EFFECT OF FAMILY ENVIRONMENT ON MATHEMATICS ACHIEVEMENT

A

THESIS

BY

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Letter of Certificate

This is to certify that Mrs. Gina Bishwas a student of academic Year 2073/ 2075 with campus Roll No.-353, Thesis No. 1563 Exam Roll No.-7328364 and T. U. Registration No: 9-3-28-129-2016 has completed her thesis under my Supervision during the period prescribed by the rules and regulation of Tribhuvan University, Kirtipur, Kathmandu, Nepal. The thesis entitled "Effect of Family Environment on Mathematics Achievement " has been prepared based on the result of his investigation. I here by recommended and forward that her thesis be Submitted for the Evaluation as the Partial requirements to award the degree of Master of Mathematics Education.

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Letter of Approval

This thesis entitled "Effect of Family environment on Mathematics Achievement" Submitted by Mrs. Gina Bishwas in partial fulfillment of the requirements for Master's Degree in Education has approved.

Committee for the Viva –Voce Signature

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Recommendation for Acceptance

This is to certify that Mrs. Gina Bishwas has Completed her M.ED. thesis "Effect of Family Environment on Mathematics Achievement" Under my Supervision during the period prescribed by the rules and regulation of Tribhuvan University, Kirtipur, Kathmandu, Nepal. I recommended and forward her thesis to the Department of Mathematics Education to organize final Viva-Voce.

Date……

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(Dr. Bed Prasad Dhakal)

Supervisor

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Dedication

Dedicated

To

My parents and all my family members whose blessing is with me forever.

Declaration

This thesis contains no materials which has been accepted for the award of other degree in any institutions. To the best of the knowledge and belief this contains no materials previously published by any authors expect due knowledge has been made.

Date …… …….....

(Gina Bishwas)

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My first obligation is to Department of Mathematics T. U. Kirtipur for providing me an opportunity to do a thesis on the topic of "Effect of Family Environment on Mathematics Achievement" I would like to express my sincere thanks, cordial gratitude and deep appreciation to Dr. Bed Prasad Dhakal my supervisor from Department of Mathematics Education, Kirtipur, for his continuous guidance and valuable suggestions in making this thesis complete.

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I am deeply indebted to my parents and family member and relatives for their kind suggesting and support me to development the research paper. Also, my thanks goes to my friends who helped for editing language of this research and arrange of technical support. At last, but not list, my thank go to those names are not mentioned here but helped me directly and indirectly during my study.

Gina Bishwas

Abstract

This is survey study related to the "Effect of Family Environment on Mathematics Achievement at Grade- VIII ". The main objectives of this study were to find the influence of parent's economic states, family involvement and family education on students mathematics achievement. One hundred ninety five students were selected from two public and two private schools in Kathmandu district by using random sampling method. Mathematics achievement test, questionnaire forms were used to collect data. The achievement test item was selected from previous used question and research questions were given to the experts at the department of mathematics education of T. U. According to their suggestion some items were changed and some were modified. The deviation, correlation coefficient and linear regression.

The mean score of students of educated, literate and illiterate father were 39.54, 30.10 and 19.50. The mean score of students of educated, literate and illiterate mother were 38.56, 34.91 and 31.00 respectively. The mean score of students of high, middle and low income family were 45.20, 39.05 and 28.76 respectively. The mean score of students of one hour, two hour and three hour providing time were 32.18, 35.07 and 46.20 respectively. The mean score of students of at least one, at least two and at least three time visiting in school were 30.87, 37.11 and 41.00 respectively. The correlation between the mathematics and family income, father education, parent provided time, parent visiting in school were found. The mother education and father education had substantial correlation with students mathematics achievement. The family income and mathematics achievement had moderate correlation. Also the parent provided time for student had moderated correlation with student mathematics achievement.

Whereas the correlation between parent visiting school and mathematics achievement were low correlated. The regression coefficient of mother education is 0.479, which is highest, so it is most influential and shows that higher mother education helps students to have higher mathematics achievement. The regression coefficient of father education is 0.21 which is also influential for the students to increase their mathematical achievement. The regression coefficient of family income is 0.151 which means when the family income increases then the student achievement

also increase. The time provided is 0.156 which is also influential for the students to increases their mathematical achievement. The Variable (mother education, father education, family income, time provided and parent visiting school) are increase than the student mathematical achievement is also increase. Since the home environmental factors affect the mathematics achievement of students.

Table of Content

List of Table

List of Figure

Chapter- I
Introduction

This is the study about the Effect of Family Environment on Mathematics Achievement at lower secondary level. This introductory part includes the background of the study, Statement of the problem, objectives of the study, Rational of the study, delimitation of the study and definition of the related key terms.

Background of the Study

Mathematics is universal part of human culture. It directly deals with the human life. It is believed that the development of Mathematics and development of civilization go together. Mathematics is created to fulfill human needs. Mathematics holds the mirror up to the civilization. Mathematics is the science of the number and their operation inter-relation and combination of space configuration their structure and measurement. It is combination tools. Mathematics is the used as an essential tool in many field including nature, science, engineering, medicine, finance, social science and art etc. It is also known as the queen of all sciences, arts of all arts, key and gateway of all sciences.

The home is the first place of learning for the child. Psychologists had classified the factors that affect learning into two broad categories namely, nature and nature. It has been discovered that the two categories play complementary roles. As nature determines the level of intelligence and inherited abilities of the child, nature helps to maximize these innate abilities.

Home environment gives beneficial impact for mathematics achievement. Home environment is defining as the condition of family such that Parent's socio-economic statuses (family income), parent's education (Father education & Mother education), family involvement (parent spend time for their children and parent visiting school). Therefore, environment directly affects the children behaviors and achievement. Thus the home is the basics institutions for providing the child primary socialization and laying the educational foundation for the child upon which the other agent of socialization is built. (Egunsol, 2014).

Learning can be defined as a modification of behaviour through experience. It is the permanent change in behaviour. Learning is not measurable but it can be change behaviour. Learning is lifelong process. Learning takes place through birth to death that enable the learners for gaining skill to solve daily problem his/her life. Gate defines learning is modification of behaviour through experience and training. Crow and Crow defines learning is the acquisition habits knowledge and attitude. Gagne defines learning as a change in human behaviour. So above definitions say that learning is change of behaviour. It is the process of acquiring new knowledge and new responses. Learning does not take in place vacuum. Learning is the product of environment. Many factors affect learning such that, personal factor, mental factor, emotional factor, school environment, teacher role, home environment (Pandit ,2068**).**

These variables are inside and outside school that affect students' quality of academic achievement. These factors may be termed as student factors, family factors, school factors and peer factors (Crosnoe, Johnson & Elder ,2004). The formal investigation about the role of these demographic factors rooted back in 17th century (Mann,1985). Generally, these factors include age, gender, geographical, belongingness, ethnicity, marital status, socioeconomics, status (SES), parents' educational level, parental profession, language, income and religious affiliations.

Mathematics is not only an important subject required solving our daily life problem; it is a separate discipline from pre-primary to university level. It is also an inter – disciplinary subject without which we cannot study Physics, Engineering, Economics, Accountancy and many other subjects. In the beginning Mathematics and Mathematics Education were considered as the same discipline. Now, Mathematics Education is regarded as a discipline which deals with the philosophical, psychological and sociological aspect of teaching and learning mathematics.

Families encourage reading, help with homework and push critical thinking at home, children are more likely to enjoy learning. The mathematics achievement of students effect different factors like; socio-economic status, qualification, support and involvement of parents. Those parents who have good economic condition, most of their children's education is good because they can manage tutor at home as much as possible. But these conditions we can not find in poor family." This shows that good economic condition is helpful for better performance in mathematics.

Many researches show parental involvement play very important role on children's academic achievement in mathematics. The parental involvement on their children study is affected by their occupation and qualification. Parent's level of education is most important factor affecting students academic achievement. Parents educational background influence the academic achievement of students because the parents would be in the good position to be the second teacher to the child; even guide and counsel the child on the best way to perform well in the education and provide the necessary materials needed by him/ her. Parents who have more than minimum level of education are expected to have a favoured attitude to the child education and to encourage and help him/her with school work." The educated family know the importance of mathematics so they provide various to encourage the child.

