EFFECT OF SOCIO-ECONOMIC STATUS ON MATHEMATICS ACHIEVEMENT AT GRADE VIII

A

THESIS

BY

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Recommendation Letter

CERTIFICATE

This is to certify that **Mr. Surya Mani Gaire**, a student of academic year 2007/2009 with Campus Roll No.: 1253/064, thesis no. 610, Symbol No.: 281258/2066 and T.U. Regd. No.: 6-1-50-91-2000 has completed his thesis under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Nepal. This thesis entitled **"Effect of Socio-Economic Status on Mathematics Achievement of Grade VIII Students in Gulmi District"** has been prepared based on the results of his investigation. I recommend and forward that his thesis be submitted for the evaluation for awarding the degree of Master of Education.

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Approval Letter

Thesis Submitted

By

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Entitled

"Effect of Socio-Economic Status on Mathematics Achievement of Grade VIII Students in Gulmi District" has been approved for the Partial Fulfillment of the Requirement for the Degree of Master of Education.

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……

Surya Mani Gaire

ABSTRACT

This is a survey study related to the "Effect of socio-economic status in mathematics achievement at grade VIII". The objective of this study was to find the effect of socio-economic status on mathematics achievement. Two hundred students from ten government schools in Gulmi district were selected through stratified random sampling. School records, students and parents questionnaire form were used to collect data. The draft interview forms with the selected list of variables and research questions were given to the experts at the department of Mathematics Education at T.U. According to their suggestion some items were changed and some were modified. For the reliability of the tool the researcher applied test-retest method. The collected data were analyzed by using statistical tools such as Mean, standard deviation, correlation coefficient, t-test, and linear regression.

The mean score of students of educated, literate and illiterate fathers were 46.31, 37.66, and 32.75 respectively. The mean score of student whose father were engaged in job, business and agriculture were 45.61, 38.24, and 34.94 respectively. The mean score of students with small, middle and large family size were 46.77, 36.89, and 32.30 respectively. The mean score of students with high, medium and low family income were 48.30, 39.53, and 34.06 respectively. The values in t-test between the students achievement whose father were educated and literate, educated and literate were found to be 2.82 and 2.22 respectively. In the test t-values between the student achievement whose fathers were in the job and business, job and agriculture were 2.10 and 2.891. Similarly, t-value between the student's achievement whose family size was small and middle, small and large was 3.016 and 3.489 respectively. And the t-values between the student achievement whose family income was high and medium, high and low were 2.416 and 2.93 respectively. All the above t-values were

found to be significant at 0.05. But t-values between the students achievement with literate and illiterate fathers, fathers engaged in business and agriculture, middle and large family, medium and low family income were 1.169, 0.986, 1.327 and 1.796 respectively which were not significant at 0.05. The positive correlation of student's achievement and parent's education, occupation and family income were 0.226, 0.214, and 0.242 respectively. But the variable family size was negatively correlated with achievement in mathematics. The variables family education, family income, family size were found to be strongly related to student achievement in mathematics and father occupation was found to be less influence on student's achievement in mathematics.

On the basis of above findings, the researcher concluded that the socio-economic status of the student effects directly in the mathematics achievement.

CONTENTS

LIST OF TABLE

ACRONYMS

SES	:	Socio-Economic Status
CBS	:	Central Bureau of Statistics
CERID	:	Research Centre for Educational Innovation and Development
FE	:	Father Education
FO	:	Father Occupation
FS	:	Family Size
FI	:	Family Income
FIMS	:	First International Mathematics Study
SIMS	:	Second International Mathematics Study
USA	:	United State of America

Chapter I

INTRODUCTION

Background of the Study

Mathematics, an essential discipline of human life relating to every step, is initiated through the ancient human civilization. In that days when the men started living in a colony, they started to realize the necessity of mathematics then the concept of number was gradually developed. The ancient civilization via. Babylonian and Egyptian had contributed a lot on the development of mathematics as an existable discipline. Generally engineering, surveying and counting were the basic subject matter of those days. The Babylonian well developed about engineering and surveying for its protection from the Euphrates and Tigris rivers as well as their dense population. The Egyptian also contributed in astronomy and surveying. The development of mathematics passed its consecutive phases as the time passed. The subject of mathematics was also included in the teaching as a vital need of development of human mind. It shows that mathematics has been developed through the human efforts in different periods and has attempted this state still on the process of development.

According to New Standard Dictionary of English language funk and Wagnalls (2000), “Mathematics is the science that treats of quantity or magnitude and of their measurement especially by the use of symbols and that investigates deductively the special, serial and numerical relation existing between objectives of perception, in wider sense, the group of allied science concerned with the concrete application of such data.”

There are several factors responsible for the achievement in mathematics of school going children. Those factors may be home environment,

instructional materials, individual difference, peer group, parents' attitudes and socio-economic status etc. Among those factors socio-economic status is an important factor that may affect the achievement in mathematics.

The term socioeconomic status is used by sociologists to denote an individual or family's overall rank in the social and economic hierarchy. In most research, SES has been measured as a combination of parents' education, parents' occupational prestige, and family income.

Socio economic status is an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position relative to others, based on income, education, and occupation. When analyzing a family's SES, the household income, earners' education, and occupation are examined, as well as combined income, versus with an individual, when their own attributes are assessed.

Socioeconomic status is typically broken into three categories, high SES, middle SES, and low SES to describe the three areas a family or an individual may fall into. When placing a family or individual into one of these categories any or all of the three variables (income, education, and occupation) can be assessed.

Income refers to wages, salaries, profits, rents, and any flow of earnings received. Income can also come in the form of unemployment or workers compensation, social security, pensions, interests or dividends, royalties, trusts, alimony, or other governmental, public, or family financial assistance. Income can be looked at in two terms, relative and absolute. Absolute income, as theorized by economist John Maynard Keynes, is the relationship in which as income increases, so will consumption, but not at the same rate. Relative income dictates a person or family's savings and consumption based on the family's income in relation to others.

Income is a commonly used measure of SES because it is relatively easy to figure for most individuals.

Occupational prestige as one component of SES encompasses both income and educational attainment. Occupational status reflects the educational attainment required to obtain the job and income levels that vary with different jobs and within ranks of occupations. Additionally, it shows achievement in skills required for the job. Occupational status measures social position by describing job characteristics, decision making ability and control, and psychological demands on the job. Occupation is the most difficult factor to measure because so many exist, and there are so many competing scales. Many scales rank occupations based on the level of skill involved, from unskilled to skilled manual labor to professional, or use a combined measure using the education level needed and income involved.

Education plays a major role in skill sets for acquiring jobs, as well as specific qualities that stratify people with higher SES from lower SES. Annette Lareau speaks on the idea of concerted cultivation, where middle class parents take an active role in their children's education and development by using controlled organized activities and fostering a sense of entitlement through encouraged discussion. Laureau argues that families with lower income do not participate in this movement, causing their children to have a sense of constraint. A division in education attainment is thus born out of these two differences in child rearing. Lower income families can have children who do not succeed to the levels of the middle income children, who can have a greater sense of entitlement, be more argumentative, or be better prepared for adult life.

Wealth, a set of economic reserves or assets, presents a source of security providing a measure of a household's ability to meet emergencies, absorb economic

shocks, or provide the means to live comfortably. Wealth reflects intergenerational transitions as well as accumulation of income and savings. Income, age, marital status, family size, religion, occupation, and education are all predictors for wealth attainment. There exists a racial wealth gap due in part to income disparities and differences in achievement. According to Thomas Shapiro, differences in savings (due to different rates of incomes), inheritance factors, and discrimination in the housing market lead to the racial wealth gap. Additionally, rates of inheritance dramatically differ between African Americans and whites. The amount a person inherits, either during a lifetime or after death, can create different starting points between two different individuals or families. These different starting points also factor into housing, education, and employment discrimination.

From the type of house we live in to the region and neighborhood in which we reside, place of residence is another leading socioeconomic factor. For better or worse, neighborhoods often group us socially among people with similar incomes and often similar backgrounds. For instance, at points in history, entire neighborhoods have been established around factories or mills for purposes of housing employees. The city of Gary, Indiana, for example, rose to prosperity around the steel mills on the shores of Lake Michigan. And when the steel industry began to take a turn for the worse in the late 1970s and early '80s, the neighborhood structures of Gary began to crumble, and poverty and crime set in.

Culture and/or ethnicity also are socioeconomic factors that can contribute to our thoughts and attitudes. Both can have an impact on how people are raised, their core values, and their sense of family and tradition. The history of one's ethnicity, special holidays, and cultural beliefs are all things that can be passed down between generations and shape individual identities. Often closely tied to culture is the

socioeconomic factor of religion. Whole social networks are built around churches, temples and mosques. From church barbecues and softball games to overseas missionaries and outreach groups, religion plays an important social role in the lives of many.

Proper facilities for study such as a separate study room, a desk or a table, a good light and good dictionary, good environment etc. are essential. Providing of those facilities cannot be isolated from parent's income.

UNESCO (2000) stated: "Pupils who come from homes with high socio-economic status (SES) as measured by factors such as family income, parental education and books in the home, consistently score better on measure of achievements than pupils from low SES families. This is pattern that applies to countries of all kinds, including developed nations that have taken steps to guarantee equal educational opportunities for all".

The education of child depends not only on part played by teachers, but also on the parents' awareness, interest and knowledge about handling and guiding their children at home. Parents can introduce and teach fundamental knowledge and skills, attitudes and values to their children. Parents can help the children to solve mathematical problems at home. In other words, a great deal of children's total development, including their academic achievement level, is the combine product of parents' support and teachers inputs. But parent's support of guidance in learning is only possible when they are educated, literate and conscious as well. Therefore, education plays very important role on the part of parents in helping their children's education.

About the role of parents education, in the booklet "parents and learning" it is said: "When parents learn system for monitoring and guiding

their children out of school time, the children do better in school, school that teach parents ways to reinforce school learning at home find that students are more motivated to learn and attend school more regularly. Parent's education programs enhance teacher, parent communication and the attitude of parents' towards the school."

In the field of education, mostly the educated parents take care of their children seriously and consciously rather than the literate and illiterate parents because they know the importance of education. But generally, people who are illiterate and far educational status is low do not take care of the values of education. They only send their children to school, but they do not take care of them seriously about what they are studying.

Children's from economically marginalized families do not have access to educational opportunity. Usually, children of poor families remain illiterate and are destined to take traditional occupation. Schools in rural areas are less in numbers and therefore more dispersed from each other. The differentials in the distance in school, generally results in the difference in access to educational opportunities of the children. This ultimately results the difference in mathematics study and the best achievement.

Statement of the Problem

Achievement records show that the less achievement of students in mathematics at school level. There are several factors such as home environment, instructional materials, individual difference, peer group, parents' attitudes and socio-economic status etc are responsible for the achievement in mathematics of school going children. Among those factors socio-economic status is an important factor that may affect the achievement in mathematics. This research

has analyzed mathematics achievement on the basis of socio-economic related variables such as father education, father occupation, family size and family Income. The question how a student learns mathematics through the provided situation was the vital question of the research. This study sought to answer the following research question.

1. Does socio-economic status influence the achievement of students in mathematics?

Hypothesis of the Study

The following hypotheses were tested during the study.

1. There is no significance difference in mathematics achievement with respect to:
    a. fathers education
    b. fathers occupation
    c. family income
    d. family size

Objectives of the Study

The following were the objectives of this study.

1. To find the effect of socioeconomic status on mathematics achievement.
2. To find the correlation between socio-economic status and students achievement in Mathematics.

Significance of the Study

Mathematics is an essential part of human life. It has been taught as compulsory subject in school level. So every student should learn mathematics for his further study and better life. Achievement records have shown the less achievement of students in mathematics education at school level. There are different factors that

affect the achievement of students in mathematics. Among them socio-economic status of the student is also one of the most important factors. Significance of this study can be pointed as follows:

1. This study would help to get information about the relation between socio-economic status and achievement in mathematics.
2. This study would help to get information about the achievement of students in mathematics.
3. This study would help to aware the students as well as their parents to create environment for better achievement in mathematics education.
4. This study would help to the Ministry of Education and Curriculum Designer to provide environment and suitable curriculum to get the better achievement in mathematics education.

Delimitations of the Study

Any study cannot consider all the aspects. So this study was delimited under the following aspects.

1. The study was delimited to only Gulmi district.
2. Only the students of grade VIII were selected in this study.
3. Data for the research were collected by questionnaire and achievement records of grade eight students in the examination held on 2067.

Definition of Terms

Socio-economic status of the children has been taken as the composite of following four variables:

Father's education: Considering the perceived importance of father's educational status, this variable has been included in this study. A value of 1 has been assigned to illiterate, 2 for literate, and 3 for educated.

Illiterate people: In this category, those people are included who are unable to read and write.

Literate people: In this category, those people are included who are able to read and write, also acquiring school education below SLC.

Educated people: In this category, those people are included who have passed at least SLC.

Father's occupation: This variable also has been included in this study. A value 1 has been coded to who engaged in agriculture, 2 for business parents, and 3 for those whose parents were in job.

Family size: This variable also has been included in this study. A value of 1 has been coded for those students whose family is small, 2 for middle, and 3 for large.

Small size: It has been considered as the number of members less than or equal to five in family.

Middle size: It has been considered as the number of member between 5-8 in a family.

Large size: it has been considered as the number of members in a family greater than 8.

Family income: This variable also has been included in this study. A value of 1 has been coded to those children whose family income is low, 2 for middle income, and 3 for those whose family income was high.

Low: In this category those families have been included whose family income is less than or equal to Rs. 8000 per month.

Medium: In this category those families have been included whose family income is between Rs.8000-Rs.18000 per month.

