Chapter I

INTRODUCTION

Background of the Study

The word 'Geometry' is taken from the two Greek words 'Geo' and 'Matron'. Geo means earth and Matron means measure (Hiele, 1959). Geometry is one part of mathematics. It is developed on the basis different figures and their measure so, it effect on mathematics achievement and it is important to ancient civilization and used for surveying, astronomy, navigation and building (Adhikari, 2015). It is proved that human civilization and development of mathematics comes together with Geometry and Arthematics. Mathematics is playing vital role to development the human civilization.

In the 21st century, Geometry is an aspect of mathematics which deals with the study of different shapes. These shapes may be plane or solid. A plane shape is a geometrical form such that the straight line that joins any two points on it whole lies on the surface. A solid shape on the other hand is bounded by surface which may not whole be represented on a plane surface (Battista, 1999). Geometry is study of points, lines, angles, triangle, perimeter, area, and volume can be used to learn the mathematics with the enjoyment way of learning mathematics.

Geometry is the one part of mathematics which is based on paper and pencil learning. Teachers too often rely excessively on text books; as a result, many students are unable to form a deep geometrical connection to the teaching material being taught. Educators now need to format their classroom agendas to adapt to their diverse classroom in order for their students to understand the material at length. The National Council of Teachers of Mathematics stresses that teachers should relate mathematical material to real geometrical problems (NTCM, 2000).

Mathematics has been taught as a compulsory subject at all levels of school system in Nepal. Compulsory mathematics is also offered to willing and worthy students. In the subject area of geometry is taught separately as important area and has an integral part of the whole school mathematics curriculum. Thus, geometry is considered as an important component of school mathematics. There is a vital role of teacher to show all these importance of geometry to the students in their teaching. Also, the new area research lower secondary level 30% study of geometry teaching (NCTM, 2000). So, the geometry is most important part of mathematics for students.

In the new area of research the lower secondary level is Lower Secondary of student of geometry. So, in this level students must vacancies meaningful learning of geometry. But in this area of educational research in these decades are continually suggesting to low achievement of geometry. So, many of the problems of different profession and discipline relate to the Geometry. This attitude towards geometry may be due to the lack of appropriate teaching methods.

In the context of Nepal there are curriculum, instructional materials, text books, teacher guides to conduct the regular teaching activities in the classroom and teacher training package for improving the achievement of the students (NCTM, 2000). In spite of these efforts significant achievement is not found. It implies that there is need to suggest new method of learning management and teaching for geometry based on research. Geometry is based on measurable subject that is often presented differently than other mathematics classes. The students introduced to abstract ideas (postulates, definitions and proofs) and asked to think and learn in an unfamiliar way. It is from the researcher's point-of-view that this system can often lead to student-teacher miscommunications as well as confusion.

School mathematics curriculums of Nepal have given emphasis on geometry learning from beginning of schooling. There are three issues in teaching and learning geometry in reference to Nepalese schools. They are: emphasis on the learning geometry, change from the traditional one-way classroom to two way interaction and contextualization of learning geometry (Luitel, 2005). I really convinced by that Nepalese school is facing the problem and issue of low achievement of geometry in lower secondary level. Students are suffering by geometry with confusion of basic concept of geometry. So, student's achievement is poor in geometry. There are many various factors affect on student's achievement in geometry.

Same problem seems in my district Rolpa. All students do not interest to study of geometry, that's effect is achievement low in geometry (DEO, 2074). I think that; why student's achievement low of geometry in school of Rolpa district. There may be different factors which show students achievement low. Therefore, identifying those factors affect on student's achievement in geometry, I selected the title 'Factors affecting on student's achievement in geometry.'

Statement of the Problem

A problem can be defined as one or more discrepancies such as difficulty, obstacle, disagreement, inconsistency or other characteristics permeating an existing situation (Holt 1967). A research problem involves an issue of need of investigation. It follows that a basic characteristics of a researchable problem which can be investigated through the collection and analysis of data.

Most of students of rural area of Rolpa district cannot interest to study of geometric. They think geometry subject as difficulty subject. The teachers teach geometrical concept and related problems but students do not understand about it because they are not clear about basic concept of geometry.

Five years ago, when I was a lower secondary level mathematics teacher, I observed many students in my class struggling to cope with learning Geometry. I teach geometry concept without teaching materials in classroom and many students not interest in my class. Many students did not complete all question in exam, often student did not attempt question related to geometry and get poor marks in mathematics. These shows, many students do not study about concept of Geometry in classroom.

Often, the teachers do not use teaching materials in the geometry teaching in their classroom. It's directly effect on the students understanding and student's achievement is low. The pass mark of final exam in geometry is at least forty from full marks hundred but nowadays, student's achievement is less than 40 in geometry of basic school of Rolpa (DEO 2074). This shows student's achievement is poor (Appendix- F).

This study attempted to determine that factors which direct affect on student's achievement in geometry in rural school of Rolpa district. So study intended to answer the following research questions:

- What are the student related factors which affect on student's achievement in Geometry in Grade VIII?

- What are teacher related factors which affect on student's achievement in Geometry in Grade VIII?

- What are the Instructional materials related factors which affect on student's achievement in Geometry in Grade VIII?

- What are the Environment related factors which affect on student's achievement in Geometry in Grade VIII?

Objectives of the Study

The main study was to find that factors affect student's achievement in Geometry of Lower Secondary level. Often, Student's achievement is less than 40 but why? So this study was intended to fulfill the following the objectives:

- To find the student related factors which affect on student's achievement in Geometry of Grade VIII.

- To find the teacher related factors which affect on student's achievement in Geometry of Grade VIII.

- To find the Instructional materials related factors which affect on student's achievement in Geometry of Grade VIII.

- To find the Environment related factors which affect on student's achievement in Geometry of Grade VIII.

Significance of the Study

Mathematics education is changing day to day according to the society need. Geometry is the very challenging subject to teach in the teaching field (Lower Secondary school) cause of effect different factors (Battista, 1999). We can find those factors that are related to the difficulties in the instruction of geometry. Not only to point out the factor. It was also suggest the way to minimize the problems. Nowadays, geometry is the most difficult to learn and teach. Most students feel fear and fail about geometry. In such situation, this study was helped to find the solution of the existing misunderstanding on geometry. Specially, this study was important for the following significance.

- To make appropriate instructional strategies to teach geometrical concept.

- To help teachers to improve in their teaching strategies.

- To provide a database relating the teachers problems in teaching geometry

- To use concrete materials in teaching geometry

- To help the students their interest toward geometry learning and appreciate the important of geometry in their daily life.

Delimitations of the Study

The study was limited in the following ways

- This study was delimited in Rolpa district.

- In this study were selected only four schools of Rolpa district.

- This study was covered only Grade VIII.

- This study was concern only factors which effect on student's achievement in Geometry learning in Grade VIII.

- Generalization of study findings to other settings was not the purpose of this study.

- This study was limited in terms of participants. Only 140 students' was participated on survey and four teachers and eight students were taken for interview.

- This study was included only questionnaires and interview guideline for data collection.

Operational Definition of the Key Terms

The key terms of this study were defined as below:

Achievement: The term 'achievement' is defined on the Geometry teaching score of Grade VIII obtained by the student in final examination of Rolpa district.

Low achievement: The term 'low achievement' is defined on the achievement marks of students in examination below 40 marks comparatively other range in Rolpa district.

Factors: The term 'Factors' is defined as one of the things which are related in teaching geometry.

Students: Students refer to all subjects in the population who are studying in Grade VIII of Rolpa district.

Students related factor: The Factors which is related to the only students and their activities of Rolpa district. Especially interest, motivation, self- confidence and practice are student's related factors

Teacher related Factor: The factors which are related to the only teachers and their activities of Rolpa district. Especially teacher activities, teachers Behavior, teaching method, teacher's qualification and teachers training are teacher related factors.

Instructional materials related factors: The factor which are related to the instructional materials and use in school of Rolpa district. Especially Geometry, Geo gebra, low cost materials, Text Book, Curriculum and Content are Instructional materials related factors

Environment factors: The factors which are related to the only environment of Rolpa district where involve students, head teacher, teachers and stakeholders. Especially Home environment, Class environment and School are Environmental factors.

Stakeholders: Those people who are school related person of Rolpa district. Specially, head teacher, subject teacher, parents of students are the stakeholders.

Rural school: Rural schools are those schools which are located in rural area of Rolpa district

Mathematics teacher: The term 'Mathematics teacher' define on who teaches mathematics subject in basic schools of Rolpa district.

Chapter II

REVIEW OF RELATED LITERATURE

Research is a continuous and dynamic process. Research is any sector of skill wants suitable studied with the works in which there are many research have done in the same area (Casa, Firmender, Gavin, 2016). We gain deep knowledge from research with must have already developed theories and researcher which is approximately connected with the problem chosen by him or her (Chand, 2014). From the review of literature, we must identify the study what has established and what has not been try to found yet. It also, provides knowledge to find out the different facts in research for further study of task. The purpose of review of literature is to study open the text and back ground of the study. There are so many books, reports and related studies that have been reviewed in order to explain the present problem of the study. It helps to conduct the research programs and give the better ideas for the research to formulate research hypothesis. To conduct this research some studies reviewed by the researcher about trained teacher on mathematics achievement.

Teaching is mass phenomenon but learning is individualized process. Therefore student's achievement most related to teacher, teaching materials and using method (NCTM, 2000). Also understanding level of student is most important to know teacher teaching at classroom. Van-Hieles (1957) say that five level of student in teaching geometry. He has introduced five levels of students at geometry thinking. The researcher tried to find out the literature on the topic that related to problems faced by mathematics students in learning geometry, number of books, paper, research reports and book list can be found that concern with curriculum instructional materials, method, and so on. Some of the literatures reviewed by researchers which are related to the present study are discussed here:

Empirical Literature Review

Researcher was reviewed the following books, journal, thesis, articles and websites for this study.

Adhikari (2015), His research was on the topic 'Detrimental factors of low achievements in geometry.' This research is qualitative research. In this research, he had followed the case study to identify the detrimental factors for low achievement of geometry. His objectives were; to identify the detrimental factors for low achievement of geometry and to find out the strategies taken by teacher to improve achievement of geometry. He was conducted on Grade VIII of Nightingale School, Kapondol, Lalitpur. Two teachers and six low achiever students of geometry were selected as the respondent units. The school documents, classroom observation and interviews with students, teachers and parents were the tool of study. The major findings of the study were identified such as foundation of instructor and the learner is not in the level of satisfactory.

Mohamed (2012), His research entitled 'The factors influence of students achievement in mathematics.' The purpose of this study was to determine the key factors that influence Libyan student's achievement in mathematics. The sample size was 201. One hundred and five students were in Grade 4-6, eighty-one students from Grade 7-9 and fifteen students from secondary school. A questionnaire of 30 items was distributed for Libyan students in Kuala Lumpur, Malaysia. Students were asked to respond to a 5-points Linker scale. Factor analysis technique was used. The combination of items, with loadings greater than 0.50, were considered as separate factors. These factors which affect the student's achievement were teaching practice, teacher attribution and Classroom climate, student's attitude towards the mathematics and students anxiety in addition to student's mathematics achievement. Subsequently,

confirmatory factor analysis was conducted using the structural equation modeling. The result showed that the teacher attribution and students attitude towards mathematics were the highest and lowest factors influencing the students achievement respectively. Moreover, the relationship among the teaching practices and teacher attribution was high (0.68). Generally, good correlation was found among these factors in one hand and student achievement in mathematics in the other hands.

Dakal (2011), His research was on topic "factor affecting mathematics achievement of Rai students in Khotang district". He selected 100 students, 6 math teachers and 6 head teachers from school. The main concern of this study was to find out the achievement of Rai students in Khotang district. The prior knowledge, favorable subjects, students regularity in math class, consulting with teachers and friends about missed class, time to time practice of previously learned subject matter in math, parent higher education, environment in school, higher education of subject teachers, environment of family, social belief and tradition, house hold work and lack of motivation were founding the major causing factors to effect on mathematics achievement of Rai students.

Above two empirical literature reviews are based on low achievement of students. These different factors direct effect on achievement of mathematics. So student's achievement is low in geometry. All factors must be managed and relation each other then we get expected achievement of students in geometry. So teacher and stakeholder must be careful that critical situation and improving their strategies.

Ling (2008), He studied on year five pupils pre-algebraic thinking in solving pre algebraic problems by taking 13, 11-years old year five pupils. The researcher was categories pre-algebraic problem namely generalization problems involving number patterns generalization problems involves geometry patterns and word

problems involving unknown quantities. They were given ten pre-algebraic problems to be solved individually in two separate sessions. Data were collected via the participants' written solutions, thinking-aloud verbal protocols, retrospection through task-based interview and video taping of their solution process. Finding of this study indicate that recursive strategy and based on shape of figure. Strategy was most frequently used in solving problems involving number patterns and geometry patterns, respectively. For word problems, 'unwinding' and arithmetic strategies were most frequently used and also pre-algebraic thinking can further be enhanced through relevant teaching learning activities in mathematics classroom.

Savas, Tas and Duru (2007), Their research was on the topic "Factors that affect student's achievement in secondary school mathematics." The purpose of this study was to find the factors that affect mathematics achievement. The sample of the study consisted of 275 students from one private and two government school. Data analysis involved descriptive statistics and Chi-Square analysis. The result of study showed that; type of school, family income, studying time, student's attitude towards mathematics and attendance to private course had statistically significant effect on student's mathematics achievement.

Above empirical literature reviews are focused on teaching learning geometry and different factors which effect on achievement of students in mathematics. The issues are emphasis learning geometry, contextualization of learning and change from the traditional one-way classroom to two-way interactive. If the geometry subject make popular, the stakeholder along teacher must be focus learning method of geometry, context of geometry and two-way interaction in teaching geometry. Also type of school, family income, studying time, student's attitude towards mathematics

and attendance to private course are factors which direct effect on achievement of students in mathematics so balance those factors in learning process.

Lamsal (2005), He conducted a research entitled "The effectiveness of Van Hiele approach in teaching geometry at lower secondary school". His objective was to explore the effectiveness of Van-Hiele approach in teaching geometry. The research was experimental and used posttest only equivalent group design. All students of Grade VIII enrolled in the public school of the Syanja district were considered as population and forty three students were selected as sample. The conclusion was that Van-Hiele approach of teaching was found to be more effective in teaching geometry and this approach help to reduce difference in boys and girls in terms of achievement.

Olive (1998), He outlined several educational implications of Geometer Sketchpad in the geometry classroom. The traditional approach of building up geometry from axioms, definitions and theorems is not appropriate when phenomena can be explored real-time. Inductive reasoning should be the focus, relying on experimentation, observation and conjecturing.

He agreed with de Villiers that proof becomes more appropriately used for explanation than for verification. This approach allows students to construct mathematical relationships and meaning for themselves which constructivists believe is the only way that learning is accomplished. Olive stated, "If used in conjunction with practical, physical experiences (such as ruler and compass constructions on paper), the computer construction tool can provide a link between the physical experiences and the mental representations" (p. 400). This statement aligns with the AIMS model of developing the interaction between concrete and representation. This also implies that dynamic geometry software aids in the development of student's spatial visualization abilities.

Battista (1994), He proposed that visual-spatial processing is the initial stage in developing conceptual understanding of mathematical ideas, even as fundamental as addition. The learning sequence begins with concrete manipulation, moves into the ability to mentally manipulate images, progresses to the development of language to describe the operation and the result, and with repeated experience, leads to symbols representing the operations, "by passing the spatial-like thinking required to use the underlying mental model. However, even though such thinking may appear strictly verbal. It be conceptually meaningful and powerful enough to encompass novel situations, it must be based at some level on operations with mental models" (p.93). Therefore, it is important to explicitly include visual representations as students learn new content in order to build a foundation for conceptual understanding and a basis for problem solving.

Burger and Shaughnessy (1986), They developed an assessment tool that involves a structured interview focused on triangles and quadrilaterals. Their interviews of 45 students in Oregon, Michigan and Ohio confirmed that the van Hiele levels are useful in describing students" thinking processes regarding geometry. They concluded that their structured interview process provided insights and consistent conclusions regarding a student's van Hiele level of understanding.

Usiskin and Senk (1982), They were the leaders of the Cognitive Development and Achievement in Secondary School Geometry Project. Their objective was to study the relationship between van Hiele level and achievement in students enrolled in a one-year high school geometry course. The challenge was to take an elegant theory and translate it into a practical and predictive assessment tool. In order to do so, the team developed three testing instruments to gauge student performance in incoming geometry knowledge, van Hiele level and geometric proof.

Amatya (1978), His research entitled "Effectiveness of Teaching Mathematics with and without use of instructional Materials."With the aim to find out whether the instructional materials are helpful to develop the mathematical concept and to measure the difference in concept development among students in the experimental and control group of Grade III. 60 students of Lalitpur Nagar Panchayat were selected by using systematic sampling and the experimental was conducted for four weeks duration. The t-test was applied to conclude that the mean difference was significant at 0.05 levels. He conducted that the performance of students taught with the use of instructional materials was significantly improved when compared with the performance of students taught without the use of instructional materials.

Above the empirical literature reviews are focused on using teaching materials in teaching field and follow the Van-Hiele teaching learning method in geometry then we will get expected achievement of students in geometry and improve the teaching strategies.

Theoretical Literature Review

This study was related with Van-Hiele theories.

Van Hiele Theory

In 1957, Dina van Hiele-Geld of and Pierre Marie van Hiele, two Dutch mathematics educators, recognized this complication and constructed an approach to explain why many students have difficulty learning geometry? Their method was titled the Van Hiele Level Theory (Hiele, 1959). This theory has been applied to explain why many students have difficulty with the higher order cognitive processes required for success in geometry. To begin with, according to this theory, there are five levels of understanding that must be consecutively completed for maximum achievement (Hiele, 1959 & Walle, 2001).

Level 1: Visualization/Recognition

At this level, individual is capable of distinguishing the different features of shapes and classifying them according to appearance (Walle, 2001). Squares and triangles are different from each other. "A square is a square for the individual and he or she is unable to comprehend neither the definition nor the features attributed to a square". (Upadhya, 2001) Depending on the definition, the individual can just say the name according to the appearance. For example, he or she is not capable of noticing that the rectangle or square. The suitable activities that can be done with an individual at this level include letting them play with items that contain geometric shapes, letting them tell their observations and experiences about these items, and providing opportunities for the individuals to draw these items.

Researcher focused on questionnaire related to student's interest and teaching materials with this visualization level.

Level 2: Analysis

An individual at this level is capable of explaining the features of each shape in a class, but the individual cannot establish the relationship between these shapes (Fisher, 2014). The individual at this level are able to derive some generalizations about the shapes. For example, the individual can say that all the edges of a square are equal and perpendicular to each other or that the opposite sides of a parallelogram are equal and parallel to each other. They can classify the shapes according to their characteristics such as an angle's edges. Appropriate activities for individuals at this level include measuring objects, identifying and transforming a shape, and classifying an object.

Researcher focused on questionnaire related to students and teacher behavior and activities with this analysis level.

Level 3: Informal Deduction /Order

Individuals at this level able to sort the shapes and relationships logically but may not be able to understand the shape's mathematical properties (Choudhury & Das, 2012). They can make simple, informal inferences but are not capable of understanding the proofs involved. They can distinguish other relations from the relations they know using informal expressions. For example, when one says that the perpendicular edge going down from the top point of a triangle is both angle bisector and median, a student at this level can notice that this triangle is an isosceles triangle or an equilateral triangle.

Researcher focused on questionnaire related to student's self- confidence, motivation and teacher's activities with this informal deduction level.

Level 4: Deduction

This level corresponds to a high school course. Individuals at this level can compare and discuss the features of shapes. Additionally, the individual can explain the relationships between axioms and theorems, postulates and definitions, and can comprehend the processes of reasoning postulates and definitions, and can comprehend the processes of reasoning by induction (Walle, 2001).

Researcher focused on questionnaire related to student's practice, teacher teaching method and environment twith deduction level.

Level 5: Rigor

Individuals at this level can understand various axiomatic systems and comprehend the relationships between them. Students can study different types of axiomatic systems of geometry teaching. The product of this reasoning is the establishment, elaboration and comparison of axiomatic systems of geometry teaching field (Fisher, 2010).

Researcher focused on questionnaire related to student's understand and generalization, materials and environment with all level.

Phase of learning

The van Hieles proposed that students progress sequentially from one level to the next by working through instructional activities that are appropriate in terms of language and task for their level of understanding (Fuys, Geddes and Tischler,1988) describe the van Hieles five instructional phases as:

Phase 1: Inquiry

In this phase the teacher effort to the students in two-way discussion about the topic. Student interest to ask about different figure of Geometry only name of figures. At that time, the teacher must be say name of all Geometrical figures and play these figures. Also vocabulary is established and teacher manages the ground for further study (Fuys, 1988).

Phase 2: Orientation

In this phase the teacher directs the path of exploration in such a way as to ensure that the students become familiar with specific key ideas related to the topic. In the analyzed lessons, the phase of guided orientation was characterized by the teacher guiding students to uncover the links that form relationships of a proof problem (Fuys, Geddes and Tischler,1988).

Phase 3: Explanation

The explanation phase of teaching was determined when students had knowledge, and were able to use mathematical language, to present the general structure of a proof (Ding and Jones, 2014). In this phase, the students work and activities in field more independently, clearing their understanding and use vocabulary.

Phase 4: Free Orientation

In this phase, students do more task by different way and explore own methods to obtain solution. The Free Orientation phase of teaching, according to the Van Hiele model and in the context of teaching geometrical proof, is when students learn their own ways to prove multi-step proof problems (Ding and Jones, 2014).For example students can be draw isosceles triangle by different way with different size.

Phase 5: Integration

At this level, geometry is understood at the level of a mathematician. Students understand that definitions are arbitrary and need not actually refer to any concrete realization. Also in this phase of teaching, according to the van Hiele model and in the context of teaching geometrical proof, is when students review and reflect the methods used in a set of proofs (Fuys, Geddes and Tischler,1988).

This theoretical review was supported to the researcher in own individual study. Researcher found that factors which direct effect on achievement of students compare with Van Hiele Geometry thinking level. Van- Hiele theory deepened on teacher, students, teaching materials and learning environment. So the researcher made questionnaires depend on Van Hiele Geometry thinking levels and compare with result of statistics and justified all factors.

Conceptual Framework

Conceptual frame work was constructed on the basis of factors of low achievement of students in geometry of Lower Secondary for this study. In this study, Researcher was study on the basis of bellow conceptual frame work. Different researches were showed that achievement is affected by students related, teacher related and environment related factors. The bellow conceptual framework was show low achievement of students in geometry if these factors were not be balance each

other. There are many various factors; they were limit in term as interest, self-confidence, motivation and practice of students, teacher behavior, teaching method, teacher training, home environment, classroom environment, school environment. For example, to teach geometry in classroom but student not interest or not regularity in his class, there were not get aspect achievement of that student.

Figure:1 Conceptual Framework

Source: Factors Contributing to Students Poor Achievement in Geometry at lower Secondary Education (Fraser, 1994)

For this study the conceptual framework devised through the literature studies facilitated to attain research objectives, get answer of the research questions and carry out

the research work as a whole smoothly. Analyzing various literatures relate to student's achievement. I had developed a conceptual framework which was supported for my thesis is present in above figure.
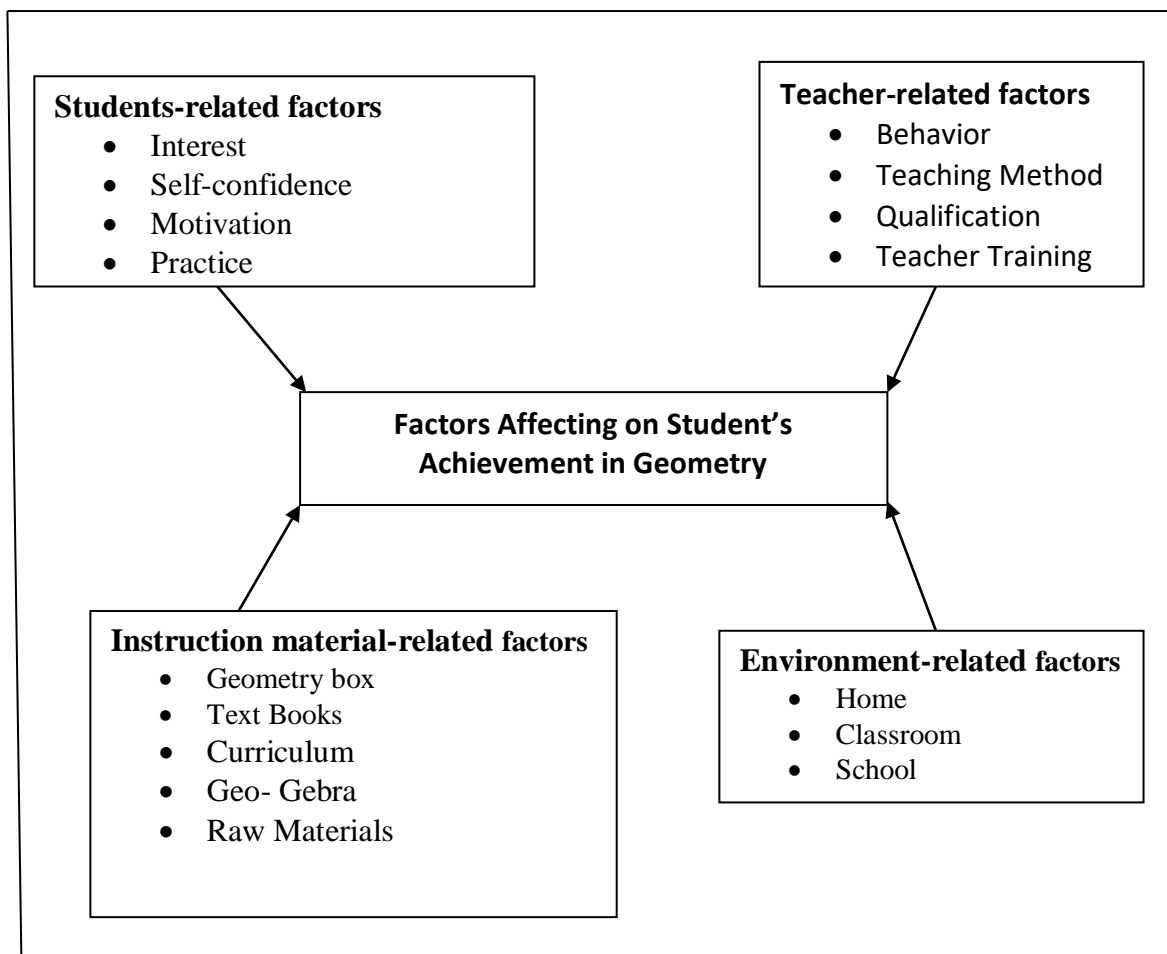
This theoretical review was supported to the researcher in own individual study. Researcher found that factors which direct effect on achievement of students with compare Van Hiele Geometry thinking level. Van- Hiele theory deepened on teacher, students, teaching materials and learning environment. So the researcher made questionnaires depend on Van Hiele Geometry thinking levels and compare with result of statistics and justified all factors.