There are many aspects that effect to the student's mathematics achievement. such as teacher personality, instructional materials, peer group, individual differences, political changes, geographical structure, socio-economic status, home environment etc. Among all these aspects home environment is an first important factor which affects the achievement in mathematics so that the home is the school of learning for child to forward their career from zero step. Parents are first teachers of child so that the knowledge given by parents should be very sensible and conscious for their child otherwise they are unable to make bright their career. Normally their schooling starts from home where a child learns how to adjust in the changing world and acquire knowledge. Parents support to their children to adjust and teach the basic things at home. The home environment determines the personality and achievement of a child. If the home environment of a child is favorable, a child can achieve the goal easily. It directly affects the children's behavior and achievement. Home environment not only influence achievement but also affects the mental condition of a child. Therefore, the researcher come up with the topic "Effect of Family Environment on Mathematics Achievement "for this research.

Statement of the Problem

The purpose statement is a statement that advances the overall direction of focus for the study. Research describe the purpose of a study in one or more succinctly formed sentence and it typically found in the "statement of the problem"(Creswell,2012). The research entitled "Effect of family environment on

mathematics achievement of an eighth grade students" is attempted to find out the relation between Parent's socio-economic status (family income), family involvement (parent spend time for their children and parent visiting school) and parent's education (father education & mother education) on mathematics achievement of the students.

Home environment is the most important factor which directly effects on the achievement in mathematics. Due to home environment, Student cannot achieve their goal as much as they try to achieve. Due to home environment, students become mentally and psychologically weak as a result there no any desirable achievement on mathematics. The researcher became interested by reading this fact and chose this topic for the study in order to find out the effect of family environment on mathematics achievement of students at lower secondary level. Considering these issues, I will try to find out the factor affecting of family environment.

- What are the factors hindering in mathematics achievement?
- What are the major factors that contribute to minimize student's learning hinderence?

Objective of the Study

A research objective is a statement of intent used in quantitative research that specifics goal that the investigator plans to achieve in study. The study was intended to determine the following objectives

- To determine the effect of family environment in student achievement.
- To analyze the most contributing factor for student achievement.

Hypothesis of the Study

Hypothesis of the statement in quantitative research in which the investigator makes a prediction or a conjecture about the outcome of relationship among attributes and their characteristic. This study was guided by the null hypothesis.

- There is no significant relationship between parent's economic status and the student academic performance.

- There is no significant relationship between parent's /family involvement and student performance.
- There is no significant relationship between parent's education and student performance.

Rational of the Study

Family environment is an important area of study in education. During past several decades' family environment has been identified as being a contributing factor in children's educational development. The family environment and family process provide a network of social, physical and intellectual forces which affects the student learning. The different learning environment is created by family from different socio-economic setting that affects the student's achievement. The family environment includes supporting atmosphere, supervising homework, providing supplementary reading materials, providing tutors. As home environment is straightly connected with the achievement of students, the study was discovering the effect of family environment on mathematic achievement of the students.

The following are the rational of this study

I. This study would help parents to manage learning environment at home.
II. This study would inform mathematics teachers and students, what are the factors that affect the home environment.
III. This study would help the mathematics curriculum designers to design better curriculum according to student's different home environment.
IV. This study would help to give information about the different mathematics program for the government to solve the student's problems.

Delimitation of the Study

The study has following delimitations:

- The study was limited to Kathmandu district.
- This study included only grade viii students of public and private schools.
- This study was conducted only for the subject of mathematics.

Definition of the Related Key Terms

Some terms related to this research are defined as follows:

- Family environment: In this research family environment refers to parent's socio-economic status (family income), family involvement (parents time for their children & parent visiting school) and parent's education (father education and mother education).
- Social economic status: Refers to financial status of the family.

High income: More than 1,00000 per year.
Middle income: Between 50,000 to 1,00000 per year.
Low income: Less than 50,000 per year.

- Achievement: This term is used for mark obtained by the student in examination.
- Public school: The schools which are run by the government or government bodies.
- Private school: A school that does not receive financial support from the government.
- Parent's: Parent's means family member of the sample students.
- Student: The students studying in grade viii on academic year 2076 are known as student at public and private schools of Kathmandu district.
- Parent's time: The time provided by the parents to guide their children at home. A value of 1 has been assigned one hour provided time 2 for two hour provided ,3 for three hour provided to their children to care.
- 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 illiterate 2 for literate and 3 for educated.
- Mother's education: considering the perceived importance of mother's educational status, this variable has been included in this study. A value of 1 has been assigned 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 ten.
- Educated people: In this category, those people are included who have passed at least ten classes.
- Parent visiting in school: This variable also has been included which means parent visiting school to collect their children academic activity. A value 1 has been coded for very good ,2 for good and 3 for poor. Where very good means parent visiting school every month at least for three or more than three time to collect their children academic activities, good means parents visiting school every month at least two time and poor means parents visiting the school every month at least one time to collect their children academic activities.

Chapter II
Review of Related Literature

A literature review is a written summary of Journal, articles, book and other document that describe the past and current state of information on the topic of your research study (Creswell,2014). Review of literature is an essential part of all the studies. A review of related literature is a source of further study of research task. It takes the research task to be undertaken in a better perspective and essential for guidance of research planning. The review of literature enables the researcher to know what is known so far and what is unknown. It helps in conceptualizing the problems, conducting the study and brings the investigator who ignores prior research and theory, chances pursuing trivial problems duplication a study already done, or reporting other mistakes. Review of the literature is very important to provide on insight into the problems to familiarize the research with the studies previously done and to make the researcher to adopt suitable design. I have reviewed a few research works within my access.

The core purpose of review of literature is to find out what works have been done in the area of study being taken. It helps to broaden the concept regarding the research topic. The review of the related literature is generally performed under to heading review of empirical literature, review of theoretical literature and conceptual framework.

Empirical Literature

The review of the empirical literatures concerns the systematic concise of scientific researches and true explorating their topics, the objectives of the study is done by clear way, design and sample are concerned in the study, the reason why this study has to have organized, method of the study, data collection tools and methods of confirming their validity and reliability and key findings in the related field. In this regard the following are the related literature in this study.

CERID (1998) carried out a study on "Evaluation System in the Primary Schools of Nepal" found that 50 percent mentioned that they do guide their children during examinations. About 31 percent mentioned that they arrange for special

tuition. The rest mentioned that their children prepare for examination by studying together with peers. Only 10 percent of the parents reported that their children dropped out the school without completing grade due to low family income and the need to be engaged in household activities.

The result of Analysis of the programmed for International Students

Assessment (PISA)-2000 which focused mainly on literacy found that students from higher socio-economic families tended to show stronger literacy skills. The same result was found for PISA-2003. PISA-2004 reported that family background was also related to students. Students whose parents were university educated performed about two-third of a proficiency level higher than those whose parents had no education more than high school. However, there is an important nuance to add this finding. Students whose parents worked in an occupation that requires advanced mathematics skills in fact performed almost one proficiency level higher than students where parents had similar educational levels and income.

Sharma (2011), conduct a study entitled "The Relationship of Home Environment and Mathematics Achievement of Dalit Community at lower secondary level in Baglung and Parbat District". The main objectives of this study to find out the correlation between the facilities provided at home and children 's mathematics achievement to analyze the achievement of a student with her/his parent's education expectation and to suggest for making Dalit better home environment .Researcher used both the descriptive and analytical design to conduct the study .The researcher had taken as the sample for the study 50 students from 50 different families and 5 different school of the parbat district. This study found most of the parent's expected their children to get their SLC level education and it was found that a significant relationship between parental expectations and the student achievement in mathematics. The mathematics achievement of Dalit students was strongly associated with the variable of facilities at home and parental expectation and the mean score of the availability of the facilities at home was positively correlated with mathematical achievement of the children.

Adhikary (2001) conducted a study entitled "A Comparative Study of Achievement in Mathematics of Primary Level Students Related to Parents 'Income ".

The result of this study showed that students with high income group performed better than middle income and low income group. But the achievement of middle income group was not found significantly higher than low income group.

Paudel (2009) did a study entitled "Impact of Home environment on Mathematics Achievement of Ninth Grade". This paper attempts to find the correlation between the mathematics achievement of student and home environment. This study used the survey design and mathematics achievement test papers as well as questionnaire were the tool for this study. Researcher included 80 students of the two school in Kapilvastu District. Researcher used student questionnaire from and parent's interview schedule to collected data. The data were analyzed using statistical tool such as mean, standard deviation, correlation coefficient and multiple regression. The researcher found that the parent's education was highly correlated with mathematics achievement. Family size had a negative correlation with their children's mathematics achievement. Father educations highly effect their children achievement. The homework checking had negatively influenced their children mathematic achievement. The researcher concluded that home related variable directly affected student mathematics achievement.