High: In this category those families have been included whose family income is greater than Rs.18000 per month.

Urban school: It has been considered as the school which lies inside the city area or district headquarters of Gulmi district.

Rural school: It has been considered as the school which lies in rural area of Gulmi district.

Chapter II

REVIEW OF RELATED LITERATURE

Review of related literature is needed to find out what works have been done and what has not been done in the field of related research. It provides broad knowledge on the field of related topic to the researcher and helps as a guideline for the further study. There have been several studies and conferences about the factors that affect mathematics learning.

The first International Association for the Evaluation of Educational Achievement (IEA) mathematics study project (1992) was implemented in Australia, Belgium, Germany, France, Finland, Israel, Japan, Netherlands, Scotland, Sweden, and United States. The major findings of the project are:

1. Gender was related to mathematics achievement in almost all countries. The boys scoring higher than girls.
2. Parents' level of education was positively correlated with students' achievement.
3. Parents' socio-economic status and students achievement was significantly correlated.
4. Positive relationship was found between students' achievement and their opportunity to learn the mathematics need to respond correctly.

The First International Mathematics Study (FIMS, 1964) and Second International Mathematics Study (SIMS, 1981),with sample 8091 students of Japan and 6958 students of US from grade eight were studied with 36 test items which showed that the mathematical achievement of Japanese students was higher than that of American students. The FIMS and SIMS continued their study with sample size 7954 of Japan and 4671 of U.S.A. of twelve grade students administering the tool

consisting of 18 test items. It was concluded that mathematics achievement of Japanese students was higher than that of American students.

Dave and Dave (1971) conducted a study on the relationship of some factors related to the home environment (parental income, education, occupation, caste and religion) with the achievement. The sample consisted of 128 academically sound and 80 academically poor students of class eight from 16 high schools of Dharwar, Habili, Madras, Trivandrum and Hyderabad. The sample was selected through stratified random sampling technique. He found that higher percentage of rank holders belongs to home with higher parental income; occupation and education where as a higher percentage of failed students belong to home having lower parental income occupation and education.

Douglas (1977) found that the comparable results in his national sample that the middle class parents take more interest in their children's progress at school than the manual working class parents do and become relatively more interested as their children grow older. They visit the school more frequently to find out how their children are getting on with their work and when they do so are more likely to ask to see the head as well as the class teacher, where as the manual working class parents are usually content to see the class teacher only. But the most striking difference is that many middle class fathers visit the school to discuss their children's progress whereas manual working class father seldom do.

Neupane (2000) conducted a study entitled "mathematics achievement of primary school of various ethnic groups in Nepal." For this purpose 500 classes five students were chosen from 27 public schools and were administered the mathematics achievement test. He concluded that ethnic groups' children differ significantly from each other with respect to mathematics achievement. The Newar children were found

to be significantly better achievers in the areas of mathematics than the Magar, Gurung, Tharu and Kumal children. The Gurung children were found to be significantly better achievers in the area of mathematics than that of Magar, Tharu and kumal community performed better than Tharu children though the difference was not significant in the area of mathematics achievement. No significance difference was found in mathematics achievement between Magar and Kumal children. From this result it was seen that the children of Newar were found to be significantly better than the children of other ethnic group with respect to mathematics achievement.

Sah (2000) conducted a study entitled "A comparative study of achievement in mathematics of lower secondary level students of different ethnic groups." Main objective of the study was to find the achievement difference of different ethnic group in Saptary district. The study was of descriptive survey type and achievement test paper was used as the tool. 150 students including Brahmin, Sah and Chaudhary of grade eight from different public schools in Saptary were selected as the sample. The content validity of the test was checked and approved by the mathematics educators of central department of education and mathematics teachers. Several descriptive statistical devices and inferential devices were used to analysis and interprete the collected data. He concluded that the achievement of Brahmin students were higher than Sah and Chaudhary students and Sah students achievement higher than Chaudhary students.

Tharu (2004) conducted a study on the topic "Impact of socio-economic status on mathematics achievement." The main objective of his study was to determine the correlation between socio-economic status and mathematics achievement. The study was of survey type. He took 140 students from four schools as sample in Bardia district by random sampling. He administered a set of

questionnaire and achievement test paper for the selected students. The validity of the test was established by its approval from the mathematics education experts, school teachers and thesis supervisor and for the reliability of the test, the investigator carried out pilot test of the test prepared. The obtained data were analyzed and interpreted by taking correlation between students and their socio-economic status. He concluded that student's achievement was directly correlated with his socio-economic status.

Neupane (2006) conducted a study entitled "Effect of socio-economic status on mathematics achievement." The main objective of his study was to find the correlation between socio-economic status and mathematics achievement. The study was of descriptive survey type. 84 students were selected from five public schools in Lamjung district. The questionnaire form and students achievement test were used to collect the data. Pilot test was applied to determine the reliability of the test. Mean, standard deviation was used to analyze and interpret the collected data. It was concluded that the achievement of the students was directly correlated with socio-economic status of his family.

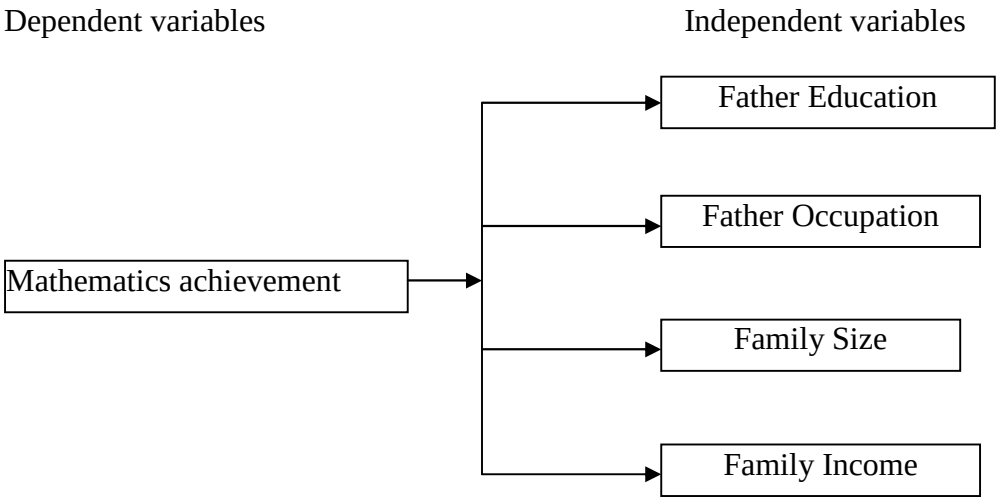
Bajracharya (2007) has conducted a study on the topic "determinants of the achievement status of grade eight students in mathematics". Main objective of the study was to make an assessment of achievement level of grade eight students in mathematics. Achievement test, interview forms and survey forms were used as the tools to collect data. 860 students were selected from 43 schools of kathmandu district. The collected data were analyzed using different statistical tools such as Mean, Standard Deviation, Correlation and Multiple Regression. She has concluded that the student's achievement was directly related to the different variables of socio-economic status.