Figure 1 gives the research framework of this study. A research framework is "a basic structure of the ideas that serves as the basis of phenomenon that is to be investigated" (Fraser, 1994). To achieve the state objective I did frame my conceptual map by four core area namely: students related, teacher related, Instructional material related and Environment related. Van- Heile geometry thinking level helped the researcher to make the difference questionnaire and compare with difference Geometry thinking level.

Researcher's experiment, the statically significance value and Van-Heile geometry thinking level correlated then seems good achievement of student in Geometry. This study is theoretically frame by Van- Heile theory, firstly the researcher take level of Geometry thinking, and secondly This study was focus on achievement of students on the basis of student interest, motivation, self confidence, students practice, teacher behavior, teaching method, qualification, teacher training, Geometry box, Geo Gebra, Raw materials, text book, curriculum, home, class and school Environment according to the Van- Heile theory affect on student's achievement in Geometry.

Chapter III

METHODS AND PROCEDURE

This section explains the design of the study in detail. It includes a detail description of the manner in which decision had made about the type of data needed for the study. The tools, device and method used in collection data (Best and Kahn, 2010).

The chapter explains design and method of the study, population, sample and sampling strategy of the study and instruments used to collect the data, the statistically procedure used in analysis and interpretation of the results (Best and Kahn, 2010). Before conducting a research, the researcher must be sure about appropriate methods and procedures. This chapter deals with the methodologies which adopts in this research.

This chapter has included research design, population of the study, sampling procedures, data collection tools and techniques as well as data analysis procedure.

Source of Data

In this study researcher collected primary data as well as secondary data. Primary data took from questionnaire and interview schedule. Also, secondary data take from result of Grade VIII (DEO, 2075) of Rolpa district for this study.

Design of Study

A mixed method approach was selected for this study because it employs both qualitative and quantitative elements, which aided in enriching the research findings (Best & Khahn, 2010). Researcher described data with quantitative technique and also described data with qualitative technique to justify the quantitative data. "Mixed method research offers a great promise for practicing researchers who would like to see methodologists describe and develop techniques that are closer to what

researchers actually use in practices" (Johnson and Onwuegbuzie, 2004). The researcher collected information by asking a set of pre-formulated questions in a pre-determined sequence in a structure to a sample of individual with defined population respectively. This study focused on the identifying those factors affect on student's achievement in geometry.

Population of the Study

The population of this study consisted of all student of Grade VIII from the Rolpa district (Appendix C). Most of the students do not interest in learning geometrical course content and a vast number of students failed in geometry of Grade VIII in Rolpa district. As data provided by District Education Office, Rolpa there were 3268 students from 122 schools in grade VIII.

Sample of the Study

The sample population of the study consisted of 140 students of Grade VIII selecting students from 4 schools of Rolpa districts (Appendix C). The Researcher selected of the sample of the study by random sampling method and selected 4 schools. They are Shree Netra basic school, Shree Shiddh Kailash secondary school, Shree Bal Kallyan high secondary school and Shree Krishn secondary school.

Also researcher selected 1 teacher and 2 students from each 4 schools (Shree Netra basic school, Shree Shiddh Kailash secondary school, Shree Bal Kallyan high secondary school and Shree Krishn secondary school) for interview.

Data Collection Tools

For this study, the researcher used three type of tool for data collection of survey Study. They were as follows.

- Questionnaire,
- Interview guideline

Questionnaire

A questionnaire is research instrument consisting of a series of questions for the purpose of gathering information from respondents (Best and Kahn, 2010).

For the students, the questionnaires were developed by the researcher himself under the conceptual framework and Van Hiele theory. Questionnaire for the students were consist 50 questions about creating students interest 4 questionnaires, student's self-confidence 4 questionnaires, student's motivation 4 questionnaires, students practice 4 questionnaires, teacher behavior 5 questionnaires, teaching method 7 questionnaires, Geometry Box 4 questionnaires, Text Book 4 questionnaires, home environment 5 questionnaires, classroom environment 5 questionnaires, school environment 4 questionnaires according to the Van Heile theory. (Appendix-A)

Interview Schedule

An interview is a conversation for gathering information with coordinates and process of conversation and asks question by conduct direct and face to face or telephone (Zarinpouch and Zarinpouch, 2006) Interview was conducted for exploring the causes of low achievement of students on the basis of interview guideline of Geometry (Appendix B).

The interview conducted with 1 mathematics teacher and 2 students of every school to collect the information related to the factors affect on students achievement in geometry (Appendix- B).

Especially, Researcher took interview to the subject teacher about teaching materials, Geo gebra, Raw materials text book, content, school environment, teaching method. Also Researcher took interview to the students about interest, motivation, self confidence, practice, teacher behavior, geometry book, text book according to Van Heile Theory.

Validity and Reliability of Test

Ensuring reliability is a prerequisite of constructing a good test. If a test is reliable, all the items should correlate with one another. If the items are highly correlated with each other, the whole test then should correlate highly with an alternate form (Nunnally, 1972).

Measurements are reliable if they reflect the true aspects but not the chance aspects of what is going to be measured. Thus, internal consistency of a test is essential for it to serve its purpose.

Validity is a measure of how well a test measures what it is supposed to measure. The content validity of the questionnaire were established its approval from the mathematics education exports, school teachers and thesis supervisor. A reliable instrument is one that produces consistent results when used more than once in the process of data collection.

For the reliability of the test the researcher was carry out pilot test prepared 25 students of Shree Netra Lower Secondary School in Rolpa district. There was one of the questionnaire with rating scales for the given statements strong agree, agree, undecided, disagree and strong disagree with rating scale 5, 4, 3, 2 and 1 for positive statements respectively and rating scale 1, 2, 3, 4 and 5 for negative statements respectively. The reliability estimates can be obtained from the test re-test method. The researcher used the test re-test method in this study to obtain the reliability measure. In this method, the researcher took the first test at 11 o'clock then second test took after half time. Then the correlation between the two tests determined. The calculation correlation was 0.93.(r=0.93). This shows high level of reliability.

These statements were included in questionnaire and interview guideline. The set of statements were questionnaire and interview guideline and distribute to the experts for checking the validity. To check gross defects in language, complexity, suitable items etc of questionnaire and interview guideline was verified on the basis of information from comment received from the experts.

Data Collection Procedure

Researcher visited the sample school of Rolpa District one by one. Researcher selected 140 students from each selected schools with the help of head master and mathematics teacher to collect the required information and the researcher built report with the concern teachers and explained them about purpose of this study. Then the researcher distributed the questionnaire to the students to collect their views with comparing five point Likert scale about the geometry. After explaining the Researcher took interview to students and teachers on basis Van Heile Theory.

Scoring Procedure

The researcher developed the questionnaire in the five point Likert5 scale points technique. Scoring of the statement did as shown below:

S.N.	Meaning of scale	Positive statement	Negative statement
1.	SA	5	1
2.	A	4	2
3.	U	3	3
4.	D	2	4
5.	SD	1	5

Where   SA= Strong Agree,   A= Agree,   U= Undecided,

SD= Strong disagree,   D= Disagree

For positive statement, if the mean of the response on each statement is 5, then it refers that students are strong agree in their response. If the mean of the response on each statement is 4 then it is agree response. If the mean is 3 then it is undecided of response. If the mean is 2 then it is disagree and if the mean is 1 then it is strong disagree. For negative statement, if the mean of the response on each statement is 1 then students are strong agreeing with the respected question. If the mean is 2 then agree response. If the mean is 3 then it is undecided response. If the mean is 4 then it is disagree and if the mean is 5 then it is strong disagree.

Data Analysis and Interpretation Procedure

The researcher used both quantitative as well as qualitative method for data analysis as purposed in research design. The quantitative data obtained from Questionnaire by calculating Chi Square test, average mean, percentage and weighted mean. Student's response of each questionnaire was divided into each of five categories was calculated. In the other hand, the obtained qualitative data through interview was analyzed in agreeing with Van Heile Theory

The Chi-Square is one of the most powerful statistics, which is used for several purposes. It is non- parametric statistics. The Chi-Square test applies only to discrete data. Chi-Square test used to measure goodness of fit test (Pandit, 1994).The weighted Mean is a kind of average. Instead of each data point contributing equally to the final mean, some data points contribute more Weight than other. It use some data points are worth more than other Education and research (Scottsdale, 2012)

Percentage is a measure of proportion in relation to a whole number, Often, expressed in relation to how many of something there are per 100 (Mathematics Dictionary, 2015). It used to compare two independent measurement of the same quantity to find out how much the measurement differs.

Chapter- IV

ANALYSIS AND INTERPRETATION OF DATA

This survey study has related to the factors affect on student's achievements of student in geometry. The main sources of data of this study were collected from mathematics students, their teachers and parents. After the collection of the data with the help of relevant tool and techniques was to analyze and interpret them with view to arrive at empirical solution to the problem.

The most important part of the study is analyzing the collected data because without analyzing the data. The essence of the study can't be found. While analyzing the collected data the investigator interprets data draws conclusion and makes generalization (Upadhyay, 2001).

In this research the main objectives were To find the student related factors which affect on student's achievement in Geometry teaching, To find the teacher related factors which affect on student's achievement in Geometry teaching, To find the Instructional materials related factors which affect on student's achievement in Geometry teaching and To find the Environment related factors which affect on student's achievement in Geometry teaching of lower secondary level. Simple random sampling selected to the lower secondary school of Rolpa district with sample sizes 140 from population. Questionnaires and interview schedule were the major tools of this study.

Thus the obtained data analyzed and interpreted under the following headings:

- Students related factors
- Teachers related factors
- Instruction materials related factors
- Environment related factors

The information obtained from questionnaires and interview schedule analyzed and interpret in this part. There are several factors that affect in learning Geometry. Also help of related literature and theory. It was showed the different four variables that effect on students achievement in Geometry. Such variables described separately as follows.

Students Related Factors

Geometry has become a difficult issue for all the teachers, students and even for experts. The new developed teaching techniques and learning styles makes more challenging. Learning is related to the students pre-knowledge where he/she can do further study. So interest is one factor of students related. Student's motivation, self-confidence and practice are also more important factors which effect on student's achievement in Geometry.

"The achievements of the students in subject are determined by their attitude rather than inability to study." (Mwamwenda,1995).

Many factors (interest, motivation, self confidence and practice) are affecting on students achievement in Geometry which are following analyzed with separately statements wise.

Interest of Learner

In this part deals with how much students are interested in Geometry. Student's attitude and belief effect on achievement of Geometry. Interest depends on individual of learner whose play vital role on achievement of Geometry. (Hiele, 1959).

The following four statements deepen the interest of learner that influences on achievements of student in Geometry at Grade VIII.

The following table present Chi-square test with 5% significant level and having degree of freedom 4 of student's response to interest of learner.

Table 1: Chi-Square Value of the Student's Response on Related to Their Interest.

S.N.	Statements	χ^2-Value	Remarks
1	Geometry is my favorite subject.	10.58	S
2	It has many formulae and problems so I don't like to study of geometry	5.56	NS
3	It has many figure which gives to understand about geometrical problems.	9.37	NS
4	Geometry is practical subject.	19.17	S
	Average value of Chi- square	11.17	S

Significant at α=5% df= 4 χ^2-value=9.49

Above statements shows that student's interest influences their achievement on Geometry. Statements 2 and 3 have no significance but statements 1 and 4 have significance.

The average value of these statements is significance, these are 5 percent level of significance indicated that the learners interest play the vital role on the achievement on Geometry.

Also, this part deal with how much students are interested on Geometry. The following table presents the student's responses towards learner's interest on Geometry with percentage, weighted mean and average weighted mean of their responses.