Pandey (2013), studied on the topic "Relationship of social and economic status on mathematics achievement of primary school students ". The major purpose of the study was to find the relation between socio-economic status and mathematics achievement of primary level students in Arghakhachi district. Achievement test paper was used as the tool to collect data. Altogether 113 students were selected from six schools of Arghakhachi 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 straightly related to their social and economic status.

Pantha (2006), conducted a study on "Parental occupation and their children achievement in mathematics "in Kathmandu district. The main objective of this study is to point out the different parent occupation and their children achievement of the student. A researcher was use to survey design. The population of study was the students of grade seven and their parents of Kathmandu district. It was selected through random sampling method. Then, researcher find jobholder parents children

achievement significant higher than businessman's children and businessman's children achievement is higher than the farmer's children achievement.

Dibyajyoti (2014), conduct a study entitles "The role of home environment and mathematics achievement for student of secondary school in Nagaon district, India". The main objective of this study is to point out the different variables in the home environment that determine the achievement of the student. A researcher was use to design of the study was descriptive method though to be appropriate to analyze the impact of attitude toward mathematics in the cortex of selected variables. The sample of this study consisted of 500 students selected from 20 school of Nagaon district. Random sampling method used to select the sample. A questionnaire was conduct to collect the data and researcher use to analyze the data using the method of SD, t-test, and Karl Pearson product. Researcher found this study a positive correlation of home environment with academic achievement. Parent should also support their children in their endeavors and provide them with all the help possible. Positive home environment with positive attitude of parents and student are key factor for successful learning of mathematics. The paper concluded that congenial home environment is essential factor in molding that appetite of the student towards mathematics which influences their overall academic achievement in long run.

Khatri (2017) Conduct a study entitled "Parents Involvement in Learning Mathematics". This paper attempted to find the correction between the mathematics achievement of student and their Parent's involvement as different role of model of grade VIII students of the Bardiya district. The sample of this study was 150 students belong to three public schools. The researcher used mathematics achievement test and parent questionnaire from as main tool for this study. The percentage mean, standard deviation and correlation coefficients were used to analyze the data related to parent involvement. The researcher shows parent's role on educational activities at home effected more than other on mathematics achievement. If parents are not involved in students learning, then the students can not achieve better achievement in the learning mathematics. And it shows that correlation between parent's involvement on educational activities at home and mathematics achievement are high and less correlated variable are parent's involvement on home environment, parent school communication and motivator at home.

Chaudhary (2000), conducted a study on "A Comparative study of Achievement of Primary Level Students Related to Parents Educational Status "included 150 students studying in grade 5 of public schools in Sapatari district and found that the mathematics achievement of educated parents 'children is higher than literate and illiterate parents 'children, and the achievement of literate parents 'children is higher than illiterate parents' children.

Rawat (2011) carried out entitled "Effect of home environment of student's achievement in mathematics at secondary level: A case study of Kami student's in salyan district ". In this study, the researcher has used semi –structure, face-to –face interview with two mathematics teachers, five kami students, their parents and classroom observation. This study was descriptive and qualitative nature. The researcher found that effect of various home environment factors such as parent's education, parent's occupation, social tradition, family size, poverty and load of household work were the main cause of affecting kami student's achievement in mathematics at secondary level. All the researchers carry out as far have concluded that different factor at home environment show a close relation with the achievement of students on mathematics. The Reacher is an add investigation in series of researcher concerning family environment and student's achievement on mathematics. The researcher is different than the earlier paper due to three reasons. Firstly, it does not take any one variable, rather it aims at using five different variables (parent education, Parent's occupation, Parent's time to children, tuition at home, entertainment time) affection family environment. Secondly, this research done in the lower secondary level. Thirdly, it has taken in to consideration both public and private school in course of the research process.

All the researches carried out so far have concluded that different factors of home environment show a close relation with the achievement of students on mathematics. This research is an added investigation in the series of researches concerning family environment and students 'achievement on mathematics. Many researchers founded that there are many factor such as home environment, socio-economic background, teaching learning process, parent education and maturation are influence factor in learning mathematics. In Nepal some studies have been done to explore whether the achievement in mathematics is affected by different variables

such as socio economic background, gender, instructional materials, teacher qualification and class size. Home environment is the most important factor affecting of mathematics achievement. The home environment is strongly related to the student performance in mathematics. This research is different than the earlier papers due to three reasons. Firstly, it aims at using different variables (Parent's education, Parent's socio-economic, Family involvement) affecting family environment. Secondly, this research will be done in the lower secondary level. Thirdly, it has taken into consideration both public and private schools in course of the research process.

Theoretical Literature

The researcher introduces the theoretical discussion, which is relevant for the interpretation of the findings of the study. There are various theories related to children's learning and development. For this study, Vygotsky's learning theory and cultural difference, discontinuity theory. Vygosthian theories have been used for the interpretation of the findings of the study they are described as follows:

Socio-cultural Theory

Vygotsky was born in western Russian in 1896. Vygotsky first big research project was in 1925 with psychology of Art. when the cold war ended, Vygotsky work his research in how children solve their problem that surpassed their level of development led Vygotsky to create socio –cultural theory or ZPD theory. This theory suggest that social interaction leads to continuous step by step changes in children thought and behavior that can vary greatly from culture to culture. Vygotsky's theory combines the social environment and cognition. Children will acquire the ways of thinking and behaving that make up a culture by interaction with a more knowledgeable person. Vygotsky's believed that social interaction will lead to behavior. These thought and behaviors would vary between cultures (Moll,1994). Vygotsky argued, "learning is necessary and universal aspect of the process of developing culturally organized, especially human psychological function"(1978, P.90)

This study will be guided by the socio –cultural theory. The socio-cultural theory has profound implications for teaching, schooling and education. The influence

of socio-cultural theory on education has resulted in broadening of our understanding of how children learn and what is their educational achievement. Vygotsky has developed"socio-cultural theory "and believe that children are active seekers of knowledge, but he did not view them as solitary agents. IN this theory rich, social and cultural context profoundly affect children cognition. knowledge is being constructed in social situation of negotiation rather than being the reflection of the objective reality, which is termed as social constructivism. According to Vygotsky (1978), much important by the child occurs through social interaction with a skillful tutor. The tutor may model behaviors and/or provide verbal instructions for the child. Vygotsky refers to this as cooperative of collaborative dialogue. The child seeks to understand the actions or instructions provided by the tutor (often the parent or teacher) then internalizes the information. Using it to guide or regulate their own performance.

According to piaget, learning is achieved through the mental, physical maturation and experience. In contrast Vygotsky observed that learning processes lead development of students. He had mentioned that learning is a necessary and universal aspect of the process of developing culturally organized and human psychological function learning is achieved through social interaction and language. According to Vygotsky initially child has two kinds of interpsychological and interpsychological. Here interpsychological means the child has new knowledge through interaction with others and interpsychological means the child has knowledge of his own inside and new knowledge which is mastered on an individual level.