Pandey (2013) conducted a study on the topic "Relationship of socio-economic status on mathematics achievement of primary schools students". Main objective of the study was to find the relation between socio-economic status and mathematics achievement of primary level students in Arghankhachi district. Achievement test paper was used as the tool to collect data. 113 students were selected from six schools of Arghankhachi district including 61 boys and 52 girls'. The collected data were analyzed using different statistical tools such as Mean, Standard Deviation, Correlation and Multiple Regression. He concludes that the student's achievement was directly related to their socio-economic status.

In Nepal some studies have been done to explore whether the achievement in mathematics is affected by the different variables such as class size, gender, teachers qualification, instructional materials, ethnic groups and some studies concerning scholastic achievement, child development in primary level or any particular grade. But the present study is the "effect of socio-economic status in mathematics achievement at grade eight."

The Conceptual Framework

The variables included in the proposed model are much relevant to the contemporary social context of Nepal to study student's achievement in mathematics. Student in the same grade belong to different social background such as their father education, father occupation, family income, family size. All the above mentioned variables were supposed to affect student achievement in mathematics. Quantitative data pertaining to it was analyzed using multiple regression method. The relationship between variables is shown in the following diagram. It also describes the conceptual frame of the research.



The model was constructing to show the effect of independent variables such as father education, father occupation, family size and family income on the dependent variable achievement of student. For the test of effect of independent variables on dependent variable linear regression was used. The relationship of socio-economic characteristics to mathematics achievement could be shown as:

$$Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \ldots.. + b_kx_k + E$$

Where,

Y = Mathematics Achievement, x_1 = Father Education, x_2 = Father Occupation

x_3 = Family Size, x_4 = Family Income, b_0 = Intercept

b_i's = Least square regression coefficients, E = Error term

Chapter III

RESEARCH METHODS AND PROCEDURES

This chapter presents design, population, sample and sampling procedure, tools/instruments, reliability and validity of tools, data collection procedure, scoring procedure, and data analysis procedure of the study.

Design of the Study

This research was in survey design and quantitive in nature. The researcher had applied questionnaire and students achievement records.

Population of the Study

The population of the study was all students of grade VIII in Gulmi district.

Sample and Sampling Procedure of the Study

The researcher selected four schools from urban area and six schools from rural area of Gulmi district by stratified random sampling. The researcher selected 20 students from each selected schools using random sampling method from the students including different casts, culture and gender.

Tools/Instruments

For the collection of data, schools record form and questionnaire form were applied. The questionnaire form was developed by the researcher himself with the help of experts and supervisor. It was constructed after the detailed study of related literature such as articles, documents, thesis etc. The questionnaire form includes the parent's educational and occupational status, family size and the family income of the student from different sources such as job, agriculture, business etc.

Reliability and Validity of Tools

For the reliability of the questionnaire the researcher applied test-retest method for 10 students in a government school and found that the correlation between pre-test

and post-test were highly positive (appendix iii). The draft interview forms with the selected list of variables and research questions were given to the experts at the department of Mathematics Education at T.U. According to their suggestion some items were changed and some were modified.

Data Collection Procedure

For the data collection the researcher visited each of the selected schools along with questionnaire form and requested letter from T.U. After explaining the purpose of visit, the researcher selected students by random sampling and filled the questionnaire form by asking necessary questions to the selected students.

Scoring Procedure

A value of 1 has been assigned to illiterate, 2 for literate, and 3 for educated. A value of 1 has been coded to who engaged in agriculture, 2 for business parents, and 3 for those whose parents were in job. A value of 1 has been coded for those students whose family is small, 2 for middle, and 3 for those students whose family size was large. A value of 1 has been coded to those children whose family income is low, 2 for middle income, and 3 for those whose family income was high.

Data Analysis Procedure

The mean, standard deviation, correlation coefficient, linear regression, t-test and ANOVA were used to analysis the collected data. Mean was used to find the mean achievement of the students with different socio-economic status. Correlation was used to determine the relationship between dependent and independent variables. t-test and ANOVA were used to test the significance of the correlation and mean respectively. Linear regression was used to find the effect independent variables on mathematics achievement.

Chapter IV

ANALYSIS AND INTERPRETATION

This chapter deals the statistical analysis and interpretation of data obtained using achievement records and questionnaire. To analyze the collected data different statistical tools such as Mean, Standard Deviation, Correlation Coefficient, t-test, Linear Regression and ANOVA were used. The data obtained by above mentioned tools were analyzed under the following headings.

- Mean and standard deviation of mathematics achievement by father education.
- Mean and standard deviation of mathematics achievement by father occupation.
- Mean and standard deviation of mathematics achievement by family size.
- Mean and standard deviation of mathematics achievement by family income.
- Inter correlation of socio-economic related variables and mathematics achievement.
- Regression and standardized regression coefficient of explanatory variables and mathematics achievement.

Mean and Standard Deviation of Mathematics Achievement by Father Education and Test for Significance

Father education of the students has been categorized into three types illiterate, literate, and educated. Illiterate people are those people who are unable to read and write, literate people are those people who are able to read and write, also acquiring school education below SLC, educated people are those people who have passed at least SLC.

The mean and standard deviation of the scores obtained by the students in mathematics according to father education are presented below.

Table 4.1

Group	No. of case	Mean	Standard Deviation
Educated	77	46.31	24.85
Literate	103	37.66	16.22
Illiterate	20	32.75	22.09

The finding record in above table shows that the mean score of students of educated, literate and illiterate fathers are 46.31, 37.66, and 32.75 respectively. Therefore the mean score of educated father's children is higher than the mean score of literate and illiterate father's children. The mean score of literate father's children is higher than those illiterate fathers' children.

The mean scores obtained by three different groups of students differed from each other. To test the significance of these differences, ANOVA test was performed. The F-ratio and its related values are given in the following table.

Table 4.2

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4632.624	2	2316.312	5.496	.005
Within Groups	83025.376	197	421.449		
Total	87658.000	199			

According to the above table, calculated F-ratio was 5.946, which is significant at p=0.005. It suggests that average mathematics achievement of those students whose parents were highly qualified was significantly higher than the other groups. Hence there is positive relationship between father's education and student's achievement in mathematics.

To test the significance difference between the mean of different groups, t-test was used. Test of significance difference between the mean of achievement of the students whose father was educated and literate is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, $t = 2.82$.

Decisions: Since $2.82 > 1.96$. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose father is educated and literate. Also $2.82 > 2.576$. Reject H_0.Hence we conclude that at 0.01levels there is significance difference in the achievement of student whose father is educated and literate.

Test of significance difference between the mean of achievement of the students whose father was literate and illiterate is given below.

Null and alternative hypothesis are:

H_0:$\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t =1.169.