Table 2: Percentages and Weighted Mean of Student Responses on Interest of Learner

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	Geometry is my favorite subject.	15.7	27.2	5.7	37.1	14.3	2.29
2	It has many formulae and problems so I don't like to study of geometry.	17.9	34.3	10.7	15.7	21.4	2.88
3	It has many figure which gives to understand about geometrical problems.	28.6	36.4	7.8	15	12.2	3.54
4	Geometry is practical subject.	22.9	17.9	7.1	30	22.1	2.89
	Average W.M.						2.9

The above table shows the percentages and weighted mean of student's interest on Geometry. The weighted mean of the statement "Geometry is my favorite subject" is 2.29. This implies that student's attitude towards Geometry is negative and total 52.4% students disagree and strong disagree with this statement shows that Geometry has been favorable subject about 42.9% students out of total students. The weighted mean of the statement "It has many formulae and problems so I don't like to study of geometry." is 2.88. This implies that students don't interest to study towards Geometry and total 52.2% students agree and strong agree with this statement shows that Geometry has been favorable subject about 37.1% students out of total students. The weighted mean of the statement "It has many figure which gives to understand about geometrical problems" is 3.54. This implies that students do interest to study of Geometry and total 65% students agree and strong agree with this statement shows that Geometry has not been understand geometrical figure and problems about 27.5%

students out of total students. The weighted mean of the statement "Geometry is practical subject" is 2.89. This implies that students do not practical work of Geometry in classroom and total 52.1% students disagree and strong disagree with this statement shows that Geometry has been understand by practical work about 40.8% students out of total students.

In additional finding, the researcher took interview form mathematics subject teacher and Students for qualitative information.

Does the interest of learner affect the student's achievements on mathematics?

"Yes, most of the students who get low marks in previous class, they don't interest in geometry and who get good mark in previous class they give interest and active participation in teaching learning process, so all students don't interest about geometry in school level".

(Teachers Views)

Do the Geometry is enjoyment part of mathematics?

"No, I don't like this part of mathematics because it is very hard to study and I don't understand problems of this part of mathematics in our class. So geometry is not enjoyment part of mathematics for me. But I like geometrical figure because I draw the picture and it help me to draw picture"

(Students views)

From view who students do hard study in school they get good score in geometry but weak students don't study of geometry and boring it, so they don't get good score in geometry, also most of students are both attitude positive and negative attitude toward geometry. Which students are negative attitude in geometry they were not interested in geometry. Some student draw geometrical figure for only drawing different picture.

Self-confidence

Self-confidence increases the ability of successful for every person. "The socio-psychological concept of self-confidence relates to self-assuredness in one's personal judgment, ability, power, etc., sometimes manifested excessively." (Lof, 2010). It plays vital role on achievement of students on Geometry in teaching learning field.

The table presents the Chi-square value 5% significant level and having degree of freedom 4 of students responses related to learner self-confidence.

Table 3:Chi-square Value of the Student's Responses on Related to Their Self-Confidence.

S.N.	Statements	χ^2 –Value	Result
1	I think geometry is not a difficult subject	9.52	S
2	I can solve the geometrical problems surely.	15.8	S
3	I can draw the geometrical figure.	10.8	S
4	I cannot get good score in geometry.	8.50	NS
*	Average value of Chi- square	11.13	S

Significant at α=5% df= 4 χ^2 -value=9.49

Above statements shows that statements 1 & 4 are no significant but statements 2 & 3 are significance. The average value of these all statements is significance, these are 5 percent level of significance indicated that the learners self-confidence affect student's achievement in Geometry. So self-confidence is one of the factors effect on student's achievement in Geometry.

Also, This part deal with how much students are self-confidence to study on Geometry. The following table presents the student's responses towards learner's self-confidence on Geometry with percentage and weighted mean of their responses.

Table 4: Percentages and Weighted Mean of Student Responses on Self-Confidence of Learner

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	I think geometry is a difficult subject.	22.9	32.9	6.4	22.8	15	3.26
2	I can solve the geometrical problems surely.	22.8	12.9	9.3	32.1	22.9	2.80
3	I can draw the geometrical figure.	20	43.6	8.6	12.1	15.7	3.40
4	I cannot get good score in geometry.	21.4	47.1	5.8	15	10.7	2.46
	Average W.M.						2.98

The above table shows the percentages and weighted mean of student's self-confidence on Geometry. The weighted mean of the statement "I think geometry is a difficult subject" is 3.26. This implies that students think very hard subject to study of geometry and total 55.8% students agree and strong agree with this statement shows that Geometry has been essay subject about 37.9% students out of total students. The weighted mean of the statement "I can solve the geometrical problems surely" is 2.80 and about 32.1% respondents agree and 22.9% respondents strong agree. This shows that 55% students can't solve the geometrical problems surely and 35.7% students can solve the geometrical problem. The weighted mean of the statement "I can draw the geometrical figure" is 3.40 and total 53.6% respondents strong agree and agree. This shows that a few students can't draw the geometrical figure. The weighted mean of

the statement "I cannot get good score in geometry" is 2.46, and only 21.4% students in strong agreed and 47.1% students in agreed with this statement shows that a few students are self-confidence to get good score in Geometry.

In additional finding, the researcher took interview form mathematics teacher and students for qualitative information.

Do students solve the geometric problems them self?

"No, all students do not solve the geometric problems but a few students solve the geometric problems with very well and we help to solve every geometrical problem in classroom."

(Teacher view)

Do you solve the problems of Geometry self?

"No, we don't solve problems of geometry self but we solve the problems of Geometry with help of teacher. We feel much difficult other exercise of mathematics so we don't solve the problems of geometry."

(Students view)

From view, some students are self-confidence to solve the problems of geometry and more students are not self-confidence and fear from problems of geometry.

Motivation

This part of analysis deals with the motivating factors. Geometry requires highly motivated students because it has many figures, formulae and problems which are difficult to understand. Motivation refers to "The reasons underlying behavior" (Guay, 2010).

Paraphrasing Gredler, Broussard and Garrison (2004) broadly define motivation as "The attribute that moves us to do or not to do something." Intrinsic

motivation is motivation that is animated by personal enjoyment, interest, or pleasure. As Deci et al. (1999) observe, "Intrinsic motivation energizes and sustains activities through the spontaneous satisfactions inherent in effective volitional action. It is manifest in behaviors such as play, exploration, and challenge seeking that people often do for external rewards"(Deci, 1999).

The following table represents the Chi-square value of the student's response on the related to their motivation.

Table 5:Chi-Square Value of the Student's Responses on Related to Their Motivation

S.N.	Statements	x^2–Value	Result
1	I like to study geometry because it has many figures.	10.85	S
2	Geometry is important subject in mathematics where understand about problem by figure.	12.34	S
3	Geometry helps to solve the problems.	9.87	S
4	Geometry will help my future study.	17.81	S
*	Average Value of Chi- square	12.67	S

Significant at α=5% df= 4 x^2 -value=9.49

From the above table, it is seem that all statements are significance in 5% level of significance. Also average value of all statements is significance. So learner's motivation is one of the factor affect on student's achievement in Geometry.

Also, this part deal with how much students are self-confidence to study on Geometry. The following table presents the student's responses towards learner's motivation on Geometry with percentage and weighted mean of their responses.

Table 6: Percentages and Weighted Mean of Student Responses on Motivation of Learner

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	I like to study geometry because it has many figures.	20.7	21.4	7.2	28.6	22.1	2.89
2	Geometry is important subject in mathematics where understand about problem by figure.	21.4	21.4	7.1	32.2	17.9	2.96
3	Geometry helps to solve the problems.	15	31.4	8.6	27.1	17.9	2.98
4	Geometry will help my future study.	12.9	12.9	11.4	28.6	34.2	2.41
	Average W.M.						2.81

The above table shows the percentages and weighted mean of student's motivation on Geometry. The weighted mean of the statement "I like to study geometry because it has many figures" is 2.89, and also total 50.7% respondents disagreed and strong disagreed with this statement shows that students are not motivated to study of geometry in their future. The weighted mean of the statement "Geometry is important subject in mathematics where understand about problem by figure" is 2.96, and also total 50.1% respondents disagreed and strong disagreed with this statement shows that students are not motivated to understand about the problem by figure of geometry. The weighted mean of the statement "Geometry helps to solve the problems in mathematics" is 2.98, and also total 46.4% respondents strong agreed and agreed with this statement shows that a few students are motivated to solve the problem by help of geometry. The weighted mean of the statement "Geometry will help my future study" is 2.41, and also total 62.9% respondents disagreed and strong

disagreed with this statement shows that students are not motivated to study of their future.

In additional finding, the researcher took interview form mathematics teacher and students for qualitative information. The views and question are described as bellow.

Does motivation affect on achievements of students in Geometry?

"Yes, all students are not motivated in learning geometry but some students are motivated in learning geometry. They active to solve the problems of geometry and they have good score in geometry."

(Teacher view)

Does your teacher help to you to solve the problems of geometry?

"Yes, teacher helps us but all problems not solve in class room and there no environment to learn out of class. We don't solve self it. Also, our parents don't know about Geometry and they always busy in the house work. So we don't motivate about it and we do not well in mathematics."

(Students view)

From above views, more students not motivated to study of geometry this implies that student's achievements have been low. So motivation affect on student's achievements.

Students Practice

Man made perfect by practice so we must more practice to achievement of any works. Students do enough class work and home work in time then they gets successful their target. Different research shows, the practice direct effect on students achievement. "Reading makes a full man, confidences make ready man makes extra man" (Bacon, 2013).

So practice of learner makes high performances in Geometry. Learners practice play important role in achievement of geometry.

The following table represents the Chi-square value of the student's response on the related to their practice.

Table 7:Chi-Square Value of the Student's Responses on Related to Their Practice

S.N.	Statements	χ^2 –**Value**	**Result**
1	I always do my home work and class work of Geometry.	12.26	S
2	I mostly study of geometry subject.	12.41	S
3	I give more time to the geometry than other subject.	16.10	S
4	I don't practice on the previously learned geometrical problem.	11.11	S
	Average value of Chi-square	12.97	S

Significant at α=5% df= 4,χ^2 -value=9.49

From the above table, it is seem that all statements related to learners practice are significant and average value of chi- square of students practice is significance in 5% level of significance. This indicated that the learner's practice play the vital role on the achievement on Geometry.

Also, this part deal with how much students are self-confidence to study on Geometry. The following table presents the student's responses towards learner's practice on Geometry with percentage and weighted mean of their responses in geometry.

Table 8: Percentages and Weighted Mean of Student Responses on Practice of Learner

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	I always do my homework and class work of Geometry.	16.4	22.9	7.1	31.5	22.1	2.80
2	I mostly study of geometry subject.	18.6	15.7	15.7	35.7	14.3	2.88
3	I give more time to the geometry than other subject.	23.6	18.6	11.4	32.9	13.5	3.06
4	I don't practice on the previously learned geometrical problem.	12.9	21.4	8.6	41.4	15.7	3.25
Average W.M.							2.98

The above table shows the percentages and weighted mean of student's practice on Geometry. The weighted mean of the statement "I always do my homework and class work" is 2.80, and also total 53.6% respondents disagreed and strong disagreed with these statement shows that more students are not practiced of class work and homework and only a few students do class work and home work. The weighted mean of the statement "I mostly study of geometry subject" is 2.88, and also total 50% respondents disagreed and strong disagreed with these statement shows that more students study of geometry sometime. The weighted mean of the statement "I give more time to the geometry than other subject" is 3.06, and also total 46.4% respondents disagreed and strong disagreed with these statement shows that less than 50% students study of geometry every time.

The weighted mean of the statement "I don't practice on the previously learned geometrical problem" is 3.25, and also total 57.1% respondents disagreed and strong disagreed with these statement shows that students do more practice of previously learned geometrical problems.

In additional finding, the researcher took interview form subject mathematics teacher and students for qualitative information. The views and question are described as bellow.

Does practice affect on students achievement of geometry?

"Yes, man perfect by practice so students must be more practice. But a few students do regular practice of geometry such that students do not well in geometry."

(Teacher view)

Do you many practice of exercise of Geometry at home?

"No, we don't practice of Geometry in our home but we are always busy house work. My parents don't help to practice of geometry in home." (Students view)

From the above views, more students don't practice of geometry in home and school so students don't understand about it and student's achievement is low. This implies that practice affect on the student's achievement on geometry.

The average value of Chi- Square test of student related factors is 11.99 and significance, also students are not interest, less self- confidence, no motivation and less practice of Geometry. This shows student related factors play the vital role on the achievement on Geometry. (Appendix- E)

Instruction Materials Related Factors

Instruction materials are these tools which help to the teachers to teach in classroom. Materials are much kind of tools of teaching learning process. It helps to understand the concept of hard subject matter. If the teachers don't use materials in his teaching activities, students don't understand about it and student's achievement is low (NCTM, 2000).

Geometry has different figures so it's clearer by teaching materials. These are following analyzed with separately statements wise.

Geometry Box

Geometry box is important tool in Geometrical chapter. It gives basic concept of point, line, angle and the different figure of Geometry. It is very important teaching materials in basic level so it play vital role on students achievement of Geometry. The following four statements defined the Geometry box that influences on achievements of Geometry at Grade VIII. The following table represents Chi-square value of 5% significant level and having degree of freedom 4 student's response on geometry.

Table 9: Chi-Square Value of the Student's Responses on Related to the Geometry Box

S.N.	Statements	χ^2-Value	Result
1	You have geometry box.	13.81	S
2	You use the geometry box to draw the mathematical figure.	10.43	S
3	Your teacher teaches in class of geometry by using teaching materials.	10.73	S
4	Teacher teaches about every part of the geometry box	9.52	S
*	Average value of Chi- Square	11.07	S

Significant at α=5% df= 4 χ^2 -value=9.49

Above all statements are significance. The average value of these statements is significance, these are 5 percent level of significance indicated that the geometry box play the vital role on the achievement on Geometry. So geometry box is one of the detrimental factors for student's low achievement on Geometry.

