PARENT'S INVOLVEMENT IN LEARNING MATHEMATICS

A

THESIS

BY

CHANDRA BAHADUR KHATRI

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER IN MATHEMATICS EDUCATION

SUBMITTED TO

DEPARTMENT OF MATHEMATICS EDUCATION

CENTRAL DEPARTMENT OF EDUCATION

UNIVERSITY CAMPUS KIRTIPUR

TRIBHUVAN UNIVERSITY

KATHMANDU

2017

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Letter of Certificate

This is to certify that Mr. Chandra Bahadur Khatri, a students of academic year 2070/071 with Campus Roll No. 671 Exam Roll No. 280395, Thesis Number 1203, and T.U. Regd. No. 6-1-55-251-2004 has completed his thesis during the period prescribed by the rules and regulations of Tribhuvan University, Nepal. The thesis entitled **"Parent's Involvement in Learning Mathematics"** has been prepared based on the results of his investigation. I, hereby, recommend and forward that his thesis be submitted for evaluation as the partial requirements to award the degree of Master in Mathematics Education.

.....

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Letter of Approval

A

Thesis

By

Chandra Bahadur Khatri

Entitled

"Parent's Involvement in Learning Mathematics" has been approved in partial fulfillment of the requirements for the Degree of Master of Education.

Viva-voce Committee	**Signature**
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Recommendation for Acceptance

This is to certify that Mr. Chandra Bahadur Khatri has completed his Mathematics Education thesis entitled **"Parent's Involvement in Learning Mathematics"** under my supervision during the period prescribed the rules and regulation of Tribhuvan University, Kirtipur, and Kathmandu, Nepal. I recommend and forward his thesis to the Department of Mathematics Education to organize final viva-voce.

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Declaration

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

……

Chandra Bahadur Khatri

Acknowledgement

It is luck to get invaluable guideline from my respected teacher Mr. Abatar Subedi, lecturer, Department of Mathematics Education, T.U. Kirtipur. I would like to express my heartful gratitude and appreciation to his as a supervisor for evaluation, suggestion, guideline, encouragement and giving constructive suggestions during the completion of this research report.

Similarly, I would like to express my gratefulness to Assoc. Prof. Laxmi Narayan Yadav, Head, Department of Mathematics Education, T.U. Kirtipur, for his valuable suggestions and inspirations to carry out the research work successfully and I would like to express my sincere appreciation to Prof. Dr. Hari Prasad Upadhyay, Chairman, Subject Committee Mathematics and Computer Science education, Faculty of Education, T.U, Kirtipur, for his helpful suggestions and constructive comments during this study. Likewise, I am grateful to Assoc. Prof. Dr. Eka Ratna Acharya, Assoc. prof. Bed Raj Acharya, Mr. Ganesh Adhikari, Mr.Arjun Neupane and other all the lecturers of Department of Mathematics Education, for their respective encouragement in carrying out this research work.

My special thanks go to all the teachers, parents and students of selected schools for providing their valuable time to collect data for my research work.

Finally, my thanks go to my friends who helped for editing language of this research report and technical support. Also, I would like to thanks to my colleagues, who helped me directly and indirectly.

…….

Chandra Bahadur Khatri.

Abstract

This is a survey type research related to Parent's Involvement in Learning Mathematics and its relation on mathematics achievement. The objectives of this study were to find the Parent's Involvement in Learning Mathematics and to analyze the mathematics achievement of students with respect to the Parent's Involvement. For this study, the researcher selected three public schools through stratified random sampling with 150 students and parents through random and purposive sampling. Mathematics achievement test for students and parent's questionnaire were the main tools of this study. Percentage, mean, standard deviation and correlation coefficient were used to analyze the data related to parental involvement in learning mathematics.

After analysis and interpretation of the obtained data, the finding indicates the mathematics achievements of students whose parents having setting well study room is better than that of other. Whose parents have electric materials like television, internet etc. they have better achievement than that of other. If the parents have always going school is better mathematics achievement than not going school. It shows that if the parents having always involve school programme they have better mathematics achievement than that of other. And the mathematics achievement of students whose parents have more time giving is better than the parents taking less time. This research shows that the mathematics achievement of students whose parents have always homework checking is better than that of other. The mathematics achievement of students whose parents having giving more motivator quantity is higher than that of other. And the mathematics achievement of students whose parents giving educational materials is better than other material.

It is concluded that the different role of parent's involvement is very essential for increasing the mathematics achievement. They are able to increasing mathematics

achievement by providing facilities for reading and writing as well as parents guiding for doing homework by parents involvement with different role for encouraging. It shows that parent's involvement on home environment, parent-school communication and motivator at home role was not sufficient, but they needed help and guidance educational activities at home. Then the parent's involvement in schools activities should be encouraged and the government should consider developing and implementing policies that support this.

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Chapter-I

Introduction

Background of the Study

A parent's involvement plays the vital role in learning mathematics and its achievement. Parents are the first and most influential teachers for student because a student spends more time at home than the schools. Parents a very strong influence over his/ her mathematics learning so appropriate necessary help is an essential factor for the better learning mathematics of students. It is the responsibility of parents to provide necessary facilities for their children to study at home. Here, some of the literature related to parental factors is mentioned, which affect the child's learning mathematics.

There are various factors which affect students' learning mathematics. Those factors may be schools, Families, peer- group, social environment, parental involvement, situation of class room, parents economic condition and parents education etc. these factors of parents role always is the most affecting factor in basic level students learning mathematics. Therefore parent's involvement is one of the most important affecting factors of student's learning mathematics. Hence, parent's involvement has vital role of student's learning mathematics.

The educational development of a child depends not only on teachers but also on the parent's awareness, interest and knowledge. Parents can introduce and teach fundamental knowledge and skills, attitudes and values of their children. Parents can help their children to solve mathematics problems at home. Supporting this view Malakar (1989) adds,

"The best way that the parents can contribute toward the continued progress in study of their children is to provide them with a secure and happy home and make

them feel that they are loved well taken care of. And at the same time they must make available almost unlimited facilities for free reading from well graded children's books and magazines and provide opportunities for a great variety of games and plays in which they can exercise their physical and agentive powers and get a balanced sense emotional satisfaction. Time to study, encouragement to study and materials to study are necessary conditions that can accelerate progress of the learning for the children".

Similarly, according to Epstein (2009), ample research evidence suggests that most parents want their children to succeed in school and in order for them to be good partners in their children's education; they obtain more information from schools. Likewise, most students at all school levels, whether it being elementary school, middle school or high school level, want their families to be familiar and acquainted partners about schooling. The positive effects that parental involvement has on students' academic achievement appear to be undeniable. Therefore, it should be a top priority for parents and schools to establish and maintain a strong partnership between schools and homes.

It has been assumed that learning mathematics of students may not only depend on the quality of schools and the teachers, rather the extent of parental involvement has vital role of play in mathematics learning of their kids. The focus of this study is to examine a relationship between the extent of parental involvement in academic activities of their children and the level of their student's learning mathematics. The transition from middle school to secondary school may be an overwhelming and stressful experience for young adolescents. Developmentally, students are entering a period in their lives when their physical, cognitive, psychological and social characteristics are beginning to evolve. Lower secondary school students experience

both a contextual change and a personal change during their transition. It may often a confusing time for students, their families and the other adult in their lives who seek to support their healthy development and learning. The lower secondary school learning environment may be more complex than elementary school and mathematics learning expectations increase.

The role of parental involvement in children's education has become a main issue in educational policy and research. Research findings support the existence of a positive relationship between parental involvement and student's learning in mathematics, especially in the lower secondary school years.

This study to ascertain in what way parents are involved in their children's learning in mathematics and how are the school ready to invite parental involvement in their children's learning in mathematics. Since education is one of the key factors for the country's development it goes without saying how important it is for Nepal that students to do well in school. According to Jone L. Rahman (2001) research finding provide seven types of parents involvement: (a) parent as communicator, (b) parent as supporter of activities, (c) parent as learner, (d) parent as advocate , (e) parent as decision maker, (f) parent as volunteer/professional and (g) parent as home activities teacher.

In the educational field parents take care of their children which depend upon the parents' educational status, economic status, and so on. Similarly the teacher parent's communication inspires the parents to take care of their children seriously and consciously. Here, in this study researcher did research work in the parental involvement in their children's at lower secondary mathematics learning.

