

DIFFICULTIES IN LEARNING ARITHMETIC AT SECONDARY LEVEL

2022

KESHAR KC

1446

DIFFICULTIES IN LEARNING ARITHMETIC AT SECONDARY LEVEL

**A
THESIS
BY
KESHAR K C**

**IN THE PARTIAL FULFILLMENT OF REQUIREMENT FOR THE DEGREE
OF MASTERS OF EDUCATION IN MATHEMATICS EDUCATION**

**SUBMITTED TO
DEPARTMENT OF MATHEMATICS EDUCATION
CENTRAL DEPARTMENT OF EDUCATION
UNIVERSITY CAMPUS
TRIBHUVAN UNIVERSITY
KIRTIPUR
2022**

Letter of Certification

This is certify that **Mr. Keshar K.C.** a student of academic year **2072/73** with Campus Roll Number **508**, Thesis Number **1446**, Exam Roll Number **7228303** and TU Registration Number **9-2-320-150-2011** has completed this thesis for the period prescribed by the rules and regulations of Tribhuvan University, Kirtipur, Kathmandu, Nepal. This thesis entitled “**Difficulties In Learning Arithmetic At Secondary Level** ” has been prepared based on the results of his investigation conducting the period 2021 at the Department of Education, University Campus, Kirtipur Kathmandu. I hereby recommended and forward that his thesis be submitted for the evaluation as the partial requirements to award the degree of Master of Education.

.....

Prof.Dr. Bedraj Acharya

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Date: 21 Feb 2022

Letter of Approval

This thesis entitled “**Difficulties in Learning Arithmetic at Secondary Level**”
submitted by **Mr. Keshar K.C.** in partial fulfillment of the requirements for the
Master's Degree in Education has been approved.

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Recommendation for Acceptance

This is to certify that **Mr. Keshar K.C.** has completed his M.Ed. thesis entitled “**Difficulties in Learning Arithmetic at Secondary Level**” under my supervision during the period prescribed the rules and regulations of Tribhuvan University, Kirtipur, 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 thesis contains no material which has been accepted for the award of other degree in any institutions. To the best of knowledge and belief this thesis contains no material previously published by any authors except due acknowledgement has been made.

.....

(Keshar K. C.)

Date : 21 Feb 2022

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Acknowledgement

I would like to thank my supervisor Prof. Dr. Binod Prasad Dhakal for his advisory and mentoring role throughout the research journey. It would not be possible for me to bring the inquiry in this form without his quality, time, positive encouragement, invaluable advice, guidance, insight and support.

I would like to express my gratefulness to Assoc. Prof.Dr. Bedraj Achary, Head,Department of Mathematics Education, Kirtipur, who provided me the opportunity to write this thesis. I equally owe my sincere gratitude to my external supervisor prof. Uma Nath Pandey and all the respected Professors, Readers and Lecturers of Department of Mathematics Education, Kirtipur for their valuable co-operation, comments and suggestions to bring this thesis into present form.

Valuable thanks go to Headmaster and teachers of Shree janjagriti Secondary School of jugar-4, district for their respective help. I am also grateful to all the students of those schools who were participated in this work.

Similarly, I would like to extend my heartfelt gratitude to my parents Mr. Chandrekhatratri and Mrs. Janakikhatri , my brothers and sister for their blessing, motivation and inspiration to bring me in this stage of my academic tenure. I am beholden to all my friends for their co-operation and assistance in bringing this thesis work into this form. Finally, I would like to express my gratitude to those who have contributed to this study directly or indirectly.

Abstract

This is a case study related the difficulties in learning arithmetic at grade X. The main objectives of this study were to explore the different kinds of difficulties in learning arithmetic at secondary level students and to analyse the cause of difficulties in learning arithmetic at secondary level .This was based on qualitative nature of data. I selected Shree jana jagriti secondary school in Rolpa district. The data was collected of this study with interview, observation and class test. The population of this study were selected purposively from rolpa district. I had selected 5 respondent's students, onemathematics teacher and head teacher, and then the collected data were analysed by descriptive method.

The finding of the study shows that there were lots of difficulties. In organizational difficulties and language difficulties students are sequential order of solution steps, mismatches for making final solution and students are confused by the language of arithmetic in technical word problem. Also the students had some causes of difficulties which were teacher-students interaction, teaching method,student's participation in arithmetic learning and material and practices of arithmetic at home. There was no proper interaction between teacher and students. Most of students were not sufficiently practice at home become there were not clear concept of arithmetic. There is lack of teaching materials and teacher cannot use teaching material in mathematic class. Students are more weeks, irregular. They haven't sufficient time to practice in classroom. So the students were filling difficulty in learning arithmetic.

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Chapter - I

INTRODUCTION

Background of the Study

The prehistory of arithmetic is limited to a small number of artifacts which may indicate the conception of addition and subtraction, the best-known being the Isango bone from central Africa. The earliest written records indicate the Egyptians and Babylonians used all the elementary arithmetic operations as early as 2000 BC. In accordance, arithmetic is an essential part of life we cannot run our daily tasks without arithmetic. If we want to be literate then we need knowledge of arithmetic such as simple counting numbers. Mathematics was born from arithmetic. The initial stage of mathematics was arithmetic, later it branched into geometry, algebra, analysis and other areas.

In school level students consider arithmetic as the most practical one. Thus arithmetic has important places from beginners to higher levels of school education. Without proper knowledge of arithmetic a person cannot become a perfect citizen. Not only the students of mathematics but every individual needs the concept of arithmetic. There is not continuation of it to high levels (cited from Wagle, 2000). Arithmetic concepts of secondary level are quite relevant to solve our daily life problems such as simple interest, unitary method, profit and loss, percentage etc. These concepts have their inception to the growth of human beings and related to daily problem solving.

The basic arithmetic operations are addition, subtraction, multiplication and division, although this subject also includes more advanced operations, such as manipulation of percentages, square roots, exponential, and logarithmic functions.

In recent times much attention is being paid to early difficulties in arithmetic and identification of arithmetic difficulties in learning and applying mathematics skills and concepts. Education is a process of bringing about a change in behavior. The learner needs knowledge and experience to reshape his/her behavior." Learning can be defined as a tentative procedure resulting in a relatively everlasting change in human behavior that cannot be described by short-term states, progress or essential feedback propensities" (Klein, 2002). Difficulties are related with arithmetical facts, procedure and strategies. Many children and adults have difficulties with a wide range of different numerical tasks (Landerl et al., 2004). Also students face many problems during secondary level studies.

From the sentence, it is usually seen that those students and teachers who have been teaching -learning mathematics, are facing with a number of problems to deal with. The problems which are occurring in mathematics are also the difficulties in arithmetic learning. The main purpose of this study is to explain some difficulties of students in learning arithmetic at secondary level.

Statement of the Problem

Mathematics is essential for all human beings but the learning situation would be different. This study was concerned with the study of difficulties in learning arithmetic of class secondary level students. The mathematical concept is given from the basic level to

secondary level but teacher seldom use teaching material while teaching mathematics in classroom. New model and method are not applied method. Student center teaching methods are not applied by teacher in classroom. Students were less interested to learn arithmetic and as a whole mathematics course could not be finished within the academic year. The school result shows that most students are failed in arithmetic. The general class is not sufficient for them. So, some special class or extra class have to be conducted for the students. The students' home environment is not favorable for learning mathematics. Therefore, there arise different question related to difficulties in learning arithmetic of -students. The study was mainly concerned to the following question.

- What are the difficulties in learning arithmetic at secondary level?
- How can we minimize the difficulties in learning arithmetic?

Objective of the study

All research studies have own objectives. In this sense, this current study cannot be an exception. The broad objectives of this study show the condition of students in arithmetic, how the learn arithmetic? The main objective of this study ware as follow.

- To explore the different kinds of difficulties in learning arithmetic at secondary level.
- To analyze the cause of difficulties in learning arithmetic at secondary level.
- **Significant of the Study**

Mathematics is taught as an essential and important component of school level curriculum. It has been taught as compulsory subject at any level of school level

education program. Although mathematics has been an important place in the curricula of all levels of school education. Most of the students are weak in mathematics. However, it is felt that most of the students dislike mathematics, and afraid of it. But arithmetic for behavioral life of people. But most of the students were felt difficult in learning to it. Students were not clear concept about arithmetic.

Thus, the purpose of the present study is to explore the different kinds of difficulties in learning arithmetic at secondary level and also causes of difficulties in learning arithmetic. The following were the significance of this study.

- Its finding is supportive to improve the mathematics achievement of student understanding.
- Its helps to students and teachers for arithmetic teaching and learning.
- This study would open the doors for the further study in problem of arithmetic learning at secondary level.

Delimitation of the Study

This research is case study research so it cannot be generalized to all over the students of different place of nation. It had concerned with only one school of secondary level in Rolpa district. The delimitation of the study was as follows.

- This study concerned to only with Rolpa district.
- This study is delimited only in secondary level.

- The study was completed on the basis of interview, observation form and recorded history of school.

Definition of Related Term

Students.In this study students of grade X of higher secondary level who study compulsory mathematics as selected subject.

Difficulties.In this study difficulty means those students who are unable to understand terms and condition of arithmetic in school level.

Arithmetic.In this research arithmetic means the lesson included in the mathematics subject of secondary level. Where discount , vat amount ,compound interest and money exchange.

Learning difficulties.Learning difficulties is a general term which refers to class X students who experience difficulties with their learning.

Language difficulties.Language difficulties mean that, students who feel difficulty in understanding arithmetic problem.

Organizational difficulties.Organizational difficulties means that students who have not organized the solution of arithmetic problem.

Chapter-II

REVIEW OF THE RELATED LITERATURE

Review of the related literature is made in order to know has already been done to determine what is to be done in the concern area to be study. It is essential to review the related literature for introduction the problem clearly, to significant the research clearly, to select the appropriate research method, to determine the process of data collection and analysis. Also a review of the related literature is the source of the further study of the research which provides the better idea for the surveying in the whole research. I have reviewed some of the literatures which are given below.

Empirical literature

The empirical study of literature is an interdisciplinary field of research which includes the psychology, sociology, philosophy, the contextual study of literature, and the history of reading literary text. The object of study of the empirical study of literature is not only the text in itself, but the roles of action within the literary system, namely, production, distribution, reception and the processing of text. The methods used are primarily taken from the social science, reception theory, cognitive science, psychology etc. In general step to be taken in empirical research are the formation of hypothesis, putting it in to practice, testing and evaluation. More concretely, for the study of reader response a wide array of techniques are used running from protocol techniques and thinking allowed protocol to pre structured techniques, such as the semantic seven point scale discourse analysis association techniques etc.

Thapa (2016) did a study on "Learning difficulties in trigonometry" carried out to find out the cause of difficulty in trigonometry and to minimize the learning problems in trigonometry at secondary level. The design of this study was survey. This study was conducted at grade X in five institutional and five community secondary schools; the researcher selects 200 students from selected schools. The tool used in this Research was questionnaire, interview and observation. The researcher interviewed with students, mathematics teachers and head teachers. The researcher gave questionnaire to all the student of grade X who were studying optional mathematics to filled questionnaire. The researcher observed the class of all selected schools in twenty days. The researcher collected the data and analyzed the obtained data with the help of conceptual understanding. The researcher obtained quantitative data on basis of questionnaire on school environment, interaction, teaching methods, materials and evaluation techniques, activities in classroom and pre knowledge. The collected qualitative information were systematized and analyzed descriptively by transcribing translating, coding, categorizing into broader themes, triangulation method to analyzed the data. The researcher concluded that the teacher used lecture method in class room so students were passive and teacher had not implemented the modern techniques, method and materials for trigonometry teaching and learning so students took trigonometry as abstract chapters.

Gautam (2017), conducted the master's thesis on the topic "Tamang students' learning difficulties in mathematics". I reviewed this thesis written by BinodGautam from MahendraRatna Campus tahachal, Kathmandu. Main objectives of this study were to explore the causes of larningdifficulties of tamang students at primary leve and to

identify impact of home environment of tamang students to learn mathematics at primary level.

Two research questions were made for conducting the research. These questions were what are the causes of leaning difficulties of tamang students at grade V? How is the home environment in learning mathematics? Case study research design was applied to get the answer of this research question. The study was conducted among the five tamang students studying at grade V. The research tools interview schedule and observation guideline tor this study.

Moreover, the survey was conducted by taking all the tamang students of Kathmandu district of class five. Only five tamang students were selected for sample among them four were girls and one was boy of class five, where purposive sampling was used. The data and information were collected by using interview guideline and observation guideline. The collected data was categorized according to the category of the responded. The categories were students, mathematics teacher, parents of the students. The researcher took individual record of tamang students' thorough interview schedule. The data analysis was interpreted by using frame work the researcher developed and with the theory in literature review. He found that tamang students used their mother tongue first and nepali language as a second language there were language discontinuity at home and school.

Joshi (2011), conducted research on “Learning difficulties in mathematics: A case study of open school students.” To identify the difficulties in learning of arithmetic for open school students and to identify the cause of difficulties in learning of arithmetic for open school student were main objective of this study. He adopted four student (3 boys

and 1 girl) with the help of in depth interview, observation were data collection tools. The used descriptive method for analysis and interpretation of data. He concluded that following learning difficulties in arithmetic or mathematics.

To develop the new concept, to convert the verbal problem in mathematical form, to understand the mathematical language, to generalize the learned concept, to maintaining precision during mathematical works, to recall mathematical fact, procedures, rules formula, to inter- relate the content principal.

Pangali (2012) did study on "Difficulties in learning arithmetic at grade IX" with the objectives, to identify the difficulty in learning arithmetic of grade IX students and to find out the causes of difficulties in learning arithmetic of grade IX students. The sample of this study was only one school of Surkhet of only 5 students who are reading in grade IX. The main instrument of this study was observation, written test and interview. The study was concluding that the learning environment of students is not supportive.

Ghimire (2005) did a study on "Difficulty in learning algebra a case study of blind student". The objectives of this study were to identify the difficulty on content of algebra and to identify the difficulty on classroom practicing. This study was conducted with the sample size of four blind students from four different schools. The children were selected on the basic of simple random process. Different tools such as case study, observation, interview and written test were applied to identify their learning difficulties on algebra and inclusive education approach. The study found that performance of blind students was very poor. They can define their concept and can solve such problems, which are very short and easily can remember to mainly the problem can solve it one step. They

were able to only addition, subtract and multiply of simple and very short algebraic terms but unable to division and they have the limited knowledge about the factorization HCF and LCM. The major difficulties of blind students were found such as to develop clear concept on subject matter, to write algebraic term and to solve process of mathematical problem in Braille script. The lesson learnt from this research can be used in special education. All these require a serious thought while making decision about curriculum, reading materials and pedagogical process.

Luitel (2005) did a study on "Difficulty area in arithmetic for grade VIII deaf student". With the objectives to identify the areas of difficulty in arithmetic of grade VIII students and to located these difficult areas of arithmetic as to relate them to their courses. The sample of this study was only one school of Kathmandu of only 4 student who have just passed the class VIII. The main instrument of this study was observation, written test and interview. The study was concluded that the difficulties while learning arithmetic were to develop conception on verbal problem, generalized the learn concept fast forgetting etc.

Sarma (2004) did a study on "appropriateness of arithmetic contents of secondary level mathematics curriculum". The objective of this student was to examine the appropriateness of arithmetic contents of secondary level mathematics curriculum on the basis of content weightage perspective and re-organizational perspective, to examine the relevancy of arithmetic contents of secondary level mathematics curriculum to the practical life need of people in different occupations and the suggest some pedagogical implications. This study was descriptive survey type. In addition, it is qualitative and observational as well. Moreover, the sample population consisted of purposively selected

twenty two mathematics teachers of secondary level from each mentioned occupations. The sample statistical tools such as mean and percent were used to analyze the information descriptively, logically and analytically. The major findings of this study was the source could hardly be finished within the allocated time, percentage, unitary method, simple interest, profit and loss and area of plan figure of secondary level arithmetic curriculum could be taught at lower secondary level.

Bhandari (2009), conducted research on “Learning difficulties from cultural discontinuity in Mathematics: A case study of Majhi students”. The objectives were to identify the cause of difficulties in learning mathematics at school, influence factor in learning mathematics. Impact of home environment. The study was done on four students in depth- interview, observation from, written documents were main tools and the study concluded that there is discontinuity between home culture and school culture. The home environment is notsupportive for mathematics learning.

Pant (2007), conducted research on “A study of learning difficulties in mathematics among grade V students in KTM”. He took 1216 student (593 rural 623 urban) as a sample size from KTM. He used interview, survey observation and Diagnostic Achievement in Test in algebra. He concluded that more student have learning difficulties in mathematics in general and algebra in specific, students have problems in learning concepts and vocabulary such as algebraic terms, expressions, power coefficients and equations. More students show negative effect on their performance in mathematics learning.

Paudel (2014), did study on “difficulties in learning trigonometry” the main objective of this study was to find the causes of difficulties in learning trigonometry and to minimize the difficulties in learning trigonometry at secondary level. For the sample one public school and private school was selected. Class observation and interview was used for the data collection. The study concludes that there was not sufficient material for learning trigonometry and due to the lack of interactive classroom student feel difficulties in learning trigonometry.

Theoretical Literature

There are so many theories which can be used to understand the learning difficulties in mathematics. Especially in the context of teaching and learning of mathematics, there are various approaches propounded by Ausubel, Brunner, Dienes, Guilford, Gagne, Piaget and Skinner. Here I discuss about constructivism in brief (Bell, 1978).

Constructivism Learning Theory

Constructivist assumes that knowledge is actively constructed by learner not passively transmitted by teacher. As constructivism becomes relate to educational theory to deal with problem of mathematics. It is a theory based on observation and scientific study to deal the problem of learning. Constructive idea of learning can point towards number of different teaching practice. It encourages the student to involved themselves actively and use techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement in mathematics rather that classroom it focus on real life learning environment, social interaction and use

of complex ideas share with other outside of classroom easily. Constructivism transforms the students from passive receipting to active participant in teaching process.

The radical constructivism, developed from the work of Jean Piaget, emphasize on construction of mathematical realities by students through action. The social construct on the other hand, believe on formation of knowledge through active construction and reconstruction of theory and practice. The child needs some mediators like parents or peer to uplift his/her knowledge from the knowledge that exist with his/her parents. This assessing process is known as” zone of proximal development (ZPD) “. It means that is Vygotskian’s theory a range of tasks about the child can’t yet handle along but can be with the help of more skilled parents.

Social constructivism aligned with Vyotskian theory, views mathematics as a social construction and a cultural product and their criticism at radical constructivism pointing out the fact it does not entail a theory of learning at alone being the theory of discovery, problem solving and investigational learning. Vygotsy (1978) states: “Every function in the Child’s cultural development appears twice: first, on the social level, and later, on the individual level; first between people (inter- psychological) and then inside the child (intra- psychological) This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate actual relationship between individual.

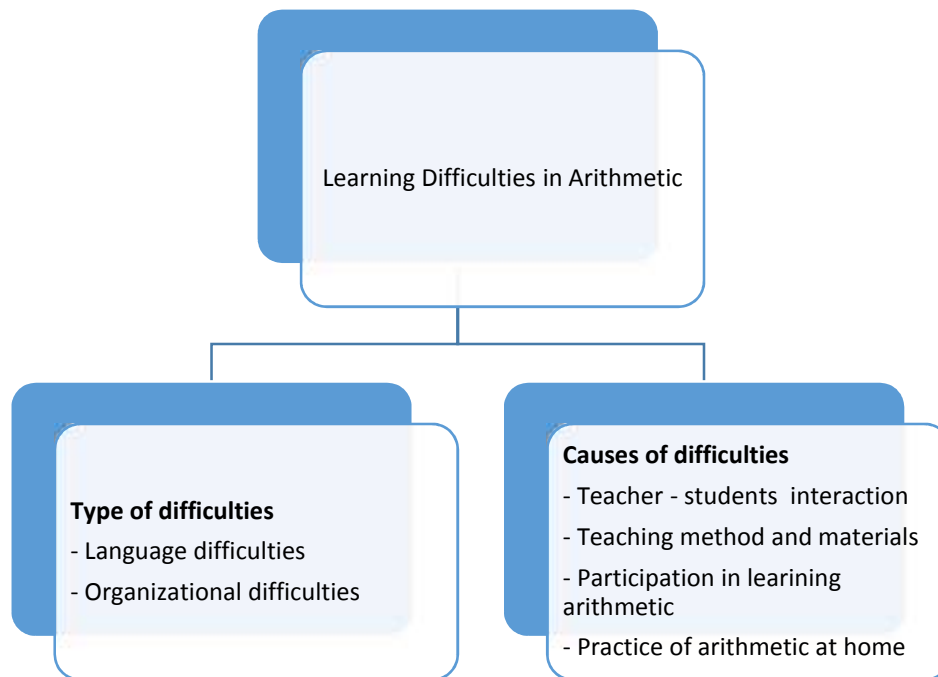
The more knowledgeable other (MKO) refers to anyone who has a better understanding or a higher ability level the learner, with respect to a particular task process or concept. The (MKO) is normally thought of as being a teacher, coach or older adult, but the MKO could also be peers, a younger person or even computers. The

classroom should be set up in such a way to foster group work and collaboration in order to allow students to take on the role of instructor with their peers as they master the skills at hand.

Vygotsky pioneered research in learning sciences and made a strong argument for the need for students to demonstrate their knowledge by creating explanations and interpreting their work for others. Children are thinking in the overall context of the school environment as well as within they introduced into that environment.

Conceptual Framework

From the above review of literature and theories the researcher conclude that learning difficulties in arithmetic were following conceptual framework for this study.



Source: pangali, L.R. (2012).

An understanding learning difficulties in Arithmetic

Language Difficulties

Language difficulties refer to those problems caused by lack of language skills. It makes students to understand the given problems of the arithmetic. For some students, arithmetic is difficult driven by problems with language. These students may also experience difficulty with reading, writing and speaking. In arithmetic however, their language problem is confounded by the inherently difficulty terminology. Students with language problems in arithmetic may have difficulty with the vocabulary of arithmetic. They are confused by language in word problems. Also, they are not known when irrelevant information is included or when information is given out of sequence. Students have trouble learning or recalling abstract terms. Some of which they hear nowhere outside of the arithmetic classroom. Students have difficulty understanding directions. Also, they have difficulty explaining and communicating about arithmetic, including asking and answering questions. These students have difficulty understanding written or verbal directions or explanations and find word problems especially difficult to translation. Students have difficulty remembering assigned values or definitions in specific problems.

Organizational Difficulties

There are many difficulty areas in learning arithmetic. Among them organizational difficulty is one of the main difficulty areas in learning arithmetic. Organizational means that the student's weakness of making sequential order of solutions, steps mismatch between making final solution of any problems. Students have difficulties in multiple steps or elements of a problem. They are lose appreciation of the final goal and over emphasize individual elements of a problem. Students are not able to identify major aspects of a mathematical situation. They are particularly in word problems or

other problem solving situations. Also students are not able to find where some information is not relevant.

Causes of Difficulties

Teacher-Student Interaction

Interaction is social activity; interaction may be within persons or in groups.

Personal interaction refers to the mental activity with her/his mind and soul. It depends upon the person's intellectual capacity. Inter-individual interaction refers to the sharing, adjustment and co-operation.

Students' Participation in Arithmetic Learning

Different aspects are suitable for learning. Social status, educational background of family, learning environment, qualified teacher etc. are the different factors which affect the learning. If the students' participation and interest, they would progress in learning. Students' participation can be defined through the factors; Irregular in school and class, extra classes and tuition classes in addition to class, negligence by peer groups and teachers.

Practice of Arithmetic at Home

Home is the first school of the child. Children can learn in basic things at home. Father, Mother, Brother, Sister are the motivational sources for the child. When the child is enrolled in school then he/she can extend their knowledge. In this study researcher had mentioned the difficulties in arithmetic learning of secondary level students. So, practice of arithmetic is one of the causal factor for difficulty in learning.

The amount of practice they do in their home affects the learning of arithmetic to a great extent.

Teaching Method and Material

The selection and use of teaching method and instructional material plays a crucial role for the effective classroom practices. There are various types of teaching method that can be used in classroom practice. The selection of appropriate teaching method for a particular topic can be considered as measure aspect of effective classroom practices.

This research is focus on student's difficulties in learning arithmetic at secondary level. For the learning difficulties the above criteria (Language Difficulties, Organization Difficulties, Teacher- Students Interaction, Students Participation In Arithmetic Learning, Practices of Arithmetic at Home, Teaching Method And Material) has been selected .

Chapter III

METHODS AND PROCEDURES

This chapter presents the procedure of the study which is carried out to achieve objective of the study and to get the answer of the statement of the problem. The present research was focused on "Difficulties in learning arithmetic at secondary level". This study was the qualitative type in which the researcher used case study as well as descriptive method. This chapter contains some subheading such as: design of the study, site selection, selection of respondent, tools, standards of tools, data collection procedure and data analysis procedure analyzing the interpretation of data. It also explains the methods of analyzing the collected data.

Design of the Study

This study was based on case study and descriptive study related to difficulties of secondary level in learning arithmetic. This study was based on qualitative data. A qualitative descriptive study is one in which information collect without changing the environment. Karlsson (2016) state that "the case study is an investigation of a phenomenon in a real-life situation the study should intensively investigate a small sample of either one or a few cases and the cases can be various size." mitchell (1983) defined a case study as a "detailed examination of an event which the analyst believes exhibits the operation of some identified general theoretical principles" it was a descriptive because it aimed to describe the events or situation addressing the learning difficulties of students and cause of these difficulties. This research was conduct by case study. The case of this study was lower performer students.

In this research I had collect the data from primary sources as direct or participant observation, interviews. I spend time for interaction with participants. This approach had a potential to deal with simple to complex situations. Mostly "how" and "why" type of question in the conduction of research in entire groups. Since the design of research was case study on which meaning derived from the total picture logic and reasoning of why it was like that, how linking with theories and propositions. This is a case study related to the difficulties and causes of difficulties of grade X students in learning arithmetic, where the case was grade X.

Site selection

The study was done in public school situated in Jugar, Rolpa, which was shreejanajagriti higher secondary school; Jugar Rolpa. I had been reading at that school from 2061-2065 at secondary level. Therefore I was familiar with the educational and physical environment of the school. The result of mathematics was very poor from secondary level. But the school could not improve in the poor result of mathematics yet. The result of the examination was seen from the school document. So for finding main difficulties in learning mathematics or arithmetic, I had selected this school.

Selection of Respondents

The main respondent of this case was students of grade X of Shree janjagriti secondary school. I had selected this school on the method of purposive sampling of my knowing students. The respondents of this research were student; mathematics teacher and head teacher of the selected school. They were selected purposively for total students of class X. From the grade X five students was selected purposively as the respondents for the

interview. 6 questions were selected from the different sector of arithmetic's. . I selected the highly difficulties occurred answer sheet after checking the all answer sheet. Among them students were selected for interview.

Tools

This study was qualitative descriptive research so that the researcher collected data only by the primary sources and analyzed with the help of literatures. In this study the following tools were used.

Observation note.As a data gathering device direct observation makes an important contribution to descriptive research. I taught topic (money exchanges)in this research duration for exploring the difficulties. Participant observation is that in which the direct observe in all activities of students. Theobservation of the study was taken on the basis of difficulties and observational note. I had taken four day class observation during the arithmetic class by using Appendix-F. At that time I would watch, listen, interact, and record the essential data during the teaching period.

Written test.The test was purposively taken to 30 students to find out the organizational and language difficulties. Paper pencil test was used to collect a data as tools. Test was a set of question which was made by I purposively from the related contents. Question was selected purposively from related topic to fulfill the objective of research. After making the question it was administrated in grade X students. After checking, I conducted discussion and explored the difficulties with them. The written test question is given in Appendix-A

Interview. In this research, the researcher was use in-depth interview with respondents on semi structure from. The research were takes the interview to achieve the objectives. The interview guidelines were designed on the basis of difficulties in: organizational difficulty, language difficulty, Teacher- Students Interaction, Students Participation in Arithmetic Learning, Practices of Arithmetic at Home, Teaching method and material etc. I took interview with students, mathematics teacher and also head teacher. After administrating the test I was selected five students for interview. Interview was taken purposively. The interview guidelines were formed separately for students, mathematics teacher and head teacher. The interview guidelines for students are given in Appendix-B, for teacher is given in Appendix-C and also head teacher is given in Appendix- D.

Standardization of Tools

For standardization tools I made guidelines tools for observation and interview using different theories and literature. Guidelines question are organized in simple to complex from. Also subject expert, specialist and supervisor helped to check the standardization of tools and necessary one. I used teacher made test. Also in this study I used the triangulation theory where the data were obtained from the classroom observation note, interview with the student, mathematics teacher and head teacher.

Data collection procedure

The aim of the study was to investigate the difficulties in learning arithmetic at grade X students. Therefore collect the qualitative data from the classroom observation form and interview guidelines regarded as the main tools of the study was developed

with the help of the supervisor. Interview guideline was administered to teacher, students and head teacher for find out the student's difficulties in learning arithmetic. The Interview guidelines for the teacher was based on the teacher and students relationship, effect of language in arithmetic ,learning, curriculum,content and text- book, teaching method, interaction between students and teacher, evaluation techniques and so on. Similarly, the interview for the students was based upon their mathematical background, practice of arithmetic at home, arithmetic of word problem, organizational difficulties, relation between students and teacher, concept of arithmetic, interaction between students and teacher etc. Interview with the head teacher concerned with learning environment at school, students interest in mathematics learning, teacher- student relation etc. In that period I observed carefully and recorded each and notable activities students and teacher in the observation from.

Data Analysis Procedure

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

To find out the difficulties in learning arithmetic, all information was collected from primary sources and match with information from reviewed documents. The data were collected by interview and observation with students, mathematics teacher and head teacher. The collected information at first was categorized according to the category of the responses and different themes waregive in the text of interview or the observation

note. These themes were considered as a code and the similar code version of respondent class of student's were collected together and explained in their perspectives. Then the related themes were analyzed from observation, interview, theory and literature review.

Chapter IV

ANALYSIS AND INTERPRETATION OF DATA

This was a descriptive qualitative research relation to the difficulties in learning arithmetic at secondary level students of Rolpa district. Only one school was chosen for this study purposively, which was Shree janjagriti secondary School JugarRolpa. The objectives of this study were to explore the different kind of difficulties in learning arithmetic at secondary level and to analyze the cause of difficulties in learning arithmetic at secondary level. Interview and observation were used for the data collection as a main tool. The main respondents of this study were whole class of grade X student of secondary level .only fivestudents were selected for the interviews on the basis of their mistake in their answer sheet. