

CHAPTER-I

INTRODUCTION

Background of the Study

Mathematics, which is dynamic in nature as discipline and essential part of human life, is etymologically derived from an ancient Greek word "Manthenian" which means "to learn". It has been developed through the human endeavors in different eras has come to this height of development and will still be in the process of development forever. The quality of teaching and learning in mathematics is a major challenge and for educators. The current debate among scholars is what student should learn to be successful in mathematics. The discussion emphasizes new instructional design techniques to produce individual who can understand and apply fundamental mathematics concepts. A central and persisting issue is how to provide instructional environments, conditions, methods and solution that achieve learning goals for students with different skill and ability levels. Innovative instructional approaches and techniques should be developed to ensure that students become successful learners.

It is important for educators to adopt instructional design techniques to attain higher achievement rates in mathematics. (Rasmussen & Marrongelle, 2006). Considering students' needs and comprehension of higher-order mathematical knowledge, instructional design provides a systematic process and a framework for analytically planning, developing, and adapting mathematics instruction (Saritas, 2004). "[Instructional design] is an effective way to alleviate many pressing problems in education. Instructional design is a linking science – a body of knowledge that prescribes instructional actions to optimize desired instructional outcomes, such as achievement and effect" (Reigeluth, 1983, p.5).

Instructional design alone cannot produce better learning and achievement. The instructional designer must know crucial factors that affect student learning and build a

bridge between goals and student performance. Identifying these factors was help to utilize limited resources including financial resources and time more effectively (Libiensi& Gutierrez, 2008).

In an effort to understand the factors associated with mathematics achievement, researchers have focused on many factors. (Beaton & Dwyer, 2002; Kellaghan&Madaus, 2002; Kifer, 2002). The impact of various demographic, social, economical and educational factors on students' math achievement continues to be of great interest to the educators and researchers. For instance, Israel et al. (2001) concluded that parents' socioeconomic status is correlated with a child's educational achievement. Another study by Jensen and Seltzer (2000) showed that factors such as individual study, parents' role, and social environment had a significant influence on "further education" decisions and achievements of young students'. In another study, Meece, Wigfield&Eccles (1990) investigated cognitive motivational variables that influence high school students' decisions to enroll in advanced math courses. Their findings revealed that math ability perceptions affect students' valuing of math and their expectations for achievement.

Educational Status of DolakhaDistrict

Half of the Dolakha people are farmers. They most spent of the time on farming. Children admit at school but most of the students don't go to school except the terminal and final examination. There are many lower secondary, secondary and higher secondary schools at Dolakha district. There are two campuses where few number of students but educational status not satisfactory of Dolakhala. They have to collect grasses to help harvesting works. Many respondents said that they only like their children to be able to read, write and to solve the simple mathematics problems. They are absent at the school for many days. And their increases the dropout rate of Dolakhali students. Students find it is more difficult to adapt to mathematics and English class than for other subject classes.

According to the census 2011 the literacy rate is 42.30 percent of Dolakha district which total number of Nepal. There total population in Nepal has 2,64,94,504 where 48.50 percent male and 51.50 percent are female. Many students cannot choose mathematics because the subject is difficult and cannot solve the problems. So my experience was also that time (school periods). Therefore 50 number of students in mathematics class of Dolakha district.

Statement of the Problem

Nepal is one of the multi-communal multi ethical countries. There is no equal access to education for all the geography and ethnics by the cause of their demographic, instructional and individual factors. Dolakhali students are weak in mathematics and feel difficult to understand it.

The following was research problems in this study.

- How the instructional factors affecting to mathematics achievements of students?
- What are the most effective instructional factors on mathematics achievement of students?

Significance of the Study

The reason why the researcher is trying to find out the factors achievements of students in mathematics and to identify why the students obtain score in the mathematics though they are treated equally as well as taught by the same expert of the same school in the same tutorial classes.

Mathematics has continuously developed and changed with changing needs and interest of human beings. So everybody needs the basic knowledge of mathematics to solve their daily life problem. Mathematics is an important component of school curriculum. Therefore, mathematics included in school curriculum and compulsory subject. Every

students want to bring better achievement but not. So without better academic achievement the students can neither study nor do they get entrance in any job market.

The children are seemed few in higher education bravensness in their characteristics. Instructional factors (curriculum, instructional method, teachers' competency, school context and facilities) are main affecting factors in mathematics achievements. Half of the students do not participate in higher education in mathematics. Also, school mathematics they are found weak. Most researchers compare low achievement of students on their basis of factors (demographical, instructional and individual). This study was helpful to determine instructional factors affecting in mathematics achievement.

The following Main Significance of the Study

1. This study was useful for teacher, parents, curriculum designer and other person.
2. This study was helping to improve teaching method by mathematics teacher while teaching students.
3. This study was being important to identify how the teaching environment has affected in the achievement of mathematics students.
4. This study was provided information to the teacher regarding to low or high achievement in mathematics and was helped to create appropriate teaching learning environment in their classroom.
5. This study was helping the family of students which create better learning environment.

Objectives of the Study

Main objectives of the study was follows

- To find out the instructional factors affecting in mathematics achievement

- To analyze the effect of instructional factors (curriculum, instructional method, teachers competency, school context and facilities) in mathematics achievement of student.

Hypothesis of the Study

The statistical hypothesis and compounding to the research hypothesis started earlier as follows

Research Hypothesis

1. There is significance different between mean of students achievements in mathematics according to instructional factors.

Curriculum

1. Null Hypothesis

There is no significant difference between the achievement of students in mathematics according to curriculum.

2. Alternative Hypothesis

There is significance difference between achievement of students in mathematics according to curriculum.

Method

1. Null Hypothesis

There is no significant difference between the achievements of students in mathematics according to method.

2. Alternative Hypothesis

There is significance difference between achievements of students in mathematics according to method.

Teacher Competency

1. Null Hypothesis

There is no significant difference between the achievements of students in mathematics according to teacher competency.

2. Alternative Hypothesis

There is significance difference between achievements of students in mathematics according to teacher competency.

School Context and Facilities

1. Null Hypothesis.

There is no significant difference between the achievement of students in mathematics according to school context and facilities.

2. Alternative Hypothesis

There is significance difference between achievement of students in mathematics according to school context and facilities.

Delimitation of the Study

The study was limited in the following aspect.

- This study was done only in Dolakha district. .
- This study was conducted only for the mathematics subject.
- This study was based on quantitative data and descriptive in nature.
- This study was carried out within the certain particular area. So it is generalized only one Dolakha district of Nepal.

Definition of the Terms

Mathematics Achievements

It means the ability to calculate the problems and get positive result in mathematics of students.

Basic Level

It means students up to class eighth at school.

Curriculum

Curriculum consists of all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school.

Method

It is a teaching learning process (interaction) between teacher and students to attain the goals of students and curriculum.

Teacher's Competency

The teacher who can solve the problem, finding, integrating, synthesizing, creating new salutation, learning on their own and working cooperatively.

Likert Scale

A likert scale is the sum of responses to several likert items. These items are usually displayed with a visual aid, such as a series of radio buttons or a horizontal bar representing a simple scale.

Instructional Factors

The factors which is relegated to teaching learning activities and achievement of students is defined as instructional factors.

CHAPTER-II

REVIEW OF THE RELATED LITERATURE

Teaching mathematics has been challenging profession with regards to its troublesome result literature basically is a “stock taking of available literature in field of research. The literature review is thus to find out what research studies have been conducted in ones chosen field of study and what remain too done. It provides the foundation for developing comprehensive theoretical framework from which hypothesis can be develop for testing.

Literature review is the detail analysis of the previous studies related to the present study. It helps to find out that what things have been presented in the past studies and what have not been mentioned.

Empirical Literatures

Saritas and Akdemir (2009) did the research on “Identifying factors affecting the mathematics achievements of students for better instructional design” on Turkey.

In this study researcher used the mixed method. In this research questionnaire and interview was the main tools. The researcher used the following research question in this study.

- What are the factors which affects the learning outcomes of students?
- What are the instructional factors which affects in learning achievement of student?
- Why and how they affects in learning achievement?
- Curriculum affects the achievement of student how?
- Method and teacher competency are also instructional factors. Is they affects in learning outcomes?

The objectives of this research was to:

- Find out the instructional factors which affects in students achievement of mathematics?
- Analyze the effects of these factors.

The conclusion of this study was main four instructional factors (curriculum, methods, teachers competency, school context and facilities) affects the achievement of mathematics.

This study's purposes were finding demographic factors, individual factors and instructional factors affecting the mathematics achievement of students. This study was to find answer the demography (gender, parent's educational level and socio-economic status) instructional (curriculum, method, teacher competency in mathematics education and school context and facilities) individual influence mathematics achievement.

This study data scoring was checked two subjects which is effective and ineffective of each factor affecting the mathematics achievement. This study was concluded main affected factors methods, teacher competency in mathematics education and motivation or concentration from the data. Further investigation of these three factors through experimental studies should enable instructional designers and mathematics educators to continue to improve mathematic instruction.

Shin, Lee and Kim (2009) did a research topic on "Student and school factors affecting mathematics achievement international comparison between Korea, Japan and USA". The purpose of the study was to comparatively investigate student and school level factors affecting mathematics achievement of Korean, Japanese and American students. For international comparison PISA 2003 data were analyzed by using the Hierarchical Linear modeling method. The variable of competitive learning preference, instructional motivation and mathematics interest were used as student level. The specifically result the competitive learning preference was significant on mathematics achievement on Korea, Japan but not in

the USA. However, the variable student teacher relationship turned out to be significant only in Japan. Implications of the result are discussed from the comparative perspectives of cultures and educational contexts of the three countries.

Regmi (2004) did a research on "A study of achievement in mathematics of Gurung and Kumal students at primary level." The researcher selected eight public schools and 128 students as a sample. The main objectives of the study were to find out the difference in mathematics achievement of Gurung and Kumal students. His finding is that the mean achievement between Gurung and Kumal is significantly different. On the other hand, the achievement of Gurung girls differed significantly from that of Kumal girls.

Another crucial aspect of the study was that the mean achievement of non-mother tongue speaking Kumal students differed significantly from that of Mother tongue speaking Kumal students. Similar finding was found regarding the case of the Gurung students.

Neupane (2001) had conducted a research on "Mathematics achievement of primary school children of various ethnic groups in Nepal". This study main objective was to find out achievement level of primary children of various ethnic group in Nepal. This study was including 500 grade five children and their parents from five ethnic groups of western development region in Nepal. The researcher was taken interview schedule, observation, questionnaire and achievement test the researcher found that mathematics achievement of the children varies by ethnicity, location. Parent's involvement and some biographical factors affect the mathematical achievement of children. Achievement level of hill area's children in mathematics was superior to that of the Terai area's children.

Pandey (2007) conducted a research on topic "Factor influencing mathematics achievement (A case studies of ineffective secondary school of Kailali district)". This case study was done in the secondary school of Kailali district. Only 20 students each from effective and ineffective schools were chosen as sample. Interview schedule, observation,

survey form and school documents were used as a tools to collect data and information. This case study was focused on multiple factors and its influence on mathematics result. Personal and environmental factors such as gender, age, prior knowledge, attendance, motivation, study at home; parental support, quality of teacher, class size, student-teacher interaction, physical and environmental condition and school leadership were in consideration.

The major findings of this study were that student's achievement was mostly affected by both their personal and environmental factors. Gender discrimination was one of the key factors that caused the girls achieve low marks and boy high. \Home environment, school environment, teacher's quality, students self-motivation has made student's achievement high in mathematics. Less knowledge on instructional strategy, less teaching experiences and lack of teaching materials have led student's mathematics achievement towards low percentage. Another physical factor like school surrounding environment was seen as an influencing factor.

Sahi (2010) did a research on topic "Factors affecting achievement of Dalit students in mathematics, a case study in Doti district". From the case school only six Dalit students who were failure in mathematics and their parents and six peer groups were chosen for the study. He took observation and interview method as a tool for research. His finding has shown that participation of Dalit students is less than non Dalkit students. Irregularity is one of the causes being Dalit students fail in the mathematics subject.

Berends, Lucas, Sullivan, Briggs (1972-1992) did a research on "Examining Gaps in Mathematics Achievement among Racial-Ethnic Groups". The main research questions were

- How did the3 test scores of blacks, Latians, and whites change between the early 1970s and early 1990s?
- To what extent were changes in these measures associated with the convergence of the black-white and Latino-white test score gaps that occurred during this period?

To answer these questions posed about trends in test scores, family and school characteristics, and achievement gaps between racial-ethnic groups, we analyze three cohorts of high school seniors in nationally representative data sets that cover the experience of secondary school students in the United States between 1972, 1982 and 1992.

Their finding was the patterns spanning the early 1970s to the early 1990s show a narrowing of the black-white and Latino-white differences in mathematics achievement. In both the L senior cohorts and NAEP data, we see a significant reduction between 1972 and 1992 in the black-white (from 1.09 to 0.87 standard deviation unit difference, or a 20 percent reduction) and Latino-white (from a 0.88 to a 0.60 standard deviation unit difference, or a 32 percent reduction) mathematics test score gaps. Over the past 30 years, minority students made substantial progress toward closing the minority-non minority test score gap in both mathematics and reading. In 1999 black students scored 13 points higher (or 14 percentile points) on the NAEP mathematics test and about 27 points higher (or 21 percentile points) in reading than black students in the early 1970s. Similarly, Latinos made large improvements in achievement.

Shrestha (1991) had conducted a research on the topic "A study of sex differences in achievement in mathematics of IX grade students". This study main objective was to find out sex achievement level in mathematics. The researcher was taken 200 (100 boys and 100 girls) students as a sample in Gorkhadistrict. This study's methods was random sampling methods, interview etc. His finding was that the boy's performance was better than that of the girls in the area of mathematics and cognitive level.

Poudel (2007) did a research on "A study to compare the student's achievement in mathematics between Kami and Gurung students at grade 8". He selected only Syangja district. 120 students were chosen for sample by random sampling method. Boys and girls students were selected proportionally from each school. His findings were that the mean

achievement of Kami students in mathematics is equal to the mean achievement of the Gurung students. i.e. there is no variation is seen in mathematics achievement of Kami and Gurung students.

Bhagat (2007) did a research on "A study on mathematics achievement of primary level students of Rai and Tharu casts in Udaypur district". The researcher selected nine public schools and the purposive sampling method was followed in the selection of sample. He selected 216 students (108 from out the difference in mathematics achievement of Rai and Tharu students. For this, t-test with two tailed was used to test the research hypothesis at 0.05 level of significance. His conclusion was the achievement of Tharu students is higher than Rai students.

Bhandari (2010) had conducted a research on topic "The mathematics achievement level of grade eight students". The main objective of this study was to find out the achievement level of 8th grade students in mathematics. Sample was taken 475 students from 12 schools of Kavre district, where 6 schools were rural and 6 were urban schools. The main tool for research was item analysis. His Finding was the mean achievement level of 8th grade students of Kavre district was 49.36%.

Dhakal, (2011) did a research on topic "Factors Affecting mathematics achievement of Rai students in Khotang district". He chose 100 Rai students and he took questionnaire and interview method as a for research. Then his finding has shown that achievement of Rai students is less than non Rai students. That cause irregularity, helping to parents, lack of knowledge of family etc. being Rai students fail in the mathematics subject.

Manandhar (2012) did a research on topic "Factors causing low achievement of girls in grade IX". She chose 120 students and took Likert scale survey, questionnaire and interview method for collected data. She concluded that girls are equally talented and should

be given equal facilities at home and at school to learn mathematics. Parent and teachers should not consider boys are assert and daughter as a liability.

Tharu (2012) did the research on topic “Impact socio-economy status in mathematics achievement on Tharu student ”. This study objective was to find out socio-economy status affect in mathematics achievement of Tharu student. He took 120 students for collected data of sample study. Also he took questionnaire, interview, achievement test for data procedure and analysis. He concluded that Tharu students affected by parent educational level, family economic size and family income in mathematics achievement of students.

I read lots of thesis in different topics .I found there are allots research about student achievement. But why and how the achievement of mathematics is getting low? No one can give absolute answers so I try to given.

Theoretical Review

There are so many factors which affects in mathematics achievements of students. Demographical factors, individual factors, instructional factors. Now days the mathematical achievement of students getting low. I studied a lot of empirical review. I get all of this research focus to find out the cause of getting low achievement of students. I try to find out the instructional factors which affects in mathematic achievement. By the thesis of Saritas and Akdemir (2009) find out the four instructional factors in Turkey. I want to test this research in Nepalese context.

Four instructional factors (curriculum, method,teacher competency school contex and facilities) of student which affecting in mathematics achievement by Akdemir (2009).

Curriculum

Many concerns have been emphasized in the literature about the existing math curricula that emphasize

. . . not so much a form of thinking as a substitute for thinking. The process of calculation or computation only involves the deployment of a set routine with no room for ingenuity or flair, no place for guess work or surprise, no chance for discovery, no need for the human being, in fact (Scheffler, 1975, p.184).

The concerns here are not that students should never learn to compute, but that students must learn how to critically analyze mathematical problems and produce effective solutions. This requires them to learn, how to make sense of complex math concepts and how to think mathematically (Cobb et al., 1992). Many mathematics curricula overemphasize memorization of facts and underemphasize understanding and application of these facts to discover, make connections, and test math concepts. Memorization must be raised to conceptualization, application and problem-solving for students to successfully apply what they learn. An impressive body of research suggests that curriculum that considers students to be incapable of metacognitive actions (e.g., complex reasoning) should be replaced with the one that sees students who are capable of higher-order thinking and reasoning when supported with necessary and relevant knowledge and activities (Bransford et al., 1994; Schauble et al., 1995; Warren & Rosebery, 1996). Research has also revealed evidence that curricula in which students' knowledge and skills grow is significantly connected to their learning, and therefore their achievement (Brown & Campione, 1994; Lehrer & Chazan, 1998).

Instructional Strategies and Methods

Being successful in math involves the ability to understanding one's current state of knowledge, build on it, improve it, and make changes or decisions in the face of conflicts. To do this requires problem solving, abstracting, inventing, and proving (Romberg, 1983). These are fundamental cognitive operations that students need to develop and use it in math classes. Therefore, instructional strategies and methods that provide students with learning situations

where they can develop and apply higher-order operations are critical for mathematics achievement. In the literature, it is pointed out that for students to accomplish learning, teachers should provide meaningful and authentic learning activities to enable students to construct their understanding and knowledge of this subject domain (Wilson, 1996). In addition, it is emphasized that instructional strategies where students actively participate in their own learning is critical for success (Bloom, B. 1976). Instructional strategies shape the progress of students' learning and accomplishment.

Teacher Competency in Mathematics Education

Many studies report that what teachers know and believe about mathematics is directly connected to their instructional choices and procedures (Brophy, 1990; Brown, 1985; National Council of Teachers of Mathematics, 1989; Thompson, 1992; Wilson, 1990a, b). Geliert (1999) also reported that "in mathematics education research, it seems to be undisputed that the teacher's philosophy of mathematics has a significant influence on the structure of mathematics classes". Teachers need to have skills and knowledge to apply their philosophy of teaching and instructional decisions. In the 21st century, one shifting paradigm in education is about teachers' roles and competencies. Findings from research on teacher competency point out that

If teachers are to prepare an ever more diverse group of students for much more challenging work--for framing problems; finding, integrating and synthesizing information; creating new solutions; learning on their own; and working cooperatively—they will need substantially more knowledge and radically different skills than most now have and most schools of education now develop (Darling-Hammond, 1997, p. 154).

Teachers not only need knowledge of a particular subject matter but also need to have pedagogical knowledge and knowledge of their students (Bransford et al., 2000). Teacher

competency in these areas is closely linked to student thinking, understanding and learning in math education. There is no doubt that student achievement in math education requires teachers to have a firm understanding of the subject domain and the epistemology that guides math education (Ball, 1993; Grossman et al., 1989; Rosebery et al., 1992) as well as an equally meticulous understanding of different kinds of instructional activities that promote student achievement. Competent math teachers provide a roadmap to guide students to an organized understanding of mathematical concepts, to reflective learning, to critical thinking, and ultimately to mathematical achievement.

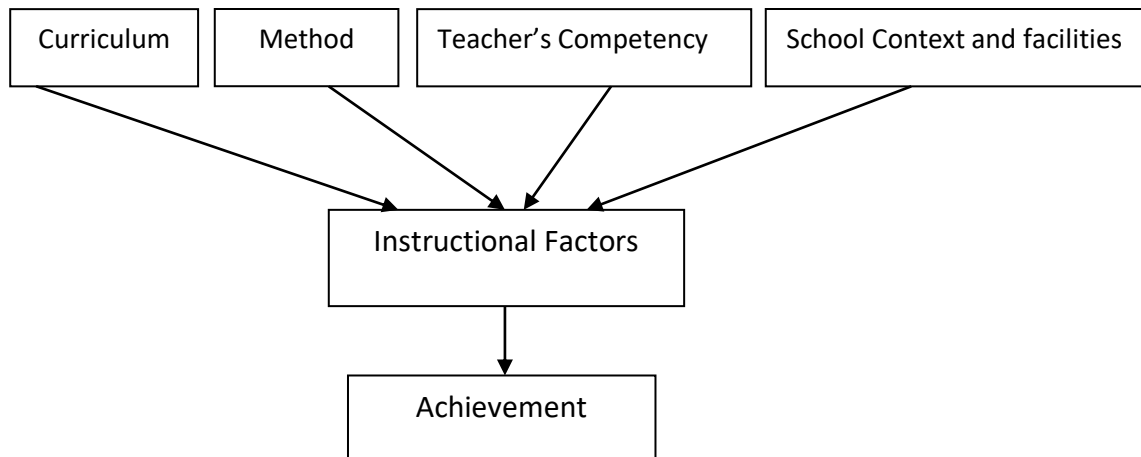
School Context and Facilities

School context and its facilities could be an important factor in student achievement. In fact, identifying factors related to the school environment has become a research focus among educational practitioners. For instance, research suggests that student achievement is associated with a safe and orderly school climate (Reynolds et al., 1996). Researchers also found a negative impact on student achievement where deficiencies of school features or components such as temperature, lighting, and age exist. In a study by Harner (1974), temperatures above 23° C (74° F) adversely affected mathematics skills. In terms of the condition of school building, Cash (1993) found student achievement scores in standard buildings to be lower than the scores of students in above standard buildings. In addition, Rivera-Batiz and Marti (1995) conducted multiple regression statistical analysis to examine the relationship between overcrowded school buildings and student achievement. The findings indicated that a high population of students had a negative effect on student achievement.

Conceptual Framework

Different styles of learning and theories of learning are key literature of the study. There are many factors affecting in mathematics achievement of students. But the researchers have taken some factors affecting in mathematics achievement of students shown below.

Fig. 1: Conceptual Framework



Saritas, T. & Akdemir, (2009, Turkey)

Above figure gives instructional factors which are affecting mathematics achievement of students.

Curriculum: Curriculum consists of all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school.

Method: It is a teaching learning process (interaction) between teacher and students to attain the goals of students and curriculum.

Teacher's Competency: The teacher who can solve the problem, finding, integrating, synthesizing, creating new salutation, learning on their own and working cooperatively.

School Context and Facilities: School context and its facilities could be an important factor in student achievement. In fact, identifying factors related to the school environment has become a research focus among educational practitioners.

CHAPTER-III

METHODS AND PROCEDURES

This chapter was designed for describing the methodology, the design of the study, population sampling, data collection procedure, data analysis and interpretation etc. This study was focused on school level. The instructional factors that affecting the mathematics achievement of students which was dependent variable in the study. This study was more quantitative and some description of phenomenon nature. The researcher was use Likert scale survey design with descriptive approach.

The present study focused to secondary level instructional factors that affected in mathematics achievement at Dolakha district. Instructional factors (curriculum, instructional method, teachers' competency, school context and facilities) were the independent variable in study.

Mathematics achievement is dependent variable in the study. Thus, this study is more quantitative in nature and including some description of phenomenon. The researcher had used survey design with descriptive approach.

Design of the Study

This study was based on Likert scale survey for collecting data. This study was conducted with main objective of research is to find out factor affecting and instructional factors affecting in mathematics .After that conclude objective the score by ANOVA test. So it was more quantitative and some descriptive in nature.

Population of the Study

The population of the study was consisted of all the regular students, teachers and some parents of bachelors' of Dolakha district in academic year 2072.

Sample of the Study

For the research, three campuses and all secondary teachers of Dolakha district were chosen randomly. The sample of this study has included 200 students, 50 teachers and some parents. As far as possible boys and girls students it was included equally for the sample.

Tools/Instrument

There are many tools for the quantitative and descriptive research to get the information from the people. To find out instructional factor affecting in mathematics achievements, 200 students and secondary level teachers were chosen from the groups. According to the guidance of the searcher had prepared fifteen questionnaires related to the above factor and for teachers fourteen questionnaire related to the above factors. The five points Likert scale for the collected data of the respondents were developed starting with a particular point of the view, all statements would score as very effective, effective, less effective, ineffective, no comment. The researcher used mathematics achievement, interview, survey and achievement tests.

Interview

This tool was used to find out participants mind and their views in relation to their action and activities. Interview was the most effective method which used in collecting primary data. It is a tool to find out the internal thought of person. Researcher used interview schedule to find out the information from respond students, teacher, friends and parents.

Questionnaire

Questionnaire is the list of questions to the investigation is the most widely used research tool while collecting data. This study was related, students related and school related factors. So for the collection of 14 questions statement based on Likert scale were used in questionnaire.

Observation

This tool was used to find out the teacher activities and class room teaching.

Researcher went to school and observed teacher competency

Reliability and Validity of the Data

The reliability of the tools and instrument was established by using administrated and split half method of reliability of the test if was determined. It was shown reliability of questionnaire, survey, interview whatever I measure. Reliability and validity of the research instrument are the necessary qualities of instrument. For the purpose of establishing reliability of opinions, one school was selected from Dolakha district which was implemented the procedure of testing reliability and validity. 30 students participated in the pilot survey. For established the reliability, the questionnaires were tired out on 30 students and correlation coefficient was calculated by using split half method. Then the researcher got same result.