Statement of the Problem

The purpose of this study is to determine whether a correlation exists between

parent's involvement and students learning in mathematics at Grade VII. Parents participation refers to the interest shown by parents in the studies of their children's at home exhibiting positive attitude towards student's learning in mathematics, performing activities, which are cooperative in promoting student's learning, academic, nonacademic and exciding genuine willingness to participate in the activities sponsored by school. The involvement parents are more careful about their child study rather non- involvement parents. In this research it is intends to study the parental involvement on their children's due to the teacher parent's interaction on mathematics learning of Grade VII students in Bardiya district. In order to ascertain its effectiveness the researcher intends to answer the following research question:

- What is the condition of parent's involvement of students in learning mathematics?
- What is the role of parent's involvement in learning mathematics for mathematics achievement of students?

Objectives of the Study

The purpose of the study is to determine the relationship between parent's involvement and achievement in mathematics of Grade VII students. So the specific objectives of the research are as follows.

- To find the parent's involvement in learning mathematics
- To analyze the mathematics achievement of student with respect to the parent's involvement.

Significance of the Study

Parent's involvement plays a significant role in learning mathematics of basic level students. But, the majority of the parents in rural area of Nepal are not aware of their responsibilities toward the education of their children's. They think that school

and teacher are fully responsible for their education. Also, most of the rural schools suffer from an acute dearth of funds. Government grants are just sufficient for teacher's salary and for nothing else, and the schools are not allowed to raise fees. In such a situation, schools can neither buys instructional materials nor can they spare time for material production the administration school does not interact with the parents of students to inspire them for the facilitation in the learning of their children's. This study has these following significant.

- This study helps parents to manage learning environment at home.
- This study helps parents to create effective learning environment at home.
- This study helps to inform about the condition of parental involvement with stakeholder who run various programmer related for this society and education planner.
- This study helps to provide information to concern agencies and educational planner to reform educational system.
- This study helpful for researchers to seek further study.

Delimitation of the Study

All study is not free from limitation or delimitations. So, every study has its own limitation due to limited resources, time and physical aspects. In this study conducted within the following delimitations.

- This study limited on Bardiya district.
- This study included only Grade VII students and their parents of three Public schools of Bardiya
- This study included only for the subject of mathematics.

Definition of the Terms

Achievement: Achievement of this study is defined in terms of the scores obtained by the students on the achievement test administered by the researcher.

Parent: Member of family who help study in Mathematics in home such as father, mother, sister and brother etc.

Parent's Involvement: Refers to participation of parents in every facet of children's education.

Communication: Home to school communication regarding children's academic development and other academically relevant information.

Home Environment: Refers to space and its surrounding where the basic school child lives with the parent or guardian for example at home.

Parent -School Communication: Refers to passing of information from either from parent to the teacher or teacher to the parent.

Mathematics Teacher: The people who teach mathematics at Grade VII in public school of Bardiya district.

Motivator: Person who promotes interest in or enthusiasm for mathematics.

Chapter –II

Review of the Related Literatures

Empirical Literature Review

Parent's involvement in education has been a topic of interest for many years among those who are concerned with improving academic achievement for children (Hoover-Dempsey and Sandler, 1997).After reviewing the literature, Henderson and Mapp (2002) indicate that student achievement is most commonly defined by report cards and grades, grade point averages, enrolment in advanced classes, attendance and staying in school, being promoted to the next grade, and improved behavior. Furthermore, research on effective schools , those where students are learning and achieving ,has consistently shown that these schools , despite often working in low social and economic neighborhood's , have strong and positive school- home relationships (Sanders and Seldon,2009; Sheldon,2009). More importantly, these effective schools have made a real effort in reaching out to their student's families in order to bring about liaison and cooperation. Thus empirical literature that has critically discovered suggestions and way forward in this direction are reviewed below.

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 parents education, parent's occupation, social tradition, family size, poverty and load of household work were the main cause of affecting Kami students 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 reaches 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 aim at using five different variable (parent education, parent's occupation, patent'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.

Similarly, Erledsdottir (2010) on his research, "Effect of parental involvement in education" mentioned a study of qualitative case study research approach was used. Data were gathered by interviewing parents of seven students' at Combretum Trust School in Windhoek, who all have achieved academically. The objective of the interviews was to learn if and how the parents are involved in their children's education.

The main findings of this research, all the parents who were interviewed were highly involved with their children's education. They had high expectation towards their children's education and their future. In addition, they were all quite vocal about their expectations to their children. The parents all recognize the importance of staying involved with their child's education and participate fully. All the parents want to know how their child spends his or her time outside of school and with whom their child spends his or her time. Most of the parents consider themselves to have a good relationship with their child's, teachers and the school. However, the results that by staying involved with their children's education in this way the parents do impact

positively on the academic achievement of the students. Hence parental involvement plays a highly important role in student's academic achievement, and surely all children to succeed.

Yadav (2014) entitled "Effect for parental involvement in mathematics learning" to analyze, explore the existence of parental involvement in school activities and to compare the mathematics achievement of parent involved students and non-involved students. The data were collected from 96 students and their parents. In this study, the researcher has used questionnaire for parents, face to face interview with students, head mathematics teacher and achievement test paper for students were used. In this study researcher used mixed method research design and objectives were to explore the existence of parental involvement in school activities and to compare the mathematics achievement of parents involved students and non-involved students.

In this research, the focal point of researcher is effect of parental involvement of parents in mathematics education. Comparing parent's involvement students and parents' non-involvement students, there are many factors that affect mathematics achievement which are separate learning corner learning hour at home, learning materials, visiting in school, learning information and homework. Therefore, the proper parental involvement in school education increased the mathematics achievement. Hence these research shows that the mathematics achievement of parent's involvement students was better than the parents non- involvement students.

An article carried by Malaker (1989) entitled "Parental involvement in education of children" mentioned a study of 250 California elementary school revealed that parental involvement is related both to parent satisfaction and students achievement. "The curriculum of the home" that included parent child discussion about everyday occurrences, monitoring and viewing television together encouragement to read and

to discuss the matters read, and emotional support and interest in the child's world was reported to leave together, academic achievement. In 29 Controlled study 91 percent of the children in the program benefited when the learning environment at home was improved. The experimental children were compared to the children who did not participate in the program. It was found that home environment effected at the outcome twice as much as the socio- economic status did.

A study carried by Mwirichia (2013) entitled "Influence of parental involvement on academic performance of preschool children in kangeta division, meru county Kenya" mentioned a study of 10 preschools (six public and four private preschools), 100 children's, 100 parents and 7 teacher were sampled. Therefore, for this study sample size was two hundred and seven subjects consisting of parents, teachers and children. The researcher has used interview schedules for children and parents, questionnaire for teachers with 100 children's, 100 parents and 7 preschools teachers and documentary analysis. This study was descriptive survey design. The objectives of this study were to find out whether home environment has an influence on academic performance of preschool learner, to establish whether the parent-school communication has an influence on academic performance of preschool learners, to investigate whether parent's participation in educational activities at home has an influence on academic performance of preschool learners and to find out whether parents participation in educational activities at school has an influence on academic performance of preschool learners.

The researcher found that various forms of parents' participation in educational activities at school, educational activities at home, parent-school communication and home environment had an influence on the academic performance of preschool learners. Home environment was found to have influence on academic performance of

preschool learners both positively and negatively, parent's involvement in educational activities at school was found to have indirect influence on academic performance of preschool learners, and while involvement in educational activities at home had direct influence. Parent-school communication was found to be influencing academic performance of preschool learners to some extent. However, the results that varied parent's involvement in educational activities have an influence on academic performance of childrens'. To improve behavior at home and school, better social skills and adaptation to school then improved academic performance.

As the discussion above thesis and studies has illustrated, there is a steady and growing body of evidence of how important parental involvement is in improving student's academic achievement. Parental involvement has a positive effect on test scores and grades in score subjects, such as reading, math and science. However, the effect of parental involvement is not only on the academic side , but also on the non-academic outcomes, such as school attendance, student behavior in school, student attitudes towards school , and their social skills, it has been argued that these benefits hold for students of all agrees, across educational, economic and racial and ethnic background, thus generally it is accepted that in order for students to excel in school, they need the support and encouragement from their parents.

Theoretical Framework

The theoretical framework of this study is grounded in the theory of Epstein (2001). Epstein's conceptual model theory of overlapping spheres of influence extends and integrates ecological, education and sociological perspectives on social organization and interactions. Epstein's conceptual model theory emphasizes the need for reciprocal relationships of parents, educators and community partners to identify common goals for student's academic achievement and to appreciate each other's

contribution to student's development. Containing six important factors with regards to parental involvement has been developed by Epstein and her co-workers at the center on family, school and community partnership at John Hopkins University. This view is based on findings from many studies of what factors are most effective when it comes to children's education (Epstein, 2009). Those six factors are parenting, communicating, volunteering, learning at home, decision-making and collaborating with the community.

