimitation is the boundaries created by the researcher. The delimitations are those characteristics that limit the scope and define the boundaries of the study. They are created before any investigations are carried out in order to reduce the amount of

time or effort spent in certain unnecessary, perhaps even unrelated, areas to the overall study. The main delimitations of this study were as follows:

- The study is limited to the students of optional mathematics for secondary level in Kailali district.
- This study had limited in the public (government) schools at secondary level.
- The result of this study has generalized in Kailali district only.

Definition of Related Terms

Attitude. An attitude is an expressing of favor or disfavor towards a persons, place, things or event. Mathematics student's attitude towards optional mathematics is an understanding, thinking, realizing as well as giving positive or negative value on it.

Attitude Scale. An information from that attempts to measure to attempt or belief of an individual is known as attitude scale according best and khan (as cited in pant, 2014). Attitude scale is an inquiry from or scale used obtain the measure of attitude of an individual towards some phenomenon, in this study attitude scale was used by researcher to obtain the measure of students, towards secondary level optional mathematics.

Present Optional mathematics course. The course of optional mathematics of 2075/2076 academic year.

Value. How to learning optional mathematics held to deserve, the importance, worth, or usefulness of real world mathematics.

Enjoyment. The process of taking pleasure, entertainment, benefit, use, ownership in learning optional mathematics course.

Self-efficacy. Mathematics self-concept aimed to capture how Students felt towards mathematics and their ability to understand and use mathematics, Wilkins & Ma, 2002(as cited in Kilman, 2015, p. 24). Self-efficacy is the belief we have our own abilities, specifically our ability to meet the challenges ahead of us and complete a task successfully.

Motivation. A reason or reactions for acting or behaving in learning optional mathematics course.

Chapter II

REVIEW OF RELATED LITERATURE

Literature review was the one of the essential task to conduct any research. This research has also adopted the review of related literature. According to Kothari (1995, p. 30) describes as, “the literature review is an integral part of the entire research process and make a valuable contribution to almost every operational step.” It widens the horizon of the knowledge of the shed light on some theoretical aspects of the study.

Theoretical Review

Theories were formulated to explain, predict and understand phenomena and in many cases to challenges and extend existing knowledge within the limits of critical bounding assumption. The theoretical framework is the structure that can hold or support a theory of a research study. The theoretical framework introduces and describes the theory that explains why the research problem under study exists.

Constructivism was learning theory that proposes that students construct knowledge by connecting present knowledge to prior knowledge through present individual or social experience. A major tenet of constructivism was the students are curious and natural learners if placed in conducive environment. Furthermore, the learning process had been described as a highly social process Vygotsky, 1978 (as cited as in Kilman, 2015). In the classroom this translate into the notion that students should be actively involved in the learning process not just passively listening as a lesson is being taught. Direct instruction, on the other hand, imagines students as passive bystander in the classroom. That is, teacher have a knowledge which they simply pass along to learners. Problem based instruction is a teaching technique that stems from the constructivist learning theory. It is a form of teaching where students

are presented with real-word problem and then given the time and opportunity to solve that problem in order to discover a present concept of practice a presently learned concept. The process of solving an authentic, real-word problem is the avenue for present mathematical concept to be presented, Hiebert, et.al. 1996 (as cited in Kilman, 2015). Proposed that the mathematics classroom should be “problematic”. That is based on problem solving. Students should be allowed to inquire to wonder why thing are, the way they are and to resolved the incongruities they encounter. Those same other argue that a “problematic” mathematics classroom of well suited to engage students, show the students how mathematicians solve mathematics and make mathematics useful and relevant to students. This problem based process can be completed with varying degree of guidance from teacher. The role of teacher of to help students among their own path to find solutions to posed problems. With this types of instruction, the correct mathematical solution is the only goal. Students also learn valuable skill such as critical thinking, estimation and mathematics communication.

Empirical Literature Review

Empirical literature was that research which published in book, pre-review journals as well as other source of study (Bhatta, 2017, p.21). Empirical literature helps the researcher to make their research works unique, valid and reliable. In this same way, the research topic” Attitude of students towards learning optional mathematics” has different related empirical literature. To make this research valid and reliable the following published and unpublished study were reviewed.

Pathak (2011) did his research on, “Teacher and students attitudes towards the utility of content of optional mathematics.” The objectives of this research were to find the view of teacher and students towards the content of secondary level optional

mathematics, to find the response teacher and students towards the utility of optional mathematics content and to compare the opinion of teacher and students with regard to the unity of content of optional mathematics curriculum on the following aspects. This study was quantitative research method. The design of this study was survey. Population of this study are secondary levels students of optional Mathematics of academic year 2066 B.S. primary and secondary are the source of data. Twenty students are selected from Kathmandu district by purposive and convenience sampling method. Questionnaire are the main tools of this study by using Likert five point scale. Statistics analysis by mean, weight mean, chi-square, t-test.

The researcher claim that teacher and students have positive attitude towards the content of optional mathematic. All the teacher and students agreed that all the content were very useful for the higher study.

Kilman (2015) did his research on topic, “The relationship between students, applied mathematics skill and students attitudes towards mathematics.” The purpose of this study was to find the relation between students’ knowledge of applied mathematics and students attitudes towards mathematics and if significance relation does indeed exist between students applied knowledge of mathematics and students attitude towards mathematics and relationship between affect student’s achievement in mathematics. The main objective of this study was to explore the relationship between student’s basic applied mathematics skill and student’s attitudes towards mathematics. This research was quantitative and conducted using survey method. Participation in this study was open to any student currently enrolled at Mississippi College. Specifically, the researcher targeted for recruitment students who were enrolled at Mississippi College and were taking a mathematics course in the fall 2014 semester. The instrument consists of 40 statements five-point Likert-type items. The

inventory consists of four sub-scales: self-confidence, value, motivation, and enjoyment. Multiple linear regression analysis was done to analysis and found that attitude toward mathematics was indeed significantly related to students' basic applied mathematics skill. Attitudinal sub-scales were also analyzed. Students self-confident and motivation were both significant predictors and basic applied mathematics skill.

Wu (2017) studied on topic, "student's attitudes towards mathematics and math gender stereotypes: gender and year level." The main objective of this study was Chinese student's noticeable achievements in mathematics generate considerable interest in understanding their attitudes towards mathematics. However, less is known about Chinese student's math-gender stereotypes (SMGS) and relationship between student's attitudes towards mathematics (SATM) and their math-gender stereotype. In this study, the data had collected through questionnaires and interview and focus-group interview for main study from two primary schools in Chengdu-China. Nonparametric statistics were used to analyses quantitate data while qualitative data were analyzed thematically. Both boys and girls from senior primary levels share positive attitudes towards mathematics. However, some questionnaire and interview data related gender different that slightly more boys held positive attitudes than girl. Interview data further related that boys held stronger traditional stereotype views on mathematics learning. Interviews data were reveled consistence result the higher the year level, the more the mathematics talents were emphasized. Such correlations provide clear evidence that a gender equity views is beneficial for both boys and girls to develop positive attitudes towards mathematics.

Tocci(1991) did a research on topic, "Attitudes toward mathematics related to gender achievement and parental support of adolescent from different social classes in

the United State and Thailand.” The main objective of this study was to investigate gender difference in attitudes towards mathematics of adolescent from our social classes in United States and Thailand. This study was used data from 13 years olds in the United States and Thailand that were collected during. The IEA second international mathematics study (SIMS). The researcher examined gender difference in attitudes towards mathematics assessed by four attitude scales, the scales are investigate. The researcher conclude that there are some important gender difference, as well as similarity, required to attitude towards mathematics. Gender difference on student perception of the usefulness of mathematics anxiety of Thai student appear to both achievement and parent support have inverse relationship with mathematics anxiety and positive relationship with oneself concept to do mathematics and perception of the usefulness of mathematics.

Salvik (2015) research on the title, “Student’s attitude towards mathematics in a spreadsheet based learning environment.” The purpose of this study is find out how the use of spreadsheet based learning environment develops student’s sense making and conceptual understanding of financial mathematics and function. Qualitative and quantities both mixed method research. This study was selected sample of 45 students for quantitative and 44 for qualitative samples. And this research was field survey approach use in this study. The data were analyzed by mix method. The result of this research show that there were no significant change in students attitudes based on the quantitate finding, qualitative result suggest that students value of mathematics increased. In addition for most students the use of spreadsheet technology to interact with mathematics increased over the duration of study.

Mc Gregore (2016) did a research on the title, “Exploring the impact of the inquiring learning on student’s beliefs and attitudes towards mathematics.” This aim

of this study was explore how using ill-structure task in an inquiry-based learning environments affects student's beliefs and attitudes towards mathematics. This study research designs is experimental, survey and interview questions used in this study focused on student's beliefs and attitudes towards mathematics students in senior school mathematics class worked on the ill-structure task each semester for three consecutive semester. Each ill-structure task took approximately 7 to 10 hours of learning time and targeted the content for whole unit of work data were collected in a number of a ways including survey and ill-structure task both before and after implantation of the study, videos recording of class, audio recording of post task interview with four pair of students, extracts from students workbooks and fields notes comparisons of initial and final survey indicates that students in this class did self-report significant, positive shift in their beliefs about the usefulness of the mathematics. The finding of this studies make a significant contribution to research within inquiry based learning in mathematics as they presents a senior high school example of the ways students initially adapt to inquiry learning environments.

Khadka (2006) did his research on topic, "The factor influencing the attitudes toward learning mathematics to the Ex-kamaiya." The objectives of his research find out the school related environment factor that have influenced learning mathematics to find out parent care whether their children like or do not like mathematics in ex-kamayias camps, to find the attitude of children of ex-kamayis toward mathematics, to find out the influencing factors of learning mathematics to the children of ex-kamaiyas, to find putting and pushing factors to learn mathematics in Tharu ethnicity. He had taken children coming from thee camp of ex- kamaiya at Darakh and Sandepani VDCs in Kailali district. Data collection procedure were interview

schedule, observation, and opinionnaire. The data were analyzed by the description of response.

Pant (2014) in his research topic, "Attitude of student towards optional mathematics." The main aim of the study to identify factor of the secondary level students attitudes towards mathematics and to found attitude of secondary level students towards optional mathematics. The study was quantitative research method and survey type design. The researcher had selected 240 students among them 140 were boys and 100 students were girls of Dhading district. The data were analyzed by using descriptive as well as inferential statistics. The Chi square-value and mean score of each statement were used to determine the secondary level student attitudes of boys and girls. The researcher had also find that there was a positive attitudes of secondary level students towards of secondary level students towards the optional mathematics, had both boys and girls positive attitudes towards the optional mathematics.