For the validity the content of the tools and instrument was established by mathematics experts as well as school subject teacher to check the gross defects in language, suitability of the items, and appropriateness of the statements and complicity, coverage of content etc. of questionnaire and lastly with the suggestion of supervisor.

Data Collection Procedure

The researcher visited with the sample schools with achievement test paper to collect the data and information. Researcher explained the purpose of the visit to the Head Teachers, mathematics teacher, students and parents of the selected school. Students had taken achievement test paper. Then the researcher collected the data was explained and clarified any confusion that arouse in understanding the question.

After taking achievement test, the researcher visited the sample school with Likert scale survey, questionnaire and guideline for interview schedule, survey. Mathematics

teacher, head teacher and parents of low achiever students were also interviewed. After getting responds of all the students, teachers were taken back with thanks.

Data Analysis and Interpretation

Researcher analyzed and interpreted the collected data by using statistical devices and tabulated with the help of finding scores. The collected data was obtained through questionnaire tabulated and also analyzed. Mean standard deviation and variance was calculated for group with their obtained score in the achievement test. The researcher used ANOVA test technique had been used for analytical purpose of the group of sample at level of significant 0.05. The analytical design included ANOVA test to the effect of instructional factors. The researcher analyzed and interpreted from the data survey and interview tools for individual factors affecting in mathematics achievements.

The tools used for this study were interview schedule on mathematics teacher and some parents. The researcher analyzed and interpreted the data from teachers, parents and school documents on mathematics achievement.

CHAPTER – IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of mathematics achievement of students. Students' questionnaire form was used to know information about these above instructional factors. These data were tabulated and analyzed using mean, standard deviation correlation coefficient and ANOVA.

First, the researcher used Likert scale survey to know how many students affected by these instructional factors (curriculum, method, teacher competency, school context and facilities). Very effective, effective, less effective, ineffective, no comments were the comments, taken from sample students.

Curriculum

Many mathematics curricula overemphasize memorization of facts and underemphasize understanding and application of these facts to discover, make connections, and test math concepts. Memorization must be raised to conceptualization, application and problem-solving for students to successfully apply what they learn. An impressive body of research suggests that curriculum that considers students to be incapable of metacognitive actions should be replaced with the one that sees students who are capable of higher-order thinking and reasoning when supported with necessary and relevant knowledge and activities

Table – 2.1

Following data was taken from Students with mathematics teacher about curriculum

| Instructional Factors | Very Effective | Effective | Less Effective | Ineffective | NoComment |
|------------------------------|-----------------------|------------------|-----------------------|--------------------|------------------|
| Curriculum | 117(58.5%) | 48(24%) | 19(9.5%) | 12(6%) | 4(2%) |

From the above data we get 58.5 percent of student strongly agree, only 2 percent of students was not any comment. The 48 number of student said curriculum effects the

outcomes of students, 9.5 percent of students said curriculum is less effective in mathematics achievement.

In comparing the opinion of students curriculum is most affected factors in mathematics achievement.

Table – 2.2

The mean and standard deviation of curriculum are following.

| Group | Mean | S.D |
|--------------|-------------|------------|
| Curriculum | 4.20 | 1.21 |

The mean and standard deviation of student opinion of curriculum was 4.2 and 1.21. Therefore curriculum is most affected factors.

Table – 2.3

Comparison of the Achievement score of Students according to curriculum by Using ANOVA

| Achievement | Df | Sum of Square | Mean Square | F |
|--------------------|-----------|----------------------|--------------------|----------|
| Column means | 3 | 147 | 49 | |
| Error | 196 | 1803.2 | 9.2 | 5.32 |
| Total | 199 | 2765.2 | | |

Form the above table, the calculated value $F = 5.32 > F_{0.01, 3, 196} = 3.78$. So, there is significant difference between the mean mathematics achieving students according to curriculum. So it is found that the student achievements in mathematics differs according curriculum

Parents and Teachers Response

I asked four questions to educated parents and mathematics teachers for understanding their opinions. In survey of eighty parents and fifty teachers, among them 50 parents 48 teachers strongly agree that curriculum mostly affects in achievement of mathematics. It shows that 62.5 percent parents and 96 percent mathematics teachers strongly agree to effect of curriculum. Some teachers said, "Curriculum is the key of learning which gives the guideline to attain the goal".

"Curriculum is the key of learning which gives the guideline to attain the goal".

Teachers view

"Curriculum is runway of student where students reach to gets the goals"

Head teachers view

"Curriculum is the list o content which gives the path of doing teaching learning activities".

Parents view

Curriculum is the Key

I asked some question to teacher and parents. In their, opinion curriculum is the key of teaching learning activities and curriculum help to gets the goal of students. Some teachers said that students achievement and outcomes depend ion curriculum. If curriculum is the bash and level of student. They can get success.

In the above data analysis, teachers and parents opinions I conclude that curriculum is the most effecting factors in mathematics achievement.

Method

Instructional strategies and methods that provide students with learning situations where they can develop and apply higher-order operations are critical for mathematics achievement. In the literature, it is pointed out that for students to accomplish learning, teachers should provide meaningful and authentic learning activities to enable students to construct their understanding and knowledge of this subject domain. In addition, it is emphasized that instructional strategies where students actively participate in their own learning is critical for success.

Table – 2.4

Following data was taken from student and mathematics teachers

| Instructional Factors | Very Effective | Effective | Less Effective | Ineffective | No Comment |
|------------------------------|-----------------------|------------------|-----------------------|--------------------|-------------------|
| Method | 160(80%) | 20(10%) | 16(8%) | 4(2%) | 0 |

Data shows that 80 percent of students said method very effective factors of achievement, 20 percent of students said method effects the mathematics achievement only 2 percent of student said method in effected factors.

Table – 2.5

The mean and standard deviation of method are following

| Group | mean | S.D |
|--------------|-------------|------------|
| Method | 4.58 | 0.98 |

The mean and standard deviation of student opinion of curriculum was 4.58 and 0.98. Therefore method is most affected factors.

Table – 2.6

Comparison of the Achievement score of Students according to method by Using ANOVA

| Achievement | Df | Sum of square | Mean square | F |
|--------------------|-----------|----------------------|--------------------|----------|
| Group means | 3 | 160.77 | 53.59 | |
| Error | 196 | 2750.4 | 14.03 | 3.81 |
| Total | 119 | 2902.66 | | |

From the above table the calculated value $F = 3.81 > F_{0.01, 3, 196} = 3.78$. So, there is no significant difference between the mean mathematics achievements of students according to method. So student's achievements in mathematics are no differs according to method.