Parenting pertains to helping all families understand the development of both the child and the adolescent. It also helps establishing a supportive home environment for children as students. It helps us home visits at transition points to pre-school, elementary, middle, and high school. Neighborhood meetings to help families understand schools and to help schools understand families. For student awareness of importance of school, balance between time spent on chores, on other activities, and on homework. For parents to understanding of and confidence about parenting, child and adolescent development, and changes in home conditions for learning as children proceed through school and for teachers understanding families' background, cultures, concerns, goals, needs, and views of their children and understanding of student diversity.

Communicating refers to how best to design and conduct an effective two-way communication that is school-to-home and home-to-school, about school programs and their children's progress. In this involvement conferences with every parent at least once a year, with follow-ups as needed, Weekly or monthly folders of student work sent home for review and comments and regular schedule of useful notices, memos, phone calls, newsletters, and other communications. For students awareness of own progress and of actions needed to maintain or improve grades and informed

decisions about courses and programs and for parents to understanding school programs and policies and interactions with teachers and ease of communication with school and teachers. For teachers understand family views on children's programs and progress and increased diversity and use of communications with families and awareness of own ability to communicate clearly.

Volunteering applies to recruiting and organizing help and support from parents for school programs and students' activities. In this involvement parent room or family center for volunteer work, meetings, resources for families and school and classroom volunteer program to help teachers, administrators, students, and other parents. It helps for student's skill in communicating with adults and awareness of many skills, talents, occupations, and contributions of parent and other volunteers. For parent's awareness that families are welcome and valued at school and understanding teacher's job, increased comfort in school, and carry-over of school activities at home and for teacher's readiness to involve families in new ways, including those who do not volunteer at school and awareness of parents' talents and interests in school and children.

Learning at home pertains to providing ideas and information to parents about how they can best assist their children with homework and curricular related decisions and activities. In this involvement provide information and ideas to families about how to help students at home with homework and other curriculum-related activities, decisions, and planning. It helps for student's homework completion, positive attitude toward schoolwork and gains in skills, abilities, and test scores linked to homework and classwork. For parents know how to support, encourage, and help student at home each year and discussions of school, classwork, and homework and for teacher's better design of homework assignments and respect for family time.

Decision-making refers to including parents in school decisions and to developing parent leaders and representatives. In this involvement active PTO or other parent organizations, advisory councils, or committees (e.g., curriculum, safety, personnel) for parent leadership and participation and networks to link all families with parent representatives. It helps for students understanding that student rights are protected and awareness of representation of families in school decisions. For parent's awareness of parents' voices in school decisions and shared experiences and connections with other families and for teacher's view of equal status of family representatives on committees and in leadership roles.

Collaborating with the community pertains to identifying and integrating communities' services and resources to support and strengthen schools, students, and their families. In this involvement Information for students and families on community health, cultural, recreational, social support, and other programs or services and Service to the community by students, families. It helps for students awareness of careers and of options for future education and work and specific benefits linked to programs, services, resources, and opportunities that connect students with community. For parent's awareness of school's role in the community and of community's contributions to the school and for teacher's awareness of community resources to enrich curriculum and instruction and Knowledgeable, helpful referrals of children and families to needed services.

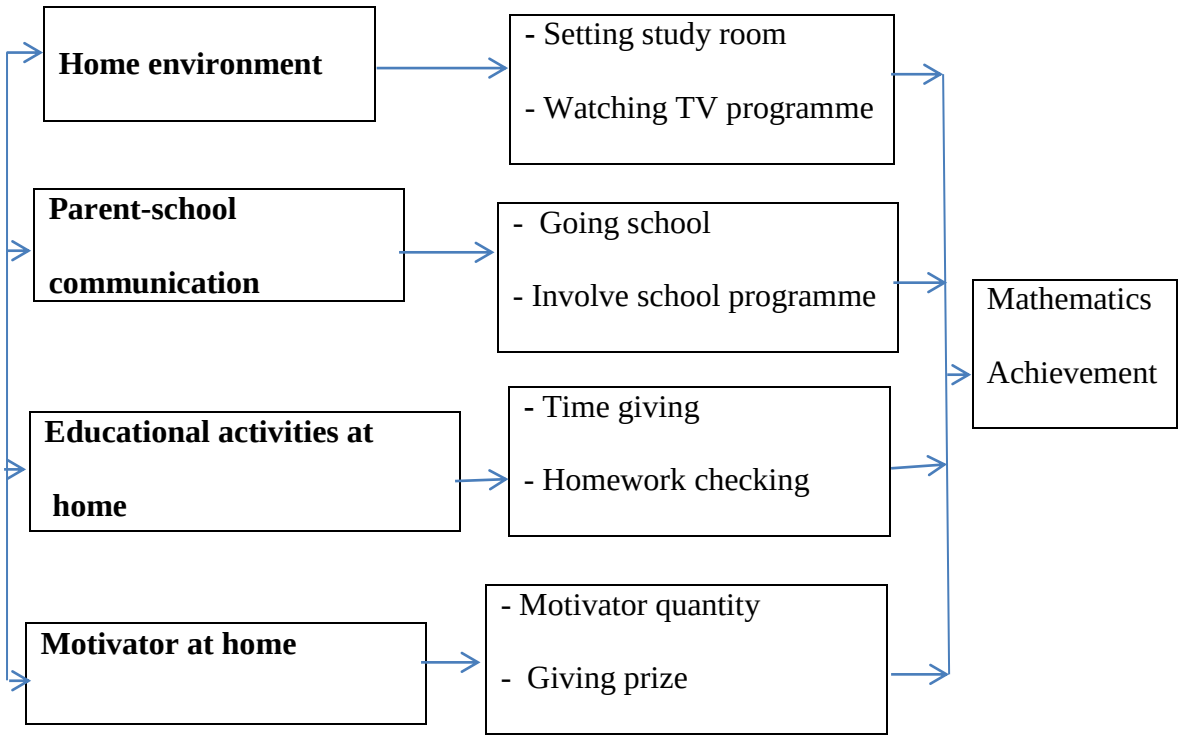
Epstein's theory said that, for teachers, the benefits may be presumed to be better communication with parents, a deeper understanding of the family of their students and their situation, and more effective communication with both the homes and the community (Epstein, 2009). This theory concerning the effectiveness of parental

involvement on their children at basic level mathematics achievement in Grade VII students has not yet been done and will be a milestone in related filed.

Conceptual Framework of Study

This study covers the variables on the parental involvement on their children's at basic level mathematics achievement. These variables include; home environment, parent-school communication, educational activities at home and motivator at home. Researcher adapts a conceptual framework of the study as present below.

Figure 1 Conceptual Framework



Source: Ventoricah M. Mwirichia,(2013)

The above framework illustrates that the roles of parents as home activities teacher that influence the teaching learning process and learning achievement. This conceptual framework is related to student's mathematics achievement. Researcher

added that the involvement of parents in learning achievement in mathematics would help students to better learn. This is the focus area of my study. The present study focuses on involvement of parents with the students, teachers and home environment. Hence, researcher to find out the students mathematics achievement from the help of four variables; home environment, parent-school communication, educational activities at home and motivator at home.

Chapter- III

Methods and Procedures

This chapter deals about the methods and procedures which is the one part of research methodology that determines how the research becomes complete and systematic. Method and procedures does not mean only collect data/information but also means the use of appropriate research method. As methodology is the root of the research. So, the researcher should be clear about the design of study, population of the study, sample and sampling procedure, research instruments, validity and reliability, procedures of collecting data and its analysis procedures.

Design of the Study

A research design or study is the planning structure and strategy of investigation, which is a complete scheme or program of the research. The study was based on quantitative survey design research method. It's to find the parent's involvement and achievement in learning mathematics.

Population of the Study

The population of this study was the parents and students in Grade VII in public school of Bardiya district in academic year 2073 BS.

Sample and Sampling Procedures

The respondents of the study were selected from selected three public schools of Bardiya, Shree Siddhartha lower Secondary School Haupur-8, Shree Gyan Jyoti Secondary School Chhatranagar-3 and Shree Nepal Restriya Secondary School Laxmanpur-2. As a sample 50 students were selected from each school. Stratified random sampling technique was used for selecting school, Random sampling was used for students and purposive sampling was used to select parents. For stratified random sampling , write names of the public school and arranged in alphabetical

order, then divided into 3 strata, the first names in each stratum was selected. For random sampling techniques, number were written on the paper, folded and then picked. The Grade VII students who picked the odd numbers were selected. Purposive sampling was done for parents. Paper for parents was picked by their students. It means that the students who were selected for study, by random sampling, their parents were picked to join the study.