Vygotsky postulated that human knowledge is derived from culture. This means that much of what we know comes from our family and large society. Much of the behavior of young children is rooted in family activities and expectation. Some for instance, have learned at home that hitting back is an acceptable solution to problem situation with peers or sibling. Children must communicate with patents for gain new knowledge. For Vygotsky, the zone of Proximal Development (ZPD) is the mechanism by which development occurs. This ZPD is technically the difference between what a learner can do independently and what can be done with the help of a more experienced or knowledge able teacher, family member. Note that for the purpose of cognitive development a teacher might be a family member. This approach

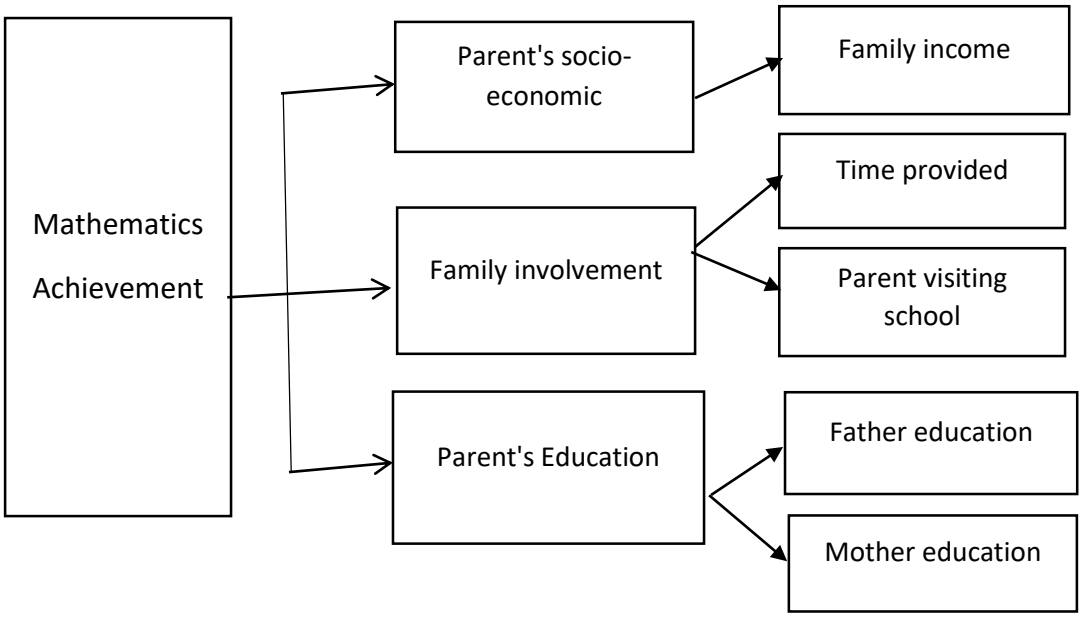
to understanding cognitive development emphasizes the collaboration between the learners and teacher, family member. Vygotsky's cognitive development Theory postulates that social interaction is fundamental to cognitive development. Vygotsky's theory is comprised of concepts such as culture specific tools, language and thought interdependence, and the Zone of Proximal Development.

A key feature of this emergent view of human development is that higher order function develops out of social interaction. According to Fleer (2002)"Socio-cultural theory challenges us to widen our perspective beyond that of individual and of knowledge and meaning in isolation. "Vygotsky's socio-cultural theory of human learning describes learning as a social process and the origination of human intelligence in society or culture. The major theme of Vygotsky's theoretical framework is that social interaction plays a fundamental role in the development of cognition of the students. Socio-economic status is a broad construct representing a family's access to social and economic resources. In my study I have included income of the parents' education level of the parents and the occupation of the parents. The educational levels, as well as income and occupation of parents are interconnected; this is because educated parents, by virtue of their educational background, possess the potential for increased income. Those parents who are educated they make their family educated. They have idea about the life to prepare better as they want.

Conceptual Framework

Conceptual framework was construct on the basis of home environment factors by affecting on mathematics achievement for this study. This study aims to identify and analyze the effect of home environment on mathematics achievement at lower secondary level (Grade viii). With the help of above empirical literatures, theoretical understanding, researcher creates the indicators to find out the factor affecting environment on mathematics achievements that are environmental factors which effect directly on student's mathematics achievement, the conceptual framework as follows:

Dependent Variable Independent Variable



On the basis of above mentioned conceptual framework independent variable are parent's socio-economic status (family income), family involvement (Parent spend time for their children & parent visiting school) and parent's education (father education & mother education). The tools will construct such as questionnaire form and mathematics achievement. By using the tools, the data will collect. Collect data will analyze on the basis of researcher will find out on the basis of conceptual framework. In sum, conceptual framework for this survey is designed in the above diagram on the basis empirical literature and theoretical literature understanding. On the basis of conceptual framework, to show the factor affecting of independent variable on mathematics achievement will analyze.

Chapter III
Method and Procedure

This section explains the design of the study in detail. It concludes design of the study, population of the study, sample of the study, tools for data collection, validity and reliability of the tools, data collection procedure and data analysis procedure.

Design of the Study

The research design of this study was quantitative survey. It was find the effect of family environment on achievement in learning mathematics. Descriptive survey design was selected because the study entailed asking question to the large number of people about their opinion and idea and even describes what the people say. This study also used descriptive survey design since the variables were not manipulated and there was an opportunity to explore and probe the respondents for information.

Population of the Study

A population is a group of individual objects or items from which sample are taken for measure while the target population refers to the total of subject. The population of the study consist the compulsory mathematics students of grade VIII and their parents in Kathmandu district by using purposive sampling method .

Sample of the Study

The Study was conducted on four schools situate in Kathmandu district, two private and two public schools was selected through random sampling method. Then all students from each school was selected for sampling. Therefore, total sample size of this study was 195 students of two public and private schools see the (Appendix E)

Data Collection Tools

The following tools was constructed for the study.

For this study, Mathematics achievement test(MAT) and survey opponnaire was used.

i) Mathematics Achievement Test:

The Mathematics Achievement Test (MAT) was developed from prescribed textbook of grade VIII.

In this MAT

Multiple Choice Question (MCQ)					
Unit	K	U	A	H A	Total
1	1			1	2
2	1	1			2
3	1		1		2
4	1	1			2
5	1			1	2
6	1		1		2
7	1	1			2
8	1			1	2
9	1				1
10	1		1		2
11	1				1
12	1			1	2
13	1		1		2
14	1	1			2
15	1		1		2
16	1			1	2
17	1	1			2
18	1				1
19	1				1
20	1		1		2
21	1			1	2
22	1	1			2
Total					40

ii) Survey opponnaire

This study was used to find parent's socio-economic status (family income), family involvement (parent spent time for their children and parent visiting school) and parent's education (father education and mother education).

Validity and Reliability of the Tools

For the reliability of the Mathematics Achievement Test (MAT), pilot study was administered to 20 students of grade-VIII of Jansewa higher secondary school Kirtipur, Kathmandu. Before administering the test paper, the researcher instructed the students on how to respond the test papers within a fixed time. After the pilot test, item analysis was done. For the validity of the questionnaire, test specification gride was prepared.

Data Collection Procedure

Researcher obtained an introductory letter from department of education. After making the tools ready, researcher visited each of the selected schools, consult with the head teachers, explain the purpose of the visit, sought permission and appointment to visit the school on a particular day. The tools for the study was administered on the at least 195 students from the schools under sampling. Before administering the test, the researcher explained the answering procedure of test. After the time duration of examination, the answer sheets collected on a class. For validity of Mathematics Achievement Test (MAT), Specification Grid prepared.

For reliability of survey, pilot test was done for twenty students. After pilot test i.e. to find the reliability of the mathematics achievement test, correlation coefficient had tested. To test the correlation coefficient split half method was applied. Split half method had applied as the odd and even question. After pilot test the reliability coefficient test had done where the value of 'r' was 0.96. (See Appendix D)

Data Analysis Procedure

Data was analyzed using both descriptive and inferential statistics. The hypothesis was tested using Pearson's correlation Multiple regression technique was

also used to find the effect of different variable in mathematics achievement. The analytical design was included regression equation pertaining to the effect of five major variables are parent's socio-economic status (family income), family involvement (parent spent time for their children and parent visiting school) and parent's education (father education & mother education). Correlation coefficient was used to determine the relation between dependent and independent variables. Multiple linear regressions were used to find the effect of independent variable on dependent variable. It's equation was used:

$$Y = a_0 + a_1 x_1 + a_2 x_2 + a_3 x_3 + a_4 x_4 + a_5 x_5$$

Where,

Y = Dependent Variable

x_1 = Family Income

x_2 = Mother Education

x_3 = Father Education

x_4 = Parent provided time

x_5 = parent Visiting in school

Chapter-IV
ANALYSIS AND INTERPRETATION OF DATA

The data for the study were collect from grade 8 student and related parents of sample student from the selected sample. parent's questionnaire about parent's education, parent's occupation, parent's income parent's provided time and student achievement test was used to find out the mathematics achievement score. The collected data were tabulated and analyzed for the study of attainment of the objectives.

The study sought to determine the influence of parent's economics status on student academic performance in public and private school, to establish the influence of parent's involvement on student academic in public and private school and examine the parent's education on student's academic performance in public and private school in Kathmandu district are the main objectives of this study. The study adopted both descriptive survey designs. Simple random sampling was used to select the sample included in the study. Questionnaire was used as a data collection tool. The collected data were analyzed using both descriptive and inferential statistics using the statistical package for scientist (SPSS).