Decisions: Since1.169 < 1.96. Accept H_0.Hence we conclude that at 0.05 levels there is no significance difference in the achievement of student whose father is literate and illiterate. Also 1.169 < 2.576. Accept H_0.Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose father is educated and literate.

Test of significance difference between the mean of achievement of the students whose father was educated and illiterate is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180}$ =1.96, $-\ t_{0.025,180}$ =-1.96 and at 0.01 level is $t_{0.005,180}$ =2.576, $-t_{0.005,180}$ =-2.576.

Computation: Using statistical tool we compute the value, t = 2.22.

Decisions: Since 2.22 > 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose father is educated and illiterate. But 2.22 < 2.576. Accept H_0.Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose father is educated and illiiterate.

Mean and Standard Deviation Of Mathematics Achievement by Father Occupation and Test for Significance

Father occupation of students has been categorized into three types agriculture, business, and job.

The mean and standard deviation of the scores obtained by the students in mathematics according to father occupation are presented below.

Table 4.3

Group	No. of case	Mean	Standard deviation
Job	85	45.61	22.08
Business	62	38.24	19.41
Agriculture	53	34.94	19.38

The finding record in above table shows that the mean score of student's father engaged in job, business and agriculture are 45.61, 38.24, and 34.94 respectively. Therefore the mean score of children achievement with father engaged in job is higher than the mean score of children achievement with father engaged in business and agriculture. The mean score of children whose father is engaged in business is higher than those children whose father is engaged in agriculture.

The mean scores obtained by three different groups of students differed from each other. To test the significance of these differences, ANOVA test was performed. The F-ratio and its related values are given in the following table.

Table 4.4

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4173.611	2	2086.805	4.924	.008
Within Groups	83484.389	197	423.779		
Total	87658.000	199			

According to the above table, calculated F-ratio was 4.924, which is significant at p=0.008. It suggests that average mathematics achievement of those students whose parents were involved in job was significantly higher than the other groups and average mathematics achievement of those students whose parents were

involved in business was significantly higher than the students whose parents were involved in agriculture. Hence there is positive relationship between father's occupation and student's achievement in mathematics.

To test the significance difference between the mean of different groups, t-test was used. Test of significance difference between the mean of achievement of the students whose father occupation was job and business is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t = 2.10.

Decisions: Since 2.10> 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose father occupation was job and business. But 2.10 < 2.576. Accept H_0.Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose father occupation was job and business.

Test of significance difference between the mean of achievement of the students whose father occupation was business and agriculture is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180}$ =1.96, - $t_{0.025,180}$ =-1.96 and at 0.01 level is $t_{0.005,180}$ =2.576, -$t_{0.005,180}$ =-2.576.

Computation: Using statistical tool we compute the value, t = 0.986.

Decisions: Since 0.986 < 1.96.Accept H_0.Hence we conclude that at 0.05 levels there is no significance difference in the achievement of student whose father occupation was business and agriculture. Also 0.986 < 2.576. Accept H_0.Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose father occupation was business and agriculture.

Test of significance difference between the mean of achievement of the students whose father occupation was job and agriculture is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: α = 0.05 and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180}$ =1.96, - $t_{0.025,180}$ =-1.96 and at 0.01 level is $t_{0.005,180}$ = 2.576, -$t_{0.005,180}$ =-2.576.

Computation: Using statistical tool we compute the value, t = 2.891.

Decisions: Since 2.891 > 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose father occupation was job and agriculture. Also 2.891 > 2.576. Reject H_0. Hence we conclude that at 0.01levels there is significance difference in the achievement of student whose father occupation was job and agriculture.

Mean and Standard Deviation of Mathematics Achievement by Family Size and Test for Significance

Family size of the students has been categorized into three types small, middle and large size. Family with members less or equal five is small, family with member greater than five and less or equal to eight is middle, and family with members greater than eight is large size.

The mean and standard deviation of the students achievement in mathematics according to their family size is as follow.

Table 4.5

Group	No. of case	Mean	Standard deviation
Small	93	46.77	23.14
Middle	64	36.89	14.80
Large	43	32.30	20.99

The finding record in above table shows that the mean score of students of small, middle and large family size are 46.77, 36.89, and 32.30 respectively. Therefore the mean score of small size family children is higher than the mean score of middle and large size family children. The mean score of middle size family children is higher than those of large size family children.

The mean scores obtained by three different groups of students differed from each other. To test the significance of these differences, ANOVA test was performed. The F-ratio and its related values are given in the following table.

Table 4.6

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7384.438	2	3692.219	9.061	.000
Within Groups	80273.562	197	407.480		
Total	87658.000	199			

According to the above table, calculated F-ratio was 9.061, which is significant at p=0.000. It suggests that average mathematics achievement of those students with small family size was significantly higher than the other groups and average mathematics achievement of those students with middle family size was significantly higher than the students whose family size were large. Hence there is negative relationship between family size and student's achievement in mathematics.

To test the significance difference between the mean of different groups, t-test was used. Test of significance difference between the mean of achievement of the students whose family size was small and middle is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t = 3.016.

Decisions: Since 3.016 > 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose family size was small and middle. Also 3.016 > 2.576. Reject H_0.Hence we conclude that at 0.01levels there is significance difference in the achievement of student whose family size was small and middle.

Test of significance difference between the mean of achievement of the students whose family size was middle and large is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t = 1.327.

Decisions: Since 1.327 < 1.96. Accept H_0.Hence we conclude that at 0.05 levels there is no significance difference in the achievement of student whose family size was middle and large. Also 1.327 < 2.576. Accept H_0.Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose family size was middle and large.

Test of significance difference between the mean of achievement of the students whose family size was small and large is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t = 3.489.

Decisions: Since 3.489 > 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose family size was small and large. Also 3.489 > 2.576. Reject H_0.Hence we conclude that at 0.01levels there is significance difference in the achievement of student whose family size was small and large.

Mean and Standard Deviation of Mathematics Achievement by Family Income and Test for Significance

Family income of the student has been categorized into three types low, medium, and high. Family with income less than or equal Rs.8000 per month is included in low income, family with income greater than Rs.8000 and less or equal to Rs.18000 per month is included in medium, and family with income greater than Rs.18000 per month is included in high income.

The mean and standard deviation of students achievement in mathematics according to his family income is presented below.

Table 4.7

Group	No. of case	Mean	Standard Deviation
High	52	48.30	27.48
Medium	100	39.53	17.15
Low	48	34.06	17.72

The finding record in above table shows that the mean score of students of high, medium and low family income are 48.30, 39.53, and 34.06 respectively. Therefore the mean score of high income family children is higher than the mean score of medium and low income family children. The mean score of medium income family children is higher than those of low income family children.

The mean scores obtained by three different groups of students differed from each other. To test the significance of these differences, ANOVA test was performed. The F-ratio and its related values are given in the following table.