Table 1 gives the detailed description of the sample

Table 1

School wise Description of the sampled students

Name of school	No of students		Total
	Boys	Girls	
Siddhartha lower sec. school	25	25	50
Gyan jyoti secondary school	25	25	50
Nepal restriya sec. school	25	25	50
Total	75	75	150

Research Instruments

There were two instruments, one for the parents and another for the students. The instrument for parents was questionnaire (See Appendix-A) and instrument for students was achievement test (See Appendix-B).

Questionnaire for Parents

For the parents, the questionnaires are developed by the researcher himself under the conceptual framework. Then the researcher to collect the information parents and students regarding to the parents at home environment, parent-school communication,

educational activities at home and motivator at home. The questionnaire involved closed questions (See Appendix-A).

Mathematics Achievement Test for Students

In this process of data collection the researcher constructed an achievement test paper with the help of prescribed curriculum and text book Grade VII mathematics consisting 40 multiple choice items. According to the objectives the question of the test paper was selected on equal weightage given for each chapter. There were 20 (50%) item from arithmetic, 9 (22.5%) item from algebra and 11 (27.5%) item from geometry and it contained 13 (32.5%) item from knowledge, 7 (17.5%) item from comprehension, 12 (30%) item from skill and 8 (20%) item from application level domain. The test items covering different level of cognitive domain are shown in the following table.

Table 2

Item Covering Area of Mathematics and Level of Cognitive Domain

S.N.	Area of mathematics	Level of cognitive domain				Total
		K	C	S	A	
1	Arithmetic	5	3	8	4	20 (50%)
2	Algebra	2	1	3	3	9 (22.5%)
3	Geometry	6	3	1	1	11 (27.5%)
Total		13 (32.5%)	7 (17.5%)	12 (30%)	8 (20%)	40 (100%)

Note: K=Knowledge, C=Comprehension, S=Skill, A=Application

Validity and Reliability of the Tools

Validity is a measure of how well a test measures what it is supposed to measure.

The content validity of the questionnaire was established its approval from the mathematics education exports, school teachers and thesis supervisor. A reliable instrument is one that produces consistent results when used more than once in the process of data collection. Reliability test was done through test-retest method. For the reliability of the test the researcher carried out pilot test prepared 20 Grade VII students of Shree Sarbodaya lower Secondary School in Bardiya were taken for pilot test. Before administering the test paper, the researcher instructed the students how to respond the test paper.

Then to find the reliability in of the test paper the score of 20 students of item analysis chart were identified by the letter in the first column of the table [See Appendix (D-I)]. The score on the odd and even items of 40 items, in the second and third column of the table [See Appendix-D (I)] .The reliability of the test was determined by using split-half calculation (Stanley's procedure) score on the odd and even items of 40 items. From the calculation the reliability coefficient was found 0.284 [See Appendix (D-II)] also the reliability of the test was determined by using the item analysis of the score of 20 students [See Appendix (D-III)]

Item Analysis

The difficult level and discrimination index of text was computed to check the quality of the text items. The item analysis was accomplished by administering 20 students of Grade VII of Shree Sarbodaya Lower Secondary School. The text items were score 1(one) for correct response and 0 (zero) for incorrect response on each multiple choice items. Level of difficulty and power of discrimination of each item was calculated from 27 percent i.e. 6 students of higher score, 27 percent i.e. 6 student of lower score and remaining i.e.8 student medium score. P-value or D-value of each item was calculated from the tabulated 27 percent of the lower scores of 20 students

on the test in the given relation. Item number 7, 12, 15, 17, 18, 22, 30, 36 were rejected and whose D-value or P-value do not lie between 0.40 to 0.90 or below 39 percent to above 90 percent were cancelled. In this way items analysis were accepted for the final form [See Appendix-D (III)]. Hence the refined achievement test paper contains only 32 items (See Appendix-B).

Procedures of Data Collection

The researcher was visited the sample school and the researcher met the head teacher, mathematics teachers and students. Then explained in detail the purpose of the visit. The Sample of this study was 150 students. Total sample divided in four groups according to parent's involvement. Before administering the test, the researcher explained the answering procedure of test. The time allocated for completing the test was 1 hour. After the time duration of examination the answer sheets were collected and score by the researcher. Then researcher visited the parents of sample students and distributed the questionnaire for the parents to respond the answer. The literate parents who could response questionnaire themself, they responded the questionnaire. The illiterate parents who could not response themself, the researcher obtained the information as direct interview method included questions related to parent's involvement in different roles as home environment, parent-school communication, educational activities at home and motivator at home. If the researcher couldn't meet some parents to their home, questionnaire were sent by the help of students and mathematics teachers. Parents answer compare with achievement score of their students. From the above process researcher collection of the raw date.

Data Analysis Procedures

The researcher analyzed the obtained data by calculating the percentage, mean, standard deviation and correlation coefficient. The percentage was used to find the

total number of parent's involvement in different role of four variables. The mean was used to find the level of mathematics achievement of students and standard deviation to find the variability of mean. Similarly, correlation coefficient was used to determine the relation between mathematics achievements and related variable of parent's involvement.

Chapter-IV

Analysis and Interpretation of Data

This chapter deals with the statistical analysis and interpretation of data obtained by using the tools questionnaire for parent's and achievement test for students in learning mathematics survey form of sample students and their parents. The data for the study collected from the sampled students at Grade VII and their parents. The parent's involvement survey was used to know information about parent's involvement and its relation on mathematics achievement. These data were tabulated and analyzed by using percentage, mean, standard deviation and correlation coefficient. The data obtained are presented in terms of following topics; setting study room, watching TV programme, going school, involve school programme, time giving, homework checking, motivator quantity and giving prize and mathematics achievement of their students of three selected school.

Home Environment on Mathematics Achievement of Setting Study Room

The percentage, mean and standard deviation of the score obtained by the students according to parent's involvement at home environment (how they setting study room for their children) is presented on the following table.

Table 3

Parents Involvement on Setting Study Room

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
Good	80	53.33	15.06	3.71
General	56	37.34	14.71	3.77
Never	14	9.33	9.71	2.25

The above table shows that the percentage of parents involvement of good, general and never are 80 (53.33%), 56 (37.34%) and 14 (9.33%). Similarly the mean score of students with the response good, general and never parent's involvement are 15.06, 14.71 and 9.71 with standard deviation of 3.71, 3.77 and 2.25 respectively. Therefore the percentage of parents involvement good in the setting study room with students in home is higher than the percentage of as general and never. whose parents were involvement good in their setting study room at home is higher than the mean score of general and never. whose parents were involvement general setting study room at home is higher than the mean scoring of never. It shows that the setting study room with students good if they have necessary increases the mathematics achievement of students.

Home Environment on Mathematics Achievement of Watching TV Programme

The percentage, mean and standard deviation of the score obtained by the students according to parent's involvement at home environment (how much time they watching TV programme for their children per day) is presented on the following table.

Table 4

Parents Involvement on Watching TV Programme

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
1 hour	80	53.33	15.26	3.51
2 hours	40	26.67	14.2	4
3 hours or more	30	20	12.53	4.2

The above table shows that the percentage of parents involvement of 1 hour, 2 hours and 3 hours or more are 80 (53.33%), 40 (26.67%) and 30 (20%). Similarly, the mean score of students with the response 1 hour, 2 hours and 3 hours or more are 15.26, 14.2 and 12.53 with standard deviation of 3.51, 4 and 4.2 respectively. Therefore the percentage of parent's involvement 1 hour in their students watching TV programme at home is higher than the percentage of as 2 hours and 3 hours or more. whose parents were involvement 1 hour in their students watching TV programme at home is higher than the mean score of as 2 hours and 3 hours or more. Whose parents were involvement 2 hours in their students watching TV programme at home is higher than those of 3 hours or more. It shows that the watching TV programme with students 1 hour if they have necessary increases the mathematics achievement of students.

Parent-School Communication on Mathematics Achievement of Going School

The percentage, mean and standard deviation of the score obtained by the students according to parents involvement parent-school communication (how much time they going school for their children per year) is presented on the following table.

Table 5

Parents Involvement on Going School

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
2 times per month	79	52.67	14.66	3.96
2 times per year	53	35.33	14.6	3.69
No going	18	12	12.82	3.43

The above table shows that the percentage of parents involvement of 2 times per month, 2 times per year and no going are 79 (52.57%), 53 (35.33%) and18 (12%).

Similarly, the mean score of students of 2 times per month, 2 times per year and no going parents' involvement are 14.66, 14.6 and 12.82 with standard deviation of 3.96, 3.69 and 3.43 respectively. Therefore the percentage of parent's involvement 2 times per month going school is higher than the percentage of as 2 times per year and no going. Whose parents were involvement 2 times per month going school is higher than the mean score of as 2 times per year and no going. It is also shown that the mean score of 2 times per year going school parents is higher than the no going parents. So we can conclude that school going of parents directly affects their student's mathematics achievement.

Parent-School Communication on Mathematics Achievement of Involve School Programme

The percentage, mean and standard deviation of the score obtained by the students according to parents involvement at parent-school communication (how much involve they School programme for their children) is presented on the following table.

Table 6

Parents Involvement School Programme

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
Always	67	44.67	15.15	4.36
Sometimes	64	42.67	14.48	3.69
Never	19	12.66	12.26	2.27

The above table shows that the percentage of parents involvement school programmed as always, sometimes and never are 67 (44.67%), 64 (42.67%)

and 19 (12.66%). And the mean score of students of their parent's involvement as school programme always, sometime and never are 15.15, 14.48 and 12.26 with standard deviation 4.36, 3.69 and 2.27 respectively. Therefore the percentage of parent's involvement as always school programmed is higher than sometimes and never involve school programme. Whose parent's involvement as always school programme is higher than sometimes and never involve school programme. This shows that the involvement of parents school programme is directly proportional to the mathematics achievement of students.

Educational Activities on Mathematics Achievement of Time Giving

The percentage, mean and standard deviation of the score obtained by the students according to parent's involvement on education activities at home (how much time they giving for their children per day) is presented on the following table.

Table 7

Parents Involvement on Time Giving

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
1 hour	52	34.67	13.44	3
2 hours	64	42.67	14.98	4.11
3 hours or more	34	22.66	15.5	3.77

The above table shows that the percentage of parents involvement as time giving for 1 hour, 2 hours and 3 hours or more respected are 52 (34.67%), 64 (42.67%) and 34 (22.66%). And the mean score of students of their parent's involvement as time giving 1 hour, 2 hours and 3 hours or more are 13.44, 14.98 and 15.5 with standard deviation are 3, 4.11 and 3.77 respectively and the percentage of parents involvement

as 3 hours or more time giving is higher than 1 hour and 2 hours. Whose parent's involvement as 3 hours or more time giving is higher than the mean score of as 1 hour and 2 hours. It is found that the mean score of parent's involvement as 2 hours' time giving is higher than 1 hour at home.

Educational Activities on Mathematics Achievement of Homework Checking

The percentage, mean and standard deviation of the score obtained by the students according to parent's involvement at education activities at home (how to homework checking for their children) is presented on the following table.

Table 8

Parents Involvement on Homework Checking

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
Always	80	53.33	15.2	3.61
Sometimes	52	34.67	14.25	3.31
Never	18	12	11.56	3.71

The above table shows that the percentage of parents involvement of homework checking always, sometime and never are 80 (53.33%), 52 (34.67%) and 18 (12%). The mean score of students of always, sometimes and never parent's involvement on homework checking are 15.2, 14.25 and 11.56 with standard deviation of 3.61, 3.31 and 3.71 respectively. Therefore, the percentage of parent's involvement of always homework checking is higher than the percentage of sometimes and never. Whose parents were involvement always homework checking is higher than the mean scoring of sometimes and never. It is also shown that the mean score of sometimes homework checking is higher than the never parent's involvement. It shows that mathematics

achievement of their children's increases as the increment of their parent's involvement of always homework checking.

Motivator at home on Mathematics Achievement of Motivator Quantity

The percentage, mean and standard deviation of the score obtained by the students according to parents involvement on motivator at home (how much they motivator quantity for their children per month) is presented on the following table.

Table 9

Parents Involvement on Motivator Quantity

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
2 times per week	80	53.33	15.54	3.52
2 times per month	57	38	13.65	3.33
Never	13	8.67	11.62	2.43

The above table shows that the percentage of parents involvement at motivator quantity as 2 times per week, 2 times per month and never are 80 (53.33%), 57 (38%) and 13 (8.67%). The mean score of students of their parent's involvement as motivator quantity as 2 times per week , 2 times per month and never are 15.54, 13.65 and 11.62 with standard deviation 3.52, 3.33 and 2.43 respectively and the percentage of parent's involvement as 2 times per week motivator quantity is higher than 2 times per month and never . The mean score of students of their parent's involvement 2 times per week motivator quantity is higher than 2 times per month and never motivator quantity. It is also that the mean score of students of their parent's involvement as 2 times per month motivator quantity is higher than never motivator

quantity. This shows that students mathematics achievement increase as the involvement in motivator quantity.

Motivator at home on Mathematics Achievement of Giving Prize

The percentage, mean and standard deviation of the score obtained by the students according to parent's involvement on motivator at home (what material prize giving for their children) are presented on the following table.

Table 10

Parents Involvement on Giving Prize

Group	No. of Parents	Parents Involvement (%)	Mean Scores	S.D.
Children like Material	74	49.33	14.08	3.88
Educational material	61	40.67	15.16	4.03
Never	15	10	13.2	3.21

The above table shows that the percentage of parents involvement of giving prize as children like material, educational material and never are 74 (49.33%), 61 (40.67%) and 15 (10%). And the mean score of students of children like material, educational material and never parent's involvement are 14.08, 15.16 and 13.2 with standard deviation of 3.88, 4.03 and 3.21 respectively. Therefore, the percentage of parent's involvement of educational material is higher than the percentage of as children like material and never. Whose parents giving prize for students educational material is higher than the mean score of as children like material and never. It is also shown that the mean score of children like material is higher than the never giving prize. It shows that mathematics achievement of their children's increases as the increment of their parent's involvement of educational material. So we can conclude

that giving prize with students which are educational materials directly affect to their mathematics achievement.

Average Mathematics Achievement of Student with Patents Involvement

Mean and standard deviation of the score obtained by the students according to parent's involvement at home environment, parent-school communication, educational activities at home and motivator at home are presented on the following table.

Table 11

Parents Involvement Related Variables

Variable	Mean Scores	S.D.
Home environment	13.58	3.57
Parent-School Communication	13.99	3.56
Educational Activities at Home	14.16	3.59
Motivator at Home	13.88	3.4

The above table shows that the mean score of students on their parent's involvement at home environment, parent-school communication, educational activities at home and motivator at home are 13.58, 13.99, 14.16 and 13.88 with the standard deviation 3.57, 3.56, 3.59 and 3.4 respectively. The mean score of parent's invoivement educational activities at home is higher than the parent's home environment, parent-school communication and motivator at home. So we can conclude that parent's educational activities at home are directly proportional to the achievement of their students.

Overall, all variable i.e. parent's involvement at home environment, parent-school communication, educational activities at home and motivator at home all have

positively effect on their children's mathematics achievement. Parents on educational activities at home are more effect than other.

Correlation between Mathematical Achievement and Parents Involvement

Correlation between mathematical achievement and parental involvement in mathematics learning related variables (home environment, parent-school communication, educational activities at home and motivator at home) are presented on the following table.

Table 12

Correlation between Parents Involvement and Mathematics Achievement

Variables	Correlation Coefficient
Home Environment	0.654
Parent-School Communication	0.698
Educational Activities at Home	0.700
Motivator at Home	0.670

The above table shows the correlation between mathematics achievement and four variables; home environment, parent-school communication, educational activities at home and motivator at home. Analysis of the data resulted from the Pearson's correlation analysis (See Appenix-H). The results of this study shows that there is a significant relationship between mathematics achievement and home environment, parent-school communication, educational activities at home and motivator at home with correlations r = 0.654, 0.698, 0.700 and 0.670 respectively this shows that the mathematics achievement and these variables are closely correlated. The above table indicates that performance is positively correlated with all the four variables. The results of this study shows that there is a significant

relationship between parents involvement on educational activities at home and mathematics achievement (r = 0.700). The results of this study also shows that there is a significant relationship between parents involvement at parent-school communication and mathematics achievement (r = 0.698). It is also shows that there is a significant relationship between parents involvement at motivator at home and mathematics achievement (r = 0.670. The results of this study shows that there is a significant relationship between parents involvement at home environment and mathematics achievement (r = 0.654) respectively.

The above table shows that the mathematics achievement of students is found to be strongly associated with parent's involvement at home environment, parent-school communication, educational activities at home and motivator at home. There is positive relationship between mathematical achievements and their parent's involvement. It indicates that there is significant relationship between with these four variables. This shows that correlation between parent's involvement on educational activities at home and mathematics achievement was high and less correlated variable was parent's involvement at parent-school communication, motivator at home and home environment.

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Chapter-V

Summary, Conclusion and Recommendations

After the analysis and interpretation of collected data an attempt has been made to summarize, enlist the finding, conclusion and recommendation for the study. The first section of this chapter presents the summary of the researcher, the second section presents its conclusion and last section present recommendations base on the finding.