Sharma (2014) in his study on topic, "Attitudes of secondary level students towards mathematics." The main aim of the study was to find out students attitude towards mathematics and to compare student's attitude towards mathematics by their socio economic status (SES) The researcher had selected 93 female and 107 males of Kaski district. The researcher found that the secondary level students had positive attitudes towards mathematics, the difference in the attitudes of the high and low SES was not, for the most part, statistically significance. The only significantly different attitudes was perception of student toward their mathematics teacher, for it, high SES had good perception toward their mathematics teacher then low SES student. Again the attitude at low SES lowered then those at high SES student negligibly. There was

no relationship between SES and gender of student to determine attitude toward mathematics.

Ray (2016) had conducted his research entitled “factors affecting low participation of girls in optional mathematics.” The aim of researcher was to find out the factors that affect the low participation of girls in optional mathematics. She collected the data from 120 girls’ students and twenty math teachers from ten school, five from urban area and another from rural area of secondary level girls of academic year 2072 of Bara district. The researcher used interview and questionnaire to collect data. The researcher concluded that interested of girls student, teachers qualification, student as well as parents, expectation and their views and beliefs directly influenced on girls participation in optional mathematics girls had very low participation in mathematics class, they were almost absent in class and low interest in mathematics.

Joshi (2017) researched on the title, “Students Attitude towards Mathematics.” The main objects of this study was to find the student’s attitude towards mathematics and factors affecting student’s attitudes towards mathematics at grade ten. Researcher was selecting 230 from community based school by simple random sampling method (odd-even method) and schools were selected by systematics sampling method. The data were collected from questionnaire and unstructured interview schedule. The data was analyzed by SPSS program. Percentage and chi-square test were used to find out the attitude of students towards mathematics at 0.05 level of significant. The result off this study showed the most of students have positive attitude towards mathematics at grade ten but many of the students have facing so many problem such as, lack of student’s confident level, mathematics antianxiety, lack of guardians’ qualification, home environment, social culture, social tradition, social discrimination, lack of

trained teacher, lack of teaching material, and other physical facility are the main factor that affecting students, attitude towards mathematics.

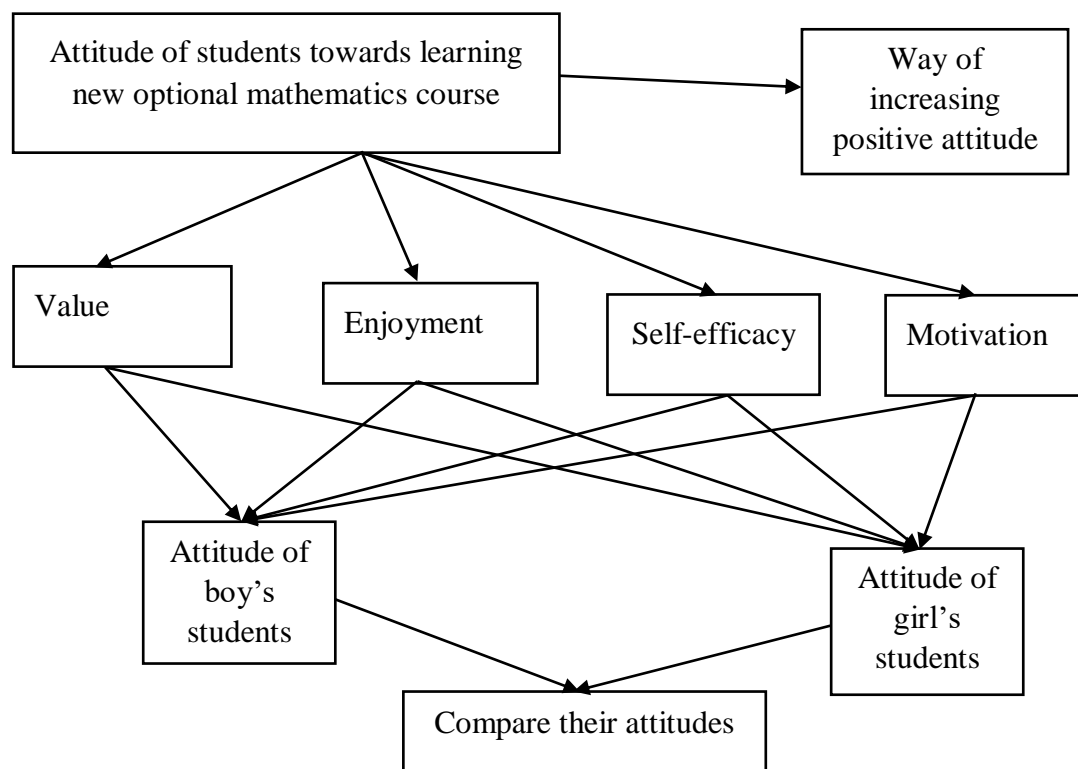
Attitude is the affective responses that involve positive, negative or neutral feelings of moderate intensity and reasonable stability, Salvik (2015), how to use mathematics in the real world, tends to develop a more favorable outlook towards mathematics? Or, on other hand, do the attitude of students towards mathematics remains unaffected as their ability to use mathematics in the real world increase, Kilman (2015). The current research seek to clarify these proposition in an effort to improve instruction by providing educators with a better understanding of student's attitude towards mathematics. An information from that attempts to measure to attempt or belief of an individual is known as attitude scale according best and Khan. Attitude scale is an inquiry form or scale used obtain the measure of attitude of an individual towards some phenomenon, in this study attitude scale was used by researcher to obtain the measure of students of self- confident, value, enjoyment and motivation.

From the literature review, it can be conclude that the various researcher have been made regarding the student's attitude towards mathematics and student's attitude towards optional mathematics. Many researcher study about attitude of students towards content of optional mathematics and study in attitude of students towards mathematics, but some researcher study in attitude of students of optional mathematics course at secondary level. And so on but researcher does not shows the students attitudes towards learning present optional mathematics course at secondary level Kailali district and researcher interested what is the attitude of students towards learning present optional mathematics course at secondary level of Kailali district. So the researcher select this topic.

Conceptual Framework

A conceptual framework was presented either in graphical or narrative forms which depicts the relation between the variables, brings clarity, focus to see and organize the research question more clearly. From the above literature review of literature and theoretical approach, the researcher had been come to the points that the topic of current research attitude of students towards learning present optional mathematics course at secondary level. Therefore, I used the following conceptual framework to improve my study.

Fig 2.1: Attitude of students towards learning optional mathematics.



Source: Revised Kilman (2015)

In this study the researcher intended to find out the attitude of secondary level students towards present optional mathematics course based on research reports in the fields of attitudes. Researcher used questionnaire to investigate respondents' attitude towards optional mathematics. For the questionnaire, 40 statements had been prepared

based on the above theme of conceptual framework and the helps of experts. The list of 40 statements (11 statement for value, 11 statement enjoyment, 14 statement for self- efficient and 4 statement for motivation) were applied an instrument to collect needed data, compare attitude of boys students and girls students. The selected statements that reflect the issue in the question was given to the respondents to indicate their degree of agreement/disagreements by selecting the appropriate response or a number on a numeral scale. Also taking open indeed interview for way of increasing positive attitude towards optional mathematic to five optional mathematics teacher. The optional mathematics were given their respondents, then analysis by descriptive method.

Chapter III

RESEARCH METHODS AND PROCEDURE

Simply, Research methodology is a science, which determined how the research become complete and systematic. Research methodology does not means only to collect data/information but also means the use of appropriate research method. As methodology is the root of the research, the researcher should be clear about the selection of population, tools, procedure of the data collection, scoring procedure and analyzing or interpretation of collect data.

Research Design of study

The design of this research was surveyed type. Survey research studies large universe by selecting and studying samples chosen from the population to discover the relative incidence, distribution and interrelation of social and psychology variable (Kerlinger, 1973:410). Survey research was probably best accept to obtain personal and social facts, beliefs and attitude. The researcher applied such types of design to finds out boys and girls attitude towards present optional mathematics course. We simply do not know what people's attitudes towards optional mathematics. So, the researcher had applied such types of design to find out mathematical attitudes.

Population of Study

The population of the study was consisted the secondary level of public students majoring optional mathematics and teacher (teaching optional mathematics) of Kailali district in the year 2018/2019. All the students of 80 schools of Kailali district were the population of this study.

Sample of Study

There were 122 secondary school in Kailali district. Among them 42 are private and 80 are public school. Private secondary schools were not included for the

sample of this study. Out of 80 public schools, 30 schools were selected for sample by random sampling method and five teacher were selected by purposive sampling. Two school were not teaching optional mathematics and were left. A total of studying optional mathematics of 237 students and five optional mathematics teacher from different public school of Kailali district were the sample for the study.

Instruments

The tools were important for collecting the data. The questionnaire and interview schedule type of tools for to collecting data.

Questionnaire. The attitudinal scale used in this study was the Attitudes toward Mathematics Inventory (ATMI) which was developed by Tapia and Marsh (2002) (as cited in Kilman, 2015). The instrument consists of five-point Likert-type items with responses ranging from strongly disagree one to Strongly Agree five for positive statement and strongly disagree five to strongly agree one for negative statements. Some items gauge positive attitudes using statements such as “I think limit is the most important contain in further study” whereas other items gauge negative attitudes using items like “Mathematics is dull and boring.” Eleven of the 40 items are worded in the 12 items negative and the remaining 28 items were formulated in a positive manner. (See in Appendix: A)

Interview schedule. I selected five teacher for interview for increasing attitude of students toward present optional mathematics course. I prepared interview guideline (open indeed interview question) on the basis of suggestion from supervisor and subject expert. (Appendix: F)

Scoring Procedure

The Scale for scoring each item of the questionnaire, the Likert five scale points strongly agree, agree, neutral, disagree, strongly disagree were used. The value

of five point for strongly agree, four point for agree, three point for neutral, two point for disagree and one point for strongly disagree response for positive statements. The weighted mean is total attitude score divided by total no of students and interview was descriptive analysis.

Validity and Reliability of Tools

The researcher used tools in this study questionnaire and unstructured interview. “Validation is the single most importance aspect of the any measurement instrument in education research. However good our research design or sophisticated our statistical analysis, the result was meaningless if we aren’t actually measuring what we are purposing to measure (Muijs, 2004).” For the validation of tools, researcher had conducted the questionnaire form and interview guideline which was helped off supervisor and subject expert.

“Unreliable instruments will also lead to relationship with other variables being lower than if they were more reliable, thus harming our ability to come to clear research finding. Low reliability of our instrument is one of the reason why many of the relationships we find in educational research are low (Muijs, 2004).” Its reliability was ensure by taking pilot test among 20 students, it was found that Cronbach alpha 0.78 by using SPSS. Which piloting students not include in the study. For the interview schedule, the consult with the supervisor and subject expert.

