

LEARNING DIFFICULTIES OF GRADE VIII STUDENTS IN ARITHMETIC

**A
THESIS
BY
HEM RAJ RAI**

**FOR THE PARTIAL FULFILLMENT OF REQUIREMENTS
FOR THE DEGREE OF MASTER'S IN
MATHEMATICS EDUCATION**

**SUBMITTED TO
DEPARTMENT OF MATHEMATICS EDUCATION
UNIVERSITY CAMPUS
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This thesis submitted by Mr. Hem Raj Rai, entitled on "Learning Difficulties of Grade VIII Students in Arithmetic" has been approved for the partial fulfillment of the requirement of Master Degree in Mathematics education.

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This is to certify that Mr. Hem Raj Rai has completed his M.Ed. Thesis entitled "Learning Difficulties of Grade VIII Students in Arithmetic" under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Kathmandu, Nepal. I recommend and forward his thesis to the Department of Mathematics Education to organize final viva-voice.

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Dedication

This thesis is dedicated to my father Mr. Nanda Lal Rai and mother Mrs. Rupa Maya Rai whose help, support and encouragement has increased my desire to work and inspired me to complete this research.

Declaration

I declare that this thesis is my own work which contains no materials from other accepted thesis of degree awards which have been already done in any institutions. Similarly, I declare that this thesis has not been submitted for any degree.

Date: April 8, 2022

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Hem Raj Rai

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Date: April 8, 2022

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Hem Raj Rai

Abstract

The main aim of this study is to explore the learning difficulties of grade VIII students in Arithmetic. The main objective of this study was to find the difficulties area in learning arithmetic of students and to explore the causes of difficulties in learning arithmetic of students. The study is case study design and Shree MA.VI. Bijayabasti school of Thori Rural Municipality-4, Parsa were selected by convenient sampling and purposive sampling procedure to select two talented, two medium and two weak students and equal gender of the student select at grade VII. This study was based on qualitative data directly collected from the field. Observation form, interview schedule for selected students, mathematics teacher, head teacher and parents were tools used for data collection. Triangulation and descriptive analysis methods were used for data and information analysis. Analysis and explained on the basis of qualitative data. The finding of the study showed that learning difficulties of grade VIII students included processing skill difficulties, comprehension difficulties, cognitive difficulties and difficulties for the time management at home are among the main learning difficulties. To solve the causes of learning difficulties of grade VIII students in arithmetic students need to be diligent, hardworking, willing to study. Their parents should maintain their good environment at home. There should be interaction between student, parents and teacher. Mathematics teachers should be focused on student-centered learning. The school should provide the necessary physical facilities for the school and professional development training of teacher.

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Chapter I

INTRODUCTION

Background of the Study

Mathematics is the science and study of quantity, structure, space and change. A mathematician, like a painter or poet, is a maker of patterns. Mathematics accelerates the social, economic and technological growth of a nation. The world of today demands more and more mathematical knowledge on the part of human life. So, it is necessary to prepare the child with a strong base of mathematical knowledge. Mathematics is the science of measurement quantity and magnitude. According to New English Dictionary, "*Mathematics in a strict sense- is the abstract science which investigates deductively. The conclusions implicit in the elementary conception of spatial and numerical relations*". We can conclude that mathematics is a systematized, organized and exact branch of science. Also, mathematics is the science of quantity, measurement and spatial relations. Mathematics the abstract science of number, quantity and space, either as abstract concept or as applied to other disciplines such as physics and engineering and the study of the measurement relationship and the properties, number and symbols of quantities and sets are used (Pangali,2012).

Learning difficulties are the problem that affects the brain of children with average ability and low ability. There are many children who struggles with mathematics which affect their life and make it difficult for them to move forward smoothly.(Lounden, 2000) stated that the models can help students to represent their calculation Strategies and use it as a tool for thinking. According to eves (1990), "*Mathematics is the door and key to science, the carelessness of the word mathematics hurts all knowledge.*" We cannot do our daily work without arithmetic.

The earliest stage of mathematics was arithmetic, later it was branched into geometry, algebra, analysis and other fields. The arithmetic concepts of class VIII are relevant to solve the problems of our daily life which helps in forming necessary perceptions in children. Like, general interest, profit and loss, time and work, percentage, unitary method etc. The basic arithmetic functions are addition, multiplication, subtraction and division. Symbolic, pre-ability to reduce, multiply, add and divide numbers are key elements of mathematics curriculum in basic school (National Mathematics Advisory Panel, 2008). Arithmetic provides them with the mathematical knowledge which helps them to solve problem in their daily life.

Arithmetic is the most essential and important part of the school curriculum of mathematics, the specific role of this field in arithmetic has been studied in great detail. Arithmetic events affect the brain as well as develop counting skills, as it allows us to understand how developing brains change when children acquire culturally transferred skill, such as reading, writing or arithmetic (Kandel, 2006). A persistent lack of learning arithmetic leads to frustration, a specific neuro-developmental learning disorder, characterized by life-long difficulties in computation that is not only explained by intellectual, impaired mental or neurological disorders (American Psychiatric Association, 2013). Cognitive development research has explored the acquisition of arithmetic and this development involves changes in the mix of arithmetic strategies used to calculate the answer to a particular problem (Pauzel, 2012), the knowledge of arithmetic has changed the art of living.

Arithmetic is a branch of mathematics that consists of the study of numbers, especially concerning to the properties of the traditional operations like addition, subtraction, Multiplication, division, exponentiation (Pant, 2006). Mathematical knowledge, reasoning and skills are no less important than reading

ability. Mathematics needs to be taught in the schools to strengthen the child for developing their elementary concepts as it is a tool for management and industries (Poudel, 2010). Arithmetic is a basic human thing. It is very important for our daily life. Home arithmetic, percentage, simple and compound interest, profit and loss etc. are the essential tools.

Although, mathematics is very important and useful subject for every people, most of the students are not interest to study the mathematics. This is an issue, most of the student in grade VIII have a problem in learning arithmetic mathematics in present days.

Statement of the Problems

The study mainly focuses on learning difficulties of grade VIII students in Arithmetic. Students face difficulties in learning geometry, trigonometry, algebra, statistics and arithmetic (Pangali, 2012). Among these, most of the student take arithmetic as a very difficult part. Arithmetic knowledge is generally used in our daily life activities; however, the students can't learn arithmetic easily. So, I wanted to study learning difficulties of grade VIII students in arithmetic. Students do not use arithmetic in daily life. Students are not interested in solving arithmetic problem which makes arithmetic difficult for them. The result in the arithmetic of the school is not good and the course is not completed on time (Thapa, 2016). Which results in confusion and doubt among students. Many students take arithmetic as a difficult unit and basic level students feel more difficulty in the solving arithmetic. I had tried to find out the learning difficulties of grade VIII students in Arithmetic.

-) What sorts of difficulties are facing by the students to solve the problem in learning arithmetic?
-) How do students experience the difficulties in learning arithmetic?

-) What are the reasons behind the difficulties?

Objectives of the Study

The most important aspect of research is objectives. Objectives would be establish the scope, depth and direction that the research would be even tally take effective research of objectives would give the research clarity, indicate what the objectives can be achieved, indicate how the objectives would be achieved (Best& Khan J., 1999). The main objectives of this study were following.

-) To find the difficulties area in learning arithmetic of students.
-) To explore the causes of difficulties in learning arithmetic of students.

Rational of the Study

This study would be learning difficulties of grade VIII students in arithmetic. Learning arithmetic would help in daily practice which would play an important role in daily life but most of the students would feel difficult in learning arithmetic (Louden, 2000). Students do not have a good grasp of arithmetic, they would struggle to solve arithmetic problems (pangali, 2012). I always see this type of problem in government school. This study is significant for the reason that it would help to identify the factor that affects the learning process. The signification of the study would be stated below.

-) This study would improve the mathematics achievement of students.
-) This study would help the further study in problems of arithmetic learning of grade VIII students.
-) This study would help mathematics teacher at class while teaching arithmetic in mathematics.
-) This study would help students identify problem areas in arithmetic.
-) This study would help for school, book writers, parents and other.

Delimitation of the Study

The following were the delimitations of the study.

-) This study was limited on one school of Thori Rural Municipality-4, Parsa.
-) This study was limited to only grade VIII students in shree MA.Vi. Bijayabasti.
-) This study was generated through the observation form and interview guidelines.

Definition of Related Terms

Arithmetic. The branch of mathematics concerned with numerical calculations, such as addition, subtraction, multiplication and division.

Cognitive difficulties. Cognitive difficulties generally present as a state of confusion, loss of memory, trouble understanding or making sense, places of things or changes to mood.

Comprehension Difficulties. The difficulties related to the act of understanding the meaning of the problem. In this study comprehension on ability to understand to get the meaning of problem own words and ability to understand the mathematical term and their relation that used in problem,

Difficulties. In this study difficulties means processing skill difficulties, cognitive difficulties, comprehension difficulties and difficulties for the time management at home of students.

Difficulties for the time management at home. Difficulties for the time management at home would be how much time students spend on reading and writing at home, plus student's behavior and learning environment provided by their families.

Learning. A more or less permanent changes in behavior, which occurs as a result of instruction and practice.

Parents.Parents means father, mother, brother, sister and other related person of students.

Processing skill difficulties.Processing skill difficulties may include mathematical and systematic operation and can be a measure of an individual's critical skills. The solving processing refers to the ability to do correct the mathematical operation and choosing from appropriate answer mathematical operation.

Students.In This study students who is studying at grade VIII of the school of Shree MA.VI.Bijayabasti.

Teacher. In this study teacher means that who is teaching mathematics at grade VIII in that school.

Chapter - II

REVIEW OF THE RELATED LITERATURE

Review of related literature is an essential part of all studies. It helps to provide accurate data's for the study as well as to broaden the scope of the study by exploring the main objectives of the literary review. It helps to broaden the concept regarding the research topic. So, this chapter present the empirical and theoretical as well as conceptual framework.

Empirical Literature

The review of empirical literature concerns the systematic concise of scientific researches. A review of empirical literature adds to the study by providing a better knowledge of subject matter. Also review of the related literature is the source of the further study of the research and provide the better ideas of the surveying in the whole research. I have not found the exactly literatures follow:

Pangali(2012) conducted a study entitled "Difficulties in learning arithmetic content at grade IX students." The main objective of this study to identify the difficulties and its causes in learning arithmetic in grade IX students. This is a case study base on qualitative nature data directly collection from field and it is qualitative research as well as descriptive. The researcher selects one school from Surkhet district by purposive sampling, which is Shree Nepal Rastriya Higher Secondary school Koraikhola, Surkhet. Five students are selected as the respondent for the interview. The research is taken face to face interview with students and mathematics teacher and head teacher for identifying the learning difficulties. Difficulties in learning arithmetic are due to inability to use it in practice, depending on the student's wishes, desires, as well as the physical condition of the school, family, social environment.

Luitel (2005), carried out the study entitled on "Difficulty area in arithmetic for grade VIII deaf student" with the objectives to identify areas of difficult in arithmetic of grade VIII deaf students and to locate these difficult areas of arithmetic as to relate them to their course. The sample of this study was only one school of Kathmandu of only four students who have just passed the class VIII. The main instruments of this study were observation, written test and interview. This study concluded that have to develop clear conception on verbal problems to solve the difficulties while learning arithmetic.

Poudyal (2008), conducted a research on the title "Error analysis of grade VIII students on solving word problem in fraction." The main objectives to identify the difficulties in learning mathematic of stone quarries students at school and to find out the cause of difficulties in learning mathematics of stone- Quarries students at school level. The sample of this study was four public schools in Kathmandu district at near to Chovar V.D.C. of only five stone Quarries children (Students) at lower secondary level. Interview and observation were the main tools of this study. The study found that family environment, home and society created difficulties in learning mathematics. Students from low income families did not have enough time to learn mathematics.

Pant (2006), in his doctoral dissertation entitled "A study of learning difficulties in mathematics among grade V students in the Kathmandu valley of Nepal" did a study in the government and private schools of Kathmandu valley. He selected the students, teacher and parents of the selected schools as his respondents. He was used descriptive case study in nature followed by both quantitative and qualitative approach. He was used questionnaire, observation and in-depth interview tools for collect data. From the study, the researcher has found that physical factors of school,

factors related to teaching, personal factor of students, home related to factor are main factors influencing mathematics learning.

Harish (2001), did a study on article performance across different areas of mathematical cognition in children without learning difficulties performance of 2010. Second grader in the different area of mathematical cognitive was examined children were divided into four achievement group. The learning of children with poor mathematical ability is also weak in other subject and the learning of children with high mathematical ability is also good in other subjects. Due to the mathematical difficulties, children are not able to participate in many fields and they also faced difficulties in reading and writing.

Poudel (2009), Carried out the study entitle "A study on the problems faced by graded VIII students in mathematics." He was taken eight schools for his study in which three schools were selected form urban area and five were selected from rural area. From each school six student were equally selected. The study followed the descriptive survey method. The questionnaire and class observation from were the main tools for data collection. In this study, the researcher has prepared the information obtained using the questionnaire in his notes for which the researcher had included mathematic questions. In Sarlahi district, the problem faced by them in geometry. Researcher included teacher, students and parents in the study. The study concluded that there were problems such as lack of skilled teachers, uneducated parents and students having to do a lot of work at home. There was a problem with the geometry.

KC(2009),carriedouttheresearchentitled,"Astudyofproblemsfacedbystudentsin compulsorymathematicsatsecondarylevel."Thenatureofthisstudywas quantitativeaswell as

qualitative. This study followed survey design. He selected six schools from urban area of Lamjung district randomly in which three were private and three were government schools. From each school, one mathematics teacher and three mathematics students of grade X were selected as a sample for the study. For the data collection, a set of class observation form and interview schedule were used. The obtained data was analyzed and interpreted with the help of mean weightage. In this study, researcher found that learning geometry at secondary level is an important problem due to lack of interest of students in geometry. In this study, the researcher concluded that lack of physical facilities in school, lack of adequate budget in schools, low learning achievement, lack of encouragement and counseling for students.

Bhatt(2014), conducted a research on "Student's difficulties in learning Geometry." The objective of this study was to determine Van Heile's level of geometry thinking of grade VIII students in order to identify the causes of difficulties in learning geometry. The study was qualitative and quantitative in nature. In this study the researcher selected two secondary schools as the sample purposively from Baitadi district. Six students from each school were selected for interview on the basis of the weak written response. He had analyzed and interpreted the data. After various studies, Van Heile's collected information about problems faced by students, problem related to the learning process and problems encountered in teaching learning. After the study, the researcher concluded that geometry was an old way of teaching that geometry was difficult for many students, negligence of teacher and that educational materials were not used.

Research Gap

The above empirical review documents related to mathematics education had discussed the problem of learning difficulties. Some studies had been focused to

identify the difficulties and cause of difficulties in learning mathematics but research study on the learning difficulties of grade VIII student in Arithmetic were not found. The variable of this study were processing skill difficulties, cognitive difficulties, comprehension difficulties and difficulties for the time management at home which is differ from the other research. I had chosen this area for the study.

Theoretical Literature

Theoretical literature is an important work. Theoretical literature helps to guide research studies in the right direction. Theoretical literature explores the knowledge of theory related study. The main purpose of review of related literature is to find out what works will be done in the area of the research problems under study and will be done in the field of the research study being under taken.

Vygotsky's Theory of Learning

The theme of Vygotsky's works is that a learner's cognitive development takes place in a social context. Students are directly and indirectly socially bound. Students have relationships with people in the community. Throughout their lives learners are surrounded by the parents, sibling, relative's friends, teachers and fellow students. They communicated with one another and stimulate, parents and teacher in particular are more knowledgeable and skilled than learner learners acquire knowledge. Their cultural knowledge includes shared beliefs, students learn from their family, society.

According to Vygotsky, cognitive development is related to the physical, symbolic, cognitive process of children. Cognitive development has shown that children's intellectual development takes place in different ways according to which learning takes place. It is a process of learning to operate with physical, symbolic and cognitive process. The difference between a child's individual and that child's performance when guided by experts in metaphorically described by Vygotsky's zone

of proximal Development (ZPD). In this ZPD a learner, although not capable of solving problems independently, can do so with help of other. The ZPD was described by Vygotsky (1978) if the teachers provide guidance, counseling and support to the children with the same level of mental development, the level of learning achievement of such children is seen to be good. Because of that, mental development of children is not equally dynamic. Children's learning outcomes will be influenced by family environment, school environment, age and gender etc.

According to Vygotsky (1978), solving mathematical problem a collaboration would be easy and helpful to solve math problem. Mathematics is a fun subject that focuses on the mental development of children by developing logical skill. Vygotsky consider that teacher need to provide special assistance to increase the ability of children with low ability in mathematics only then the learning achievement level of low level children would go up. Also, even if there is good relationship between friends, it would be help to solve mathematical problems together. A contemporary educational application of Vygotsky's theory teacher, students, use of teaching methods to raise the level of learning achievement of children. In this method, teachers and students collaborate in learning and practicing four key skills. Summarizing, questioning, clarifying and predicting.

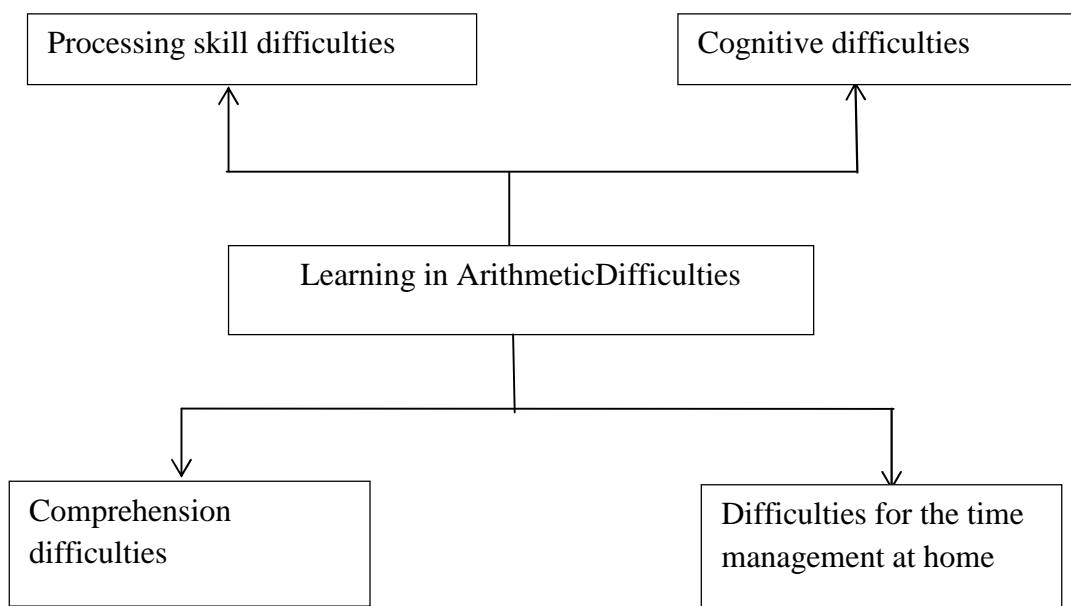
Also, family conversations and language have made learning arithmetic difficult. Student have their own home language which makes the language of the school different and makes learning difficult. Difficulties in learning student's interests, desire, aspirations, age, gender, religion. There is wide range of characteristics which may impact on learning in a variety of ways.

Conceptual Framework

Conceptual framework as the way ideas are organized to achieve a research project's purpose. The conceptual framework is generally developed based on a literature review of existing studies and theories about the topic. The conceptual framework helps to guide the study in right direction. In writing this thesis researcher following framework in difficulties of students in arithmetic will be draw from the above.

To fulfill the objectives of this study, researcher mentions the following model.

Figure 1: Conceptual framework of the study



Source: (Pangali,2012)

This conceptual frame work describe about learning difficulties of grade VIII students in Arithmetic. Processing skill difficulties, Cognitive difficulties, comprehension difficulties and difficulties for the time management at home are main component of this study. These all components play vital role in learning Arithmetic.

Processing skill difficulties. A difficult classified as processing skill difficulty when a student is able to identify the correct operation but didn't know the procedure to carry out these operation correctly. Processing is more important for problem solving skills. If students are able to correct mathematical operation, it was be a no processing difficulties. If students are able to carry out correct mathematical operation. There was be considered as processing skill difficulties.

Comprehension difficulties. Comprehension difficulties would be classified as comprehension difficulties if the student is confusion about the meaning of word orsentences and lack of concentration during the reading. Comprehension difficulties means distinguishing significant information from minor details. Comprehension is the ability to understand and get meaning from spoken and written language skill. The successful word problem appears to employ such a problem solve strategy drawing on their skills and reading comprehension skills appear to be more in overcoming such texted complexities that being able to use one's mental representation skills.

Cognitive difficulties. Cognitive difficulties generally present as a state of confusion, loss of memory, trouble understanding or making sense, places of things or changes to mood.

Difficulties for the time management at home. Difficulties for the time management at home would be how much time students spend on reading and writing at home, plus student's behavior and learning environment provided by their families.

Chapter III

METHODS AND PROCEDURES

Research methods and procedures is important part of the research. Research methods and procedures help to fulfill the purpose of the study. Research methods and procedures provide guidance and support to achieve a specific goal. Research methods and procedures is a plan and design used to systematically solve the research problem. In this chapter the researcher describes the design of the study, population of the study, sample and sampling of the study.

Design of the Study

Research design is an important, systematic, logical plan that provides the necessary guidance to accomplish the objectives. Research design is the plan, structure and strategies of investigation conceived so to obtain answer to research questions and to control variance. This study was based on qualitative data especially concerned. The research design was case study in which theories and propositions were taken from the overall picture, logic and reasoning (Pangali, 2012). A case study is an in-depth study of one person, group or event.

Case study is bounded by time and activity and the researcher collect detailed information using a variety of data procedures over a sustained period of time. In the case study, data are analyzed through description of the case and themes of the case as well as cross-case themes (Acharya, 2017). I had tried to explore the learning difficulties of grade VIII student in Arithmetic.

Respondents for the Study

This study was conducted on Shree MA.VI. Bijayabasti School of Thori Rural Municipality, Parsa. I used convenient sampling to select this school and purposive sampling method to select two talented, two medium and two weak students in mathematics subject because the learning difficulties of the overall students can be determined on the basis of the selected students. The researcher selected equal number of boys and girls from the students of grade VIII. The sample of this study was six students, one mathematics teacher and six parents of the selected students of this school in grade VIII.

Data Collection Tools and Instruments

To collect primary data for this study, observation form and interview schedule was used as tools of this study. The above tools are used in the following ways.

Observation Form. Observation is a way to gather data by watching people, events or nothing changed physical characteristics in their natural setting. Observation concerns the recording of what is being observed. It is the most useful tool for data collection in any kind of research. At first, I met head teacher and take permission to observe the arithmetic class of grade VIII students. I observed that class for one month at Shree MA.VI. Bijayabasti of Thori rural municipality-4, Parsa. I had noted the qualitative data from the observation form. The main theme of observation was to find the processing skill difficulties, comprehension difficulties, cognitive difficulties and difficulties for the time management at home of students in learning arithmetic.

Interview Schedule. Face to face interview was conducted for selected student for grade VIII. In this research the researcher had used interview schedule with respondents. The researcher had taken the interview on the basis of the objectives i.e. to find out the difficulties are in learning arithmetic of students and to explore the

causes of difficulties in learning arithmetic of students. The interview was designed on the basis of different types of difficulties as: processing skill difficulties, comprehension difficulty, cognitive difficulty and difficulties for the time management at home.

Interview was taken with the selected six students from grade VIII. The researcher had taken interview with a subject teacher, head teacher and six parents of the selected students. This was helpful to the researcher to draw the actual information about difficulties of arithmetic.

Data Collection Procedure

The aim of the study was to investigate the learning difficulties of grade VIII student in arithmetic. Therefore, collect the qualitative data from the observation form and interview guidelines with the help of supervisor is regarded as the main tools of the study. At first, researcher had constructed the observation form to collect necessary qualitative information. The researcher used peer observation form from the Faculty of Education Tribhuvan University, Kirtipur. In this purpose researcher had visited the selected school. For collecting information through the interview was based upon their processing skill difficulties, comprehension difficulties, cognitive difficulties and difficulties for the time management at home. The researcher had taken interview with six students, one subject teacher and one head teacher at the school and six parents of the selected students at their house. On the basis of the observation form the researcher had observed arithmetic class of students at grade VIII.

Data Analysis Procedure

Data interpretation is the systematic process of presenting and showing its effect. The analysis of data is an important thing while we are preparing a research report. In this study primary data are presented and analyzed. The collected data from primary source by using interview and observation form, analyzed and interpreted by

using descriptive method. In this research, observation forms and interview schedule were used in class VIII for the purpose of finding out the difficulties of arithmetic. At the beginning, the answers given by the students were collected and interview with the selected students, math teacher, head teacher and parents of the selected students. The difficulties made by students were classified as process skill difficulties, comprehension difficulties, cognitive difficulties and difficulties for the time management at home. At last, main themes were developed and analyzed under the guidance of the conceptual framework and review findings.

Chapter IV

ANALYSIS AND INTERPRETATION OF DATA

This study was case study related to the learning difficulties of grade VIII students in arithmetic. This study was based on single School. Convenient sampling and purposive sampling method was used where two talented, two medium and two weak students in mathematics subject with equal gender of the student grade VIII were selected. The main objectives of this study is to find the difficulties area in learning arithmetic of students and to explore the causes of difficulties in learning arithmetic of students. The main tools used for this study were observation form and Interview schedule. The main respondents of this study were whole class of grade VIII students (that was six students were taken for interview). This study was conducted on one mathematics teacher and six parents of the selected students of selected school of grade VIII.

The data obtained from the field were presented in terms of following difficulties, process skill difficulties, comprehension difficulties, cognitive difficulties and difficulties for the time management at home. Researcher took interview with students, mathematics teacher, head teacher and parents and also collected data through observation form. The data were analyzed and interpreted with reference to information taken from math teacher's interview, student's interview, head teacher's interview, parents interview and classroom observation.

The descriptive method is mainly used in this research is to study analyzed and interpretation of the learning difficulties of grade VIII students in arithmetic. Analysis of the study had carried out under the following major heading corresponding to objective of the study.

) To find the difficulties area in learning arithmetic of students.

) To explore the causes of difficulties in learning arithmetic of students.

The collected data and information have been analyze and discussed under the following heading

Processing Skill Difficulties

Processing skill difficulties means how students handle the mathematical problem while solving it. Most of the time, these students may face difficulties in knowing or processing a lot of low level skills. Processing skill difficulties are what students make mistakes in processing mathematical problem solving. The difficulties in the processing skill are related to the carry out operation for the mathematics problem solving.

A processing skill difficulties when students were given arithmetic problems, the students made mistakes in the processing of solving arithmetic problems. Most of the students did not know the processing of calculation. The students forget the problem solving processing and many students made mistakes in the small processing. Students could not use assumptions, facts and formulas in processing skills difficulties and could not addition, subtraction, multiplication and division properly as per need. Student without good processing skill might show a difficulty in listening, reading, writing and understanding. A processing skill difficulties is defined as the students use an appropriate method to solve the problem correctly but students were unable to proceed appropriate processing in problem solving.

Figure 2 shows, there is a processing skill difficulties while solving problem. In this problem the student

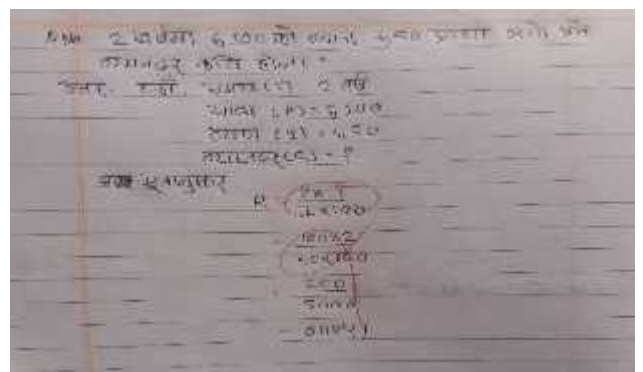


Figure 2

understood the question well and able to transform it mathematically but she had a problem in the solving processing. In simple interest students were required to find out the relation by using formula. $I = PTR/100$. The question was given with principle, interest and time and asked to find rate. The student seems to have used the wrong formula in the give problem. This type of difficulties can be considered as processing skill difficulties. So, we could say students had many process skill difficulties in arithmetic.

"Our math teacher teaches course fast. Problem solving process did not explain well." (Student's A views)

The above students view shows that mathematics teacher was not serious about teaching mathematics. The math teacher had not taught the student how to solve the problem faced by the students to understand the processing. Teacher thought them how to finish the mathematic course fast. It has led to bad impact in learning processing skill.

"Our math teacher did not do arithmetic insystematic able and did not give knowledge about the use of symbols and calculation." (Student's B views)

The above student's view shows that mathematics teacher had not taught arithmetic properly and teacher didnot explain the symbols which made it difficult for the student to calculate and use the symbols in the processing skill.

Moreover, for justification of student's processing skill difficulties, I had taken interview to the related student.

I: what is the question asking you to do?

S: It is asking..... $R = P \times T / I \times 100$.

I: All right. How did you work that out?

S: First, I use the formula.

I: How do you solve the problem?

S: $100 \times 2 / 50 \times 100$

I: Show me, how can you use the formula to find out the answer of the question?

S: $200 / 500$

I: Now write down your answer to the question.

S: $R = 0.004$ Percentage

I: As you did in your paper $R = I \times 100 / P \times T$. Which is wrong.

S: sorry sir, I know but forget.

Figure 3 shows, there is a processing skill difficulties while solving problem. The problem is that student is capable the processing good concepts and formula but not paying attention to the sign calculation led to the wrong calculation. In simple interest students were required to find

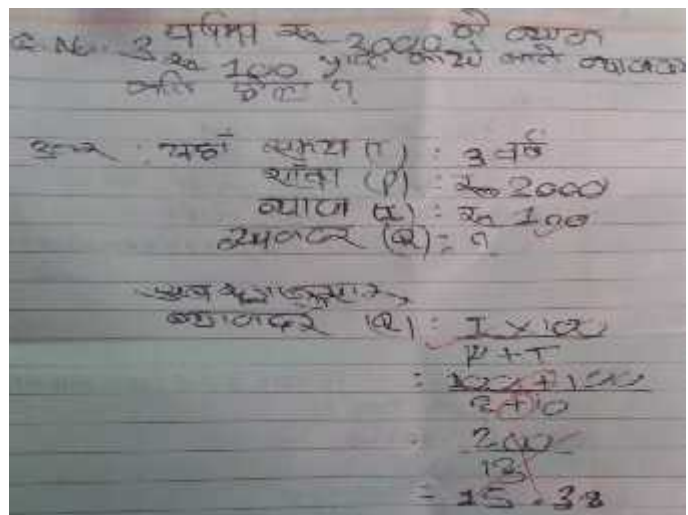


Figure 3

$P \times T$. the question was given with principal, interest and time and asked to find out rate. The student has made a mistake by using the add sign instead of the multiplication sign. This type of difficulties can be considered as processing skill difficulties.

“There is a lack of prior knowledge in mathematics and we don’t know much about symbol.” (Student’s views)

The above view of the student shows that the lack of prior knowledge of mathematics and teacher ignorance regarding the same affected the student's processing skill.

Figure 4 shows, there is a processing skill difficulties while solving problem. In this given problem, it was seen that the student did not have a good understanding about the processing skill that is why the processing of calculation is went wrong. This type of difficult problem is processing skill difficulties.

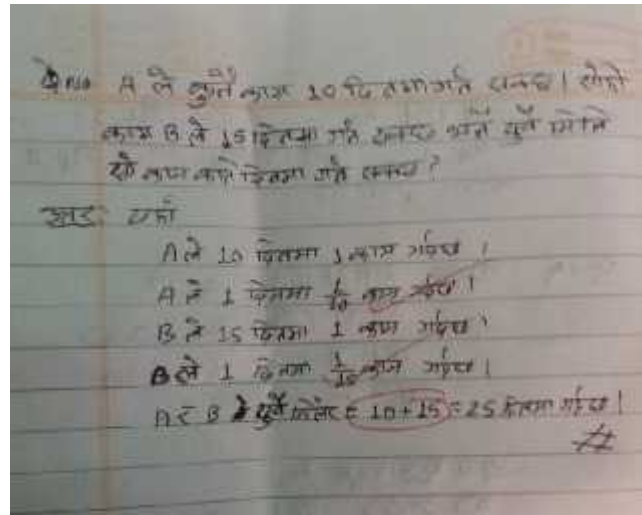


Figure 4

Form above interview the research came to the conclusion that student had problem in processing skill difficulties. Again, I took face to face interview with the mathematics teacher related this problem. I asked "What are the causes of processing skill difficulties?" He replied "*Today's students do not pay attention to mathematics, do not show desire to study mathematics, do not practice mathematics at home, there is a lack of prior mathematical knowledge of students and also sometime even get confused in simple interest formula*".

The above teacher view shows lack of knowledge in the student to which it is understood that the student has less interest or desire towards mathematics. Therefore, students do not work hard in mathematics difficulty in processing skill. According to the teacher if the only student wants to improve then student's processing skill were improved.

Comprehension Difficulties

Comprehension difficulties would be classified as comprehension difficulty if the students get confused with the meaning of word or sentences and lack of concentration during the reading. Comprehension difficulties were distinguishing significant information from minor details. Students understand the wording of the question but do not understand the meaning of the question. Comprehension is the ability to understand and get meaning from spoken and written language skill.

Comprehension is the ability to understand and get the meaning of problem. Most of the student can read the words, numbers and sentences given in the arithmetic question together but the students feel difficult to understand the word problem of the given arithmetic. Student need to have mental development and maturity to understand the problem of arithmetic and that would develop the student's comprehension skill. If students do not understand the problem of arithmetic, it also affects the process of solving the problems of arithmetic. Comprehension difficulties are related with the students inability to solve and get its idea that the question process. There are difficulties in understanding the classification if the students cannot comprehend.

Figure 5 shows, there is a comprehension difficulties while solving problem. In this given problem, it was seen that the students did not have a good understanding about direct and indirect method. In the given problem, the student has termed indirect method as direct method

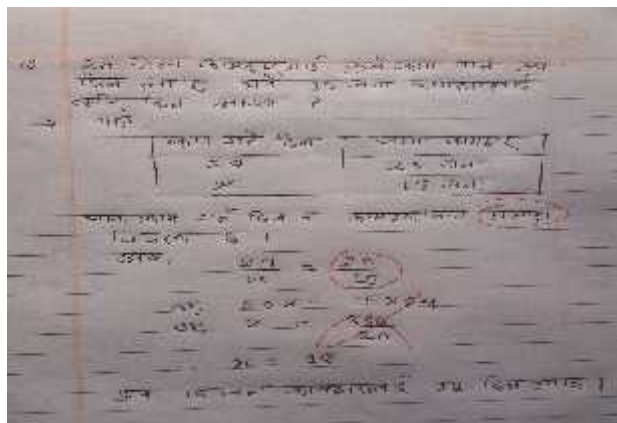


Figure 5

and the method of calculation is also wrong. The student tried to solve the problem without understanding the meaning of problem. She did not understand the overall meaning of the problem. This type of problem is Comprehension difficulty.

“I cannot do anything in mathematics. I don’t understand anything and I have any idea to solve mathematical problems, so I do not like to sit in the mathematics classroom.” (Student’s view)

From the above view, I concluded that students are facing the comprehension difficulties. They could not do anything in mathematics even they could not start how to solve the problem. I found that students are very weak in mathematics. They are not active in learning process in mathematics.

Moreover, for justification of student's comprehension difficulties, I had taken interview to the related student. After the student had read the question correctly to interviewer, the following dialogue took place:

I: what is the question asking you to do?

S: It is asking..... direct and indirect method.

I: All right. How did you work that out?

S: First, direct method.

I: How do you solve the problem?

S: $24/X = 20/15$

I: Show me, how do you find the answer of the question?

S: $X \times 20 = 24 \times 15$

I: Now write down your answer to the question.

S: $X = 18$

I: As you did in your paper $x/24 = 20/15$. Which is wrong.

S: sorry sir, I know but forget.

Figure 6 shows, there is a comprehension difficulties while solving problem.

The question was given with principal, interest and time to find rate. In simple interest student were required to

find the relation by using

formula $R = I \times 100 / P \times T$.

Student has made a mistake

in using the formula $I =$

$P \times T / 100$ so the calculation

was also wrong. Student did

the calculation without

Q.No 4 वर्षों में 200 के व्याज में 200 प्राप्त होना है
द्वारा दर कितना होगा ?
अज्ञ. $I = \frac{P \times T \times R}{100}$ ✓
 $= \frac{200 \times 4 \times 200}{100}$
 $= 1600$ ❌

Figure 6

understanding the question. This type of problem is comprehension difficulties. In this

problem the student was able to read the question correctly but would not understand

the overall meaning of problem. After this, researcher interviewed to the math

teacher, "why do students have Comprehension difficulties?" He told "*Many students*

can read the question but cannot solve the problem by understanding the question.

Students had not develop the skill to solve problem in depth."

The comprehension level difficulties are describe as the about mentioned the

problem. Due to Lack of comprehension in the meaning of the mathematical term

students could not understand the mathematical relation. Even after reading the

problem, they did not understand the problem because of lack of comprehensive

ability. Thus it is confirmed that student have comprehension difficulties.

Cognitive Difficulties

Cognitive difficulties generally present as a state of confusion, loss of

memory, trouble understanding or making sense, places of things or change to mood.

Cognitive impairment also called intellectual disabilities, occur when a child limited

mental functioning. Children with cognitive impairments usually acquire developmental milestones late and have more difficulties in learning mathematical skills and communicating skills, speaking, writing or understanding language and other.

This type of difficulties can be consider as cognitive difficulties. This shown that students face the cognitive difficulties. So, we would say students had many cognitive difficulties in arithmetic.

“The teaching speed of our teacher is very high for elementary level. He doesn’t repeat the concept more than once.” (Student’s E views)

“He solves the problems by himself instead of making students understand it. Moreover he focuses on only firstbencher of students. He gives us homework daily but he checks hardly.” (Student's D views)

The above view of students shows that mathematics teacher was not serious about teaching. Teacher was more into finishing the mathematic course, before time which directly affected the learning environment in the classroom.

“I understand the mathematical knowledge and solving process of mathematical problem while I reading at the classroom but I cannot remember the things for long time. I don’t have enough time to practice mathematical problem at home.” (Student’s F views)

One of the main problem and difficulties of the students is forgetting the things quickly. They could not memorize for the long period of time. The main cause of forgetting the mathematical knowledge is lack of practice the mathematical knowledge at home.

Again, I took face to face interview with the mathematics teacher about related this problem. I ask “what are the causes of cognitive difficulties?” He replied that

“The intellectual level of the students is very weak. Student forgets what they learned on the first day. They cannot solve the problem on their own which means their capability is very low.”

The above mathematics teacher’s view shows that there is a problem in learning among weak memory of the students. Student’s learning achievement is weak so they cannot read or calculate which directly or indirectly affects mathematic learning.

Again, I took face to face interview with the guardians related this problem. I ask, “What are the causes of cognitive difficulties?” Guardians replied that *“Our children are weak. They can only understand slow learning and I have never seen them doing homework at home.”*

The above guardian’s view shows that cognitive domain of the student is weak so that the learning achievement of the students is weak and students did not do homework at home.

Difficulties for the time management at Home

Time management is one of the major challenges. Most of the students do not pay much attention to time management and result is directly or indirectly affects in the learning achievement of the students. Most of the students do not manage their Time for math subject at home which makes learning mathematics very difficult and leading to and result in mathematics. Another factor, most of the parents were uneducated. Parents also have a deep hand in managing student time. Home is regarded as the first school of child but most of the students do not get help from their parents. Thus home environment plays vital role in learning. Some of the views of students are given below.

"When I am at home, I have to do the housework, take care of the brother and sister at home." (Student's F views)

"Teacher gives me a lot of homework on all subjects I don't like to do math because I don't know how to solve the mathematical problem." (Student's E views)

The above views shows that students were not studying sufficient at home because they have individual and home environment problems. Some student does not manage their time to attempt homework, forgot to do homework and lack of guidance for mathematics at home. Also cause problem in learning the students did not show interest in studying at home which made it difficult for student to study mathematics and the result was below average. Some of the students have domestic problems as they have don't enough time to study mathematics and other subjects too. They have the stress of homework of all subjects and the work to do at home. Therefore, they were not able to managing their time for study and homework which is a great problem for some students to learn and achieve more results in mathematics. By the views of the interviewed students, their friends may have similar kinds of problems Moreover, teacher said that;

"The students does not study at home which makes the subject difficult for the students and the result is not good. Students of high economic family have many facilities like mobile, laptop, T.V., internet etc. which spends their more time. Some are not worried about their children's future. So, they tend to ignore their students. Also, in class time they are busy in side talk, making noise and only a few numbers of students are interested in learning. Children spend more time in recreational activities at home. So, I think they hardly open book at home and try to attempt their homework." (Views of Teacher)

From above view it shows that student did not study at home due to which the mathematic subject gets difficult and result was bad. Most of students of higher income families spend their time on mobile, T.V, laptop, internet, etc. It also shows that some of the children have their personal conditions that they completely depends on study they get in school only. Parents have allowed their children to have a lot of fun which is why the children's learning achievement seems to have deteriorated as they are happier in entertainment learning. They spend most of the time in unproductive field at home and fully depends in their study at school. So, they fails in learning mathematics.

Again, I took face to face interview with the guardians related this problem. I asked, "What are the cases of difficulties for time management at Home?" Guardians replied "*Students do not listen to their parents because of their strong desire to play sports. They prefer to play sports than study. Irregularity in school, lack of interest in studies and student attitude that will they passes the exam easily.*"

The above Guardians view show that students do not go to school regularly. Therefore, students have more problems in learning mathematics. Learning achievement will get better if the student's tendency to play a game and perception of passing anyway could be improved. According to Vygotsky's social constructivism theory, student can learn from social interaction. If the students get more chance to participate in learning activities at home and school they can learn the mathematical knowledge easily.

Student-Teacher Interaction. Interaction essentially a structured conversation where one party asks question, and the other provides answers. In common parlance, the word "interaction" refers to face to face conversation between an interview and an interviewee. Interaction helps to bring out the intellectual in the mind which helps in

solving the problems in teaching and learning. Interaction plays an important role in mathematics, which helps to solve problems that appears in mathematics. It depends upon the personal intellectual capacity. Individual interaction refers to sharing, co-operation and adjustment between two or more persons. And it brings the maturity in learning. Vygotsky describe the Zone of Proximal Development (ZPD) of the child. The children can learn more knowledge with support of teacher than without any support. The following are the words of the students and teachers how they interacted with their mathematics teacher in classroom and school, how the mathematics teachers interacted with the students respectively.

"Our math teacher teaches very fast which makes it difficult for us to understand mathematical problem. Sir does all calculation on the board, there is a limited of time to copyit. Mathematical problem are not explained well, so it takes time for us to understand. Our math teacher does not be cooperate with student. Our math teacher occasionally use educational materials which do not make the concept clear."

(Views of students)

From above thoughts of the students we can say that math teacher had not taught according to the child psychology. Not teaching for all student. Only few problems of lengthy exercise are solved by the teachers saying that the remaining canbe understand and it is not necessary to do. Teacher have not used educational materials while conducting the teaching-learning process. There is not a good relationship between students and math teacher. Teacher was not able to connect mathematic with daily life while teaching. As a result, it affects the students learning achievement. After that, while interacting with the math teacher about the problem that appeared while teaching arithmetic, the following statements of math teacher was found.

“Students do not do homework, students have poor knowledge in mathematics and student do not pay much attention in class. No matter how good methods of teaching was used.” (View of teacher)

From above view of the teacher the intellectual level of the student was found to be weak. It was found that the learning achievement was weak due to poor mathematical knowledge of the students. Since the students do not practice math or do homework, it is found that the students do not know the process of understanding and problem solving which affects the achievement of learning math. The following was said in an interview with the head teacher about the above problem.

“The physical infrastructure in our school is not good, there is shortage of teachers, parents do not come to the school and local level do not invest in school. Most of the students from below average families come to study.”

The above head teacher’s view show that there was a problem in teaching and learning due to lack of adequate structure in the school which affected the learning achievement of the students. Due to the ignorance of local level investment in the school and the absence of parents, it was not possible to find out difficulties and solutions of the problem. At the same time, it was seen that student could not learn due to lack of teachers. If the above problem can be solved in due time, the learning level of the school and the students would improve.

Chapter-V

SUMMARY, FINDING CONCLUSION AND RECOMMENDATIONS

This chapter deals with the study “Learning Difficulties of Grade VIII Students in Arithmetic.” This chapter was divided into sections summary, findings, conclusion and recommendation.

Summary of the Study

This study was totally based in learning difficulties of grade VIII students in Arithmetic. The specific objectives of the study were to find the difficulties area in learning arithmetic of students and to explore the causes of difficulties in learning arithmetic of students. This study was based on qualitative method. This study was a case study in which meaning derived from the total picture, logic and reasoning. Researcher conduct observation form and interview schedule with selected students, teacher and parents as the data collection tools.

The respondents were selected from Shree MA.VI. School Bijayabastiof Thori Rural Municipality-4, Parsa. This study use convenient sampling and purposive sampling method to select two talented, two medium and two weak students in mathematics subject. This study includes six students, one teacher and six parents of the selected students and equal gender of the students select in grade VIII.

On the basis of this study the researcher concludes that most of the students have difficulty in learning arithmetic and poor performance of students in the solving the problems of arithmetic. Students do not sufficiently practice at school and home for arithmetic. Teacher never gives proper attention especially to the weak students. There is lack of interpersonal relation between students and teacher. Most of the students are facing difficulties in arithmetic. They are unable to apply the accurate process of the problems. Students tend to forget some steps of the arithmetic

problem. When mathematical problems are presented in long verbal expressions, arithmetic becomes the main problem. They are not understanding technical language of arithmetic. Some of the teachers are not willing to check home work of the students, Lack of mathematics teacher and inappropriate use of new technology and teaching aids in arithmetic learning are one of learner for student poor performance.

Finding

The main concern of this study was to find the difficulties area in learning arithmetic of students and to explore the causes of difficulties in learning arithmetic of students. This study research included the four levels difficulties (processing skill difficulties, comprehension difficulties, cognitive skill difficulties and difficulties for the time management at home). The result of analysis show the following difficulties.

-) Students have lack of knowledge of processing skill.
-) Students negligent in the calculation processing.
-) Students calculate by using unnecessary formula.
-) Students do not have strategic knowledge of processing skills and problem solving skills.
-) Students are unable to read the questions due the poor learning level.
-) Lack of prior knowledge of formulas creates problem in understanding.
-) Students learn slowly and forget quickly.
-) Learning achievement of students with intellectual disabilities tends to be lower of normal students.
-) Students with cognitive impairment tend to feel that there is nothing they can do.
-) Students with cognitive difficulties tend to change mood from time to time.

-) Home is considered to be the first school for children but most students do not get parental support.
-) Students have many facilities like mobile, laptop, T.V., internet etc. which spends more time.
-) Students do not regularly open books at home.
-) Students prefer to play with friends rather than study at home.

Conclusions

From the above finding of study, it is concluded that learning Arithmetic problems is not satisfactory at grade VIII students. Among the four different categories describes above, it was found that there was processing skill difficulties, cognitive difficulties, comprehension difficulties and difficulties for the time management at home. Due to lack of basic knowledge and pre knowledge, teacher students interaction, lack of students labor in learning Arithmetic, forgetting formulas or any steps of the arithmetic very fast, low practice of arithmetic at home were the causes of those arithmetic difficulties. Student were unable to perform steps of various arithmetical problems. They were distracted in the arithmetic tasks. As a result students learning directly and indirectly affected.

Recommendation for Educational Implication

The recommendation for education implication are given below.

-) Student should be aware about their small careless weaknesses to improve learning.
-) The teacher should be concentrated the student more participatory using the student-centered method while teaching.

-) Teacher should be identify the area of difficulty and should beuse remedial teaching to avoid the difficulties.
-) The teacher should be connect the events of daily life, which makes daily life easier for students.
-) The parent should be understand the difficulties of the children in learning and should be provide support to their children in learning.
-) Student's errors in arithmetic shouldbe investigated. In addition, future study might also focus on students misconceptions in arithmetic.
-) This study should support the curriculum designer and policy maker to develop the suitable curriculum and policy for the children.

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Appendices

Appendix-A

Individual student record-2021

Name:

Grade:

Roll no.:

Age:

Sex:

Religion:

Address:

Nationality:

Name of school:

Father's name:

Occupation:

Mother's name:

Occupation:

Number of members;

Appendix-B

Interview Guidelines for Student

Name of student:

Date of interview:

Address:

Grade:

Roll No:

Age:

Name of school:

The interview for the students can be taken on the basis of following main topics:

) Processing skill difficulties

-Is teacher's method of teaching working for student?

-What method would be easier for student?

) Cognitive difficulties

-How well does the student remember the formulas?

-Does have trouble understanding?

) Comprehension difficulties

- Practical use of the math problem in real life

) Student's participation in arithmetic learning.

-Attention in learning class.

-Disturb from any other friends.

) Difficulties for the time management at home

-How much time does the students spend in house hold reading and writing?

-Cause of difficulties in learning arithmetic.

Appendix-C

Interview Guidelines with Mathematic Teacher

Name:

Date:

Address:

Grade:

Qualification:

Age:

Name of school:

The interview with the mathematics teacher had been taken on the basis of following main topics:

) Teaching strategies

-Different teaching strategies.

-Using teaching materials

) Problem in teaching arithmetic

-Understanding of basic concepts.

-Use of formula.

) Cause of difficulties acquiring the knowledge of mathematics

-Lack of the foundational concepts.

- Lack of interest in the topic.

) Classroom management

-following norms and values in classroom.

-Discipline in classroom controlling unwanted activities by students.

Appendix-D

Interview Guidelines for Head Teacher

Name:

Date:

School name:

Grade:

Address:

Qualification:

Experience:

The interview for head teacher can be taken on the basis of following main topics:

-) Condition of school: number of teacher, number of students, physical facility, community participation
-) Teacher and students relation
 - Students are openly taking with teacher?
 - Students opportunity for learning withteacher?
-) Teacher training for mathematics teacher
 - Are teacher equipped with proper training regarding handling of subject?
-) Use of difficulties in learning mathematics
 - Availability of teaching and student?
-) Educational activities of teacher and students
 - How do student respond to teaching method?
 - Relation between teacher and student?
-) Cause of difficulties in learning arithmetic
 - Understanding of basic concept.

Appendix-E

Interview Guidelines with Parents

Name of Parent:

Date:

Address:

Gender:

Education status:

Age:

The interview with the parents had been taken on the basis of following main topics:

) Family status

-What is the economic background?

-Does the student contribute to family income?

) Reading / writing opportunity at home

-How much time does the student spend house hold work?

-How much time is spent learning?

) Family environment of students for learning mathematic

-Do the parents value their children's education?

-Does anyone help student with learning?

) Child's interest

-Do the child show interest in practicing arithmetic?

) Behavior towards child at home

-Do the students obey the parents?

-is he sincere towards students?

) Expectation from school

-Do the parents feel that school is fully responsible for their children's studies?

Appendix-F

Classroom Observation Guideline

Class:

Date:

School name:

Address:

-) Teacher collaboration and discussion in subject matter
-) Linking textbook knowledge with students daily life
-) Interaction between students-students, Teacher students in classroom
-) Teacher behave toward students in teaching leaning process
-) Teacher teaching style
-) Use of educational materials