Also, this part deal with how much students use the geometry box to study on Geometry. The following table presents the student's responses towards geometry box on Geometry with percentage and weighted mean of their responses.

Table 10: Percentages and Weighted Mean of Student Responses on Geometry Box

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	You have geometry box.	7.1	11.5	11.4	39.3	30.7	3.75
2	You use the geometry box to draw the mathematical figure.	16.4	11.5	5.6	32.9	33.6	2.75
3	Your teacher teaches in class of geometry by using teaching materials.	12.9	22.1	20.7	22.9	21.4	2.82
4	Teacher teaches about every part of the geometry box	15	22.8	18.6	30.7	12.9	2.96
Average W.M.							3.07

The above table shows the percentages and weighted mean of students use geometry box to study of Geometry. The weighted mean of the statement "You have geometry box" is 3.75, and also total 70% respondents strong disagreed and disagreed with these statement shows that more students don't have geometry box and only a few students have geometry box. The weighted mean of the statement "You use the geometry box to draw the mathematical figure" is 2.75, and also total 66.5% respondents strong disagreed and disagreed with these statement shows that a few student draw the mathematical figures by geometry box. The weighted mean of the statement "Your teacher teaches in class of geometry by using teaching materials" is 2.82, and also total 44.3% respondents disagreed and strong disagreed with these statement and 20.7% respondents unknown, this shows that often, the teachers do not use materials in teaching field. The weighted mean of the statement "Teacher teaches about every part of the geometry box" is 2.96, and also total 43.6% respondents disagreed and strong disagreed with these statement shows that the teachers do not teach about every part of geometry box previously.

In additional finding, the researcher took interview form to the subject teacher and students for qualitative information. The views and question described as bellow.

Does the geometry box is the essential tool for geometry subject?

"Yes, students must be known about every part of geometry box and their uses. Geometry box is like a teaching material which gives basic concept of geometry and essay to understand about problems of geometry. Now, students carry the geometry box sometime." (Teacher view)

Do you buy the geometry box and its use?

"No, I don't buy geometry box and I don't know about this geometry box, But I saw Geometry box of my brother. I don't use this material yet."

(Student's view)

From the above views, more students have geometry box but not always carry so students don't interest about geometry box. This implies that students don't learn about geometry. Parents don't care their children's equipment and does not care that situation in home so student's achievement is low. This implies that geometry box affect on the student's achievement on geometry.

Text Books

Books are always friend of students because they are always together. It is essentials materials for students.

It is another variable which is direct effect on student's achievements so it play vital role on achievements of students of geometry. The following four statements defined the text book that influences on achievements of Geometry at Grade VIII.

The following table represents Chi-square test value at 5% significant level and having degree of freedom 4 of student's response related to the Books.

Table 11:Chi-Square Value of the Student's Responses on Related to the Text Book

S.N.	Statements	χ^2 –Value	Result
1	I am always carrying the mathematics book.	9.50	S
2	Mathematics book is not flexible.	13.48	S
3	You have mathematics book from your school.	9.33	NS
4	Mathematics book is not available in your school library.	9.32	NS
*	Average Value of Chi- Square	10.25	S

Significant at α=5% df= 4χ^2 -value=9.49

Above statements shows that statements 3 & 4 are no significant it mean all students have books from school and statements 1 & 2 are significant. It mean mathematics book is not flexible so they don't carry everyday in school. The average value of these statements is significant, these are 5 percent level of significance indicated that the text books play the vital role on the achievement on Geometry. So text book is one of the factors affect on student's achievement on Geometry.

Also, this part deals with how much students use text box to study of Geometry in their school and they how much like it. All students have mathematics book and use in classroom only. They don't self study out of class and they do other works in their house.

The following table presents the student's responses towards the text book about Geometry with percentage and weighted mean of their responses.

Table 12: Percentages and Weighted Mean of Student Responses on Text Book

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	I am always carrying the mathematics book.	30.7	32.1	2.9	20	14.3	3.44
2	Mathematics book is not flexible.	22.9	39.2	5.7	12.9	19.3	2.66
3	You have mathematics book from your school.	47.1	27.1	2.9	12.9	10	3.88
4	Mathematics book is not available in your school library.	12.9	48.6	3.6	12.8	12.1	2.33
	Average W.M.						3.07

The above table shows the percentages and weighted mean of students use text book to study of Geometry. The weighted mean of the statement "I am always carrying the mathematics book" is 3.44, and also total 52.8% respondents strong agreed and agreed with these statement shows that more than 50% students carry the text book and only a few students don't carry text book. The weighted mean of the statement "Mathematics book is not flexible" is 2.66, and also total 62.2% respondents strong agreed and agreed with these statement shows that mathematics book is very hard to more students.

The weighted mean of the statement "You have mathematics book from your school" is 3.88, and also total 54.2% respondents strong agreed and agreed with these statement shows that all the students have mathematics book from their school. The weighted mean of the statement "Mathematics book is not available in your school library" is 2.33, and also total 61.5% respondents strong agreed and agreed with these statement shows that the students don't have extra book related to geometry..

In additional finding, the researcher took interview form to the teacher and students for qualitative information. The views and question are described as bellow.

Do you follow the curriculum of Geometry and teach its problem by Geo- Gebra software?

"No, we follow the text book in class and our school doesn't have projector and electricity. So we solve the geometry problem in the board and all students don't understand all problems of Geometry and they seem too weak in Geometry."

(Teachers Views)

Does your teacher use the teaching materials in class room, especially raw materials?

"No, Sir doesn't use materials in classroom. They don't make local materials and not interest about it and they don't use in teaching learning process. Sometime he uses card and formula table."

(Students view)

From the above views, most of schools don't have projector and electricity so teachers don't use geo- gebra in Geometry teaching in school. Teacher doesn't use material in class room. Geo gebra is the best material for teaching Geometry but don't use in Rolpa district because it is high cost materials. Also teacher did not use low cost material because they feel merited and bore in class room. It was direct effect on student achievement. This shows Geo-Gebra and Raw materials affect on students achievement in Geometry.

Curriculum is one important map in the teaching field but every teacher is not teaching on the base of mathematics curriculum. It is direct effect on student's achievement so curriculum is also one of the factor affect on student's achievement in Geometry.

The average value of Chi- Square test of Instructional materials related factors is 10.16 and it is 5% level of significance. These shows Instructional materials related factors play the vital role on the student's achievement on Geometry. (Appendix-E)

Teacher Related Factors

This study intended to find the factors which are direct effect on student's achievement. Teachers are ways in teaching field where students follow these ways so good teacher have always good students but sometime seems negative relation between teacher and students because of teacher negative behavior with students and their activities in teaching learning process and teaching method according to the course content in teaching sport. So teacher and students must be good relation in every time in teaching learning process. These are following analyzed with separately statement wise.

Teacher's Behavior

Behavior is one kind of characteristics of human which is different according to each person. It makes good relation with other person everywhere. Teacher behavior must be good in their teaching field and their activities also good in teaching. Teacher behavior plays important role in teaching field with their experiences (Heile, 1959).

Different research in education and psychology has demonstrated that teacher and students often understand and shared experiences through learning by doing (Fraser, 2014).

Teacher behavior would be connected their teaching learning activities and students activities. Teacher behavior must be positive and suitable teaching environment. At that situation all students interest to learn any things everywhere. So teacher must be always positive and co-operative with students in teaching field. This topic focuses on relation of behaviors between students and teachers of teaching learning process in teaching fields. Teacher activities affect on student's interest in learning geometry.

The following table represents Chi-square test value at 5% significant level and having degree of freedom 4 of student's response related to teacher's behaviors.

Table 13:Chi-Square Value of the Student's Responses on Related to the Teacher's Behaviors

S.N.	Statements	χ^2–Value	Result
1	Teacher helps students even out time of class if students ask.	9.53	S
2	Teacher has been interested in my progress in geometry.	9.65	S
3	Teacher doesn't teach geometry regularly in your class.	11.43	S
4	Teacher doesn't give advice to me in geometry learning individually also.	15.13	S
5	Teacher neglect to the weak students in classroom.	14.36	S
6	Teacher angry while students ask question.	13.58	S
*	Average value of Chi- Square	12.28	S

Significant at α=5% df= 4 ,χ^2 -value=9.49

Above all statements show that significant. The average value of these statements is significant, these are 5 percent level of significance indicated that the teacher's behaviors play the vital role on the student's achievement in Geometry. So teacher's behavior is one of the factors effect on student's achievement in Geometry.

Also, the following table presents the student's responses towards the teacher's behavior on Geometry with percentage, weighted mean and average weighted mean of their responses.

Table 14: Percentages and Weighted Mean of Student Responses on Teacher's Behavior

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	Teacher helps students even out time of class if students ask.	12.9	15	7.9	45	19.2	2.57
2	Teacher has been interested in my progress in geometry.	12.9	20	5.7	30	31.4	2.53
3	Teacher doesn't teach geometry regularly in your class.	30.3	21.2	10	16.4	22.1	2.66
4	Teacher doesn't give advice to me in geometry learning individually also.	17.9	35	10	16.4	20.7	2.87
5	Teacher neglect to the weak students in class.	22.1	36.4	5.7	17.9	17.9	3.26
6	Teacher angry while students ask question.	22.9	39.3	5.7	12.9	19.2	3.33
	Average W.M.						2.87

The above table shows the percentages and weighted mean of teacher's behaviors of Geometry. The weighted mean of the statement "Teacher helps students even out time of class if students ask" is 2.57, and also total 64.2% respondents disagreed and strong disagreed with these statement shows that the teacher s helpfulness is not favorable. The weighted mean of the statement "Teacher has been interested in my progress in geometry" is 2.53, and also total 61.4% respondents disagreed and strong disagreed with these statement shows that teachers do not interest on progress of students. The weighted mean of the statement "Teacher doesn't teach geometry regularly in your class" is 2.66, and also total 45% respondents strong agreed and agreed with these statement shows that the teacher is not regular in school.

The weighted mean of the statement "Teacher doesn't give advice to me in geometry learning individually also" is 2.87, and also total 52.9% respondents strong agreed and agreed with these statement shows that the teacher does not give the advice of geometry problems to the students individually.

The weighted mean of the statement "Teacher neglect to the weak students in class" is 3.26, and also total 58.5% respondents strong agreed and agreed with these statement shows that the teacher does not care weak students individually.

In additional finding, the researcher took interview form to the subject teacher and students for qualitative information. The views and question are described as bellow.

Do you prepare the lesson plan before teaching in Geometry class?

"Yes, sometime prepare the lesson plan for teaching improvements plan before teaching Geometry but it can't use daily because how much make lesson plan in one day, I take 6 period in one day so It is not necessary for me."

(Teacher views)

Do you like your teacher's behavior in Geometry teaching?

"I don't like behavior of math teacher because our math teachers don't focus to all students in the class room. He is very angry to ask question period of teaching and neglected to the slow or weak students. He does not teach full time in teaching period."

(Students view)

This view of the students shows teacher focus on the talent students not on the slow students. Talent students learn in easy ways but other students were difficult in learning Geometry. So teacher must be positive and helper to teach Geometry with all categories students.

Teaching Method

The teacher's teaching method play an important role on the achievement of students. The following table represents Chi-square test value at 5% significant level and having degree of freedom 4 of student's response related to teacher's teaching method.

Table 15:Chi-Square Value of the Student's Responses on Related to the Teacher's Teaching Method

S.N.	Statements	χ^2–Value	Result
1	Teacher follows discussion method in Geometry teaching.	15.24	S
2	Teacher use teaching materials while teaching in class.	12.26	S
3	Teacher gives more questions to the students for practice in the classroom.	9.76	S
4	Teacher gives homework to the students for every day.	9.85	S
5	Teacher starts new lesson giving pre-knowledge.	12.4	S
*	Average of chi-square value	12.45	S

Significant at α=5% df= 4 χ^2 -value=9.49

The above table shows that all statements are significance. Also the average value of these statements is significant, these are 5 percent level of significance indicated that the teaching method play the vital role on the achievement on Geometry. So teaching method is one of the factor affect on student's achievement in Geometry.

Also, the following table presents the student's responses towards the teaching method on Geometry with percentage and weighted mean of their responses.

Table 16: Percentages and Weighted Mean of Student Responses on Teaching Method

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	Teacher follows discussion method in Geometry teaching.	11.5	10	7.1	34.3	37.1	2.25
2	Teacher doesn't use teaching materials while teaching in class.	22.9	31.5	7.1	16.4	22.1	2.83
3	Teacher gives more questions to the students for practice in the classroom.	12.9	27.9	7.9	30	21.4	2.81
4	Teacher gives homework to the students of geometry for every day.	15	31.4	8.6	27.1	17.9	2.98
5	. Teacher gives more concepts about related chapter of geometry	18.6	15.7	15.7	35.7	14.3	2.88
Average W.M.							2.75

The above table shows the percentages and weighted mean of teaching method of Geometry. The weighted mean of the statement "Teacher follows the text book in class" is 2.25, and also total 71.4% respondents strong disagreed and disagreed. The weighted mean of the statement "Teacher gives more questions to the students for practice in the classroom." is 2.81, and also total 51.4% respondents disagreed and strong disagreed with these statement shows that teacher gives a few questions to practice for the students. The weighted mean of the statement "Teacher gives more concepts about related chapter of geometry" is 2.88, and also total 50% respondents disagreed and strong disagreed with these statement shows that the teacher gives more concepts of geometry problems to the students in class room.

In additional finding, the researcher took interview form to the subject teacher and students for qualitative information. These are described as bellow.

Which teaching method you follow to teach in Geometry of your class room?

"We follow the lecture method often. Some time we follow discussion method. We have many students so we always don't follow discussion method. Also our course must finish in time."

(Teachers view)

Which method do you essay to learn the geometry?

"Obviously, discussion method because Geometry has many figures, postulate, definition etc. it is clear by discussion method but our teacher don't follow discussion method in class so we don't understand and solve problems of Geometry."

(Students Views)

From the above views, every teacher focus on lecture method and less focus the other method in their teaching class. Student doesn't understand all problems by lecture method. It is direct effect on student achievement on Geometry. Teacher behavior must be always positive, teacher follows the teaching methods according to subject matter, teacher involve every training and must be qualified own subject. So teacher behavior, teaching method, teacher qualification and teacher training are factors affect on student's achievement.

The average value of Chi- Square test of Teacher related factors is 12.11 and significance. These shows teacher related factors play the vital role on the achievement on Geometry (Appendix- E).

Environment Related Factors

Environment is most important factor where students acquire the knowledge. This factor facilities and encourage to the students study from home environment, classroom environment and school environment. On this research, the factors discussed base on students and his related factors. These are following analyzed.

Home Environment

Home is first school of children and home environment is educational atmosphere of students. Family is the foundation of their life and education. If family is educated, their children will always intelligence. So student's achievement is effected by background of their home. This topic focuses on how effect to the students his home environment. The following table represents Chi-square test value at 5% significant level of student's response related to home environment.

Table 17:Chi-square Value of the Student's Responses on Related to the Home Environment

S.N.	Statements	χ^2 –**Value**	**Result**
1	My parents help me to solve Geometrical problems.	16.24	S
2	My parents don't ask to my geometry teacher about my study.	11.45	S
3	My family helps me to buy essential teaching materials.	12.22	S
4	I have separate room to study of Geometry at my home.	17.61	S
5	My family doesn't give to me enough time for study of Geometry.	9.51	**S**
Average of Chi- Square Value		13.30	S

Significant at α=5% df= 4 χ^2 -value=9.49

Above statements shows that statement 5 is no significant but statements 1, 2, 3 & 4 are significant. The average value of these statements is significant, these are 5 percent level of significance indicated that the home environment play the vital role on the achievement on Geometry. Home environment is one of the detrimental factors for student's low achievement on Geometry.

Also, the following table presents the student's responses towards the home environment on Geometry with percentage and weighted mean of their responses.

Table 18: Percentages and Weighted Mean of Student Responses on Home Environment

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	My family doesn't give to me enough time for study.	37.9	20.7	8.6	12.9	20	2.56
2	My parents don't ask to my geometry teacher about my study.	26.4	31.4	12.9	15	14.3	2.59
3	My family helps me to buy essential teaching materials.	20	18.6	10.7	29.3	27.1	2.92
4	I have separate room to study of Geometry at my home.	12.9	12.9	11.4	28.6	34.2	2.13
5	My parents help me to solve Geometrical problems.	15.7	15	15	32.9	21.4	2.70
Average W.M.							2.58

The above table shows the percentages and weighted mean of home environment of Geometry. The weighted mean of the statement "My family doesn't give to me enough time for study." is 2.56, and also total 58.6% respondents strong agreed and agreed with these statement shows that the students don't help their children but they busy in field. The weighted mean of the statement "My family helps me to buy essential teaching materials" is 2.92, and also total 56.4% respondents strong disagreed and disagreed with these statement shows that a few parents buy essential materials for their children. The weighted mean of the statement "My parents don't ask to my geometry teacher about my study" is 2.59, and also total 57.8% respondents strong agreed and agreed with these statement shows that the parents do not interest their children achievement in Geometry. The weighted mean of the statement "I have separate room to study of Geometry at my home" is 2.13, and

also total 62.8% respondents disagreed and strong disagreed with these statement shows that the students do not have separate room for study in home. The weighted mean of the statement "My family doesn't give to me enough time for study of Geometry." is 2.70, and also total 54.3% respondents' strong disagreed and disagreed with these statement shows that the students help his parents of house work than study.

In additional finding, the researcher took interview form to the subject teacher and students for qualitative information. The views and question are described as bellow

Do you practice problems of Geometry in your home?

"No, I have no time to practice of Geometry. My parents go to work out in the field and that time I have contributed my family by working in the field sometimes as carrying goods. So I don't have time study at home."

(Students view)

Does home Environment effect on student's achievement?

"Majority of the students are poor family so they are reeling throughout the academic year. They work earn money but hampers on their study. Parents are illiterate and they weren't aware of children's study. So students bore this situation and don't have good idea for study of Geometry."

(Teacher View)

Classroom Environment

Classroom is close area where teacher and students be involve then they do fully interaction and discuss about related topic. Classroom environment includes class size, clear whiteboard, student's sitting, project and practical lab, number of

students, enough desk benches etc. it is assumed that classroom environment play an important role on the achievement of students.

The following table represents Chi-square test value at 5% significant level and having degree of freedom 4 of student's response related to classroom environment.

Table 19:Chi-square value of the Student's Responses on Related to the Classroom Environment

S.N.	Statements	χ^2 -Value	Result
1	There is not projector in your class room.	9.31	NS
2	There are enough Geometrical figures in your classroom.	17.8	S
3	Your classroom has lap where you do practical work of Geometry.	11.3	S
4	You don't discuss about problems of Geometry in classroom.	6.32	NS
5	Your teacher solves all problems of geometry in classroom.	10.5	**S**
*	Average of Chi- Square Value	11.07	S

Significant at α=5% df= 4, χ^2 -value=9.49

Above statements shows that statements 1 & 4 are no significant but statements 2, 3 & 5 are significant. The average value of these statements is significant, these are 5 percent level of significance indicated that the class room environment play the vital role on the achievement on Geometry. Class room environment is one of the factors effect student's achievements on Geometry.

Also, the following table presents the student's responses towards the class environment on Geometry with percentage and weighted mean of their responses.

Table 20: Percentages and Weighted Mean of Student Responses on Class

Environment

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	There is not projector in your class room.	34.3	22.9	8.6	20	14.3	2.57
2	There are enough Geometrical figures in your classroom.	14.3	12.9	12.9	22.1	37.9	2.43
3	Your classroom has lap where you do practical work of Geometry.	21.4	12.9	8.6	35.7	21.4	2.77
4	You don't discuss about problems of Geometry in classroom.	20.7	38.6	5.7	22.9	18.6	3.39
5	Your teacher solves all problems of geometry in classroom.	17.1	11.4	8.6	32.9	27.1	2.49
Average W.M.							2.73

The above table shows the percentages and weighted mean of class environment of Geometry. The weighted mean of the statement "There is not projector in your class room." is 2.57, and also total 57.2% respondent strong agreed and agreed with these statement shows that the Geo-gebra don't use in teaching geometry in class room. The weighted mean of the statement "There are enough Geometrical figures in your classroom." is 2.43, and also total 60% respondents disagreed and strong disagreed with these statements shows that students don't feel every figure of Geometry in class room. The weighted mean of the statement "Your classroom has lap where you do practical work of Geometry" is 2.77, and also total 57.1% respondents disagreed and strong disagreed with these statement shows that the more students do not practice in lab in class room. The weighted mean of the statement "Your teacher solves all problems of geometry in classroom." is 2.49, and also total 60% respondents strong disagreed and disagreed with these statement shows that the teachers don't solve all problems of geometry.

In additional finding, the researcher took interview form to the teacher and students for qualitative information. The views and question are described as bellow.

Does your class room good manage for study of Geometry?

"No, there is not projector and other materials of geometry, also there are not enough desk benches and all students can't see white board. There is not materials which give concept of geometry. So, we are not interest in study of geometry." (Students view)

How does the environment for study of geometry in your teaching class?

"There are not enough physical things to use in geometry teaching, we focus our class in text book but there are many students so students are not attention and teachings are not effective." (Teacher view)

School Environment

School is second home of students where they involve with their teacher in formally. School environment includes location, regulation, teaching learning process, library, peaceful environment etc. it is direct effect on achievement of students so school environment play vital role on achievement of students. The following table represents Chi-square test value of student's response related to school environment.

Table 21:Chi-Square Value of Student's Responses on Classroom Environment

S.N.	Statements	χ^2 –Value	Result
1	Your school don't have different figure of geometry	5.57	NS
2	I discuss with teacher about how to solve the geometry problems in school.	16.86	S
3	School takes extra class of geometry.	17.76	S
4	There is not good environment in school for geometry study.	9.41	NS
Average of Chi- Square Value		12.40	S

Significant at α=5% df= 4 χ^2 -value=9.49

Above statements shows that statements 1 & 4 are no significant but statements 2& 3 are significant. The average value of these statements is significant, these are 5 percent level of significance indicated that the school environment play the vital role on the achievement of student on Geometry.

Also, the following table presents the student's responses towards the school environment with percentage and weighted mean of their responses.

Table 22: Percentages and Weighted Mean of Student Responses on School Environment

S.N.	Statements	SA%	A%	U%	D%	SD%	W.M.
1	Your school don't have different figure of geometry made by plastic and wooden.	22.9	35	8.6	22.1	11.4	2.64
2	I discuss with teacher about how to solve the geometry problems in school.	8.6	25.7	7.1	22.9	35.7	2.48
3	School takes extra class of geometry.	14.3	17.1	8.6	22.1	37.9	2.47
4	There is no good environment in school for geometry study.	34.3	28.6	11.4	12.9	12.9	2.41
	Average W.M.						2.5

The above table shows the percentages and weighted mean of class environment of Geometry. The weighted mean of the statement "Your school don't have different figure of geometry made by plastic and wooden." is 2.64, and also total 57.9% respondents strong agreed and agreed with these statement shows that the school don't has any geometrical figure of plastic and wooden. The weighted mean of the statement "I discuss with teacher about how to solve the geometry problems in school" is 2.48, and also total 58.6% respondents disagreed and strong disagreed with these statement shows that there is not good environment for discussion in the school. The weighted mean of the statement "School doesn't take extra class of geometry" is

2.47, and also total 60% respondents disagreed and strong disagreed with these statement shows that there is not additional class for students in school. The weighted mean of the statement "There is no good environment in school for geometry study" is 2.41, and also total 62.9% respondents strong agreed and agreed with these statement shows that the school do not have enough equipment for study of geometry and other subject.

In additional finding, the researcher took interview form to the subject teacher and students for qualitative information and described as bellow.

Do you agree that the school environment play important role in Geometry teaching learning process?

"Yes, I agree. School environment must be peaceful and enjoyment with difference figure of geometry. We must create geometry learning environment and give energy of geometry." (Teachers view)

Do you agree that the school environment play important role in Geometry teaching learning process?

"Yes, I agree. If school environment is good then our educational achievement is also good. But our school has not enough play ground where we learn playing anything. Also there do not manage coaching class of Geometry." (Student's view)

From the above analysis get environment is important aspect to the students learning because it made discipline to the student and encourage to learning anything of mathematics. If Home, class and school environment are good then students achievement are also good so Home, class and school environment are factors affect on student's achievement in Geometry. The average value of Chi- Square test of Environment related factors is 11.92 and significance. These shows Environment related factors play the vital role on the achievement on Geometry.

Chapter- V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary

This chapter was concluding concerns with summary, findings and conclusions from the discussion of previous chapter. Moreover it has even some recommendations which helped further study about it.

The purpose of this study was concerned to identify factors that influences in success of students in Geometry. This research design applied mixed method. Sample of population were taken by simple random sampling method. Students selected from four schools. The information was obtained through questionnaire, percentage, weighted mean and interview guideline of this study. Questionnaires were made for students. Interview was made for teachers and students. The information obtained from different respondents were analyzed and interpreted on the views.

In this study various statistical method such as percentage, weighted mean, average mean and Chi-square test were used in this study. For the students arise questionnaire having 50 statements covering students, teacher, instruction materials and environment by using Chi-square test for goodness of fit in Geometry. Also other was collected from the interview. The population of this study was those students who are studying in Grade VIII of Rolpa district. 140 students were taken as sample of this study.

The Questionnaire form was consist 50 statements having 16 statements related to student's related, 8 statements related to teaching materials,12 statements related to teachers and 14 statements related to environment related factors. The questionnaire was developed in Likert5 point scales. Chi-square test, percentage, weighted mean and interview used to analyze the quantitative and qualitative data.

Findings

From the analysis and interpretation of the collected quantitative and qualitative data, researcher found the following major factors of this study.

There are four objectives of this study, in the first the researcher was selected 4 schools randomly. Altogether 140 students were taken as a sample. An assessment was taken from this sampled students and their work was analyzed by using Likert5 scale point. Secondly with the help of assessment response 8 students and 4 teachers were selected for four schools for the interview.

Students related factors: the average value Chi- square test of interest of learner is 11.17, learner's motivation is 12.67, self confidence is 11.13 and students practice is 12.97. The average value of Chi- Square test of student's related factors is 11.99 and it is significance. Average value of weighted mean of student's interest is 2.9, student's motivation is2.98, self confidence is 2.81 and students practice is 2.98. Also every student do not interest in Geometry because students do feel difficult about of Geometry. They are not self confidence to well in Geometry and they do not interest further study. Most student do not practice at home so they forget pre learn activities of Geometry.

Teacher related factors: the average value of the Chi- square test of teacher's behavior is11.76, teaching method is12.45, teacher qualification is 11.43 and teacher training is 12.23. The average value of Chi- Square Teacher related factors is 12.11 and it is significance, Average value of weighted mean of teacher behavior is 3.07, teaching method is 3.07 and teacher qualification is2.87.Also Most of teacher's behavior and teaching methods are not suitable. They neglect to weak students. They don't give and check class work and home work properly. They don't use teaching materials in class room properly and don't complete course in time. Instructional

material related factors: the average value of Chi- square test of Geometry box is 10.07, Curriculum is 11.12, Content is 10.54 and Text Books is 10.25. The average value of Chi- Square test of Instructional material factors is 10.16 and it is significance, Also Most students don't have Geometry box so they don't know about compass, protector, set-square etc. Students don't learn about its lower class and teacher don't use Geometry box at class. Geo- Gebra software doesn't use in classroom and less use the local teaching materials.

.Environment factors: the average of value Chi- square test of Home environment is13.30, class environment is11.07 and school environment is12.40. The average value of Chi- Square of Environment factors is 11.92 and it is significance, Average value of weighted mean of home environment is 2.55, class environment is2.77 and school environment is 2.5. Also Most parents are not educated and not interest of their child so home environment is not suitable to study. Students go either work or play at home. Class environment is not suitable to study. Mathematics class doesn't run regularly and not manage extra class at school.

In the other hand analysis of qualitative data shows student's less interest in geometry, negative aspect of students, in problem solve not confidence and motivation of students, less practice at home, use skill of geometry box, use of teaching materials, negative behavior and less preparation of teacher, teacher training and teacher qualification, current teaching method, family background, house work, classroom management and physical and educational environment of school affect on student's achievement in Geometry.

Conclusions

The intention of this research was to examine basic level students' low achievement in Geometry.

The findings of this survey conformed the fact; students interest, motivation, self confidence, students practice at home, use of geometry box, text books, not use geo gebra, follow curriculum, teacher behavior, teaching method, teacher qualification and training, student's home environment, class environment and school environment are the main factors affect on student's achievement in Geometry in Grade VIII. This study would be much effective for those mathematics teachers' who are still teaching mathematics in Grade VIII. Also, this study would helps difference policy makers, all of the mathematics teachers, stakeholders and students. So the, this research provides a good idea for perspective of geometry learning.

Recommendations for Further Study

This research is not complete a research itself and this study cannot be generalized to all schools of all area. After conclusion the researcher would like to suggest some recommendations and educational implication for the further study to improve achievement in Geometry.

- The study of this kind should be conduct at all levels of schools and in other subjects (Algebra, Arithmetic, Mensuration and Trigonometry) as well.

- Parents should be made aware to enhance the education of their children.

- Promoting research and development effort for increasing mathematics achievement.

- Teacher should provide mathematical concept through pre knowledge and applied practical based activities which can promote their previous learning.

- To improvement the achievements mathematics students adequate time, separate study room, effective teaching at school and proper physical and educational environment.

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APPENDIX- A

Questionnaire

Name of students: ……………..   **Date**:………………….

Class: ....**Roll No.**:…………**School name:**……………………………………

I am going to carry out small study on the" Factors affecting on student's achievement in Geometry." So these questionnaires are addressed to you. Here are 50 statements with related achievement of students in Geometry. These statements are no right or no wrong. The right answers are your own opinion. Please, read the following statements carefully and give your own response by putting tick (O) on any one of the given three rating scale of each statements. Reliability and validity of this study is based on your response.

Note: A= Agree   SA= Strong Agree   D= Disagree   SD= Strong Agree

U= Undecided

S. N.	Statements	SA	A	U	SD	D
	Students related factors					
	Interest					
1	Geometry is my favorite subject.					
2	It has many formulae and problems so I don't like to study of geometry.					
3	It has many figure which gives to understand about geometrical problems.					
4	Geometry is practical subject.					
	Self-confidence					
5	I think geometry is a difficult subject.					

6	I can solve the geometrical problems surely.					
7	I cannot get good score in geometry.					
8	I can draw the geometrical figure.					
Motivation						
9	I like to study geometry because it has many figures.					
10	Geometry is important subject in mathematics where understand about problem by figure.					
11	Geometry helps to solve the problems.					
12	Geometry will help my future study.					
Practice						
13	I always do my homework and class work.					
14	I mostly study of geometry subject.					
15	I give more time to the geometry than other subject.					
16	I don't practice on the previously learned geometrical problem.					
Instructional materials related factors						
Geometry box						
17	You have geometry box.					
18	You use the geometry box to draw the mathematical figure.					
19	Your teacher teaches in class of geometry by using teaching materials.					
20	Teacher teaches about every part of the geometry box					
Text book						
21	I am always carrying the mathematics book.					
22	Mathematics book is not flexible.					
23	You have mathematics book from your school.					

24	Mathematics book is not available in your school library.					
	Teacher related factors					
	Teacher Behavior					
25	Teacher helps students even out time of class if students ask.					
26	Teacher has been interested in my progress in geometry.					
27	Teacher doesn't teach geometry regularly in your class.					
28	Teacher doesn't give advice to me in geometry learning individually also.					
29	Teacher neglect to the weak students in class.					
	Teaching method					
30	Teacher follow the discussion method in geometry teaching					
31	Teacher doesn't use teaching materials while teaching in class.					
32	Teacher follows the text book.					
33	Teacher gives more questions to the students for practice in the classroom.					
34	Teacher gives homework to the students for every day.					
35	Teacher starts new lesson giving pre-knowledge.					
36	Teacher gives more concepts about related chapter of geometry.					
	Environment related factors					
	Home Environment					
37	My parents do not help to solve geometry problems.					
38	My family helps me to buy essential teaching materials of geometry.					
39	My parents don't ask to my geometry teacher about my study.					
40	I have separate room to study of Geometry.					

41	My family doesn't give to me enough time for study of Geometry.					
	Classroom Environment					
42	There is not projector in your class room.					
43	There are enough Geometrical figures in your classroom.					
44	Your classroom has lap where you do practical work of geometry.					
45	You don't discuss about problems of Geometry in classroom.					
46	Your teacher solves all problems of geometry in classroom.					
	School Environment					
47	your school don't have different figure of geometry					
48	I discuss with teacher about how to solve the geometry problems in school.					
49	School doesn't take extra class of geometry.					
50	There is no good environment in school for geometry study.					

Thanks for co-operation

APPENDIX- B

Guidelines for Interview with mathematics teacher and students

Date of interview: …………………

Name of teacher/ students:

………………………………………………………………………………….

Qualification: ………………..   Ethnicity:

………………………..

Religion: …………………   Sex: ……….

Teacher experience: ………………   Age: ……..

Address: ………….. District …………….. VDC/Municipality …………………Ward

No. ……….

Major area of interview

- Student's activities

- Home environment and its influence in learning geometry

- Teacher Behavior towards students

- Class and School environment

- Teacher qualification and their Teaching strategies

- Teaching method in geometry

APPENDIX- C

Sample students in the Research

S.N.	Name of Schools	Total Students	Sample of students
1	Shree Shiddha Kailash secondary school Minahi, Rolpa	48	38
2	Shree Netra basic school Mehal Dada, Rolpa	34	22
3	Shree Bal Kllyan Secondary school Lwang, Rolpa	85	45
4	Shree Krishna secondary school, Rolpa	46	35
	Total students	213	140

APPENDIX- D

Formula of statistics

1. Chi- Square $(\chi^2) = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$

   df= (C-1)

   Where, O= Observation value,   E= Expected value ,

   C= category

2. Mean $(\bar{x}) = \frac{\sum x}{N}$

3. Weighted Mean= $\frac{\sum_{i=1}^{n}(x_i - w_i)}{\sum_{i=1}^{n} w_i}$

4. Correlation (r) = $\frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}}$ Where X= data from test and Y= data from

   retest

APPENDIX- E

Average value of Chi- Square test

S.N.	Detrimental Factors	Average of Chi-Square	R
1	Students related Factors(Interest, Self confidence, Motivation and Practice)	11.99	S
2	Teacher Related Factors(Behavior, Teaching Method, Qualification and Teacher Training)	12.11	S
3	Instructional Related Factors(Geometry Box, Text Book, Curriculum and Content)	10.16	S
4	Environment Related Factors(Home, Class and School)	11.92	S
#	Average Value of Chi- Square test	11.55	S

APPENDIX- F

Achievement result only mathematics subject (2069-2073)

Year	Subject	Appeared	Pass	Pass%	Fail	Fail%
2069	Maths	38	20	52.6	18	46.4
2070	Maths	41	19	46.3	21	52.7
2071	Maths	28	9	32.2	17	67.8
2072	Maths	34	8	23.5	26	76.5
2073	Maths	42	16	38.1	26	61.9

Achievement Result of Rolpa District in 2074

Subjects	Year	Appeared	Pass	Pass%	Fail	Fail %	Total Pass
English		3268	2053	62.8	1215	37.2	
Nepali		3268	2943	90	325	10	23072
Maths		**3268**	**1032**	**31.6**	**2236**	**68.4**	
Science	2074	3268	2257	69.1	1011	30.9	
Social		3268	2425	74.2	843	25.6	(78.44)
HPE		3268	3039	92.9	229	7.1	
OBTE		3268	3095	94.7	173	5.3	
Moral		3268	3122	95.5	146	4.5	
Computer		3268	3106	95.1	162	4.9	

Source: District Education Office of Rolpa, (2074)

APPENDIX- G

Reliability of test questions

Q.N.	First Test(X)	Second Test(Y)	$x = (X - \overline{X})$	$y = (Y - \overline{Y})$	x^2	y^2	Xy
1	18	19	1.5	2	2.25	4	3.0
2	16	16	-0.5	-1	0.25	1	0.5
3	15	15	-1.5	-2	2.25	4	3.0
4	15	14	-1.5	-3	2.25	9	4.5
5	13	14	-3.5	-3	12.25	9	10.5
6	15	16	-1.5	-1	2.25	1	1.5
7	18	18	1.5	1	2.25	1	1.5
8	12	11	-4.5	-6	20.25	36	27.0
9	15	16	-1.5	-1	2.25	1	1.5
10	17	18	0.5	1	0.25	1	0.5
11	14	15	-2.5	-2	6.25	4	5.0
12	16	15	-0.5	-2	0.25	4	1.0
13	17	17	0.5	0	0.25	0	0
14	20	21	3.5	4	12.25	16	14.0
15	17	18	0.5	1	0.25	1	0,5
16	18	18	1.5	1	2.25	1	1.5
17	15	16	-1.5	-1	2.25	1	1.5
18	18	19	1.5	2	2.25	4	3.0
19	18	17	1.5	0	2.25	0	0
20	15	16	-1.5	-1	2.25	1	1.5
21	14	15	-2.5	-2	6.25	4	5.0
22	18	18	1.5	1	2.25	1	1.5
23	18	19	1.5	2	2.25	4	3.0
24	17	17	0.5	0	0.25	0	0
25	16	16	-0.5	-1	0.25	1	0.5
26	15	16	-1.5	-1	2.25	1	1.5
27	18	18	1.5	1	2.25	1	1.5
28	20	21	3.5	4	12.25	16	14.0
29	19	20	2.5	3	6.25	9	7.5

30	18	18	1.5	1	2.25	1	1.5
31	12	10	-4.5	-7	20.25	49	31.5
32	15	16	-1.5	-1	2.25	1	1.5
33	14	14	-2.5	-3	6.25	9	7.5
34	20	21	3.5	4	12.25	16	14.0
35	18	19	1.5	2	2.25	4	3.0
36	22	23	5.5	6	30.25	36	33.0
37	19	20	2.5	3	6.25	9	7.0
38	14	15	-2.5	-2	6.25	4	5.0
39	16	17	-0.5	0	0.25	0	0
40	17	17	0.5	0	0.25	0	0
41	16	17	-0.5	0	0.25	0	0
42	13	14	-3.5	-3	12.25	9	10.5
43	15	16	-1.5	-1	2.25	1	1.5
44	14	15	-2.5	-2	6.25	4	5.0
45	19	19	2.5	2	6.25	4	5.0
46	15	16	-1.5	-1	2.25	1	1.5
47	18	18	1.5	1	2.25	1	1.5
48	20	21	3.5	4	12.25	16	14.0
49	16	17	-0.5	0	0.25	0	0
50	17	18	0.5	1	0.25	1	0.5
			0	0	$\Sigma x^2 =$ 254.5	$\Sigma y^2 =$ 302	$\Sigma xy =$ 259

Where $\overline{X}$=16.5, $\overline{Y}$=17

$$r = \frac{\Sigma xy}{\sqrt{\Sigma x^2 \Sigma y^2}} = \frac{259}{\sqrt{254.5 \times 302}} = \frac{259}{\sqrt{76859}} = \frac{259}{277.234} = 0.93$$

APPENDIX –H

Calculation of Chi-Square test

Chi-Square Value of the Student's Responses on Related to Their Interest.

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2 value	R
1	Geometry is my favorite subject.	Boy	15 12.6	20 21.7	5 4.6	30 29.7	10 11.4	10.58	S
		Girl	7 9.4	18 16.3	3 3.4	22 22.3	10 8.6		
2	It has many formulae and problems so I don't like to study of geometry.	Boy	15 14.3	28 27.4	10 8.6	12 12.6	15 17.1	5.56	NS
		Girl	10 10.7	20 20.6	5 2.4	10 9.4	15 12.9		
3	It has many figure which gives to understand about geometrical problems.	Boy	20 22.9	28 29.1	11	11 12	10 9.7	9.37	NS
		Girl	20 17.1	23 21.9	0 4.7	10 9	7 7.3		
4	Geometry is practical subject.	Boy	22 18.3	17 14.3	0	20 24	21 17.7	19.17	S
		Girl	10 13.7	8 10.7	10 4.3	22 18	10 13.3		
Average of chi-square value			11.17						S

Chi-square Value of the Student's Responses on Self- Confidence.

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2	R
1	I think geometry is not a difficult subject.	Boy	15 18.3	26 26.3	9 5.1	20 18.3	10 12	9.52	S
		Girl	17 13.7	20 19.7	0 3.9	12 13.7	11 9		
2	I can solve the geometrical problems surely.	Boy	17 18.3	8 10.3	13 7.4	20 25.7	22 18.3	15.8	S
		Girl	15 13.5	10 7.7	0 5.6	25 19.3	10 13.7		
3	I can draw the geometrical figure.	Boy	14 16	32 34.9	12 6.9	8 9.7	14 12.6	10.8	S
		Girl	14 12	29 26.1	0 5.1	9 7.3	8 9.4		

4	I cannot get good score in geometry.	Boy	15 16.6	35 37.7	8 4.6	13 12	9 9.6	8.5	NS
		Girl	14 12.4	30 28.3	0 3.4	8 9	8 7.4		
Average of chi-square value			11.13						S

Chi-Square Value of the Student's Responses on Related to Their Motivation

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2	R
1	I like to study geometry because it has many figures.	Boy	15 16.6	20 17.1	10 5.7	20 22.9	15 17.7	10.85	S
		Girl	14 12.4	10 12.9	0 4.3	20 17.1	16 13.3		
2	Geometry is important subject in mathematics where understand about problem by figure.	Boy	15 17.1	20 17.1	10 5.7	25 25.7	10 14.3	12.34	S
		Girl	15 12.9	10 12.9	0 4.3	20 19.3	15 10.7		
3	Geometry helps to solve the problems.	Boy	11 12	24 25.1	12 6.9	20 21.7	13 14.3	9.87	S
		Girl	10 9	20 18	0 5.1	18 16.3	12 10.2		
4	Geometry will help my future study.	Boy	10 10.3	6 10.3	16 9.1	20 22.9	28 27.4	17.61	S
		Girl	8 7.7	12 7.7	0 6.9	20 17.1	20 20.6		
Average of chi-square value			12.67						S

Chi-Square Value of the Student's Responses on Related to Their Practice

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2	R
1	I always do my home work and class work of Geometry.	Boy	13 13.3	15 18.3	10 5.7	24 25.1	18 17.7	12.26	S
		Girl	10 9.9	17 13.4	0 4.3	20 18.9	13 13.3		

2	I mostly study of geometry subject.	Boy	16 14.9	12 12.6	12 12.6	25 28.6	15 11.4	12.41	S
		Girl	10 11.1	10 9.4	10 9.4	25 21.4	5 8.6		
3	I give more time to the geometry than other subject.	Boy	20 18.9	6 14.9	10 9.1	30 26.3	14 10.9	16.1	S
		Girl	13 14.1	20 11.1	6 6.9	16 19.7	5 8.1		
4	I don't practice on the previously learned geometrical problem.	Boy	10 10.3	14 17.1	12 6.9	30 33.1	14 12.6	11.11	S
		Girl	8 7.7	16 12.9	0 5.1	28 24.9	8 9.4		
Average value of Chi- square								12.97	S

Chi-Square Value of the Student's Responses on Related to the Geometry Box

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2	R
1	You have geometry box.	Boy	6 5.8	7 8	16 9.1	28 31.4	23 24.6	13.8	S
		Girl	20 18.4	28 23.6	0 6.9	8 7	4 4.2		
2	You use the geometry box to draw the mathematical figure.	Boy	13 13.1	8 9.1	8 4.6	26 26.3	25 25.7	10.4	S
		Girl	20 19.7	22 21.3	0 3.4	10 9.9	8 6.9		
3	Your teacher teaches in class of geometry by using teaching materials.	Boy	10 10.3	16 17.7	15 16.5	20 18.3	19 17.1	10.7	S
		Girl	8 7.7	15 14.3	14 12.5	12 13.7	11 12.9		
4	Teacher teaches about every part of the geometry box	Boy	11 12	20 18.3	16 14.9	25 24.6	8 10.3	9.5	S
		Girl	10 9	12 13.7	10 11.1	18 18.4	10 7.7		
Average of chi-square value			11.07						S

Chi-Square Value of the Student's Responses on Related to the Text Book

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2	R

1	I am always carrying the mathematics book.	Boy	23 24.6	25 25.7	4 2.3	20 16	8 11.4	9.50	S
		Girl	20 14.4	20 19.3	0 1.7	8 12	12 8.6		
2	Mathematics book is not flexible.	Boy	17 18.3	31 31.4	8 4.6	14 10.3	10 15.4	13.48	S
		Girl	15 13.7	24 23.6	0 3.4	4 7.7	17 11.6		
3	You have mathematics book from your school.	Boy	36 37.7	20 21.7	4 2.3	8 10.3	12 8	9.33	NS
		Girl	30 28.3	18 16.3	0 2.3	10 7.7	2 6		
4	Mathematics book is not available in your school library.	Boy	16 10.3	34 38.9	4 2.9	10 10.3	16 17.7	9.32	S
		Girl	2 7.7	34 29.1	1 2.1	8 7.7	15 13.3		
Average of chi-square value			10.25						S

Chi-Square Value of the Student's Responses on Related to the Teacher's Behaviors

S. N.	Statements	SEX	A	SA	U	D	SD	χ^2	R
1	Teacher helps students even out time of class if students ask.	Boy	10 10.3	11 12	11 6.3	33 36	15 15.4	9.53	S
		Girl	8 7.7	10 9	0 4.7	30 27	12 11.6		
2	Teacher has been interested in my progress in geometry.	Boy	18 16	10 10.3	8 4.6	22 25.1	22 24	9.65	S
		Girl	10 12	8 7.7	0 3.4	22 18.9	20 18		
3	Teacher doesn't teach geometry regularly in your class.	Boy	23 23.4	11 12.6	14 8	15 13.1	18 17.7	11.43	S
		Girl	18 17.6	11 9.4	0 6	8 9.9	13 13.3		

4	Teacher doesn't give advice to me in geometry learning individually also.	Boy	15 14.3	25 28	14 8	13 13.1	13 16.6	15.13	S
		Girl	10 10.7	24 21	0 6	10 9.9	16 12.4		
5	Teacher neglect to the weak students in classroom.	Boy	13 17.7	31 29.1	8 4.6	10 14.3	18 14.3	14.36	S
		Girl	18 13.3	20 21.9	0 3.4	15 10.7	7 10.7		
6	Teacher angry while students ask question.	Boy	17 18.3	31 31.4	8 4.6	14 10.3	10 15.4	13.58	S
		Girl	15 13.7	24 23.6	0 3.4	4 7.7	17 11.6		
Average of chi-square value					12.28				S

Chi-Square Value of the Student's Responses on Related to the Teacher's Teaching Method

S. N.	Statements	SEX	SA	A	U	D	SD	χ^2	R
1	Teacher follows discussion method in Geometry teaching.	Boy	10 8	10 8	0 5.7	32 29.7	28 27.4	15.24	S
		Girl	4 6	6 6	10 4.3	20 21.3	20 20.6		
2	Teacher use teaching materials while teaching in class.	Boy	13 13.1	18 17.7	10 5.7	15 18.3	24 25.1	12.26	S
		Girl	10 9.9	13 13.3	0 4.3	17 13.4	20 18.9		
3	Teacher gives more questions to the students for practice in the classroom.	Boy	10 10.3	25 22.3	3 6.3	22 24	20 17.1	9.76	S
		Girl	8 7.7	13 16.7	9 4.7	20 18	10 12.9		
4	Teacher gives homework to the students for every day.	Boy	11 12	13 14.3	12 6.9	20 21.7	24 25.1	9.85	S
		Girl	10 9	12 10.7	0 5.1	18 16.3	20 18		
5	Teacher starts new lesson giving pre-knowledge.	Boy	16 14.9	12 12.6	12 12.6	25 28.6	15 11.4	12.4	S
		Girl	10 11.1	10 9.4	10 9.4	25 21.4	5 8.6		
Average of chi-square value					12.45				S

Chi-square Value of the Student's Responses on Related to the Home Environment

S.N.	Statements	SEX	SA	A	U	D	SD	χ^2	R
1	My parents help me to solve Geometrical problems.	Boy	12 10.3	30 31.4	14 9.1	19 16.6	5 12.6	16.24	S
		Girl	6 7.7	25 23.6	2 5.9	10 12.4	17 9.4		
2	My parents don't ask to my geometry teacher about my study.	Boy	20 15.4	24 27.4	16 10.3	10 12	10 10.3	11.45	S
		Girl	17 21.6	24 20.6	2 7.7	11 9	8 7.7		
3	My family helps me to buy essential teaching materials.	Boy	20 21.7	21 32.4	15 8.6	16 14.9	16 16	12.22	S
		Girl	18 16.3	20 17.6	0 6.4	10 11.1	12 12		
4	I have separate room to study of Geometry at my home.	Boy	10 10.3	6 10.3	16 9.1	20 22.9	28 27.4	17.61	S
		Girl	8 7.7	12 7.7	0 6.9	20 17.1	20 20.6		
5	My family doesn't give to me enough time for study of Geometry.	Boy	26 26.3	11 12	18 12	10 12.6	15 17.1	9.51	S
		Girl	20 19.7	10 9	3 9	12 9.4	15 12.9		
Average of chi-square value					13.30				S

Chi-square value of the Student's Responses on Related to the Classroom Environment

S.N.	Statements	SEX	A	SA	U	D	SD	χ^2	R
1	There is not projector in your class room.	Boy	26 27.4	20 18.3	10 6.9	16 17.1	8 11.4	9.31	NS
		Girl	22 20.6	12 12.7	0 5.1	14 12.9	12 8.6		
2	There are enough Geometrical figures in your classroom.	Boy	10 11.4	6 10.3	16 10.	23 17.7	25 30.3	17.8	S
		Girl	10 8.2	12 7.7	2 7.7	8 13.3	28 22.7		

								χ²	R
3	Your classroom has lap where you do practical work of Geometry.	Boy	15 17.1	10 10.3	12 6.9	28 28.6	15 17.1	11.3	S
		Girl	15 12.9	8 7.7	0 5.1	22 21.4	15 12.9		
4	You don't discuss about problems of Geometry in classroom.	Boy	16 16.7	30 30.9	8 4.6	20 18.3	15 14.9	6.32	NS
		Girl	13 12.3	24 23.1	0 3.4	12 13.3	11 11.1		
5	Your teacher solves all problems of geometry in classroom.	Boy	14 13.7	10 11.4	12 6.8	24 28.6	20 21.7	10.5	S
		Girl	10 10.3	10 8.6	0 5.2	22 21.4	18 16.3		
Average of chi-square value			11.07						S

Chi-Square Value of the Student's Responses on Related to the Classroom Environment

S.N.	Statements	SEX	SA	A	U	D	SD	χ²	R
1	your school don't have different figure of geometry	Boy	20 18.3	25 28	10 6.9	16 17.7	9 9.7	5.57	NS
		Girl	12 13.7	24 21	2 5.1	15 13.3	7 6.3		
2	I discuss with teacher about how to solve the geometry problems in school.	Boy	10 6.9	20 20.6	0 5.7	20 18.3	30 28.6	16.86	S
		Girl	2 5.1	16 15.4	10 4.3	12 13.7	20 21.4		
3	School takes extra class of geometry.	Boy	10 11.4	12 10.3	10 10.3	23 17.7	25 30.3	17.76	S
		Girl	10 8.2	12 7.7	2 7.7	8 13.3	28 22.7		
4	There is not good environment in school for geometry study.	Boy	28 27.4	20 22.9	10 5.7	10 10.3	12 13.7	9.41	NS
		Girl	20 17.1	20 17.1	0 4.3	8 7.7	12 10.3		
Average of chi-square value			12.40						S