Summary of the Study

This study was under taken to identity the parent's involvement in learning mathematic and mathematics achievement on Grade VII. For this study, the researcher developed the achievement test paper with the help of prescribed curriculum and text of mathematics of Grade VII and administrated the test in Shree Sarbodaya lower Secondary School in Bardiya for the item analysis of the test and for checking its reliability and validity to standardize it. The researcher also developed parent's questionnaire form where main instrument used in the study.

For this research the researcher select three public schools with 150 students from Bardiya district. These data were obtained thought the parents questionnaires and student's achievement test. The mathematics achievement test data was obtained from student's achievement in mathematics exam. The parent's questionnaires form was developed to get detail information about parent's involvement on home environment, parent-school communication, educational activities at home and motivator at home.

For data analysis of the study percentage, mean, standard deviation and correlation coefficient were used. The percentage was used to find the number of parent's involvement in learning mathematics. The mean was used to find the level of

mathematics achievement and standard deviation was used to find the variability of mean. And correlation coefficient was used to determine the relation between mathematics achievement and four variables.

The study note that, the percentage of parents involvement on setting study room of good, general and never are 80 (53.33%), 56 (37.34%) and 14 (9.33%). And the mean score of students of good, general and never parent's involvement are 15.06, 14.71 and 9.71. Whose parents were involvement good in their setting study room at home is higher than the mean score of as general and never. The percentage of parents involvement of 1 hour, 2 hours and 3 hours or more are 80 (53.33%), 40 (26.67%) and 30 (20%). And the mean score of students of 1 hour, 2 hours and 3 hours or more are 15.26, 14.2 and 12.53 at watching TV programme. Whose parents were involvement 1 hour in their students watching TV programme at home is higher than the mean score of as 2 hours and 3 hours or more on home environment.

The study also noted that going school and involve school programme were important to parent-school Communication. The percentage of parents involvement of 2 times per month, 2 times per year and no going are 79 (52.57%), 53 (35.33%) and18 (12%). Then the mean score of students of 2 times per month, 2 times per year and no going parents' involvement are 14.66, 14.6 and 12.82. Whose parents were involvement 2 times per month going school is higher than the mean score of as 2 times per year and no going. The percentage of parents involvement at school programmed as always, sometimes and never are 67 (44.67%), 64 (42.67%) and 19 (12.66%).Then the mean score of students of their parent's involvement on school programme always, sometime and never are 15.15, 14.48 and 12.26. And the mean score of parent's involvement as always school programme is higher than sometimes and never involve school programme on patent-school communication.

The study also noted that time giving and homework checking were important to educational activities at home. The percentage of parents involvement as time giving are 52 (34.67%), 64 (42.67%) and 34 (22.66%). Then the mean score of students of their parent's involvement as time giving 1 hour, 2 hours and 3 hours or more are 13.44, 14.98 and 15.5.Then the mean score of students of their parent's involvement as 3 hours or more time giving is higher than 1 hour and 2 hours. The percentage of parents involvement of homework checking always, sometime and never are 80 (53.33%), 52 (34.67%) and 18 (12%). And the mean score of students of always, sometimes and never parent's involvement homework checking are 15.2, 14.25 and 11.56.Whose parents were involvement always homework checking is higher than the mean scoring of sometimes and never.

The study also noted that motivator quantity and giving prize were important to motivator at home. Then the percentage of parents involvement at motivator quantity as 2 times per week, 2 times per month and never are 80 (53.33%), 57 (38%) and 13 (8.67%). And the mean score of students of their parent's involvement as motivator quantity as 2 times per week , 2 times per month and never are 15.54, 13.65 and 11.62.Then the mean score of students of their parent's involvement 2 times per week motivator quantity is higher than 2 times per month and never motivator quantity. The percentage of parents involvement of giving prize as children like material, educational material and never are 74 (49.33%), 61 (40.67%) and 15 (10%). And the mean score of students of children like material, educational material and never parent's involvement are 14.08, 15.16 and 13.2. Whose parents giving prize educational material is higher than the mean score of as children like material and never.

The study also noted that the mean score of parent's educational activities at home is higher than the parents' home environment, parent-school communication and motivator at home. Parents on educational activities at home are more effect then other. It is 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.

Conclusion of the Study

The data collected and analyzed are used to find answer of researcher questions and objectives of the study. Different data are analyzed to get the answer of objective. From this study, in conclusion parent's involvement of students in learning mathematics; home environment, parent-school communication, educational activities at home and motivator at home are highly concern with mathematics achievement of the students. In this research mathematics achievement of students whose parents are setting study room is better than the general and never setting study room. Therefore, if the parents are involvement set well study room then increasing their children mathematics achievement.

It is also found that whose parents are given sometimes watching TV programme then increasing their children mathematics achievement. If the parents are given watching TV programme more time and never then decreasing their children mathematics achievement. It is also found that if the parents are going school more time than positively affect their children mathematics achievement and if the parents are not going school then their children less mathematics achievement. If the parents are involve always school programmed then their children are more mathematics

achievement and if the parents have not involve every school programmed then their children are less mathematics achievement.

It is found that the mathematics achievement of students whose parents are giving more time is better than the parents giving less time on education activities at home. This research shows that the mathematics achievement of students whose parents always homework checking is better than the patents not checking on educational activities at home. And the mathematics achievement of students whose parents are giving per week motivator quantity is higher than whose parent's never giving motivator quantity on motivator at home. It is also found that the mathematics achievement whose parents giving educational materials like calculator and video-taped is better than the other material on motivator at home. In this research it is found that the parent's involvement on educational activities at home was highly concern with mathematics achievement of the students. There is a significant relationship between parent's involvement and mathematics achievement of the students.

It concludes that the different role of parent's involvement are very essential for increasing the mathematics achievement. They are able to increasing mathematic achievement by providing facilities for reading and writing as well as parent's setting good study room and doing homework by parent's participation with different role for encouraging. It shows that parent's involvement at home environment was not sufficient, parent-school communication role in school was not sufficient and motivator at home was not sufficient but they needed help and guidance on educational activities at home role. This 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 student cannot achieve better

achievements in the learning mathematics. And it is 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.

Recommendations

The following recommendations are based on the conclusions of the study:

- Parents should set study rooms which provide conducive home environment for doing home study. The conducive home environment enhances thorough concentration during study.
- Parents should set home rules to given their children home study behavior. E.g. time to watch TV. This will enables the children to develop good study habits at home.
- Parents and teachers should adopt modern of communication such as mobile phone to enhance communication. Parents and teachers should embrace parent's school communication for improved mathematics achievement.
- The mathematics achievement seems to more effective in the case of parents role as good teacher at home.
- The mathematics achievement seems to more effective and useful in the case of regular good motivator at home.

Recommendations for further study

The researcher recommends further studies to be carried out in the Following areas:

- The study of this kind should be conducted at all levels of schools and in other district as well.

- A study on the indicators of successful interpersonal relationship between the teacher, Basic level children and parents.
- This study was limited to students of Grade VII from three public schools of Bardiya district. Hence the investigator cannot generalize the finding of the study to all grade and whole country. So, the similar study can be done region wise as well as nation wise in the finding of the study.

Recommendations for Educational Implication

- This study helps all students should in school for good mathematics achievement.
- This study helps all parents should be inspire their children create good home environment.
- This study helps to parents for involving their children mathematics learning.
- This study helps to Parents should be managed proper environment to their children for involving in mathematics learning, which helps enhance mathematics achievement.
- This research may help for textbook writer, the educational planner and the curriculum designer.
- This research could help the teachers, students and parents.

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Appendix-A

QUESTIONNAIRE FOR PARENTS

आदरणीय अभिभावकज्यू

उपरोक्त सम्वन्धमा मैले ‘‘अभिभावकको सहभागिता र गणित सिकाई’’ भन्ने शीर्षकमा शोधपत्र लेख्न गईरहेको हुदा गणित विषयसँग सम्बन्धित रहि तलको विवरण भरी सहयोग गरिदिनु हुन अनुरोध गर्दछु ।

अभिभावकको नाम : पेशा :

विद्यार्थीको नाम : कक्षा :

विद्यालयको नाम :

ठेगाना :

कुनै एक सही विकल्पमा ठिक (√) चिन्ह लगाईदिनुहोला ।

१) तपाई आफ्नो बच्चाको लागि घरमा कस्तो कोठाको व्यवस्था गरिदिनु भएको छ ?

क) राम्रो ख) सामान्य ग) खासै छैन्

२) तपाईले आफ्नो बच्चालाई दिनमा कति घण्टा टि.भी. हेर्न दिनुहुन्छ ?

क)१ घण्टा ख) २ घण्टा ग) ३ घण्टा वा बढि

३) तपाई आफ्नो बच्चाको पढाईको बारेमा बुझ्न विद्यालयमा वार्षिक कति पटक जानुहुन्छ ?