The information for this study was gathered by using questionnaire as the main research instrument. The questionnaires were administered to the students, parents and head teacher from the selected school and selected grade.

Family Income

The family income is one of the concerns for student achievement as the educational instrument like copy, pen, book can only be afford if there is any income. so the economic cries are also one of the main problems seen in the students in this research. The family income is categorized into three levels as low income, middle income and high income respectively. Socio economic status refers to financial status of the family. Low income means less than 50,000 per year, Middle income means between 50,000 to 1,00000 per year and high income means More than 1,00000 per year. The mean and standard deviation of the score obtained by student according to patent's income are presented in the following table.

Table 4.1

Mean and Standard deviation of Student Achievement by Family Income

Group	**Number of cases**	**Mean**	**S.D.**
Low income	69	28.76	12.34
Middle income	82	39.05	8.97
High income	44	45.20	8.39

The above table shows that the mean and standard deviation score of students by family income where the mean of low income, middle income and high income are 28.76, 39.05 and 45.20 respectively and the standard deviation of low income, middle income and high income are 12.34, 8.97 and 8.39 respectively.

Therefore, the mean score of student with high family income is higher than the low and middle income family student and the mean achievement score of middle income family student is higher than low income family students. The students having high income family have good achievement in mathematics than low and middle.

Parents' Involvement

In this research the time provided by the parents to care their children has been categorized in to three sections as One Hour, Two Hour and Three or more. The mean and standard deviation of the score of student according to parent's time providing is tabulated in following table.

Table 4.2

Mean and Standard Deviation of Students Achievement by Parent's time Provided

Time Provided	Number of Cases	Mean	S.D.
One Hour	82	32.18	10.28
Two Hour	59	35.07	9.74
Three Hour or more	54	46.20	11.75

The above table shows that the mean score of the students according to the provided time i.e. one hour, two hour and three or more than three hours are 32.18, 35.07 and 46.20 with the standard deviation of 10.28, 9.74 and 11.75 respectively. The mean score of students whose parents devoted more time to their children's study was found to higher than that less time devoted. The mean score of those students is higher whose parents have provided three or more than three hours than that of the one and two hours of time provided. And similarly the parents who have provided two hour time to their children has a higher mean score than that of the one hour. It is found that, the more the time given to the children leads to the higher achievement.

Parent Visiting in School

In the research the parent visiting in school was categorized as very good, good and poor where very good, means parent visiting school every month at least for three or more than three time to collect their children academic activities good means parent visiting school every month at least two times to collect their children academic activities and the poor means parents who visit the school every month at least one time to collect their children academic activities. The mean and standard deviation score of student according to parents visiting in school is tabulated in following table.

Table 4.3

Mean and Standard Deviation of Student Achievement by Parent Visiting in School

Group	Number of Case	Mean	S.D.
Very Good	29	41.00	13.17
Good	99	37.11	11.27
Low	67	30.87	10.42

The above table shows that the mean achievement score of students of their parent visiting school at least three or more than three times, at least two times and at least one time are 41.00, 37.11 and 30.87 with the standard deviation 13.17, 11.27 and 10.42 respectively. The main score of student whose parent visit school at least two times and the mean score of students whose parents visit school at least two time is

greater than the mean score of student whose parents visit school at least one time. This can be concluded that parent visiting school effect student mathematics achievement. Whose parents visit schools time to time to collect their children academic activities have greater achievement than other students.

Parent Education

The mean and standard deviation of the score obtained by the students according to the father and mother education are analyze and stated below.

Mother Education

Considering the perceived importance of mother's educational status this variable has been included in this study. Illiterate means in this category, those people are included who are unable to read and write, literate means in this category, those people are included who are able to read and write, also acquiring school education below ten and educated means in this category, those people are included who have passed at least ten classes. The mean and standard deviation of the score obtained by the students according to mother education are presented in the following table.

Table 4.4

Mean and Standard Deviation of students Achievement by Mother Education

Group	Number of cases	Mean	S.D.
Illiterate	12	31.00	12.46
Literate	87	34.91	11.60
Educated	96	38.56	11.86

The above table shows that the mean score of students of illiterate, literate and educated mothers 31.00, 34.91 and 38.56 with the standard deviation 12.46, 11.60 and 11.86 respectively. Therefore, the mean score of educated mother's children are higher than the mean score of literate mother's children is higher than the mean score of literate and illiterate mother's children. It is also shows that the mean score of literate

mother's children is higher than illiterate mother children. It shows that the mathematics achievement of educated mother children are better than literate and illiterate mother's children.

Father education

Considering the perceived importance of father's educational status this variable has been included in this study. Illiterate means in this category, those people are included who are unable to read and write, literate means in this category, those people are included who are able to read and write, also acquiring school education below ten and educated means in this category, those people are included who have passed at least ten classes. The mean and standard deviation of the score of student according to father education is tabulated in the following table.

Table 4.5

Mean and Standard Deviation of Student Achievement by Father Education.

Group	Number of cases	Mean	S.D.
Educated	123	39.54	10.68
Literate	68	30.10	10.70
Illiterate	4	19.50	6.13

The above table shows that the mean score of students of educated, literate and illiterate father are 39.54, 30.10 and 19.50 with standard deviation 10.68, 10.70 and 6.13 respectively. Therefore, the mean score of educated father children is higher than the mean score of literate and illiterate father's children. It is also show that the mean score of literate father's children is higher than those of illiterate father. It shows that the mathematics achievement of educated father children is better than literate and illiterate father's children. Therefore, illiterate father's children score has less variation to that of the educated and literate father's children. Also the educated father's children score has more variation than that of the literate father's children. Then it

shows that educated father's children had better achievement in mathematics than that of the literate and illiterate one.

Mathematics Achievement and Home Environment Related Variable

The correlation between mathematics achievement of students and home environment related variables (family income, mother education, father education, time spend and parent visiting school) are represented in the following table:

Table 4.6

Correlation between Mathematics Achievement and Parents Related Variables

Variables	**Correlation Co-efficient with Students Achievements**
family income	**0.54**
Mother Education	**0.762**
Father Education	**0.687**
Time Provided	**0.469**
Parents Visiting School	**0.289**

From the above table, it was found that the correlation between mother education and student's mathematics achievement is higher substantial (i.e. 0.76). Similarly, the father education and student 's mathematics achievement has a substantial correlation (i.e. 0.68). The correlation of family income and student's mathematics achievement is moderate (i.e. 0.54). The Correlation between time provided by the parents and student's mathematics achievement is moderately correlated (i.e. 0.469). Whereas the correlation between parent visiting school and student's mathematics achievement is low correlated (0.289).

Through the above analysis that the mother education is high correlation with mathematics achievement of student. The mother education and father's education have the substantial correlations so it can be understood that they have the significant contributions in the student's mathematics achievements. But family income and parent provided time has moderate correlation and parents visiting school has low

correlation. From this, it can be said that parents visiting school has very less contribution on the student's mathematics achievement. So educated family student's mathematics achievement is higher than that of the literate and illiterate one.

Inter Correlation between Mathematics Achievement and Home Environment Related Variables

Inter correlation between mathematics achievement with home environment related variables (family income, mother education, father education, time spend and parent visiting school) are presented in the table below:

Table 4.7

Inter Correlation between Mathematics Achievement and Parents Related Variables

Variables	Family Income	Mother Education	Father Education	Time Spend	Parent Visiting School
Mathematics Achievement	0.551	0.771	0.688	0.479	0.279
Family Income		0.492	0.473	0.284	0.128
Mother Education			0.645	0.367	0.156
Father Education				0.429	0.182
Time Provided					0.091

The above table shows that mathematics achievement is positively correlated with family income, mother education, father education, time provided and parents visiting school. There is substantial correlation between mathematics achievement and mother education. The mother education is high correlation with student mathematics achievement. Now, the variable mother education, father education, family income, time provided and parent visiting school are positively correlated with student's

mathematics achievement. The Variable family income has a positive correlation with the mother education, father education, parent provided time and parent visiting school. The Variable family income is highly correlated with the mother education. The variable mother education is positively correlation with the father education and the time provided and parent visiting school. The variable father education has a positive correlation with time provided and parents visiting school. The variable time provided is positively correlated with family income, mother education, father education and parents visiting school. The variable parents visiting school has a positive correlation with mother education, father education, family income and time provided. Having analyzed the above table the mathematics achievement of students is substantial correlated with mother education and father education.