Data Collection procedure

Every study needs to collect data. Questionnaire was majored tools of collection of data in this study and interview was also tools. The researcher had visited the sample schools to collect data by administering the questionnaire for the optional mathematics students of secondary level. There were applied an instrument collect needed data. Before the administration of the schools, the investigator was

visited to the select schools and meet head teacher and optional mathematics teachers of school and also took permission for administered of the school, subject teacher and students for taking data on the students during their mathematics period and before the taking interview, meet the optional mathematics teacher then recorded interview by mobile. One teacher taking interview only one times.

Data Analysis Procedure

After quantifying the collected qualitative data, the researcher by using the statistical procedure from the collect data, weighted mean was measured for each items. By the help of weighted mean and percentage, the researcher found out the attitude of statement of value, self-efficacy, enjoyment and motivation of optional mathematics. And mean scores of each statement determine the secondary level student's attitude towards learning present optional mathematics course. When mean was less than three then statement was taken as negative and when mean was greater than three then statement positive and mean was exactly three then statement was undecided. Then t-test was apply to compare the attitude of boys and girls students towards learning present optional mathematics course at 0.05 level significant. I took open indeed interview with the five optional mathematics teacher for way of increasing positive attitude of optional mathematics. First interview was recorded and them transcript of interview was made. After continues reading of transcripts so many times, the transcript was coded. Than categorized many code in to different category. There were generalized way of increasing value, way of increasing self-efficacy, way of increasing enjoyment and way of increasing motivation of optional mathematics, this way analysis qualitative data.

Chapter IV

ANALYSIS AND INTERPREATION

This was a survey research related to find the students attitude towards present optional mathematics course at secondary level. Quantitative and qualitative method was used to measure the attitude of secondary level students towards present optional mathematics course. This chapter present the result of statistical analysis of collective data, which were collected from the students of secondary level at Kailali district. From the list there are 30 secondary school selected by the method of random sampling. A total 237 students of optional mathematics were the sample of this study. The questionnaire consist 40 statement which was developed and constituted under the guidance of supervisor. Questionnaire was the major tools for the collection of data in this research. Scale for scoring each items of the questionnaire used the Likert five point scale. The five point to strongly agree response, four point to agree, three point to neutral, two point to disagree. This part deals with statistical analysis and interpretation of the data. For the analyzing the data, weighted mean, percentage, standard deviation and t-test were used. The collected data were analyzed and interpreted under the following headings:

- Student's responses of values.
- Student's response of enjoyment.
- Student's response of self-efficacy.
- Student's response of motivation.
- Comparison of boy's students and girlsstudent's attitudes.
- Way of increasing positive attitude.

The first objective of the study was to find out the attitude of secondary level students towards present optional mathematics course in order to achieve this objective, the weighted mean and percentage calculated and analyzed. When weight mean greater than three than this statements are significant. Which are tabulated in the following table.

Student's Responses of Values

There were eleven statement related to the value of present optional mathematics course. The eleven statements were related to necessary subject, develop mathematics skill, helpful subject, importance further study, help problem other area, useful human life and content useful further study. Following table consist the student attitude and corresponding weighted mean and percentage of the questionnaire related to value of present optional mathematics course.

Table 4.1 Weighted mean and percentage table of attitude of value

S.N.	Statement	SA	A	N	D	SD	Mean
1	Optional Mathematics is a very worthwhile and necessary subject.	59 24.89%	86 36.29%	56 23.62%	22 9.28%	14 5.9%	3.65
2	I want after the studying present opt mathematics course to develop my mathematics skill.	60 25.31%	96 40.51%	43 18.14%	26 10.97%	12 5.06%	3.70
3	Present optional Mathematics course help to develop the mind and person think.	82 34.59%	62 26.16%	52 21.94%	23 9.70%	18 7.59%	3.64

4	I think limit is the most important contain in further study.	66 27.85%	80 33.76%	51 21.52%	19 8.01%	21 8.86%	3.64
5	Opt Math course would be very helpful no matter which grade level I read.	83 35.02%	61 25.73%	55 23.21%	25 10.55%	13 5.49%	3.74
6	I think many ways that I use opt math outside of school.	88 37.13%	64 27%	43 18.14%	23 9.70%	19 8.01%	3.76
7	I think studying present optional mathematics course is very useful for further study.	60 25.32%	96 40.51%	46 19.41%	15 6.33%	20 8.44%	3.68
8	I believe studying optional mathematics helps me with problem solving in other area.	60 25.32%	76 32.07%	57 24.05%	29 12.24%	15 6.33%	3.58
9	Optional mathematics is useless subject in human life.	17 7.17%	20 8.44%	59 24.89%	67 28.27%	74 31.22%	2.32
10	I think limit is harder than other.	21 8.86%	18 7.59%	44 18.57%	85 36.29%	69 29.11%	2.31
11	The continuity of contain is useful in further study.	62 26.16%	85 35.86%	43 18.14%	30 12.66%	17 7.17%	3.61
Total							3.42

Above table shows the positive attitude of learner towards each statements related value. First statement “optional mathematics is a very worthwhile and necessary subject” is positive attitude with weighted mean 3.65. A total of 24.89% of student’s respondent strongly agree, 36.29% of students were agree and 23.62% of students were neutral about this statement. It shows that most of the students were positive for this statement. They had taken the optional mathematics subjects is worthwhile and necessary subject.

Statement “I want after the studying present optional mathematics course to develop my mathematics skill” is positive attitude with weight mean 3.70. A total of 25.31% of students were strongly agree, 40.51% of students were agree and 18.14 % of students were neutral about this statement. It show that majority of students are positive for this statement. Students believes that Present course develop mathematics skills.

Statement “this present optional mathematics course helps to develop the minds and person think” is positive attitude with the weight mean 3.64. A total of 34.59% of students were strongly agree, 26.16% of students were agree and 21.94% of students were neutral. It means that most of students are positive for this students. So must students agree that present course help to develop the mind and person things.

Statement “I think limit is the most important contain in further study” is positive attitude with the weight mean 3.64. A total of 27.85% of students were strongly agree, 33.76% of the students were agree and 21.52% of students were neutral about this statement. It show that majority of students were favor of this statement. Students believes that Limit is the most important contain in further study.

Statement “optional mathematics course would be very helpful no matter which grade level I read.” Is positive attitude with the weight mean 3.74. A total of 35.02% of students were strongly agree, 25.73% of students were agree and 23.21% of students were neutral about this statement. It indicated that most of students are positive for this statement. Students agree that optional mathematics class are helpful in other classes.

Statement “I can think many ways that I use opt math outside of school” is significant attitude with weighted mean 3.76. Total of 37.13% of students were strongly agree, 27% of students were agree and 18.14% were neutral about this statement. It shows that majority of students are positive of this statement. Students believes that this course very useful for outside of schools

Statement “I think studying present optional mathematics course of very useful for further study” is positive attitude with the weighted mean 3.68. A total of 25.32% of students were strongly agree, 40.51% of students were agree and 19.41% of students were neutral about this statement. It indicated that majority of students are favor of this statement. Present course very useful further study.

Statement “I believe studying optional helps me with problem solving in other area” is positive attitude with the weighted mean 3.58. A total of 25.32% of students were strongly agree, 32.07% of students were agree and 24.05% of students were neutral about this statement. It shows that most of this statement were positive for this statement. Students taken optional mathematics helpful other subject problems.

Sample of the students were negative towards statement “optional mathematics is useless subject in human life” with the weighted mean 2.32. A total of 7.17% of students were strongly disagree, 8.44% of students were disagree and 24.89%

of students were neutral about this statement. It refers that most of students had negative attitude for this statement. So student's perception optional mathematics is useful subject in human life.

Sample of the students were negative towards statement "I think limit is harder than other" with the weighted mean 2.31. A total of 8.86% of students were strongly disagree, 7.59% of students were disagree and 18.57% of students are neutral about this statements. It indicated that most of the students were not favor of statement. Thus, students believes that limit is no hard then other content.

Statement "the continuity of content is useful in further study" is positive attitude with the weighted mean 3.61. A total of 26.16% of students were strongly agree, 35.86% of students were agree and 18.14% of students were neutral about this statement. It indicates that majority of students were favor of students. Thus, they had taken present lesson continuity of optional mathematics is useful in further study.

The total mean of the students related to value is 3.42. It shows that students had positive attitudes towards the value of present optional mathematics course. Statement "optional mathematics course would be very helpful no matter which grade level I read" had highest weighted mean, it show that present optional mathematics course was valuable uses other class. Also Optional mathematics course was necessary subject, it develop mathematics skill, develop the mind and person things, important content in further study, use outside the school, and help solving other area of problem. Teacher and students agree that all the content of optional mathematics were very useful for the higher study by providing basic concept Pathak (2011). This shows that students attitude of value of learning present optional mathematics course was positive towards present optional mathematics course.

Student's Responses of Enjoyment

Enjoyment of mathematics was the state or process of taking pleasure in optional mathematics. And also actions of possessing and benefiting from learning optional mathematics. There were eleven statement related to the enjoyment of the present optional mathematics course. The following table consists the students attitudes and it correspond weighted mean and percentage of the questionnaire related to enjoyment of present optional mathematics course.

Table 4.2weighted mean and percentage table of enjoyment

S. N.	Statement	SA	A	N	D	SD	Mean
1	I am enjoying studying conic section lesson of present optional mathematics course.	95 40.08%	63 26.58%	40 16.88%	25 10.55%	14 5.91%	3.84
2	I get a great deal of satisfaction out of solving optional mathematics problem.	70 29.54%	79 33.33%	47 19.83%	23 9.70%	18 7.59%	3.66
3	I am enjoying to studying a present optional mathematics course in schools.	72 30.38%	32.91%	49 20.66%	16 6.75%	22 9.28%	3.68
4	I am like to solve a present problem in optional mathematics course.	67 28.27%	89 37.55%	50 21.09%	20 8.44%	11 4.64%	3.76
5	Taking a present optional mathematics course is waste the time.	12 5.06%	23 9.70%	45 18.99%	107 45.15%	50 21.09%	2.32
6	I had really like a	95	67	45	20	10	3.99

	present optional mathematics course.	40.08%	28.27%	18.99%	8.44%	4.22%	
7	I am more happy in optional mathematics than any other class	62 26.16%	86 36.29%	47 19.83%	25 10.55%	17 7.17%	3.68
8	Optional Mathematics course is very interesting subject matter.	56 23.63%	88 31.13%	48 20.25%	27 11.39%	18 7.59%	3.58
9	I feel comfortable on my ideas, on how to look for solution to difficult problem in opt math.	68 28.69%	76 32.07%	53 22.36%	16 6.75%	24 10.13%	3.62
10	I am comfortably answering the question of the optional mathematics class.	93 39.24%	67 28.27%	39 16.46%	18 7.59%	20 8.44%	3.82
11	Limit and Continuity class is dull and boring.	20 8.44%	23 9.70%	51 21.52%	58 24.47%	85 35.86%	2.30
To tal							3.48

Above table shows that each statement had positive attitude towards enjoyment of present optional mathematics course. Statements “I am enjoying studying conic section lesson of present optional mathematics course” is positive attitude with the weighted mean 3.84. A total of 40.08% of students were strongly agree, 26.58% of students were agree and 16.88% of students were neutral about this statement. It show that most of students are positive towards this statement. So students were enjoyed in at conic section.

Statement “I get a great deal of satisfaction out of solving optional mathematics problems” is positive attitude with the weight mean 3.66. A total of

29.54% of students were strongly agree, 33.33% of students were agree and 19.83% of students were neutral. It refers that most of students were positive for this statement. So optional mathematics give to student's satisfaction.

Statement "I am enjoying in studying present optional mathematics course in school" was positive attitude with weighted mean 3.68. A total of 30.38% are strongly agree, 32.91% of students are agree and 20.66% of students are neutral. It refers that most of students are positive for this statements. Students believes present course of optional mathematics give enjoy.

Statements "I like to solve present problem in optional mathematics course" was positive attitude with the weighted mean 3.76. A total 28.27% of students were strongly agree, 37.55% of students were agree and 21.09% of students were neutral about this statement. It means that majority of students had accepted of this statement. So, students like to solve problem of optional mathematics.

Statements "Taking present optional mathematics course waste of time" is negative attitude with the weighted mean 2.32. A total of 5.06% of students were strongly disagree, 9.70% of students were disagree and 18.99% of students were neutral about this statements. It indicates that most of students have negative for this statements. Thus, students believes that optional mathematics not waste of time.

Statements "I really like present optional mathematics course" is positive attitude with the weighted mean 3.99. A total of 40.08% of students were strongly agree, 28.27% of students were agree and 18.99% of students were neutral about this statement. This statements had highest weighted mean than other statements. It was show that most of students were positive attitudes present optional mathematics. So students liked present optional mathematics.

Statements “I am happier on optional mathematics than other class” was positive attitude with weighted mean 3.68. A total of 26.16% of students were strongly agree, 36.29% of students were agree and 19.83% of students were neutral about this statement. It means that most of students were positive for this statement. Student’s perception optional mathematics class is more enjoyable.

Statements “optional mathematics course has very interesting subject matter” was positive attitude with weighted mean 3.58. A total of 23.63% of students were strongly agree, 37.13% of students were agree and 20.25% of students were neutral about this statement. It indicates that most of students were positive for this statement. So most of students agree that optional mathematics course has interested subject matter.

Statements “I am comfortable expressing my own ideas on how to look for solution to difficult problem in optional mathematics” was positive attitude with the weighted mean 3.62. A total of 28.69% of students were strongly agree, 32.07% of students were agree and 22.36% of students were neutral about this statement. It refers that most of students were positive for students. Students felt comfortable to use their own ideas in solving difficult problem.

Statement “I am comfortable answering questioning in optional mathematics class” was positive attitude with the weight mean 3.82. A total of 39.24% of students were strongly agree, 28.27% of students were agree and 16.46% of students were neutral about this statement. It means that most of students were positive for this statement. Students feels enjoy in answer questioning of optional mathematics class.

Statement “Limit and continuity class is dull and boring” was negative attitude with the weight mean 2.30. A total of 8.44% of students were strongly

disagree, 9.70% of students were agree and 21.52% of students were neutral about this statement. It means that most of students were negative for this statement. So students believe that Limit and continuity class was not boring.

The total mean of enjoyment of optional mathematics was 3.48. So that attitude of students in enjoyment of attitude of present optional mathematics course was positive attitude. Highest weighted mean was statement second. It shows that the most students studying present optional mathematics course, they enjoyed at solving conic section, enjoy at present solving problem, and felt comfortable to solved difficulty problem and enjoying at answer questioning. Students may be referring here to the fact that they enjoy solving equation, derivative, or integral, Kilman (2015). Also optional mathematics was interesting subject matter and limit and continuity class were not dull and boring. It regards that present optional mathematics course were enjoyment and interesting.

Student's Responses of Self-efficacy

The self-efficacy was needed no outside help in satisfied ones basic needs, especially with regards mathematics knowledge. According to bandura, 1977(as cited as Zimmerman, 2000:83) self-efficacy as personal judgment of ones capabilities to organize course of action to attain goal, and sought to assess its level, generality, and strength across activities and content. There were fourteen statement related to the self-efficacy of the present optional mathematics course. The following table consist the students attitudes and it corresponding weighted mean andpercentage of the questionnaire related to self-efficacy of present optional mathematics course.

tal							
9	I am sure that I can solve all the problems of Continuity and conic section in the textbook of class ten.	64 27%	88 37.13%	50 21.09%	19 8.02%	16 7.59%	3.69
10	I am sure that, I can solve all the problem of limits in the textbook of class nine.	82 34.59%	80 33.76%	42 17.72%	20 8.44%	13 5.49%	3.84
11	I have a lot of self-confidence when it comes to opt mathematic.	67 28.27%	95 40.08%	37 15.61%	15 6.33%	23 9.70%	3.71
12	I am able to solve optional mathematics problem without too much difficulty.	75 31.65%	82 34.59%	35 14.78%	21 8.66%	22 9.28%	3.68
13	I am able to solve related continuity problems easily.	73 30.80%	86 36.29%	42 17.72%	22 9.28%	15 6.33%	3.75
14	I learn present optional mathematics course easily.	65 27.43%	87 36.71%	47 19.83%	20 8.44%	18 7.59%	3.68
To tal							3.73

Above table shows that the Statements “Optional mathematics is one of my dreaded subjects” is negative attitude with the weighted mean 2.25. A total of 5.91% of students were strongly disagree, 10.55% of students were disagree and 16.03% of students were neutral about this statement. It refers that most of students’ were negative for this statement. So student believes this subjects is not dreaded.

Statement “I hear word optional mathematics I have a feeling of dislike” was negative attitude the weighted mean 2.24. A total of 10.13% of students were strongly disagree, 6.75% of students were disagree and 16.88% of students were neutral about this statements. It show that most of students were negative for this statement. So, the student’s perception of optional mathematics was not dislike.

Statements “My mind goes blank and I am unable to think clearly when working with optional mathematics” was negative attitude with the weighted mean 2.16. A total of 5.06% of students were strongly disagree, 9.70% of students were disagree and 18.14% of students were neutral about this statement. It means that most of students were negative for this statement. Students mind didn’t goes to blank to working in optional mathematics.

Statement “Studying present optional mathematics course makes me feel nervous” was negative attitude with the weighted mean 2.29. A total of 8.02% of students were strongly disagree, 7.59% of students were disagree and 20.25% of students were neutral about this statement. It shows that most of students were negative for this statement. Thus, students didn’t feels nervous to study present optional mathematics course.

Statement “The present optional mathematics course makes me feel uncomfortable” was negative attitude with the weighted mean 2.33. A total of 7.59% of students were strongly disagree, 8.86% of students were disagree and 21.09% of students were neutral about this statement. It indicates that most of students were negative for this statement. Optional mathematics does not feels students comfortable.

Statement “I am always under a terrible strain in optional mathematics class” was negative attitude with the weighted mean 2.09. A total of 5.09% of students are

strongly disagree, 5.49% of students were disagree and 18.99% of students were neutral about this statement. It means that most of students were negative for this statement. Students were always happy in optional mathematics class.

Statement “It makes me nervous to even think about having to do optional mathematics problem” was negative attitude with the weighted mean 2.28. A total of 6.33% of students were strongly disagree, 7.17% of students were disagree and 22.78% of students were neutral about this statement. It shows that most of student were negative for this statement. So the problem of optional mathematics not makes nervous to students.

Statement “I am always confused in my optional mathematics class” was negative attitude with the weighted mean 2.34. A total of 9.28% of students were strongly disagree, 6.33% of students were disagree and 19.41% of students were neutral about this statement. It indicate that most of students were negative for this statement. Students were not confused in optional mathematics.

Statement “I am sure that I can solve all the problems of continuity and conic section from the text book” was positive attitude with the weighted mean 3.69. A total of 27% of students were strongly agree, 37.13% of students were agree and 21.09% of students were neutral about this statement. It means that most of students were positive for statement. Thus, students solve all problem of present course of optional mathematics.

Statement “I am sure that I can solve all the problems limits from textbook” was positive attitude with the weighted mean 3.84. A total of 34.59% of students were strongly agree, 33.76% of students were agree and 17.72% of students were neutral

about this statement. It shows that most of students were positive for this statement. Students were solved all problem of present course of optional mathematics.

Statement “I have lot of self-confident when it comes to optional mathematics” was positive attitude with the weighted mean 3.71. A total of 28.27% of students were strongly agree, 40.08% of students were agree and 15.61% of students were neural about this statement. It refers that most of students were positive for this statement. Students believes that optional mathematics class have confidents.

Statements “I am able to solve optional mathematic problem without too much difficulty” was positive attitude with the weighted mean 3.68. A total of 31.65% of students were strongly agree, 34.59% of students were agree and 14.78% of students were neutral about this statement. It means that most of students were positive for this statement. Thus, must of students agree thatpresent course of optional mathematics were not difficulties.

Statement “I am able to solve related continuity problem easily” was positive attitude with the weighted mean 3.75. A total of 30.38% of students were strongly agree, 36.29% of students were agree and 17.72% of students were neutral about this statement. It shows that most of students were positive for this statement. So, students believes that solvedpresent course continuity of optional mathematics course easily.

Statement “I am learn present optional mathematics course easily” was positive attitude with the weighted mean 3.86. A total of 27.43% of students were strongly agree, 36.71% of students were agree and 19.83% of students were neutral about this statement. It indicates that most of students were positive for this statement. Thus, most of student agree that optional mathematics course were solved easily.

Above table shows the positive attitudes of learner towards each statement related motivation. Statement “I am confident that I could learn present optional mathematics course for the future study” was positive attitude with the weighted mean 3.89. A total of 35.44% of students were strongly agree, 32.49% of students are agree and 16.02% of neutral about this statement. This statement has highest weighted mean. So, it means that most of students are positive for statement.

Statement “I plan to take as much mathematics as I can during my further education” was positive attitude with the weighted mean 3.62. A total of 25.32% of students were strongly agree, 36.71% of students were agree and 20.25% of students were neutral about this statement. It shows that most of students were positive for this statement. So, students plan to take mathematics further study. Most of students confident that learning present course of optional mathematics for further study.

Statement “I am confident that I could get good grade in present optional mathematics course” was positive attitude with the weighted mean 3.49. A total of 36.71% of students are strongly agree, 30.80% of students were agree and 16.46% of students were neutral about this statement. It regards that most of students are positive for this statement. Students were motivated that they were get good grade in optional mathematics.

Statements “I am willing/agree to take a more than the required knowledge of present optional mathematic course” was positive attitude with the weighted mean 3.42. A total of 21.94% of students were strongly agree, 37.13% of students were agree and 18.99% of students were neutral about for this statement. It concluded that most of students were positive for this statements. Thus, students agreed that optional mathematics course were source of knowledge.

The total mean of motivation of present optional mathematics course was 3.61. So that student's attitude of motivation present optional mathematics course had been positive attitudes. The highest weighted mean was first statements, so the present course motivated to students furthers study. And also show that present course motivated to students of higher studymotivated good grade and students motivated to source of knowledge. Optional mathematics course were useful for daily life-situation, professional and vocational field. It regards that present optional mathematics course were motivated subject.

Categorical Analysis of Attitude of Students

I have also analyzed categorical analysis of attitude of students from following table. The weighted mean of value, self-efficacy, enjoyment and motivation are presented below. And overall weighted mean are presented below.

Table 4.5 categorical analysis table of attitude of students

Categories	Mean	Positive/Negative
Value	3.42	Positive
Enjoyment	3.48	Positive
Self-efficacy		
Efficacy	2.25	Negative
Inefficacy	3.73	Positive
Motivation	3.61	Positive
Overall	3.38	Positive

Above table show that the weighted meanof related to value is 3.42. It show that present optional mathematics course was worthwhile, necessary, useful further

study, useful human life and useful other area. The weighted mean of enjoyment is 3.48. It shows that present optional mathematics course was enjoyable. Enjoyable response of students are positive attitude towards present optional mathematics course. Efficacy is negative attitude at weighted 2.25 and inefficacy is positive attitude at weighted 3.73. The weighted mean of motivation was 3.61, it shows that student's response of motivation was positive attitude toward present course. Overall weighted mean of value of students was 3.38. It shows that the present optional mathematics was valuable, enjoyable, self-efficacy and motivated subjects because means were more than 3.0. And also it show that attitude of students towards present optional mathematics course had been positive attitude from the analysis of data, majority of the statement had a positive attitude towards present course. So, it was conclude that majority of secondary level of Kailali district had positive attitude towards present optional mathematics course. Also mean score of each statement is above 3.0. It show that most of the students had positive attitude towards present optional mathematics course.

Comparison of Boys students and Girls students Attitudes

The second objects of the study was to compare the attitudes of secondary level boys and girls students towards present optional mathematics course. In order to achieve objective, the researcher analyzed that the data of boys and girls attitude distinctly which presented below.

Table 4.6 Comparison table of boys and girls student's attitudes

Comparison	Sample(N)	Mean	Variance	d. f.	t-value	Decision
Boys students	141	3.30	0.011	235	8.03	S
Girls students	96	3.17	0.022			

The analysis of the information mentioned in the above table represents there were 141 boys' students and 96 girls' students as sample. The weighted mean response scores of boy's students 3.30 and Variance 0.011. Similarly, the weighted mean response score of girl's students 3.17 and Variance 0.022. The difference mean view score between these two groups is 0.13. The calculated t-value with respect to difference of mean view score is 8.03, which was greater than tabulated t-value 1.96 at 0.05 level of significant and degree of freedom 235. This show that the calculated t-value was more than tabulated t-value, therefore null hypothesis was rejected and alternative hypothesis was accepted. Thus, it concluded that attitude of boys students was better than attitude of girls students towards present optional mathematics course in secondary level. The average mean of value, enjoyment, self-efficacy and motivation were more than three, so the student's attitude of value, enjoyment, self-efficacy and motivation of present optional mathematic course had positive.

Way of Increasing Positive Attitude of Optional Mathematics

Attitudes is defined as a mental predisposition to act which is expressed by evaluating a particular entry with some degree of favor and disfavor (Pant, 2014).”Attitude towards mathematics is just a positive or negative emotional

disposition towards mathematics McLeod, 1992 (as cited as Zan & Martino, 2007). Attitude of optional mathematics is a point of view about situation of optional mathematics. It is made up of what we think, what we do and what we feel about optional mathematics. The way of increasing positive attitude towards present optional mathematics course. As per the objective, interview schedule with open ended question with five optional mathematics teachers, were used as research tools and following tips were analyzed and interpreted.

Increasing of values. Value is the importance, benefits of optional mathematics. I asked them “How to improve positive attitudes of value of optional mathematics?” Their response has been presented below:

“If teacher teaches mathematics to solve his/her daily used mathematics problem at that time, we can increase students’ positive attitude in optional mathematics.”(Teacher A).

By the response of teacher, it was seen that creation of positive attitude towards optional mathematics, it solve all mathematical problem of daily life activities. Optional mathematics is essential for daily situation, profession and vocational field (Pathak, 2011).” Using daily life activities is way of increasing positive attitude towards present optional mathematics course

“If optional mathematics should be teach practicable”(Teacher B& C)

“If teacher use inductive to deductive method then increasing positive Attitude.” (Teacher D)

Teacher B and C respondent, it can be seen that practicable method was the way of increasing positive attitude. Also teacher D respondent that teachers were used inductive to deductive method. The strategies and method are improve attitude of secondary schools students, Ibenh G.F. et.al,(2013) It so that method was increasing positive attitude of student towards learning mathematics. Furthermore teacher E responded that

Every job is done to be benefit from teachers. Similarly, if there's job had guaranteed after finishing his/her higher education in mathematics.I think the demand and positive attitude in mathematics is increased.

It seems that responded of teacher E, job gerent was developed value of optional mathematics. The positive relation between student's attitude towards learning mathematics and their achievement, Khun-Inkearee et.al (2016).So, students given job gerent then increasing positive attitude of optional mathematics.

Increasing of enjoyment. Enjoyment is a world for the pleasure that comes from enjoyable activities. Enjoyment of mathematics is pleasure comes enjoyable mathematics activities. So I asked them “How to improve positive attitude enjoyment towards optional mathematics?” Their response has been present below:

We can use student-centered methods used in mathematics, then easy to solve the problem more than one method. Another one is that if we give students general to complex idea, we can increase stude-

nts' interest in optional Mathematics. (Teacher A)

By the response of optional mathematics teacher A, it can be seen that multi-method teaching is way increase enjoyment to students. The great value in allowing them to explore and contrast many different way to solve problem, Tamer, 2015 (as cited as McGregor, 2016). So, that multi-method was the way of increasing positive attitudes towards optional mathematics. Moreover teacher D said.

By trying to teach practically to the students for example,, if the teacher should teach height and distance, teacher have to allow the student to measure angle, distance and height themselves so they get pleasure and enjoyment. (Teacher B & C)

By the response of optional mathematics teacher B & C, it can be seen that problematic teaching was developed enjoyment of students. Mathematics classroom should be problematic, (Kilman, 2015). Thus problematic was the way of increasing positive attitude of students towards optional mathematics. Moreover teacher D said

This is the time of information and technology. So, we can teach them by using internet which helps students to know different methods to solve the problems. Similarly, we can teach students by connecting historical matter, such as, when we are going to learning Pythagoras theorem, we teach students where Pythagoras theorem was developed? How it was developed? Why he developed this theorem? In this way we improve student's positive attitude in optional mathematics.

By using play method in teaching ,we develop enjoyment in the student.

(Teacher E)

It seems that way of increasing enjoyment was teach by using ICT. The use of educational technology for teaching mathematics to encourage educational administrators to implement use of educational technology in mathematics education, Eyyam & Yaraton, (2014). So, that students were teach by using ICT then increasing positive attitude towards optional learning mathematics. Teacher D also agree that students were teaches by connecting historical evidence then students were enjoyable. So historical evidence was way of increasing positive attitude of students towards learning optional mathematics and also teacher E respondent teaching play methods were way of increasing positive attitude towards optional mathematics

Increasing of self-efficacy. Self-efficacy is an individual's beliefs in their innate ability to achieve goal. Self-efficacy of mathematics is student's able/capable solved problem of optional mathematics by itself. So I asked them "How to improve positive attitude self-efficacy towards optional mathematics? Their response presented below:

"If teacher give extra time to students for teaching for discussion

than increasing positive attitude." (Teacher A)

"By using discussion method." (Teacher C)

It seems that respondent of teacher A and C discussion method was developing self-efficacy. According bandura, "the types of learning environment and method can improve self-efficacy in classroom, (as cited as Wu, 2017). So students were developed self-efficacy for increasing positive attitude of students towards learning optional mathematics.

Teacher didn't solve all the question given in the exercise. We can only facilitate students when they have feel difficulties. We can do group work exercise by mixing talent and weak students which helps them by learning own their friendly. In this way, we can increase students' self- efficacy in optional mathematics. (Teacher B)

By the making students active, being teacher as only facilitator giving hints in the difficult situation as well as by letting students to solved the problems themselves this way we can increasing positive attitudes of self-efficacy in the students. (Teacher D)

Teacher should teach something and give the students to solved problem themselves. So the develop the self-confidence. (Teacher E)

Responded of teacher B, D and E, it shows that way of increasing of positive attitude of optional mathematics is problem based learning. The students construct knowledge by connecting present knowledge to prior knowledge. Through present individual or social experience, Vygotsky, 1978 (as cited in Kilman, 2015).” So that problem based learning is the increasing self-efficacy of students.

Increasing of motivation. Motivation is the reasons for people's actions, willingness and goals motivation is the change in energy in a person that id marked by the emergence of “feeling” and preceded by the response to the existence of purpose, McDonald and David Morgan,1959(as cited as Indriati, 2018). So I ask them “How to improve positive attitude motivation towards optional mathematics?” Their responded have been presented below:

If teachers shows or tells his/her future opportunities with his/her students after taking optional mathematics. Such as engineer, doctor, pilot, science, computer science, his/her have interested in taking mathematics. They are highly motivated in optional mathematics. (Teacher A & B)

Teacher can motivated to the students to study mathematics by giving the example of successful mathematics teacher as well as by telling about the good study sectors like pilot engineer , doctor after reading optional mathematics. (Teacher C)

Students become motivated to study mathematics. If we can convince that by studying mathematics we can secure our future. (Teacher D & E)

The responded of teacher A, B, C, D and E it seems that future opportunity was the way of developed motivation to students. All the teacher and students agreed that all the content of optional mathematics are very useful for the higher study by providing the basic concept (Pathak, 2011). This show that future opportunity is way of increasing positive attitude of optional mathematics.

Hence, the questionnaire is main tools of this research and five optional mathematics teacher open indeed interview for increasing positive attitude. There were 40 statements of questionnaire, out them 28 statements were positive statement and 12 statements were negative and 11 statement related to value, 11 statements were related self-efficacy, 14 statements were related to enjoyment and 4 statements were motivation. There are 237 students, out of them 141 were boys and 96 were girl's

students. Find the weighted mean of each statement and percentage. All statements were greater than three, so all statements were significant and more than 50% students agreed this statements, so most of student's respondent were positive. After the t-test for comparison of attitude of optional mathematics boys and girls. The calculated t-value is greater than tabulated value, so there was significant different between boys students and girls students. Also taking open indeed interview for the way of increasing positive attitudes of optional mathematic with the five optional mathematics teachers. Way of increasing positive attitude of students towards optional mathematics were teaching used daily life, multi method , inductive to deductive method, discussion method, problem based learning, play method, connecting historical background and future opportunity.

Chapter-V

SUMMARY, FINDING, CONCLUSION AND RECOMMENDATIONS

After the analysis and interpretation of collected data and research design, chapter represented the summary of the study with major finding and conclusion. Finally the last section presents recommendations for the future study.

Summary of Study

This study was carried out to examine the attitude of secondary level students towards present optional mathematics course. The objects of this study were: To find the attitude of secondary level students towards learning present optional mathematics course, to differentiate the attitude of boys students and girls students towards learning present optional mathematics course at secondary level and to explore way increasing positive attitude towards present optional math course.

For the achievement of these objectives of the study, the researcher gathered the data by the method of questionnaire survey with “five Likert scale” as tools for quantitative information in and some teachers were taking interview for qualitative information. The population for the study consisted all the students of secondary level of Kailali district. The sample for the study were selected from 30 secondary school of Kailali district. There were 141 boys and 96 girls. Two school’s students were not studying optional mathematics subject.

Questionnaire were developed as the tools for collecting data for the study. The questionnaire consisted of value, enjoyment, self-efficacy and motivation statement of attitude of students towards present optional mathematics course. Out of 40 statement, 11 for the statement of value, 14 for statement of enjoyment, 11 for the

statement of self-efficacy and four for the statement of motivation. Out of 40 statement 12 statement were negative and 28 statements were positive statement.

The score of 5, 4, 3, 2, and 1 were strongly agree, agree, neutral, disagree and strongly disagree for positive statement.

Due to analysis of weighted mean and percentage of each statement, the majority of students were in the favor of positive attitude it means they demonstrate positive attitude towards this subject and t-test was used to determine the significant different between mean attitude score of boys and girls students which show that there were significant different between girls and boys of attitude towards present optional mathematics course. Furthermore, taking open ended interview with five optional mathematics teacher way of increasing of attitude towards optional mathematics.

Findings and Discussion

From the analysis of the data, the following major finding were derived:

- Overall, it was found that the attitude of the total mean score of students attitude were 3.38, this show that students towards present optional mathematics was positive attitude. The mean score of value, enjoyment, self-efficacy and motivation were more than three, thus each responded of students had positive attitude towards present optional mathematics course.
- The mean score of boys' attitude towards optional mathematics was found higher than girls. The weighted mean of boys was 3.30 and weighted mean of girls was 3.17, this shows that mean score of boys was greater than girls mean score by 0.13.
- T-test was used to determine the different between mean attitude score of boys and girls. Tabulated value of t-test was 1.96 at the 0.05 level of significant with 235 degree of freedom and calculated value of t-test was 8.03. Then,

calculated value of t-test was more than tabulated value. This shows that null hypothesis is rejected and alternative hypothesis accepted. It shows that there was significant difference between boys and girls students attitude towards present optional mathematics course. So, there was significant difference between boys and girls attitude.

- In this study, it was found that the ways of increasing positive attitude of value of optional mathematics were teaching used of daily-life activities, teaching inductive to deductive method and job garnet. Out of five optional mathematics three teacher agree to use daily life activities, one teacher agree to inductive to deductive and one teacher to agreed job garnet.
- It shows that the way of increasing positive attitude of enjoyment of optional mathematics were teaching multi-method, use of ICT, practicable, teaching learning by connecting historical evidence and play method. All teacher responded that using of ICT is best way of increasing positive attitude. Out of five optional mathematics one teacher agree to using multi-method, two teacher agree to problematic, one teacher agree to teach using of ICT with connecting historical evidence and one teacher agree to teaching play method.
- It shows that the way of increasing positive attitude of self-efficacy of optional mathematics were discussed and problem based learning. Out of five optional mathematics teachertwo teachers were agreed to discussion and three teachers agree to problem based learning.
- In this study, it was found that teaching future opportunity was the way increasingof positive attitudes of motivation of optional mathematics. All teacher responded future opportunity is the way of increasing positive attitude.

Conclusion

Mathematics is intimately in everyday life. The use of optional mathematics has been a part of human activities. It has practical value in human life. We can neither know things correctly nor get practical unity of calculation unless we have the knowledge of mathematics. It is the numerical and calculation part of human life. It enables us to solved mathematics problem in our daily life, develop discipline through cultivation the habit of concentration and self-reliance, prepare for technical service such as accounts, mathematics teaching, auditing, engineering and reasoning, so we take mathematics as way of thinking , means of communication and tools of reflexive thinking.

Mathematics is the language of logic. Being able to communicate a logical arguments does depends on some mathematical fundamental. This study was shows that the attitude of secondary level students had positive attitude towards present optional mathematics course. The secondary level girls and boys had positive attitude towards learning optional mathematics. But, there were significant difference between girls and boys students attitude towards present optional mathematics course. The mean attitude score of boys students was significantly different that of girls students. Attitude of boy's students is better than the attitude of girl's students towards present optional mathematics course in secondary level. Way of increasing positive attitude of optional mathematics are teaching daily-fife activities, use of ICT, give the job garnet, teaching discussion method, teaching problem based leaning, teaching learning multi-method, teaching learning play method, teaching leaning connecting historical evidence and to show the future opportunity.

Education Implication

The education implication of the research were as flows:

- The result of this study can be used in the curriculum designing and constructing national policy of education.
- This study should support mathematics teacher and students in increasing positive attitude toward optional mathematics.
- This study will help mathematics teacher how to improve positive attitude of students towards present optional mathematics course
- I hope that this study will facilitateto local government to increasing positive attitude program in mathematics in the school.
- This study will help to parents how improve positive attitude of children towards optional mathematics.

Recommendation

Since the present study was limited in secondary school within the Kailali district, so finding of study can be generalization for the same district but it can't be generalized to all level and national wise. So, considering these limitation the following recommendation had been made.

- A similar study can be extend in other subject as well.
- It is recommended to study out the problem faced by the students in learning optional mathematics at secondary level.
- Government should provide mathematical lab for every secondary level school.
- To conduct special program encouraging students in optional mathematics.
- This study would help to increase class participation of students in optional mathematics.

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Appendix-A

Questionnaire for Students

Dear students,

I am going to study about “ attitude of studets towards learnng new optional mathematics course”. For this purpose I describe 40 statement concerned with attitude. Please study the statement carefully and give your own opinion by putting tick marks (√) on any one of the following five rating of each statement.

Name:-

class:-

School:-

Roll No:-

S.N.	Statement	SA	A	N	D	SD
	Value					
1	Optional Mathematics is a very worthwhile and necessary subject.					
2	I want after the studying new opt mathematics course to develop my mathematics skill.					
3	This new optional Mathematics course help to develop the mind and person think.					
4	I think limit is the most important contain in further study.					
5	Opt Math course would be very helpful no matter which grade level I read.					
6	I can think of many ways that I use opt math outside of school.					
7	I think studying new optional mathematics course is very useful for further study.					
8	I believe studying optional mathematics helps me with problem solving in other area.					
9	Optional mathematics is useless subject in human life.					
10	I think limit is more hard than trigonometry.					
11	The contain of continuity is useful in further					

	study.					
	Enjoyment					
12	I am enjoy studying conic section lesson of new optional mathematics course.					
13	I get a great deal of satisfaction out of solving optional mathematics problem.					
14	I am enjoy in studying new optional mathematics course in schools.					
15	I am like to solve new problem in optional mathematics course.					
16	Taking new optional mathematics course is waste the time.					
17	I really like new optional mathematics course.					
18	I am happier in optional mathematics then in any other class.					
19	Optional Mathematics course has very interesting subject matter.					
20	I am comfortable expressing my own ideas on how to look for solution to difficult problem in opt math.					
21	I am comfortable answering questioning in optional mathematics class.					
22	Limit and Continuity class is doll and boring.					
	Self-efficient					
23	Optional Mathematics isone of my most dreaded subjects.					
24	When I hear the word optional mathematics I have a feeling of dislike.					
25	My mind does goes blank and I am unable to think clearly when working with optional mathematics.					
26	Studying new optional mathematics course ismake me feel nervous.					

27	The new Optional Mathematics course is make me feel uncomfortable.					
28	I am always under a terrible strain in opt math class.					
29	It is make me nervous to even think about having to do optional mathematics problem.					
30	I am always confused in my optional mathematics class.					
31	I am sure that I can solve all the problems of Continuity and conic section in the textbook of class ten.					
32	I am sure that I can solve all the problem of limits in the textbook of class nine.					
33	I have a lot of self-confidence when it comes to opt mathematic.					
34	I am able to solve optional mathematics problem without too much difficulty.					
35	I am able to solve related continuity problems easily.					
36	I learn new optional mathematics course easily.					
	Motivation					
37	I am confident that I could learn new optional mathematics course for the further study.					
38	I plan to take as much mathematics as I can during my further education.					
39	I am confident that I could get good grade in new optional mathematics course.					
40	I am willing/agree to take more than the required knowledge of new optional mathematics course.					

SA= strongly agree, A=agree, N= neutral, D= disagree, SD= strongly disagree

Appendix –B

Attitude statement for the secondary level students towards new optional mathematics course

S.N.	Statement	SA	A	N	D	SD	Total Attitude Score
	Value						
1	Optional Mathematics is a very worthwhile and necessary subject.	59	86	56	22	14	865
2	I want after the studying new opt mathematics course to develop my mathematics skill.	60	96	43	26	12	877
3	This new optional Mathematics course help to develop the mind and person think.	82	62	52	23	18	862
4	I think limit is the most important contain in further study.	66	80	51	19	21	862
5	Opt Math course would be very helpful no matter which grade level I read.	83	61	55	25	13	887
6	I can think of many ways that I use opt math outside of school.	88	64	43	23	19	890
7	I think studying new optional mathematics course is very useful for further study.	60	96	46	15	20	872
8	I believe studying optional mathematics helps me with problem solving in other area.	60	76	57	29	15	848
9	Optional mathematics isuseless subject in human life.	17	20	59	67	74	550
10	I think limit is more hard than other.	21	18	44	85	69	548
11	The contain of continuity is useful in further study.	62	85	43	30	17	856
	Enjoyment						
12	I am enjoy studying conic section lesson of new optional mathematics course.	95	63	40	25	14	911

13	I get a great deal of satisfaction out of solving optional mathematics problem.	70	79	47	23	18	871
14	I am enjoy in studying new optional mathematics course in schools.	72	78	49	16	22	873
15	I am like to solve new problem in optional mathematics course.	67	89	50	20	11	892
16	Taking new optional mathematics course is waste the time.	12	23	45	107	50	551
17	I really like new optional mathematics course.	95	67	45	20	10	936
18	I am happier in optional mathematics then in any other class.	62	86	47	25	17	862
19	Optional Mathematics course has very interesting subject matter.	56	88	48	27	18	848
20	I am comfortable expressing my own ideas on how to look for solution to difficult problem in opt math.	68	76	53	16	24	859
21	I am comfortable answering questioning in optional mathematics class.	93	67	39	18	20	906
22	Limit and Continuity class is dull and boring.	20	23	51	58	85	543
	Self-efficient						
23	Optional Mathematics is one of my most dreaded subjects.	14	25	38	89	71	533
24	When I hear the word optional mathematics I have a feeling of dislike.	24	16	40	70	87	531
25	My mind goes blank and I am unable to think clearly when working with optional mathematics.	12	23	43	73	86	501
26	Studying new optional mathematics course is make me feel nervous.	19	18	48	80	72	543
27	The new Optional Mathematics course is make me feel uncomfortable.	18	21	50	81	67	553
28	I am always under a terrible strain in opt math class.	12	13	45	82	85	496

29	It is make me nervous to even think about having to do optional mathematics problem.	15	17	54	84	67	540
30	I am always confused in my optional mathematics class.	22	15	46	93	61	555
31	I am sure that I can solve all the problems of Continuity and conic section in the textbook of class ten.	64	88	50	19	16	876
32	I am sure that I can solve all the problem of limits in the textbook of class nine.	82	80	42	20	13	909
33	I have a lot of self-confidence when it comes to opt mathematic.	67	95	37	15	23	879
34	I am able to solve optional mathematics problem without too much difficulty.	75	82	35	21	22	872
35	I am able to solve related continuity problems easily.	73	86	42	22	15	889
36	I learn new optional mathematics course easily.	65	87	47	20	18	872
	Motivation						
37	I am confident that I could learn new optional mathematics course for the further study.	84	77	38	24	14	904
38	I plan to take as much mathematics as I can during my further education.	60	87	48	22	20	858
39	I am confident that I could get good grade in new optional mathematics course.	87	73	39	18	20	827
40	I am willing/agree to take more than the required knowledge of new optional mathematics course.	52	88	45	23	19	812

SA= strongly agree, A=agree, N= neutral, D= disagree, SD= strongly disagree

Appendix-C

Attitude score and mean obtained by students towards new optional mathematics course

S.N.	Statement	SA	A	N	D	SD	Total Attitude Score	Mean
	Value							
1	Optional Mathematics is a very worthwhile and necessary subject.	59 24.89%	86 36.29%	56 23.62%	22 9.28%	14 5.9%	865	3.65
2	I want after the studying new opt mathematics course to develop my mathematics skill.	60 25.31%	96 40,51%	43 18.14%	26 10.97%	12 5.06%	877	3.70
3	This new optional Mathematics course help to develop the mind and person think.	82 34.59%	62 26.16%	52 21.49%	23 9.70%	18 7.59%	862	3.64
4	I think limit is the most important contain in further study.	66 27.85%	80 33.76%	51 21.52%	19 8.01%	21 8.86%	862	3.64
5	Opt Math course would be very helpful no matter which grade level I read.	83 35.02%	61 25.73%	55 23.21%	25 10.55%	13 5.49%	887	3.74
6	I can think of many	88	64	43	23	19	890	3.76

	ways that I use opt math outside of school.	37.13%	27%	18.14%	9.70%	8.01%		
7	I think studying new optional mathematics course is very useful for further study.	60 25.32%	96 40.51%	46 19.41%	15 6.33%	20 8.44%	872	3.68
8	I believe studying optional mathematics helps me with problem solving in other area.	60 25.32%	76 32.07%	57 24.05%	29 121.24%	15 6.33	848	3.58
9	Optional mathematics is useless subject in human life.	17 7.17%	20 8.44%	59 24.89%	67 28.27%	74 31.22%	550	2.32
10	I think limit is more hard than other.	21 8.86%	18 7.59%	44 18.57%	85 36.29%	69	548	2.31
11	The contain of continuity is useful in further study.	62 26.16%	85 35.86%	43 18.14%	30 12.66%	17 7.17%	856	3.61
	Enjoyment							
12	I am enjoy studying conic section lesson of new optional mathematics course.	95 40.08%	63 26.58%	40 15.88	25 10.55%	14 5.91%	911	3.84
13	I am get a great deal of satisfaction out of solving optional mathematics problem.	70 29.54%	79 33.33%	47 19.83%	23 9.70%	18 7.59%	871	3.66
14	I am enjoy in	72	78	49	16	22	873	3.68

	studying new optional mathematics course in schools.	30.38%	32.91%	20.66%	6.75%	9.28%		
15	I am like to solve new problem in optional mathematics course.	67 28.27%	89 37.55%	50 21.09%	20 8.44%	11 4.64%	892	3.76
16	Taking new optional mathematics courseis waste the time.	12 5.06%	23 9.70%	45 18.99%	107 45.15%	50 21.09%	551	2,32
17	I really like new optional mathematics course.	95 40.08%	67 28.27%	45 18.99%	20 8.44%	10 4.22%	936	3.99
18	I am happier in optional mathematics then in any other class.	62 26.16%	86 36.29%	47 19.83%	25 10.55%	17 7.17%	862	3.68
19	Optional Mathematics course has very interesting subject matter.	56 23.63%	88 31.13%	48 20.25%	27 11.39%	18 7.59%	848	3.58
20	I am comfortable expressing my own ideas on how to look for solution to difficult problem in opt math.	68 28.69%	76 32.07%	53 22.36%	16 6.75%	24 10.13%	859	3.62
21	I am comfortable answering questioning in optional	93 39.24%	67 28.27%	39 16.46%	18 7.59%	20 8.44%	906	3.82

	mathematics class.							
22	Limit and Continuity class is dull and boring.	20 8.44%	23 9.70%	51 21.52%	58 24.47%	85 35.86%	546	2.30
	Self-efficient							
23	Optional Mathematics is one of my most dreaded subjects.	14 5.91%	25 10.55%	38 16.03%	89 37.55%	71 29.96%	533	2.25
24	When I hear the word optional mathematics I have a feeling of dislike.	24 10.13%	16 6.75%	40 16.88%	70 29.54%	87 36.71%	531	2.24
25	My mind does goes blank and I am unable to think clearly when working with optional mathematics.	12 5.06%	23 9.70%	43 18.14%	73 30.80%	86 36.29%	513	2.16
26	Studying new optional mathematics course is make me feel nervous.	19 8.08%	18 7.59%	48 20.25%	80 33.76%	72 30.58%	543	2.29
27	The new Optional Mathematics course is make me feel uncomfortable.	18 7.59%	21 8.86%	50 21.09%	81 34.18%	67 28.27%	553	2.33
28	I am always under a terrible strain in opt math class.	12 5.09%	13 5.49%	45 18.99%	82 34.59%	85 35.86%	496	2.09
29	It is make me	15	17	54	84	67	540	2.28

	nervous to even think about having to do optional mathematics problem.	6.33%	7.17%	22.78%	35.44%	28.27%		
30	I am always confused in my optional mathematics class.	22 9.28%	15 6.33%	46 19.41%	93 39.24%	61 25.74%	555	2.34
31	I am sure that I can solve all the problems of Continuity and conic section in the textbook of class ten.	64 27%	88 37.13%	50 21.09%	19 8.02%	16 7.59%	876	3.69
32	I am sure that I can solve all the problem of limits in the textbook of class nine.	82 34.59%	80 33.6%	42 17.72%	20 8.44%	13 5.49%	909	3.84
33	I have a lot of self-confidence when it comes to opt mathematic.	67 28.27%	95 40.08%	37 15.61%	15 6.33%	23 9.70%	879	3.71
34	I am able to solve optional mathematics problem without too much difficulty.	75 31.65%	82 34.59%	35 14.78%	21 8.66%	22 9.28%	872	3.68
35	I am able to solve related continuity problems easily.	73 30.80%	86 36.29%	42 17.72%	22 9.28%	15 6.33%	889	3.75
36	I learn new optional	65	87	47	20	18	872	3.68

	mathematics course easily.	27.43%	36.71%	19.83%	8.44%	7.59%		
	Motivation							
37	I am confident that I could learn new optional mathematics course for the further study.	84 35.44%	77 32.49%	38 16.02%	24 10.13%	14 5.91%	904	3.89
38	I plan to take as much mathematics as I can during my further education.	60 25.32%	87 36.71%	48 20.25%	22 9.28%	20 8.44%	858	3.62
39	I am confident that I could get good grade in new optional mathematics course.	87 36.71%	73 30.80%	39 16.46%	18 7.59%	20 8.44%	827	3.49
40	I am willing/agree to take more than the required knowledge of new optional mathematics course.	52 21.94%	88 37.13%	45 18.99%	23 9.70%	19 8.01%	812	3.42

Total mean

3.69

SA= strongly agree, A=agree, N= neutral, D= disagree, SD= strongly disagree

Appendix-D

Attitude score and weighted obtained by boy students towards new optional mathematics course

S.N.	Statement	SA	A	N	D	SD	Total Attitude Score	Mean
	Value							
1	Optional Mathematics is a very worthwhile and necessary subject.	46	60	25	6	4	561	3.89
2	I want after the studying new opt mathematics course to develop my mathematics skill.	39	56	29	12	5	535	3.79
3	This new optional Mathematics course help to develop the mind and person think.	39	49	34	11	8	521	3.70
4	I think limit is the most important contain in further study.	42	47	35	8	9	528	3.74
5	Opt Math course would be very helpful no matter which grade level I read.	43	42	40	12	4	531	3.77
6	I can think of many ways that I use opt math outside of school.	56	35	33	10	7	546	3.78
7	I think studying new optional mathematics course is very useful for further study.	36	63	31	5	6	541	3.84
8	I believe studying optional mathematics helps me with problem solving in other area.	35	51	38	12	5	522	3.70
9	Optional mathematics is useless subject in	7	8	30	41	55	294	2.09

	human life.							
10	I think limit is more hard than other.	8	8	22	58	45	299	2.12
11	The contain of continuity is not useful in further study.	31	62	29	12	7	521	3.69
	Enjoyment							
12	I am enjoy studying conic section lesson of new optional mathematics course.	56	43	27	11	4	559	3.96
13	I get a great deal of satisfaction out of solving optional mathematics problem.	40	51	34	8	8	530	3.76
14	I am enjoy in studying new optional mathematics course in schools.	45	46	33	7	10	532	3.77
15	I am like to solve new problem in optional mathematics course.	42	56	30	9	4	546	3.87
16	Taking new optional mathematics course is not waste the time.	4	12	31	52	42	307	2.18
17	I really like new optional mathematics course.	42	57	29	10	3	548	3.89
18	I am happier in optional mathematics then in any other class.	41	46	35	12	7	525	3.72
19	Optional Mathematics course has very interesting subject matter.	36	54	32	11	8	522	3.70
20	I am comfortable expressing my own ideas on how to look for solution to difficult problem in opt math.	39	56	31	6	9	533	3.78
21	I am comfortable answering questioning in optional mathematics class.	48	58	20	8	7	555	3.94
22	Limit and Continuity class is doll and boring.	6	13	25	37	61	292	2.07
	Self-efficient							
23	Optional Mathematics is one of my most dreaded subjects.	4	10	25	59	43	296	2.09
24	When I hear the word optional mathematics I have not a feeling of	8	6	30	39	58	290	2.06

	dislike.							
25	My mind does goes blank and I am unable to think clearly when working with optional mathematics.	4	12	28	45	52	294	2.09
26	Studying new optional mathematics course is make me feel nervous.	7	8	33	49	44	308	2.18
27	The new Optional Mathematics course is makes me feel uncomfortable.	8	7	35	47	44	311	2.21
28	I am always under a terrible strain in opt math class.	4	6	31	47	53	284	2.01
29	It is make me nervous to even think about having to do optional mathematics problem.	5	7	24	67	38	297	2.11
30	I am always confused in my optional mathematics class.	9	5	27	68	32	314	2.23
31	I am sure that I can solve all the problems ofContinuity and conic section in the textbook of class ten.	41	57	28	9	6	541	3.87
32	I am sure that I can solve all the problem of limits in the textbook of class nine.	61	42	25	10	3	581	4.12
33	I have a lot of self-confidence when it comes to opt mathematic.	28	75	22	5	11	527	3.74
34	I am able to solve optional mathematics problem without too much difficulty.	43	56	24	9	9	538	3.82
35	I am able to solve related continuity problems easily.	45	51	30	10	5	544	3.86
36	I learn new optional mathematics course easily.	41	53	32	7	8	535	3.79
	Motivation							
37	I am confident that I could learn new optional mathematics course for the further study.	42	60	24	11	4	548	3.89
38	I plan to take as much mathematics as I	40	45	34	12	10	516	3.66

	can during my further education.							
39	I am confident that I could get good grade in new optional mathematics course.	57	41	28	8	7	556	3.94
40	I am willing/agree to take more than the required knowledge of new optional mathematics course.	31	55	31	12	9	501	3.55

SA= strongly agree, A=agree, N= neutral, D= disagree, SD= strongly disagree

Appendix-E

Attitude score and weighted mean obtained by girls students towards new optional mathematics course

S.N.	Statement	SA	A	N	D	SD	Total Attitude Score	Mean
	Value							
1	Optional Mathematics is a very worthwhile and necessary subject.	13	26	31	16	10	304	3.17
2	I want after the studying new opt mathematics course to develop my mathematics skill.	21	40	14	14	7	342	3.56
3	This new optional Mathematics course help to develop the mind and person think.	43	13	18	12	10	365	3.80
4	I think limit is the most important	24	33	16	11	12	334	3.45

	contain in further study.							
5	Opt Math course would be very helpful no matter which grade level I read.	40	19	15	13	9	337	3.51
6	I can think of many ways that I use opt math outside of school.	32	29	10	13	12	333	3.47
7	I think studying new optional mathematics course is very useful for further study.	34	33	15	10	14	381	3.96
8	I believe studying optional mathematics helps me with problem solving in other area.	25	25	19	17	10	326	3.39
9	Optional mathematics is useless subject in human life.	10	12	29	26	19	256	2.67
10	I think limit is more hard than other.	13	10	22	27	24	249	2.59
11	The contain of continuity is useful in further study.	31	23	14	18	10	335	3.49
	Enjoyment							
12	I am enjoy studying conic section lesson of new optional mathematics course.	39	20	13	14	10	352	3.67
13	I get a great deal of satisfaction out of solving optional mathematics problem.	30	28	13	15	10	341	3.55
14	I am enjoy in studying new optional mathematics course in schools.	27	32	16	9	12	341	3.55
15	I am like to solve new problem in	25	33	20	11	7	346	3.60

	optional mathematics course.							
16	Taking new optional mathematics course is waste the time.	8	11	14	55	8	244	2.54
17	I really like new optional mathematics course.	43	18	14	14	7	364	3.79
18	I am happier in optional mathematics then in any other class.	21	40	12	13	10	337	3.51
19	Optional Mathematics course has very interesting subject matter.	20	34	16	16	10	326	3.39
20	I am comfortable expressing my own ideas on how to look for solution to difficult problem in opt math.	29	20	22	10	15	326	3.39
21	I am comfortable answering questioning in optional mathematics class.	45	9	19	10	13	351	3.66
22	Limit and Continuity class is dull and boring.	14	10	26	21	24	254	2.65
	Self-efficient							
23	Optional Mathematics is one of my most dreaded subjects.	10	15	13	30	28	237	3.47
24	When I hear the word optional mathematics I have a feeling of dislike.	16	10	10	31	29	241	2.51
25	My mind does go blank and I am unable to think clearly when working with optional mathematics.	8	11	15	28	34	219	2.28
26	Studying new optional mathematics	12	10	15	31	28	235	2.45

	course is make me feel nervous.							
27	The new Optional Mathematics course is make me feel uncomfortable.	10	14	15	34	23	242	2.52
28	I am always under a terrible strain in opt math class.	8	9	14	35	32	220	2.29
29	It is make me nervous to even think about having to do optional mathematics problem.	10	10	30	17	29	243	2.53
30	I am always confused in my optional mathematics class.	13	10	19	25	29	241	2.51
31	I am sure that I can solve all the problems of Continuity and conic section in the textbook of class ten.	23	31	22	10	10	335	3.49
32	I am sure that I can solve all the problem of limits in the textbook of class nine.	21	38	17	10	10	338	3.52
33	I have a lot of self-confidence when it comes to opt mathematic.	39	20	15	10	12	352	3.67
34	I am able to solve optional mathematics problem without too much difficulty.	32	26	11	12	13	334	3.48
35	I am able to solve related continuity problems easily.	27	35	12	12	10	345	3.59
36	I learn new optional mathematics course easily.	24	34	15	13	10	337	3.51
	Motivation							

37	I am confident that I could learn new optional mathematics course for the further study.	42	17	14	13	10	356	3.71
38	I plan to take as much mathematics as I can during my further education.	20	40	14	10	12	334	3.48
39	I am confident that I could get good grade in new optional mathematics course.	30	32	11	10	13	344	3.58
40	I am willing/agree to take more than the required knowledge of new optional mathematics course.	21	33	14	11	10	311	3.24

SA= strongly agree, A=agree, N= neutral, D= disagree, SD= strongly disagree

Appendix-F

Guideline for Interview with Secondary level Optional Mathematics Teacher

Date of interview:-.....

Name of teacher:-.....

Name of school:-.....

Trained/untrain:-.....Sex:-.....

Teaching experience:-.....Age:-.....

Address:-.....

.....

The interviews with teachers was conducted on the basis of following main topics :

- Confident level in new optional mathematics course.
- Value of optional mathematics
- Enjoyment of optional mathematics
- Self-efficient of optional mathematics
- Motivation of optional mathematics
- How increasing value, enjoyment, self-efficient and motivatin.
- Way of increasing positive tough.
- How to increasing positive feeling.

Appendix G

Name of school Selected for sample

1. Nepal RastriyaKarnali S.S, chisapani
2. Rastriya S.S.,motipur
3. Janata S.S., Chauri
4. SahidSmirti,S.S.Lamki
5. Rastriya S.S.,Gopka
6. Janpriya H.S.S. Masuriya
7. RastriyaBhawani S.S, Msuriya
8. Mahadev S.S., Matkauna
9. Laxmi H.S.S.,Badaipur
10. Darahk H.S.S., Harinagar
11. Padaun S.S, Pandaun
12. Rasrtiya H.S.S, Taranager
13. Dasrath H.S.S.,Sandepani
14. MelghattiS.S, Dipnager
15. ChhadiS.S., Belar
16. Rastriya H.S.S, Sukhad
17. BiratSanatan S.S., Godagodi
18. SitaKunda H.S.S.,Ramshikharjhala
19. Mahonyal H.S.S.,Bhajani
20. Karmeshawar H.S.S, Bhajani
21. KantiRajyalaxmi H.S.S., pahalmanpur
22. PahalmanShing Memorial H.S.S.,Ambasa
23. Navjoti S.S, Tilaknaher

24. Khadaksmirti S.S., Tikapur
25. BirendraBidyaMandir, Tikapur
26. Rastriya S.S.,Beluwa
27. Janata H.S.S.,Sunakata
28. Karnali S.S.,Satti
29. Panchodya H.S.S.,Utterbehidi
30. Tribhuwan H.S.S.,Batanpur

Appendix H

Statistical Formula Used for Data Analysis

1) For positive attitude

Strongly agree	Agree	Neutral	Disagree	Strongly agree
5	4	3	2	1

Total score= No of strongly agree×5+No of agree×4+No of neutral×3+No of disagree×2+No of strongly disagree×1

For negative statement

Strongly agree	Agree	Neutral	Disagree	Strongly agree
1	2	3	4	5

Total score= No of strongly agree×1+No of agree×2+No of neutral×3+No of disagree×4+No of strongly disagree×5

$$\text{Weighted mean} = \frac{\text{Total score}}{\text{Total student}}$$

$$2) \quad t = \frac{\bar{X}_1 - \bar{X}_2}{Sp \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$\text{Where, } S_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$$

\bar{X}_1 = mean score of boys students

\bar{X}_2 = Mean score of girl's students

n_1 = Number boys students

n_2 = Number of girls students

S_1^2 = Variance of boy's students

S_2^2 = variance of girls students