क) महिनाको २ पटक ख) वर्षको २ पटक ग) जादैन

४) तपाई विद्यालयको कार्यक्रममा सधै उपस्थिती हुनुहुन्छ ?

क) हुन्छु ख) कहिलेकाही ग) हुदैन

५) तपाईले घरमा आफ्नो बच्चाको पढाईमा शिक्षकको रुपमा प्रतिदिन कति समय दिनुहुन्छ?

क)१ घण्टा ख)२ घण्टा ग) ३ घण्टा वा बढी

६) तपाई आफ्नो बच्चाले गृहकार्य गर्‍यो वा गरेन भनी सधै चेक गर्नुहुन्छ ?

क)सधै गर्छु ख) कहिलेकाही गर्छु ग) गर्दिन

७) तपाई आफ्नो बच्चालाई पढाईमा कति मात्रामा उत्प्रेरण जगाएर प्रेरित गर्नुहुन्छ ?

क) हप्ताको २ पटक ख) महिनाको २ पटक ग) खासै गर्दिन्

८) तपाईले बच्चालाई उत्प्रेरणा दिन कस्तो किसिमको पुरस्कार दिनुहुन्छ ?

क) बच्चालाई मन पर्ने सामाग्री (खेलौना) ख) शैक्षिक सामाग्री(क्याल्कुलेटर, भिडियो टेप)

ग) केही गर्दिन

Appendix-B

Mathematics Achievement Test Paper

प्रिय भाइबहिनीहरु,

उपरोक्त सम्वन्धमा मैले ‘‘अभिभावकको सहभागिता र गणित सिकाइ’’ भन्ने शीर्षकमा शोधपत्र लेख्न गईरहेको हुँदा तलको विवरण गणित विषयसँग सम्बन्धित रहि उत्तर दिई सहयोग गरिदिनु हुन अनुरोध गर्दछु ।

कक्षा–७ समय :१ घण्टा

विषय–गणित पूर्णाङक : ३२

विद्यार्थीको नाम–

विद्यालयको नाम–

तल दिईएका प्रत्येक वस्तुगत प्रश्नका लागि चारवटा सम्भाव्य उत्तरहरु राम्रोसँग पढी उदाहरणमा दिए जस्तै सहि उत्तरमा ठिक (√) चिन्ह लगाऊ ।

उदाहरण: यदि A={1,2,3,4} र B={1,3,5} भए A UB ले तलको कुन समुहलाई जनाउँछ ?

क) {1,3} √ख) {1,2,3,4,5} ग) {1,2,3,4} घ) {1,3,5}

1.यदि A={2,4,6,8,10} भए n(A)कति हुन्छ ?

क) 10 ख) 2 ग) 5 घ) 4

2.P={a,b,c,d,e} र Q={a,e,i,o,u} भए P∩Q ले तलको कुन समुहलाई जनाउँछ?

क) {a,e} ख) {a,b,c,d,e} ग) {a,b,c,d,e,i,o,u} घ){a,e,i,o,u}

3. $26-3\{24\div(18\div6)\}$ लाई सरल गर्दा कति हुन्छ ?

क) 3 ख) 2 ग)4 घ) 5

4.18 र 24 को म.स. कति हुन्छ ?

क) 36 ख) 54 ग) 6 घ) 72

5. 625 को वर्गमूल कति हुन्छ ?

क) 50 ख) 15 ग) 5 घ) 25

6. -7 र 5 को बिचमा कतिवटा पूर्णाङक संख्या हुन्छन् ?

क)11 ख) 13 ग) 10 घ) 12

7. 41 कस्तो संख्या हो ?

क) घन संख्या ख) वर्ग संख्या ग) संयुक्त संख्या घ) रुढ संख्या

8. 9/10 X 5/3 को मान कति हुन्छ ?

क) 2/3 ख) 3/2 ग) 45/30 घ) 14/13

9. 0.5÷1000 को मान कति आउँछ ?

क) 0.0005 ख) 0.005 ग) 0.05 घ) 5

10. 75% लाई भिन्नमा बदल्दा कति हुन्छु ?

क) 4/3 ख) 5/4 ग) 3/4 घ) 5/3

11. 300 को 20% ले कति हुन्छ ?

क) 20 ख) 60 ग) 30 घ) 40

12. तिमीले एउटा क्याल्कुलेटर रु 625 मा किनेर साथीलाई रु 150 नाफा गरी बेच्यौ भने तिमीले उक्त क्याल्कुलेटर कतिमा बेच्यौ ?

क) 775 ख) 475 ग) 575 घ) 875

13. 20 वटा कापीको मूल्य रु 640 पर्छ भने एउटा कापीको मूल्य कति पर्छ होला ?

क) रू22 ख) रू32 ग) रू42 घ) रू12

14. तिम्रो बुबाले बैकमा रु 12,000 को 10% वार्षिक ब्याजदरमा 2 वर्षमा कति ब्याज पाउनुहुन्छ होला ?

क) रु1800 ख) रु 3600 ग) रू1200 घ) रू2400

15. 30 को घनसंख्या कति हुन्छ ?

क) 900 ख) 27000 ग) 2700 घ) 270

16. 7 लाई मिलान चिन्हमा कसरी लेखिन्छ ?

क) ~~/////~~ ख) /////// ग) ~~////~~ // घ) /// ~~///~~

17. यदि a=2, b=3 र c=4 छ भने 2a+5b-4c को मान कति हुन्छ ?

क)5 ख) 2 ग) 4 घ) 3

18. $4X^3$ x$2X^2$x4X को गुणानफल कति हन्छ ?

क) 32X ख) $32X^6$ ग) $32X^5$ घ) $10X^6$

19. यदि 4X+7=19 छ भने X को मान कति हुन्छ ?

क) 4 ख) 3 ग) 5 घ) 6

20.3X+5<20 को मान कति हुन्छ ?

क) X=5 ख) X>5 ग) X<5 घ) X<6

21. सबै भुजाहरु बराबर भएको त्रिभुजदाई के भनिन्छ ?

क) समवाहु त्रिभुज ख) समद्धिवाहु त्रिभुज ग) विषमवाहु त्रिभुज घ) सबै

22. 90^o लाई के कोण भनिन्छ ?

क) अधिककोण ख) सरलकोण ग) समकोण घ) न्यूनकोण

23. 90° भन्दा ठुलो र 180^o भन्दा सानो कोणलाई के कोण भनिन्छ ?

क) सरलकोण ख) अधिककोण ग) न्यूनकोण घ) समकोण

24. आईसक्रिम केसको उदाहरण हो ?

क) बेलना ख) घन ग) सोली घ) गोला

25. चतुर्भजका चारवटा कोणहरुको योगफल कति हुन्छ ?

क) 360° ख) 180° ग) 270° घ) 90°

26. P (4,9) मा Y–निर्देशाङक कुन हो ?

क) 4 ख) 9 ग) दुबै घ) कुनै होइन

27. लम्बाई 4 cm र चौडाई 5cm भएको आयतको परिमिति कति हुन्छ ?

क) 30 cm ख) 20 cm ग) 9 cm घ) 18 cm

28. एउटा भुजा 9 cm भएको वर्गको क्षेत्रफल कति हुन्छ ?

क) $81cm^2$ ख) 81cm ग) $36cm^2$ घ) 36cm

29· कुनै ज्यामितिय आकृतिलाई स्थानान्तरण गर्दा त्यसको प्रतिविम्ब कस्तो बन्छ ?

क) उस्तै उत्रै ख) उस्तै सानो ग) उस्तै ठुलो घ) सबै

30· कुनै वस्तुको आकृतिलाई symmetry गर्दा कस्तो गरिन्छ ?

क) बराबर तिन भाग ख) बराबर चार भाग ग) बराबर दुई भाग घ) कुनै गरिदैन्

31· कुनै कार्पेटमा बुट्टा भर्नुलाई के भनिन्छ ?

क) symmetry ख) Tessellation ग) चित्र घ) क र ख दुबै

32· एउटा कोण 90^{o} भएको त्रिभुजलाई कुन त्रिभुज भनिन्छ ?