Regression Analysis between Dependent and Independent variables

In this section the home environment related actors on mathematics achievement is analyzed where five independent variables and one dependent variable were used in multiple linear regression model. The result of regression analysis and standardized regression coefficient of independent variable are show in table below.

Table 4.8

Regression and standardized Co-efficient of Mathematics Achievement and Home Related Independent Variables

Independent variables	**Standardized Co-efficient**	**Regression Co-efficient**	**Sig.**	**R-value**	**R^2**	**Adj.R^2**
Constants	6.275		0.001			
Family Income	4.49	0.151	0.001			
Mother Education	1.79	0.479	0.00	0.84	0.713	0.706
Father Education	0.206	0.21	0.00			
Time Provided	2.120	0.156	0.00			
Parents visiting School	2.913	0.132	0.001			

a) Dependent Variable: Mathematics Achievement
b) Prediction Variable (Constant): Family Income, Mother Education, Father Education, Time provided, Parent Visiting School.

Multiple regression are used to predict one variable on the basis of severable other variables. It is also statistical approach for modeling the linear relationship between Independent variable and Dependent variable. Now Un - standardized Co-efficient indicates how much the Dependent variable varies with an Independent variable when all other independent variables are held constant. Standardized Co – efficient examines effects of Independent variable on a Dependent variable. R-value can be considered as one of the measures of the quality of the prediction variable or level of prediction. R^2 value can be considered as a proportion of variance in Dependent variables that can be explained by the Independent variable. Adj.R^2 value can be considered to report your data accurately. The above table illustrates the information of the result analyzed. Based on the test result on the elevation it shows that family environment factors are the significant factors that contribute to the prediction model of the mathematics achievement. The above table shows an R-value (0.84) with adjusted R^2 (0.713) which shows that only 71.3% effect was found in student's achievement by their home environment factor.

However, home environment related factors contribute significantly to the prediction model of mathematics achievement and other factors that might contribute to their achievement up to 28.7 %. From the finding the prediction model can be written as the following multiple linear equation.

Dependent Variable(Y) =Constant + (Family income) x_1 +(Mother education) x_2+ (Father education) x_3 + (Parent provided time) x_4 +(Parent visiting school) x_5

$Y = 6.27 + 0.15\ x_1 + 0.479\ x_2 + 0.21\ x_3 + 0.156\ x_4 + 0.132\ x_5$

Among the family income, mother education, father education, time provided and parents visiting in school are the variable. The regression coefficient of mother education is 0.479 which is the highest, so it is most influential factor to increase mathematics achievement of the students. Mother education was found to be positively associated with mathematics. Only 47.9% effect of mother education was

found in their student's mathematics achievement. This concludes that the students of educated mother were found to be intellectual than others. This means where there is an increasement in mother education so does the mathematics achievement of students.

Similarly, the regression coefficient of father education is 0.21 which was also found to be positively associated with mathematics achievement of the students. Only 21% effect of father education was found in their student mathematics achievement. This means the mathematics achievement of the student increase with the increasement in the father education also increase.

Similarly, the regression coefficient of parent's time provided is 0.156 which was also found to be positively associated with mathematics achievement of the students. parents time provided was found be effective on mathematics achievement. Only 15.6% effect of parent's provided time was found in their student's mathematics achievement. This means the mathematics achievement of students increase with the increasement of the family income. The regression coefficient of parent's visiting school is 0.132 which was also found to be positively associated on their children mathematics achievement. Only 11.4% effect was found on their students' achievement. This means the increasement the parent's visiting school also increases the mathematics achievement of students. Mother education, father education, parent's provided time and family income have positive influence on mathematics achievement of students. From the overall analysis of the above table the variable mother education and father education, have more effect than the income, time provided and parents visiting school. The variable family income and time provided have more effect than the parent visiting school. It means the mother education, family income, father education, Parent provided time for student and parent visiting school have positive relationship between the mathematics achievement of students.

Chapter –V
SUMMARY, FINDING, CONCLUSION AND RECOMMENDATION

The first section of this chapter presents the summary of the research the second section present its finding the third section present to conclusion and the last section present recommendation base on the finding of the study**.**

Summary

This study was undertaken to identify the effect of family environment on mathematics achievement of students of grade -8. Achievement test paper and parent's questionnaire from were the main instruments used for the study. The researcher developed the achievement test paper with the help of prescribed curriculum and text book of mathematics of grade -VIII with students and administered the test in Jansewa secondary school. Also the researcher developed the parent's questionnaire form with the help of supervisor. The objective of this study were: To find the mathematics achievement of the students with respect to their home environment, to determine the correlation between home environment and mathematics achievement to find the effect of home environmental factors in mathematics achievement of grade -8 students.

For this research study the researcher select two public and two private schools with 195 students from Kathmandu district. These data were obtained through the parent questionnaire and mathematics achievement test. The mathematics test data was obtained from student achievement in mathematics exam. The parents questionnaire form was developed to get detail information about the parent's income, father education, mother education, time spend and parent visiting school.

For the data analyses of the study mean standard deviation, correlation co-efficient inter correlation and multiple regression were used. The mean was used to find the level of mathematics achievement and standard deviation used to find the variability of mean. The correlation co-efficient was used to determine the relationship between the dependent and independent variable. Inter correlation are used to find the correlation between dependent and independent variable. The multiple regressions were used to find the effect of independent variable i.e. family income, mother education, father

education, time spend and parents visiting school on dependent and independent variable i.e. mathematics achievement.

Findings

The collected data at the first were analyzed by applying tools. Correlation and multiple linear regression statistical analysis the following result were found.

- The mean achievement score of family high income children is higher than the mean achievement score of middle income family children and the mean achievement score of middle income children higher than the low income family children.
- The mean achievement score of three hour or more time hour provide parent's children higher than the mean score of the two hour time provide parent's children is higher and the mean achievement score of two hour time provide parent's children is higher than the mean achievement at one hour time provide parents children.
- The mean achievement score of educated mother children is higher than the mean achievement score of literate mother children and the mean achievement score of literate mother children is higher than the mean achievement score of illiterate mother children.
- The mean achievement score of three times visiting school parents student is higher than the meant achievement score of two time visiting in school Parents student and the mean achievement score of two time visiting in school parents student is higher than the one time visiting in school parents student.
- The mean achievement score of educated father children is higher than the mean score of literate father children and the mean achievement score of literate father children is higher than the mean score of illiterate father children.
- The mother education has a high correlation with the mathematics achievement.
- There is positive relationship between the mathematics achievement of student and father education.
- There is positive relationship between the mathematics achievement of student and family income.

- There is positive relationship between the mathematics achievement of student and time provided.
- There is positive relationship between the mathematics achievement of student and parent's visiting in school.
- There is significant relationship between family income and the student mathematics achievement.
- There is significant relationship between father education and the student mathematics achievement.
- There is significant relationship between parent's provided time and the student's mathematics achievement.
- There is significant relationship between parent visiting school and student's mathematics achievement.

Conclusions

From the finding of the study the researcher made the conclusion that the mother education is most contributing factor on their student than the other factor. So mother education is strongly positive associated with mathematics achievement of student. Also the mother education is strongly relationship with the student achievement. It conclusion that that the father education and mother education very essential for increasing mathematics achievement of student. The children of time provided by the parent's whose parent were devoted parent's children mathematics achievement. The children from educated mother had better mathematics achievement than from the literate and illiterate children. It conclusion that educated mother supports their children to increase the mathematics achievement. The family income, mother education, father education, and time spend were positively correlated with their children mathematics achievement. The parents visiting in school were positively correlation with their student mathematics achievement. Similarly, from the regression analysis of the data we can conclude that the father education and mother education are contribution factor on their student than the other factor.

It concluded that the above mother education and father education factors are very essential for increasing the mathematics achievement. Parents are able to increases mathematics achievement by providing almost facilities for reading and

writing as well as parents guiding read and writing. Parents education encourage their children is better mathematics achievements.

Recommendation

After conducting this research the investigator found some finding, there are several areas where the investigator would like suggest some recommendation and education and educational implication for the implication improvement in mathematics.