Table 4.8

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5253.201	2	2626.600	6.279	.002
Within Groups	82404.799	197	418.298		
Total	87658.000	199			

According to the above table, calculated F-ratio was 6.279, which is significant at p=0.002. It suggests that average mathematics achievement of those students with high family income was significantly higher than the other groups and average mathematics achievement of those students with medium family income was significantly higher than the students whose family income was low. Hence there is positive relationship between family income and student's achievement in mathematics.

To test the significance difference between the mean of different groups, t-test was used. Test of significance difference between the mean of achievement of the students whose family income was high and medium is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t = 2.416.

Decisions: Since 2.416 > 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose family income was

high and medium. But 2.416 < 2.576. Accept H_0. Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose family income was high and medium.

Test of significance difference between the mean of achievement of the students whose family income was medium and low is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180} = 1.96$, $-t_{0.025,180} = -1.96$ and at 0.01 level is $t_{0.005,180} = 2.576$, $-t_{0.005,180} = -2.576$.

Computation: Using statistical tool we compute the value, t = 1.796.

Decisions: Since 1.796 < 1.96. Accept H_0.Hence we conclude that at 0.05 levels there is no significance difference in the achievement of student whose family income was medium and low. Also 1.796 < 2.576. Accept H_0. Hence we conclude that at 0.01levels there is no significance difference in the achievement of student whose family income was medium and low.

Test of significance difference between the mean of achievement of the students whose family income was high and low is given below.

Null and alternative hypothesis are:

H_0: $\mu_{1=}\ \mu_2$ the difference is merely due chance.

H_1: $\mu_{1\neq}\ \mu_2$ there is significance difference between the achievements.

Level of significance: $\alpha = 0.05$ and 0.01.

Critical region: It is a two tailed test. From t-table the critical region for α at 0.05 level is $t_{0.025,180}$ =1.96, - $t_{0.025,180}$ =-1.96 and at 0.01 level is $t_{0.005,180}$ =2.576, -$t_{0.005,180}$ =-2.576.

Computation: Using statistical tool we compute the value, t = 2.93.

Decisions: Since 2.93 > 1.96. Reject H_0.Hence we conclude that at 0.05 levels there is significance difference in the achievement of student whose family income was high and low. But 2.93 > 2.576. Reject H_0. Hence we conclude that at 0.01levels there is significance difference in the achievement of student whose family income was high and low.

Inter Correlation of Socio-economic Related Variables and Mathematics Achievement

The inter correlation of four socio-economic related variables and mathematics achievement are shown below.

Table 4.9

		Achievement	**FE**	**FO**	**FS**	**FI**
Achievement	Pearson Correlation	1	.226**	.214**	-.284**	.242**
	Sig. (2-tailed)		.001	.002	.000	.001
	N	200	200	200	200	200
FE	Pearson Correlation	.226**	1	.375**	-.138	.221**
	Sig. (2-tailed)	.001		.000	.052	.002
	N	200	200	200	200	200
FO	Pearson Correlation	.214**	.375**	1	-.226**	.593**
	Sig. (2-tailed)	.002	.000		.001	.000
	N	200	200	200	200	200

FS	Pearson Correlation	-.284**	-.138	-.226**	1	-.162*
	Sig. (2-tailed)	.000	.052	.001		.022
	N	200	200	200	200	200
FI	Pearson Correlation	.242**	.221**	.593**	-.162*	1
	Sig. (2-tailed)	.001	.002	.000	.022	
	N	200	200	200	200	200
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

The above table shows that the mathematics achievement of students is positively correlated with their father education, occupation, and family income but negatively correlated with their family size. The variable father education was positively correlated with occupation and family income but negatively correlated with family size. Father occupation is positively correlated with family income but negatively correlated with family size. Also, family income is negatively correlated with family size.

Similarly, the positive correlation of student's achievement and parent's education, occupation and family income are 0.226, 0.214, and 0.242 respectively, which are highly significant. Another variable family size of the student is negatively correlated with achievement in mathematics, which is highly significant at the value -0.284.

Regression and Standardized Regression Coefficient of Explanatory Variables and Mathematics Achievement

The linear regression of four socio-economic related variables and mathematics achievement is shown below.

Table 4.10

Variabless	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	b	Std. Error			
FE	5.144	2.360	.156	2.180	.030
FO	.060	2.247	.002	.026	.979
FS	-6.269	1.817	-.235	-3.450	.001
FI	4.963	2.440	.168	2.034	.043

The standardized coefficient beta displayed above shows that student achievement score depends on the family income. This variable has appeared as the strong predictor in the model. Its beta coefficient is 0.168. The positive sign indicates that there is direct variation between family income and the dependent variable. It means that achievement increase or decreases according to change in family income. A unit increase in family income is associated with 49.63% increment in students achievement score in mathematics. In the test t-value was found to be 2.034 which was significant at 0.043. Thus a good family income obviously leads to the achievement further.

The second powerful indicator is father education. The beta is 0.156 in the model. It means that students whose father education is good, increases students achievement. A unit increase in father's education is associated with 51.44% increments in student's achievement. Test shows that the t-value was 2.180 and it was significant at 0.03. The least powerful variable was the father's occupation in this model. The beta coefficient of this variable was 0.002. Change of a unit of father's occupation has contributed the achievement score to increase by 0.6% only. The t-value was found to be 0.026 which was significant at only 0.979.

Another variable in this model was family size of the students. The beta coefficient of family size was -0.235. the negative sign indicates that family size of student impact student achievement score. A unit increase in family size decreases achievement in mathematics by 62.69%. in the test t-value was found -3.450 and it was significant at 0.001.

Chapter V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

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

Summary and Finding

This is a survey study related to the "Effect of socio-economic status on mathematics achievement". The objectives of this study were to find the effect of socio-economic status on mathematics achievement, correlation between socio-economic status and student's achievement in mathematics, and level of mathematics achievement of students with respect to socio-economic status. School records and students and parents questionnaire form were used to collect data. 200 students from different 10 government schools in Gulmi district were selected as the sample through stratified random sampling. With the help of questionnaire detailed information about parent's education, occupation, family income, and family size of the students were collected. Also with the help of achievement record form detailed information of student achievement in mathematics were collected. Mean, standard deviation, and correlation coefficient were used to analysis the data.

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

- The mean score of students of educated, literate and illiterate fathers are 46.31, 37.66, and 32.75 respectively, which was found to be significant at p=0.005. Therefore the mean score of educated father's children is higher than the mean

score of literate and illiterate father's children. The mean score of literate father's children is higher than those illiterate fathers' children.