क) समकोण त्रिभुज ख) न्यूनकोण त्रिभुज ग) अधिककोण त्रिभुज घ) सबै

Appendix-C

Answer Key for Achievement Test

Q. No.	Correct Answer	Q. No.	Correct Answer	Q. No.	Correct Answer	Q. No.	Correct Answer
1	ग	9	क	17	घ	25	क
2	क	10	ग	18	ख	26	ख
3	ख	11	ख	19	ख	27	घ
4	ग	12	क	20	ग	28	क
5	घ	13	ख	21	क	29	घ
6	क	14	घ	22	ग	30	ग
7	घ	15	ख	23	ख	31	ख
8	ख	16	ग	24	ग	32	क

Appendix-D

Item Analysis

I. Following table shows marks obtained by students for even question and odd question.

Students Roll No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Marks Obtained in an Odd Question	11	11	8	9	10	8	12	12	8	13	12	11	9	10	9	9	9	8	14	13	Total Obtain (X)=206
Marks Obtained in an Even Question	14	9	9	14	14	11	8	14	14	10	10	13	10	17	14	14	14	13	13	14	Total Obtain (Y)=249
Total Obtain Marks	25	20	17	23	24	19	20	26	22	23	22	24	19	27	23	23	23	21	27	27	

II. Split-half Reliability Calculation (Stanley's Procedure)

	Students	Odd	Even	Sum	Difference
Upper 27%	1	10	17	27 H	-7 L
	2	14	13	27 H	1 H
	3	13	14	27 H	-1
	4	12	14	26	-2
	5	11	14	25	-3 L
	6	11	13	24	-2
Lower 27%	7	8	13	21	-5 L
	8	11	9	20	2 H
	9	12	8	20	4 H
	10	8	11	19 L	-3
	11	9	10	19 L	-1
	12	8	9	17 L	-1

From the table, Sum of three highest 81 7

Sum of three lowest 55 -15

Difference $D_a = 26$ $D_b = 22$

Difference squared $D2_a = 676$ $D2_b = 484$

By formula, Reliability co-efficient (r_{tt}) $=1-\frac{D2_b}{D2_a} = 1-\frac{484}{676} = 0.284$

III. Item difficulty index and index of discrimination.

Q. No.	P-Value $= \frac{R}{N} \times 100$	Interpretation of P - Value	Index of discrimination(D) $= \frac{R_U - R_L}{0.5XN}$	Interpretation of D – Value
1	85%	Easy	0.5	Very good
2	85%	Easy	0.33	Good
3	80%	Easy	0.5	Very good
4	75%	Substantial	0.5	Very good
5	60%	General	0.33	Good
6	70%	Substantial	0.66	Very good
7	5%	Very difficult	0	Negligible
8	85%	Easy	0.33	Good
9	40%	General	0.33	Good
10	75%	Substantial	0.66	Very good
11	55%	General	0.33	Good
12	10%	Very difficult	0.16	Negligible
13	80%	Easy	0.5	Very good
14	58%	Easy	0.66	Very good
15	30%	Very difficult	0	Negligible
16	85%	Easy	0.5	Very good
17	20%	Very difficult	0	Negligible
18	100%	Very easy	0	Negligible
19	45%	General	0.5	Very good
20	40%	General	0.33	Good
21	40%	General	0.33	Good
22	30%	Very difficult	0	Negligible
23	70%	General	0.5	Very good
24	40%	General	0.5	Very good
25	40%	General	0.83	Very good
26	80%	Easy	0.33	Good
27	80%	Easy	0.33	Good
28	60%	General	0.33	Good
29	65%	Substantial	0.33	Good
30	95%	Very easy	-0.16	Negligible
31	60%	General	0.66	Very good
32	60%	General	0.33	Good
33	65%	Substantial	0.33	Good
34	40%	General	0.33	Good
35	40%	General	0.5	Very good
36	30%	Very difficult	0	Negligible
37	45%	General	0.5	Very good
38	50%	General	0.33	Good
39	40%	General	0.33	Good
40	55%	General	0.33	Good

Rejected Question: 7, 12, 15, 17, 18, 22, 30 and 36.

Note

Item Difficulty Level (P) = $\frac{\text{Number of Students who got the item right (R)}}{\text{Total number of students (N)}} \times 100\%$

- Discriminating index (D) = $\frac{R_U - R_L}{0.5XN}$ where ;

R_U = No. of students in the upper group who got the item right

R_L = No. of students in the lower group who got the item right

N = Total No. of students in the upper and lower group

P-Value Interpretation

P – Value in (%)	Interpretation
0 - 39	Very difficult
40 – 60	General
61 - 75	Substantial
76 – 90	Easy
91 - 100	Very easy

-Sources: Harper and Harper, 1990:363

D – Value Interpretation

D – Value	Interpretation	Comments
-1 - 0.19	Negligible	Need to remove the question
0.20 -0.29	General	Need to improve the question
0.30 -0.39	Good	Good question
0.40– 1.00	Very good	Very Good question

-Source : Eble and Frisbie , 1991:232

Appendix-E

Variable Define

Scoring Parents Involvement in Mathematics Learning on Setting Study Room

S.N.	Parents Involvement in mathematics learning on Setting Study Room	Involvement level
1	Good	1
2	General	2
3	Never	3

Scoring Parents Involvement in Mathematics Learning on Watching TV

S.N.	Parents Involvement in mathematics learning on Watching TV	Involvement level
1	1 hour	1
2	2 hours	2
3	3 hours or more	3

Scoring Parents Involvement in Mathematics Learning on Going School

S.N.	Parents Involvement in mathematics learning on School Going	
1	2 times per month	1
2	2 times per year	2
3	No going	3

Scoring Parents Involvement in Mathematics Learning on Involve School Programme

S.N.	Parents Involvement in mathematics learning on Involve School Programme	Involvement level
1	Always	1
2	Sometimes	2
3	Never	3

Scoring Parents Involvement in Mathematics Learning on Time Giving

S.N.	Parents Involvement in mathematics learning on Time Giving	Involvement level
1	1 hour	1
2	2 hours	2
3	3 hours or more	3

Scoring Parents Involvement in Mathematics Learning on Homework Checking

S.N.	Parents Involvement in mathematics learning on Homework Checking	Involvement level
1	Always	1
2	Sometimes	2
3	Never	3

Scoring Parents Involvement in Mathematics Learning on Motivator Quantity

S.N.	Parents Involvement in mathematics learning on Motivator Quantity	Involvement level
1	2 times per week	1
2	2 times per month	2
3	Never	3

Scoring Parents Involvement in Mathematics Learning on Giving Prize

S.N.	Parents Involvement in mathematics learning on Prize Giving	Involvement level
1	Children like material	1
2	Educational material	2
3	Never	3

Appendix-F

Correlation Coefficient Between Parental Involvement and Mathematics Achievement

Appendix-F [I]

Correlation Coefficient Between Mean of Involvement Level on Setting Study Room and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.53	15.06	0.953
0.37	14.71	
0.09	9.71	

Appendix-F [II]

Correlation Coefficient Between Mean of Involvement Level on Watching TV and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.53	15.26	0.354
0.27	14.20	
0.20	12.53	

Appendix-F [III]

Correlation Coefficient Between Mean of Involvement Level on Going School and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.53	14.66	0.409
0.35	14.60	
0.12	12.82	

Appendix-F [IV]

Correlation Coefficient Between Mean of Involvement Level on Involve School Programme and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.45	15.15	0.986
0.43	14.48	
0.13	12.26	

Appendix-F [V]

Correlation Coefficient Between Mean of Involvement Level on Time giving and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.34	13.44	0.960
0.43	14.98	
0.23	15.5	

Appendix-F [VI]

Correlation Coefficient Between Mean of Involvement Level on Homework Checking and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.53	15.2	0.440
0.35	14.25	
0.12	11.56	

Appendix-F [VII]

Correlation Coefficient Between Mean of Involvement Level on Motivator Quantity and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.53	15.54	0.870
0.38	13.65	
0.09	11.62	

Appendix-F [VIII]

Correlation Coefficient Between Mean of Involvement Level on giving Prize and Mathematical Achievement

Mean of Involvement level	Mean of mathematics achievement	Correlation Coefficient
0.49	14.08	0.470
0.41	15.16	
0.10	13.2	

Appendix-G

Correlation Between Mathematical Achievement and Parents Involvement Related Variables

Variables	Correlation Coefficient
Home Environment	0.654
Parent-School Communication	0.698
Educational Activities at Home	0.700
Motivator at Home	0.670

Appendix-H

1. Item Difficulty Level (P) = $\frac{R}{N} \times 100\%$

2. Discriminating index (D) = $\frac{R_U - R_L}{0.5XN}$ where;

$$R_U = No.of\ students\ in\ the\ upper\ group\ who\ got\ the\ item\ right$$

$$R_L = No.of\ students\ in\ the\ lower\ group\ who\ got\ the\ item\ right$$

$$N = Total\ No.of\ students\ in\ the\ upper\ and\ lower\ group$$

3. Mean $\bar{X} = \frac{\sum X}{N}$

4. Standard Deviation $(S.D.) = \sqrt{\frac{\sum(X - \bar{X})2}{N}}$

5. Correlation of Coefficient (r_{xy}) = $\frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2}\sqrt{N\sum Y^2 - (\sum Y)^2}}$