- The study of this kind should be conducted at all levels of school and other subjects as well.
- This study was limited to the student of grade eight from four public and private school. Hence the researcher cannot generalize the finding of this study go all grade and whole country. So the similar study is done regular wise as well as national wise in order to establish the finding of the study.

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Appendix –A

School wise description of the sample students

S. N.	Name of Schools	Number of students
1	Janasewa Secondary School ,Kirtipur	50
2	Panga Secondary School, Shahid- path panga	50
3	Bagh Bhairab Boarding High School, Nayabazar	45
4	Laboratory Higher Secondary School, Kirtipur	50

Appendix-B

अभिभावकको लागि प्रश्नावली

विधार्थीको नामः

अभिवाकको नामः

विधालयको नामः

कक्षाः

रोल नः

तलको प्रश्न राम्ररी पढी कुनै एक विकल्पमा ठिक (√) चिन्ह लगाउनुहोस ।

१) तपाईको बुवाको शैक्षिक योग्यता कति रहेको छ?

क) निरक्षर ख) साक्षर ग) एस.एल.सी वा सोभन्दा माथि

२) तपाईक आमाको शैक्षिक योग्यता कति रहेको छ?

क) निरक्षर ख) साक्षर ग) एस.एल.सी वा सोभन्दा माथि

३) तपाईको परिवारमा विभिन्न स्रोतबाट आउने वार्षिक आम्दनी कति रहेको छ?

क) प्रतिवर्ष ५०,००० भन्दा कम

ख) प्रतिवर्ष ५०,००० देखि १००,००० को बीचमा

ग) प्रतिवर्ष १००,००० भन्दा माथि

४) तपाईको आमाबुवाले तपाईहरुलाई घरमा कति समय पढाउनुहुन्छ ?

क) एक घण्टा ख) दुई घण्टा ग) तीन वा सोभन्दा बढी समय

५) तपाईको आमाबुबाको उपस्थिति विधालयमा कस्तो छ?

क) धेरै राम्रो ( ) महिनाको कम्तिमा ३ पटक

ख) राम्रो ( ) महिनाको कम्तिमा २ पटक

ग) न्युन ( ) महिनाको कम्तिमा १ पटक

Appendix-C

Achievement Test of Students

Subject: Mathematics

Student Name: **Date:**

Time: 1 hour

Class:

Address:

Among the four options given each of the following questions only one is correct.

Read the questions carefully and put the tick mark (√) with the letter (a, b, c, d) which you think correct.

1. If two times of 5 is added to 3, the value is

   (a) 7 (b) 10 (c) 13 (d) 17

2. The value of 5/2 × 3/4 is

   (a) 5 × 7/8 (b) 2 ×7/8 (c) 2× 6/7 (d) 5×3/8

3. If P = { b, c, d, e}, what is the value of P ∩Q ?

   (a) {c, d, e} (b) {b, c, d } (c) {a, b, d } (d) {d, e, a}

4. Conjugate of √2 ─ √3 is

   (a) √2 ─ √3 (b) √3 (c) √2 + √3 (d) 3 ─ √2

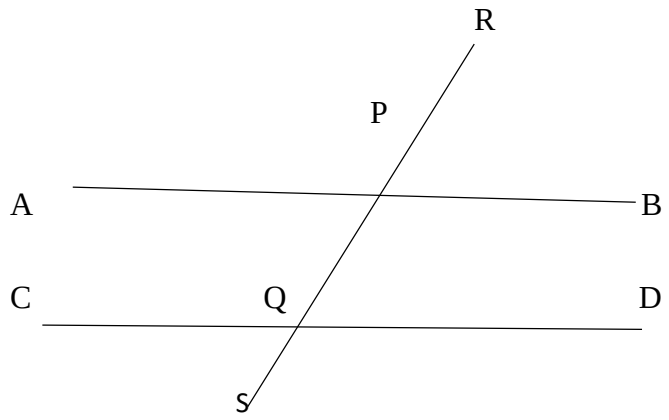
5. If 3y =6 What is the value of y + 4 ?

   (a) 4 (b) 5 (c) 6 (d) 7

6. Which of the following number is square number ?

(a) 70 (b) 80 (c) 90 (d) 100

7. Which is Co-interior angle of ∟BPQ ?



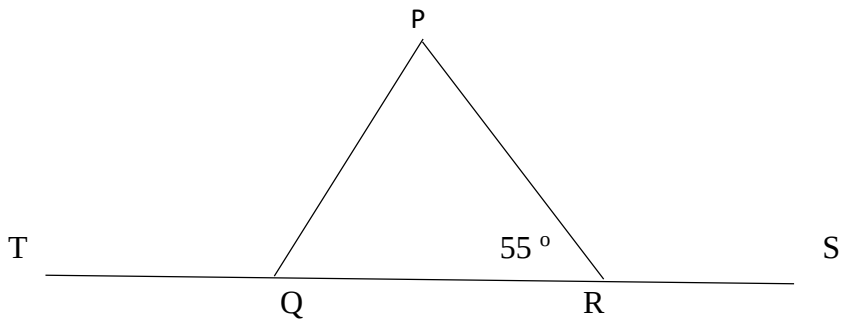
(a)<PQC (b) <PQD (c) <APC (d) <CQS

8. Which one is correct $a^m \times a^n$ equals to

(a) a^{m+n} (b) a^{mn} (c) $(a^{m)n}$ (d) $(a^n)^m$

9. In the given adjoining figure, if PQ =PR and <PRQ = 55° What is the value of

(a) 110 ° (b) 55 ° (c) 70 ° (d) 125 °



10. The sum of three interior angles of a triangle is ……

(a) 45° (b) 180° (c) 90° (d) 360°

11. Any Quadrilateral whose all sides are equal and each angle is 90 ° is called....

(a) parallelogram (b) square (c) rhombus (d)rectangle

12. Find the value of $2\sqrt{2} + \sqrt{27}$

(a) $3\sqrt{3}$ (b) $5\sqrt{3}$ (c) $6\sqrt{3}$ (d) $2\sqrt{3}$

13. what is value of 0.2×0.3?

(a) 0.6 (b) 0.06 (c) 0.006 (d) 6.0

14 what is the length of piece of ribbon for each girl when 6 meters long ribbon divided equally among ten girls?

(a) 50 cm (b)50 m (c) 60 cm (d) 60 m

15. what is the percent of ¾ ?

(a) 50% (b)65% (c) 75% (d) 85%

16. What is the 20% of Rs.15 ?

(a)Rs. 2 (b) Rs. 3 (c) Rs. 5 (d) Rs. 6

17. What is the perimeter of a square if its length is 10 cm?

(a) 20 cm (b) 22 cm (c) 30 cm (d) 40 cm

18 2.5 liters is equal to

(a) 2000 ml (b) 2500 ml (c) 3000 ml (d) 3500 ml

19. What is the value of 5^0 ?

(a) 3 (b) 4 (c) 1 (d) 5

20. If n(A) =4, n(B) =6 and $n(A \cap B) = 3$. Find the Value of $n(A \cup B)$?

(a) 7 (b) 6 (c) 8 (d) 10

21. Find the median from the following data.

25, 30, 35, 40, 45

(a) 25 (b) 30 (c) 35 (d) 40

22. What is the area of rectangle whose length 6 cm and breadth 4 cm?

(a) 24 cm^2 (b) 25 cm^2 (c) 26 cm^2 (d) 27 cm^2

23. which symbol is used to denote the membership of any set ?

(a) ϵ (b) € (c) f (d) a^c

24. Find the H.C.F. of $x^2 - 1$ and $x + 1$?

(a) $(x - 1)$ (b) $(x + 1)$ (c) $(x + 1)(x-1)$ (d) $x^2 + x + 1$

25. An angle that measure 90° is called …….

(a) Reflex angle (b) Obtuse angle (c) Acute angle (d)Right angle

26. Mohan pays 72 Rs. for one dozen copies what will be the cost for one copy?

(a) 4 (b) 5 (c) 6 (d) 7

27. What is the profit of a cap which was bought at Rs. 165 and sold at Rs. 18 ?

(a) 21 (b) 22 (c) 23 (d) 24

28. If $2^x = 1$, find the value of x.

(a) 0 (b) 1 (c) 2 (d) 3

29. Find the interest of the Rs.500 increase to Rs. 650 in 2 years.

(a) Rs.150 (b) Rs.200 (c) Rs.250 (d) Rs.300

30. If $a = 4$, then find the value of $a^2 - 4a + 3$.

(a) 3 (b) 4 (c) 5 (d) 6

31. what is the formula to find the perimeter of a square ?

(a) 2(l +b) (b) 4l (c) l^2 (d) l × b

32. which of the following is four degree expression ?

(a) $2x^2 +3$ (b) 4x + y (c) $3x^3y+8$ (d) $5x^3 +2y$

33. What is the sum of 2/3 +1/3 ?

(a) 1 (b) 2 (c) 3 (d) 4

34. What is the slope of the equation y =2x +6 ?

(a) 6 (b) 3 (c) 2 (d) 1/3

35. what is the value of $\sqrt[3]{}$ 27 ?

(a) 3 (b) 5 (c) 9 (d) 6

36. How many prime Numbers are there between 1 and 10 ?

(a) 2 (b) 3 (c) 4 (d) 5

37. Find the ratio of 200 m and 400 m ?

(a) 1:2 (b) 3:4 (c) 4:3 (d) 2:1

38. What is the algebraic expression of " Summation of x and 4 ?

(a) 4 x (b) x^4 (c) 4^x (d) x+ 4

39. What is the value of each angle of an equilateral triangle ?

(a) 60° (b)70° (c) 80° (d) 180°

40. The area of circle is πr^2. Find the area of circle if radius r =7 cm and π = 22/7.

(a) 154 cm^2 (b) 155 cm^2 (c) 156 cm^2 (d) 157 cm^2

Appendix-D

Reliability coefficient test of the test

S. N.	Score of Odd Item(X)	Score of Even Item(Y)	x^2	y^2	xy
1	26	26	676	676	676
2	26	26	676	676	676
3	25	26	625	676	650
4	26	24	676	576	624
5	28	18	784	324	504
6	24	22	576	484	528
7	16	18	256	324	288
8	12	18	144	324	216
9	12	14	144	196	168
10	15	10	225	100	150
11	22	24	484	576	528
12	26	24	676	576	624
13	6	4	36	16	24
14	4	6	16	36	24
15	2	4	4	16	8
16	10	12	100	144	120
17	2	3	4	9	6
18	5	4	25	16	20
19	2	1	4	1	2
20	1	3	1	9	3
Total	290	287	6132	5755	5839

$$\text{Correlation Coefficient } (r_{xy}) = \frac{N\sum xy - \sum x \sum y}{\sqrt{N\sum x^2 - \left(\sum x\right)^2}\sqrt{N\sum y^2 - \left(\sum y\right)^2}}$$

$$= \frac{20\times 5839 - 290\times 287}{\sqrt{20\times 6132 - 84100}\ \sqrt{20\times 5755 - 82369}}$$

$$= 0.94$$

$$\text{Reliability Coefficient (r)} = \frac{2r_{xy}}{1+r_{xy}}$$

$$= \frac{2 \times 0.94}{1+0.94}$$

$$= 0.96$$

Appendix-E

Row Score of the Sampled students

According to Family Income

High Income	Middle Income	Low Income
1,5,14,37,43,44,48,49,50,52,53,59,63, 66,67,68,69,75,85,88,89,90,93,97,99, 101,106,114,120,134,135,138,139,140, 144,155,156,159,163,164,165,171,172, 173,176	2,3,4,6,7,8,9,10,12,13,16,17,18, 19,20,21,22,23,24,26,27,28,30,39, 40,42,47,54,56,57,58,60,61,64,65, 78,80,82,83,84,91,100,104,109,115, 119,124,125,127,128,130,132,133,136, 137,141,143,145,146,147,149,150,151, 152,154,158,162,169,174,177,180,182, 183,184,186,193,194,195	11,15,25,31,32,35,36, 29,38,34,41,45,46,51, 55,62,70,71,72,73,74, 76,77,79,81,86,87,92, 94,95,96,98,102,103, 105,107,108,110,111, 112,113,116,117,118, 121,122,123,226,129, 131,142,148,157,160, 161,166,167,168,170, 178,181,185,187,188, 189,190,191,192

According to parents time provided

One Hour	Two Hour	Three Hour or more
6,8,12,16,17,18,20,21,22,23,24, 25,26,27,28,29,31,32,34,35,36, 37,38,40,41,44,46,47,55,57,58, 61,62,65,67,68,70,71,76,80,86, 87,92,94,97,98,102,117,125,126, 129,133,142,143,144,145,146,148, 149,150,151,157,158,160,161,162, 164,166,167,169,170,171,172,174, 180,184,185,187,188,189,190,192	2,3,4,10,11,13,15,19,30, 39,42,45,49,51,56,59,64, 66,72,73,74,77,78,79,83, 91,93,100,103,105,108,111, 112,113,114,115,116,118, 119,120,124,131,139,141, 147,152,154,155,163,168, 173,176,177,179,183,186, 193,194,195	1,5,7,14,43,48,50,52,53, 54,60,63,69,75,80,81,84, 85,88,89,90,95,97,99,101, 104,106,107,109,110,121, 122,123,124,127,128,130, 132,134,135,136,137,138, 140,153,156,159,165,175, 178,181,182,191

According to Father Education

Educated	Literate	Illiterate
1,2,3,4,5,6,7,10,11,12,13,14,15,16,17,18,19, 25,26,27,28,30,31,32,33,37,41,43,44,48,49, 55,52,53,54,57,58,59,60,61,62,63,64,65,66, 67,68,70,72,73,77,78,80,81,82,83,84,87,88, 90,93,97,98,100,101,104,106,107,109,110, 111,112,117,118,120,122,123,124,125,127, 130,133,134,135,137,138,139,140,143,144, 147,150,151,152,153,155,156,159,160,163, 164,165,169,170,171,172,173,174,176,177, 180,182,183,184,186,189,191,193	8,9,20,21,24,29,34, 35,36,39,40,42,45,46, 47,55,56,71,74,77,79, 85,86,89,91,92,94,96, 99,102,103,105,108, 113,115,116,119,121, 126,128,129,131,132, 136,141,145,146,148, 149,154,158,161,162, 166,167,168,175,178, 179,181,185,187,188, 190,192,194,195	38,76, 42,157

According to mother education

Educated	Literate	Illiterate
1,2,3,4,5,10,11,12,13,14,15,19, 20,21,22,23,25,26,27,28,29,41, 42,43,44,48,49,50,51,52,53,54, 58,59,60,61,62,64,65,67,68,69, 70,72,73,77,78,80,81,82,83,86, 87,89,92,95,96,98,101,104,106, 108,109,110,111,112,114,117, 119,120,122,124,127,129,133, 134,135,138,139,140,151,152, 153,156,159,160,161,165,171, 172,174,177,186,189,191	6,7,8,9,16,17,18,24,30,31, 32,33,34,35,37,40,46,47,55, 56,57,63,66,71,74,75,79,84, 85,88,90,91,93,94,97,99,100, 102,103,105,107,113,115,118, 121,123,125,126,128,130,131, 132,136,137,143,144,146,147, 148,149,150,154,155,162,164, 166,167,168,169,170,173,175, 176,178,179,180,181,182,183, 184,185,185,187,188,189,193, 195	36,38,39, 76,116,141, 142,145,157, 166,192,194

According to parent visiting school

Very good	Good	Low
1,2,3,4,5,6,7,8,38, 41,55,64,69,75,81, 86,87,91,92,93,97, 99,100,104,105,125, 192,193,194,195	9,10,11,12,13,14,15,16,19,20, 21,24,25,27,29,30,32,34,35,36, 40,42,45,46,51,56,58,62,66,68, 70,71,74,76,78,79,82,83,84,85, 88,89,90,95,98,101,102,103,106, 107,108,109,110,111,112,114, 115,116,118,119,121,122,123,126, 127,128,129,130,131,132,133,135, 137,138,139,144,145,146,147,152, 153,156,157,158,159,163,168,172, 173,175,176,177,178,182,183,184, 185	17,18,22,23,26,28, 31,33,37,39,43,44, 47,48,49,50,52,53, 54,57,59,60,61,63, 65,67,72,73,77,80, 94,96,113,117,120, 134,136,140,141,142, 143,148,149,150,151, 154,160,161,162,164, 165,166,167,169,170, 171,174,179,180,181, 186,188,187,189,190, 191