- The mean score of student's father engaged in job, business and agriculture are 45.61, 38.24, and 34.94 respectively, which was found to be significant at p=0.008. Therefore the mean score of children achievement with father engaged in job is higher than the mean score of children achievement with father engaged in business and agriculture. The mean score of children whose father is engaged in business is higher than those children whose father is engaged in agriculture.
- The mean score of students of small, middle and large family size are 46.77, 36.89, and 32.30 respectively, which was found to be significant at p=0.000. Therefore the mean score of small size family children is higher than the mean score of middle and large size family children. The mean score of middle size family children is higher than those of large size family children.
- The mean score of students of high, medium and low family income are 48.30, 39.53, and 34.06 respectively, which was found to be significant at p=0.002. Therefore the mean score of high income family children is higher than the mean score of medium and low income family children. The mean score of medium income family children is higher than those of low income family children.
- The mathematics achievement of students is positively correlated with their father education, occupation, and family income but negatively correlated with their family size. The variable father education was positively correlated with occupation and family income but negatively correlated with family size. Father occupation is positively correlated with family income but negatively correlated with family size. Also, family income is negatively correlated with

family size. Similarly, the positive correlation of student's achievement and parent's education, occupation and family income are 0.226, 0.214, and 0.242 respectively, which are highly significant. Another variable family size of the student is negatively correlated with achievement in mathematics, which is highly significant at the value -0.284.

- The variables father's education, father's occupation and family income were found to be strongly associated with the achievement of students. The variable family size appeared negative influence on student's achievement in mathematics

Conclusion

This study was undertaken to identify the effect of socio-economic status on mathematics achievement of grade VIII students related to their father education, occupation, income of the family and family size. The score obtained by students in mathematics is found positively correlated with their father education, occupation, and family income but it was found negatively correlated with their family size.

Recommendations for the Further Study

Due to different causes the researcher could not include everything in this study. So the researcher would like to suggest following recommendations for the further study.

1. The study of this kind should be conducted at all levels of schools and in other subjects as well.
2. This study was limited to the students of grade viii from only ten public schools in Gulmi district; hence the researcher cannot generalize the findings of the study to all grades and whole country. So the similar study should be done regional wise as well national wise.
3. The study was limited to four variables of socio-economic status. Similar studies should be done in other variables of socio-economic status and in other factors that affect the student's achievement.

BIBLIOGRAPHY

Bajracharya, I. K.(2007), *Determinants of achievement of grade eight students in mathematics.* Doctorial Dissertation; Degree of Doctor of philosophy in Mathematics Education. Department of Mathematics Education, Kirtipur.

CBS, (2004). *Nepal Living Standards Survey.* Kathmandu: Central Bureau of Statistics. Thapathali.

CERID, (2007). *Mathematics education forum.* Kirtipur, Kathmandu.

Chaudhary, R. N. (2000). *A comparative study of achievement in mathematics of primary level students related to parents educational status.* Master Thesis, Department of Mathematics Education, Kirtipur.

Dave and Dave (1971), *The relationship of factors related to home environment with the achievement.*

Douglas, J.W.B. (1977). *The Home and the School.* London: Mac Gibbon Kee, p.52.

James, R. C. & Backenbuch, E. F. (2001). *Mathematics dictionary.*

Malakar, S. (1989). *Parental involvement in Education of Children Education and Development.* Kathmandu: CERID/T.U. Tripureshwar.

Neupane, A. K. (2006). *Effect of socio-economic status on mathematics achievement.* Unpublished Master Thesis, Department of Mathematics Education, Kirtipur.

Neupane, S. R. (2001). *Mathematics Achievement of Primary School Children of Various Ethnic Groups in Nepal.* Doctorial Dissertation; Banaras Hindu University, Varanasi, India.

Pandey (2013), *Relationship of socioeconomic status on mathematics achievement of primary school students.* Master Thesis, Department of Mathematics Education, Kirtipur.

Sah, B. L. (2000). *A comparative study of mathematics achievement of different ethnic groups.* Master Thesis, Department of Mathematics Education, Kirtipur.

Tharu, R. P. (2004). *Impact of socio-economic status on mathematics achievement.* Master Thesis, Department of Mathematics Education, Kirtipur.

UNESCO, (1991). *Parent learning support system.* A hand book.

UNESCO. (2000). *Assessing Learning Achievement.* France: International Consultative forum, EFA forum secretariat.

http://en.wikipedia.org/wiki/Socioeconomic_status#External_links

http://www.dest.gov.au/archive/highered/eippubs/eip02_5/default.htm

http://std.about.com/od/glossary/g/sesgloss.htm

www.ncrel.org/sdrs/areas/issues/stude...

APPENDIX I

ACHIEVEMENT RECORD FORM

Shree……

……., Gulmi

S.N	Students Name	Full Marks	Pass Marks	Marks Obtained
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

…… ……

Subject Teacher principal

APPENDIX II

STUDENT/PARENT QUESTIONNAIRE FORM

Students name: …….

Parents name: ……...

Address: District……V.D.C…….Ward No……..

Age: ……years Gender: Male Fem☐ ☐

- Family structure: Nuclear☐ Joint ☐
- Father's occupation:

  Agriculture ☐ Business ☐Job ☐
- Father's education:

  Illiterate ☐ Literate ☐ Educated ☐

  Mention grade if educated……..
- Mother's occupation:

  Agriculture☐ Business ☐ Job ☐
- Mother's education:

  Illiterate ☐ Literate ☐ Educated ☐

  Mention grade if educated……..
- Family income from different sources,

  Agriculture Rs……..

  Business Rs……..

  Job Rs……..
- Number of family members,

  Male ☐ Female ☐
- Language of the family, Nepali ☐ Others ☐

  Mention the language, if others.....

APPENDIX III

SCORES & CORRELATION OBTAINED IN TEST-RETEST OF QUESTIONNAIRE FORM

FO		FE		FI		FS	
Test I	Test II	Test I	Test II	Test I	Test II	Test I	Test II
3	3	1	1	3	3	2	2
3	3	2	2	2	2	1	1
2	2	2	2	1	1	1	1
2	2	2	2	2	2	1	1
2	2	3	3	2	2	1	1
3	3	2	2	3	3	1	1
3	3	2	2	2	2	1	1
2	2	2	2	3	3	3	3
2	2	2	2	3	3	2	2
1	1	2	2	2	2	2	2
Correlation = 1.0		Correlation = 1.0		Correlation = 1.0		Correlation = 1.0	

APPENDIX IV

RAW SCORE

According to fathers educational status

Illiterate	Literate	Educated
32, 12, 36, 58, 71, 1, 32, 32, 32, 9, 32, 19, 22, 11, 32, 68, 8, 32, 83	32, 37, 32, 45, 73, 32, 32, 45, 76, 52, 33, 72, 37, 37, 33, 49, 32, 32, 39, 91, 33, 62, 53, 32, 32, 32, 43, 32, 32, 35, 33, 32, 42, 40, 38, 32, 50, 10, 32, 91, 49, 42, 32, 5,14, 34, 20, 34, 32, 93, 32, 55, 40, 33, 50, 32, 32, 32, 48, 32, 32, 32, 83, 44, 33, 16, 33, 32, 53, 62, 6, 23, 52, 33, 38, 24, 12, 25, 5, 10, 42, 52, 21, 76, 57, 37, 32, 34, 38, 32, 35, 54, 63, 32, 2, 59, 53, 32, 42, 37, 32, 32, 32, 11	99, 98, 32, 46, 49, 55, 55, 37, 45, 50, 84, 77, 49, 67, 32, 53, 57, 43, 86, 9, 96, 65, 47, 32, 40, 68, 34, 9, 32, 32, 32, 82, 33, 10, 33, 60, 32, 32, 33, 32, 70, 84, 34, 42, 89, 87, 94, 48, 60, 38, 37, 53, 65, 45, 55, 35, 43, 32, 32, 34, 36, 35, 32, 67, 6, 3, 5, 9, 8, 32, 32, 33, 32, 32, 32, 32, 5