An ANOVA test was run to test there is statistically difference between mean mathematics achievements of students according to method.

Parents and Teachers Response

I asked five questions to educated parents and mathematics teachers for understanding their opinion. In survey of eighty parents and fifty teachers, among them 60 parents 50 teachers strongly agree that method mostly affects in achievement of mathematics. It shows that 75 percent parents and 100 percent mathematics teachers strongly agree that method affect the learning outcome. Some teachers said, "Method is the main factor of learning which gives the principle to accomplish the objective". Some parents mentioned that they have found higher learning outcome in their children when the teachers have used student-centered methods. Most of the teachers mentioned that they have used problem solving method in teaching learning activities of mathematics subject. They also came to conclusion that instead of using lecture method, problem solving method can increase learning achievement.

"The children gets the higher scores in mathematics when teacher have used student centered methods".

Parent's view

"Method is the main factors of learning which gives the principle to accomplish the objectives".

Teacher's view

"I always used problem solving method and inductive method to teaching mathematics".

Head teachers view

Methods always be in Students Centered

I asked some question for teachers and parents in their opinion method must be in student centered. When teacher teaching by student centered method the achievement mathematics was increasing. All most teacher focus on student centered methods.

In the above data analysis, from the teachers' and parents' opinion, I came to conclusion that method is the most effective factor in learning achievement of mathematics.

Teacher's Competency

Teachers not only need knowledge of a particular subject matter but also need to have pedagogical knowledge and knowledge of their students. Teacher competency in these areas is closely linked to student thinking, understanding and learning in math education. There is no doubt that student achievement in math education requires teachers to have a firm understanding of the subject domain and the epistemology that guides math education as well as an equally meticulous understanding of different kinds of instructional activities that promote student achievement.

Table – 2.7

Following data was taken from student and mathematics teachers.

| Instructional factors | Very Effective | Effective | Less Effective | Ineffective | No Comment |
|------------------------------|-----------------------|------------------|-----------------------|--------------------|-------------------|
| Teacher competency | 139(69.5%) | 42(21%) | 14(7%) | 4(2%) | 1(0.5%) |

The above data shows 69.5 percent of student said teacher competency very effective factors in mathematics achievement. 21 percent of students said teacher competency effective the learning outcomes of students only 2 percent of students said teacher competency in effective factors in learning outcomes of students.

Table – 2.8

The mean and standard deviation of method are following

| Group | Mean | S.D |
|--------------------|-------------|------------|
| Teacher competency | 3.995 | 1.28 |

The mean and standard deviation of student opinion of curriculum was 3.995 and 1.28. Teacher's competency is most affected factors.

Table – 2.9

Comparison of the Achievement score of Students according to teacher competency by Using ANOVA

| Achievement | Df | Sum of Squares | Mean Squares | F |
|--------------------|-----------|-----------------------|---------------------|----------|
| Column means | 3 | 185.7 | 61.9 | |
| Error | 196 | 2426.45 | 12.38 | 5.0 |
| Total | 119 | 2758.67 | | |

From the above table the calculated value $F = 5.0 > F_{0.01, 3, 1196} = 3.87$. There is significant different between the mean mathematics achievements of students according to

teacher competency. This implies that the students achievement in mathematic differs from teacher competency.

Parents and Teachers Response

I presented 3 questions to educated parents and mathematics teachers for understanding their opinion. In survey of eighty parents and fifty teachers, among them 70 parents 45 teachers strongly agree that teachers' competency mostly affects in learning achievement. It shows that 87.5 percent parents and 90 percent mathematics teachers strongly agree that teachers' competency affect the learning outcome. Some teachers said, "We have found that the learning outcome has been increased when trained and subject expert have taught rather than other teachers". Some parents mentioned that they have found their children have been able to understand and solve the problem easily when they have been taught by teachers who have higher qualification. They also came to conclusion that qualified, skilled and subject expert can teach student in simple way focusing on students.

"We have found that the learning outcomes have been increased when trained and subject expert have thought rather than other teachers".

Teachers view

"Trained and expert teacher teach effectively and focusing on demand, interest and psychology of learner's".

Head teachers view

"Competent teacher teach difficult term and subject in simple way".

Parents view

Competent Teacher Teach on Demand Interest ad Psychological way of learner's.

I asked some question to teacher and parents. All most teacher said competent teacher teach by simple way. He focus on demand, interest of students. Competent teacher on student center activities. Some parents said talent teacher teach effectively.

In the above data analysis, from the teachers' and parents' opinion, I came to conclusion that teachers' competency is the most helpful factor in increasing learning achievement of mathematics subject.

School context and facilities

School context and its facilities could be an important factor in student achievement. In fact, identifying factors related to the school environment has become a research focus among educational practitioners. For instance, research suggests that student achievement is associated with a safe and orderly school climate. Researchers also found a negative impact on student achievement where deficiencies of school features or components such as temperature, lighting, and age exist.

Table – 2.10

Following data was taken from student and mathematics teachers.

| Instructional Factors | Very Effective | Effective | Less effective | Ineffective | No comment |
|-------------------------------|-----------------------|------------------|-----------------------|--------------------|-------------------|
| School context and facilities | 96(48%) | 40(20%) | 40(20%) | 16(8%) | 8(4%) |

The above data shows 48 percent of student said school context and facilities very effective factors in mathematics achievement. 20 percent of students said school context and facilities effective the learning outcomes of students only 8 percent of students said school context and facilities in effective factors in learning outcomes of students.

Table – 2.11

The mean and standard deviation of school context and facilities are following

| Group | mean | S.D |
|-------------------------------|-------------|------------|
| School context and facilities | 3.8 | 1.41 |

The mean and standard deviation of student opinion of curriculum was 3.8 and 1.41. Therefore school context and facilities is most affected factors.

Table – 2.12

Comparison of the Achievement score of Students According to school context and facilities by Using ANOVA

| Achievement | df | Sum of squares | Mean squares | F |
|--------------------|-----------|-----------------------|---------------------|----------|
| Column means | 3 | 148.37 | 49.45 | |
| Error | 196 | 2423.4 | 12.36 | 4.0 |
| Total | 199 | 2758.67 | | |

From the above table the calculated value $F = 4.0 > F_{0.01, 3, 1196} = 3.87$. There is significant different between the mean mathematics achievements of students according to school context and facilities. This implies that the students achievement in mathematic differs from school context and facilities.

Parents and Teachers Response

I offered 3 questions to well-read parents and mathematics teachers for their opinion. In survey of eighty parents and fifty teachers, among them 70 parents 45 teachers strongly agree that school's context and facilities mostly affects in learning achievement. It shows that 87.5 percent parents and 90 percent mathematics teachers strongly agree that school's context and facilities affects the learning outcome. Some teachers said, "We have found that the some students have sound knowledge in mathematics who are near to school and some are very weak because their resident is far away from school". Some parents mentioned that they have found their children have been tired and unable to manage the time to practice more to understand and solve the problem easily. They also came to conclusion that learning

outcome tend to be higher when they have been taught with the help of different teaching materials, in mathematics labs, using over head project and modern technologies.

"School lies on suitable place and right distance from home".

Teachers view

"School environment should be far from noise place and road".

Parents view

"School has good environment, playground, pure drinking water, suitable desk and bench with child focus classroom".

Head teachers view

School should be Right Distance and Place with Child Centered Environment

I asked some questions to teachers and parents. Teacher said school lying on suitable place and distance from home. They focus on environment should be child centered. Parents said if the school is far from home the child feel tired and their achievement getting low because of low practice and cant manage time.

In the above data analysis, from the teachers' and parents' opinion, I came to conclusion that school's context and facilities is the most supportive factor in increasing learning achievement of mathematics subject.

The following table shows the mean and standard deviation of the explanatory variables along with their correlation with dependent variables.

Table - 2.13

Mean and Standard Deviation of Explanatory Variables and their Correlation with Dependent Variables

| Explanatory Variables | Mena | Correlation With Dependent Variables |
|------------------------------|-------------|---|
| curriculum | 0.70 | 0.386 |
| Method | 0.40 | 0.325 |

| | | |
|-------------------------------|------|-------|
| teacher competency | 0.69 | 0.378 |
| school context and facilities | 0.54 | 0.355 |

Above table shows that mathematics achievement of students were found to be positively associated with the curriculum, method, teacher competency and school context and facilities.

The curriculum mean and student achievement is positively associated so curriculum is most affected factor. Similarly correlation between mean of method, teacher competency and school context and facilities is highly positive associated with achievement. So, these four factors (curriculum, method, teacher competency, school context and facilities) most affected factors in mathematics achievement.

CHAPTER – V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATION

After the analysis and interpretation of collected data, an attempt has been made to summarize to enlist of findings and score recommendation for further study. The first section of this chapter present summary of the research, the second section presents finding and the last section presents recommendations based on the findings of the study.

Summary

This study was concerned with the impact of instructional factor (Self - directed leaning, arithmetic ability and motivation) on mathematics achievement of students related their instructional factors. For this study the researcher developed the questionnaire and for checking its reliability and validity to test. Also the researcher developed the student questionnaire form and parent questionnaire form with help of supervisor. Achievement test, student questionnaire form and used for the study.

The objectives of the study were as follows:

- To find out most effective instructional factors on mathematics achievement of students.
- To analyze the effect of instructional factors in mathematics achievement of students.

For this study 200 students were chosen from three public campus of Dolakha district. The data sampled students and sampled parents were obtained through the administration of achievement test paper, student's questionnaire form and parent's questionnaire form. The student's questionnaire about achievement test paper and teacher's and parent's questionnaire form about students' instructional factor which affecting mathematics achievements where/ (curriculum, method, teacher competency, school context and facilities) and help distribute number of students. Then help to find out of above objectives.

Findings

The statistically analysis of the collected data yielded the following results as the finding of the study. The mean score of students of more effective ,effective ,less effective, ineffective, undecided scores given below.

- The score of students effective by curriculum. The mean score of students of more effective ,effective ,less effective, ineffective, and undecided scores are 117(58.5%),48(24%),19(9.5%),12(6%) and(2%)
- The score of students effective by method. The mean score of students of more effective ,effective ,less effective, ineffective, and undecided scores are 160(80%),20(10%),16(8%),4(2%),and 0(0%) respectively.
- The score of students effective by teacher competency. The mean score of students of more effective ,effective ,less effective, ineffective, and undecided scores are 139(69,5%),42(21%),14(7%),4(2%),and 1(0.5%) respectively.
- The score of students effective by school facilities and context. The mean score of students of more effective ,effective ,less effective, ineffective, and undecided scores are 96(48%),40(20%),40(20%),16(8%),and 8(4%) respectively.
- The curriculum has affected mostly in learning outcome of the students in mathematics subject.
- Method brings positive changes in learning outcome when teachers adapt students centered method.
- Similarly, qualified and subject expert teachers have been able to increase learning outcome.
- School's facilities and context also have brought positive and negative effects in learning ability of the students in mathematics.

Conclusion

It is accepted that changing the quality of teaching and learning mathematics in the positive direction is one of the major challenges concerns of educators and researchers. Identifying the factors that possible affect the mathematics achievement of students could help researcher to select the best instructional strategies to most effective. Knowing and understanding the opinions of students are important to identify factors they perceive to be achievement in mathematics. Finding of this study revealed three instructional factors that contribute to mathematics achievement; where (curriculum, method, teacher competency, school context and facilities)e researcher took achievement test and analyzed by ANOVA test the calculated value was greater than tabulated value of curriculum (5.32>3.78),method(3.81>3.78) , teacher competency (5.0>3.78) and school context and facilities(4.0>3.78).So most effective instructional factors are curriculum, method ,teacher competency and school context and facilities Also, students in mathematics achievements. Further investigation of these factors through experimental studies should enable instructional designers and mathematics educators to continue to improve mathematics instruction. About 75 percent of the teachers and parents agree that curriculum, teacher's competency, method and school's context and facilities greatly affects the learning outcome.

Recommendation

After conducting this study the research get some findings on the basis of these findings, the researcher would like to suggest some recommendations for the improvement in mathematics achievement.

- Most of the students are weak from mathematics achievement in our remote villages. The Village lacks the well educated people where affected students. If curriculum is not good the student can't learn mathematics. Learning. So the result we can't expect

the quality education form our student. Therefore, the school and campus should make the student bash curriculum

- The rural people and the student to develop in them positive attitude towards education as well as to increases the level of their commitment in providing education to student, is suggested that literacy and non - formal education program be made widely available to rural area.
- Developing motivational power of students.
- To help the teacher to students about arithmetic ability's knowledge.
- Teacher should be trained.
- To create good environment for reading and writing to student at home.
- Promoting research and development effects for increasing mathematics achievement.
- The study of this type should be conducted at all level of student other subjects and different situation students as well.
- Teaching learning activities should be conducted by subject experts.
- Teacher should focus on student centered and problem solving method while teaching.
- School should be at right place, appropriate distance, and should have peace environment.
- The school should have availability of pure drinking water, separate toilets for girls and boys, playground, child friendly classrooms, desk and benches.

REFERENCE

- Banstola, C. (2007). *Factors affecting on achievement of Dalit students in mathematics; a case study in Kaski district*. Master's Thesis, T.U., Kirtipur.
- Berends, M., Lucas, S. R., Sullivan, T., & Briggs, R.J. (1972-1992). *Examining Gaps in Mathematics Achievement among Racial-Ethnic Groups*. Prepared for the Spencer Foundation and the U.S. Department of Education (by RAND EDUCATION).
- Best, J. W., & J. V. Khan, (2001). *Research in education*. New Delhi: Prentice Hall of India.
- Bhagat, J. K. (2007). *A study on mathematics achievement of primary level students of Rai and Tharu casts in Udaypur district*. Master's Thesis, T.U., Kirtipur.
- Bhandari, D. R. (2010). *The mathematics achievement level of grade eight students*. Master's Thesis, T.U., Kirtipur.
- Bharati, G. (2003). *Mathematics achievement of Hindu and Muslim students at primary level*. Master's Thesis, T.U., Kirtipur.
- Dhakal, D. (2011). *Factor effecting mathematics achievement of Rai students in Khotang district*. Master's Thesis, T.U., Kirtipur.
- Dursun, S., & Dede, Y. (2004). *The factors affecting student's success in mathematics. Teachers perspectives*. Journal of gazi educational faculty.
- Giri, Y. (2010). *A study on basic mathematical concepts practiced by Kulung Rai community in Sankhuwasava district*. Master's Thesis, T.U., Kirtipur.
- Khanal, P. (2010). *Educational research methodology*. Sunlight publication, Kirtipur, Kathmandu.
- Knowles, M. (1975). *Self directed learning a guide for learners and teachers*. New York association pres.
- Manandhar, M. (2012). *Factors causing low achievement of girls in grade IX. A study on kanchanpur district*. Master thesis TU kirtipur

- Maskey, S. (1975). *A comparative study of mathematics achievement of primary school students under different class sizes*. Unpublished Master's Thesis, T.U., Kirtipur.
- Neupane, S.R. (2001). *Mathematics achievement of primary school children of various ethnic group in Nepal*. Doctoral Dissertation, Varanasi: Banaras Hindu University.
- Pandit, R.P. (2007). *Foundation of mathematics education*. United Graphic Printers, Kathmandu.
- Paudel, K. P. (2007). *A study to compare the students achievement in mathematics between Kami and Gurung students at grade 8*. Master's Thesis, T.U., Kirtipur.
- Regmi, S.P. (2004). *A study of achievement in mathematics of Gurung and Kumal students at primary level*. Master's Thesis, T.U., Kirtipur.
- Sahi, H.P. (2010). *Factors affecting achievement of Dalit students in mathematics, (A case study in Doti district)*. Master's Thesis, T.U., Kirtipur.
- Saritas, T. & Akdemir, O. (2009). *Identifying factors affecting the mathematics achievement of students for better instructional design (Turkey)*.
- Shin, J., Lee, H .and Kim Y. (2009). *Students and School Factor Affecting mathematics Achievement international comparison between Korea, Japan and USA*.

APPENDIX – I

The researcher would be grateful for your response I gives thanks for your help and grateful comment and opinion.

Interview Guideline for Teachers

Curriculum

- Do you agree the curriculum affects the student's achievement?
- Which types of curriculum is suitable for students?
- "Curriculum is the runway to reach the goal" do you agree in this statement?
- Is student centered curriculum effective in school level student?

Method

- Method is the process to make our learning easy,do you agree?
- Which method is the best in classroom teaching?
- Does our achievement depend on our class room activities?
- Which method do you apply in your classroom?
- In your opinion, which method is best for teaching learning activities?

Teacher competency

- Does competent teacher makes our learning easy?
- Does competent teacher teach effectively and focusing on demand, interest and psychology of learners?
- How competent teacher teach difficult terms?

School context and facilities

- Does school place and distance of students home affect learning?
- Does your child feel tired when he/she return at home?
- Has learning outcome been increased because of school's facilities?

APPENDIX – II

Students Questionnaire Form.

The Researcher would be grateful for your response if you put (√) tick mark for an appropriate option among more effective ,effective ,less effective, ineffective, undecided after though study of this questionnaires.

Your response will be kept secretly and used only for research study.

Part – I

General information of the students

Please write correct information about the following points, or put tick (√) more on appropriate answer.

Name of Student

Boy () girl ()

Name of campus

Part – II

Please go through the questionnaire and tick (√) the option among agree, undecided and disagree that best indicates your response.

| S.N. | Statements | Response | | | | |
|-------------------|---|----------------|-----------|----------------|-------------|------------|
| | | more effective | effective | less effective | ineffective | no comment |
| curriculum | | | | | | |
| 1. | I was fond of studying mathematics dependent on curriculum. | | | | | |
| 2. | curriculum should be simple to complex | | | | | |
| 3 | curriculum should be | | | | | |

| | | | | | | |
|---------------------------|--|--|--|--|--|--|
| | bash on student ability and context | | | | | |
| teacher competency | | | | | | |
| 1. | teacher should makes good classroom environment | | | | | |
| 2. | good teacher makes student more active | | | | | |
| 3 | train teacher use student center method in class room activity | | | | | |
| method | | | | | | |
| 1. | classroom activity depend on student ability. | | | | | |
| 2. | teaching learning activity should be student center | | | | | |
| 3 | teacher should use problem sloving method | | | | | |
| 4 | classroom activity depend students achivement | | | | | |

| | | | | | | |
|--------------------------------------|--|--|--|--|--|--|
| school context and facilities | | | | | | |
| 1. | classroom activity depend on school context and facilities | | | | | |
| 2. | school should be good light and | | | | | |

| | | | | | | |
|---|--|--|--|--|--|--|
| | classroom | | | | | |
| 3 | school should be in good lacated area | | | | | |
| 4 | classroom enveronment depend students achivement | | | | | |

APPENDIX – III

INTERVIEW GUIDELINES FOR PARENTS

The interview with mathematics teacher will be taken in the basis of following topics.

- Views toward for student achievement effective by curriculum.
- Views toward for student achievement effective by method.
- Views toward for student achievement effective by teacher competency.
- Views toward for student achievement effective by school context and facilities.

APPENDIX – IV

STATISTICAL FORMULA USED IN THE ANALYSIS

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

2. Standard Deviation (σ) = $\sqrt{\frac{\sum X - \bar{x})^2}{N}}$

3. $y = a + b_1 x_1 + b_2 x_2 + \dots + E.$

4. ANOVA = $f = \frac{f_1^2}{f_2^2}$