According to fathers occupational status

Agriculture	Business	Job
58, 84, 76, 32, 52, 12, 9, 9, 39, 32, 10, 32, 36, 10, 50, 72, 67, 42, 32, 32, 33, 32, 14, 32, 34, 32, 32, 32, 11, 32, 83, 32, 44, 33, 19, 33, 33, 32, 32, 32, 38, 55, 42, 52, 76, 32, 35, 37, 32, 3, 32, 32	32, 32, 73, 49, 32, 32, 37, 33, 49, 32, 32, 33, 32, 32, 43, 47, 35, 42, 40, 32, 50, 32, 1, 91, 33, 32, 34, 20, 32, 93, 55, 32, 48, 34, 32, 42, 32, 87, 94, 16, 23, 25, 21, 57, 38, 32, 5, 54, 63, 32, 59, 53, 32, 32, 32, 32, 33, 9,32, 32, 6, 10	99, 98, 32, 32, 46, 37, 32, 45, 32, 45, 33, 55, 55, 37, 33, 37, 45, 50, 77, 49, 32, 53, 57, 62, 53, 32, 71, 43, 32, 86, 96, 65, 32, 33, 40, 68, 34, 38, 49, 60, 32, 32, 91,70, 84, 40, 33, 50, 89, 48, 83, 8, 60, 68, 38, 37, 53, 65, 53, 62, 82, 45, 52, 24, 12, 5, 37, 35, 32, 34, 4, 32, 35, 32, 32, 32, 11, 34, 36, 6, 32, 42, 5, 67, 9, 8

According to family income

Low	Medium	High
32, 33, 9, 33, 32, 32, 43, 32, 10, 32, 36, 10, 55, 67, 71, 72, 96, 32, 32, 33, 14, 6, 32, 34, 22, 12, 55, 5, 42, 32, 44, 33, 19, 33, 33, 32, 32, 32, 32, 11, 32, 32, 32, 53, 32, 42, 37, 32, 3, 32, 32	32, 32, 32, 99, 46, 58, 37, 45, 32, 73, 49, 32, 84, 76, 52, 55, 32, 37, 12, 9, 32, 37, 45, 32, 39, 57, 32, 32, 86, 47, 32, 35, 40, 42, 68, 40, 32, 38, 32, 50, 32, 32, 33, 33, 49, 32, 32, 32, 32, 32, 34, 20, 32, 76, 57, 37, 34, 32, 35, 8, 5, 54, 32, 32, 32, 45, 52, 33, 38, 21, 83, 38, 37, 32, 32, 32, 48, 34, 42, 59, 32, 34, 36, 32, 32, 32, 32, 38, 23, 24, 25, 10, 52, 16, 32, 35, 94	98, 32, 45, 37, 33, 49, 50, 91, 77, 49, 32, 53, 62, 53, 43, 65,91, 33, 5, 1, 60, 32, 35, 32, 43, 32, 63, 65, 53, 62, 82, 89, 87, 48, 83, 60, 68, 53, 33, 2, 70, 84, 55, 40, 50, 6, 5, 67, 9, 9, 8, 11

According to family size

Small	Medium	Large
99, 98, 32, 58, 73, 49, 32, 84, 45, 76, 32, 33, 55, 55, 37, 37, 49, 32, 45, 32, 33, 57, 53, 32, 32, 96, 65, 35, 33, 40, 42, 91, 91, 68, 40, 34, 38, 32, 32, 10, 5, 5, 49, 42, 60, 32, 32, 32, 34, 20, 34, 93, 70, 84, 40, 50, 48, 48, 32, 83, 48, 60, 38, 33, 53, 32, 45, 23, 52, 25, 10, 21, 76, 57, 32, 34, 38, 35, 54, 63, 32, 82, 83, 87, 59, 32, 42, 32, 8, 5, 67, 14, 94	32, 32, 46, 37, 32, 45, 32, 32, 52, 33, 33, 37, 39, 49, 67, 53, 32, 32, 43, 32, 32, 86, 50, 32, 32, 32, 6, 9, 32, 32, 55, 33, 34, 32, 32, 44, 68, 33, 37, 32, 32, 65, 53, 62, 22, 33, 32, 24, 12, 55, 5, 42, 37, 35, 43, 32, 32, 11, 53, 34, 32, 32, 9, 35, 37	32, 1, 32, 12, 9, 77, 50, 62, 32, 43, 47, 32, 36, 10, 71, 72, 33, 32, 32, 32, 32, 32, 11, 9, 32, 19, 16, 33, 38, 52, 32, 8, 32, 36, 89, 32, 32, 3, 32, 2, 32, 6

APPENDIX V

LIST OF SAMPLED SCHOOLS

1. Siddhababa Higher Secondary School, Tamghas.
2. Upallo Tamghas Secondary School, Tamghas.
3. Resunga Secondary School, Tamghas.
4. Mahendra Higher Secondary School, Tamghas.
5. Nepal Rastriya Higher Secondary School, Anpchor.
6. Gyanodaya Higher Secondary School, Turang.
7. Sharadha Secondary School, Rupakot.
8. Shiva Shankar Secondary School, Anpchor.
9. Satyawati Higher Secondary School, Hansara.
10. Rudrawati Higher Secondary School, Juhang.

APPENDIX VI

STATISTICAL FORMULAE USED IN THE ANALYSES

1. Mean $\bar{x} = \frac{\sum fx}{N}$

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

3. Correlation coefficient $\rho = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\ \sqrt{N\sum Y^2 - (\sum Y)^2}}$

4. T = $\frac{\rho\sqrt{n-2}}{\sqrt{1-\rho r^2}}$

5. F = $\frac{MSC}{MSE}$; where MSC = $\frac{SSC}{k-1}$, MSE = $\frac{SSE}{N-k}$, SSE = SST-SSC,

   SST = $\sum_{i=1}^{k}\sum_{j=1}^{n_i} x_{ij}^2 - \frac{T_{..}^2}{N}$, SSC = $\frac{\sum_{i=1}^{k} T_{i.}^2}{n_i} - \frac{T_{..}^2}{N}$, N = total

   number of sample, k = number of columns

6. $Y = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + \ldots.. + b_kx_k + E$

   Where, Y = Mathematics achievement, x_1 = Father education

   x_2 = Father occupation, x_3 = Family size

   x_4 = Family income, b_0 = Intercept

   b_i's = Least square regression coefficients, E = Error term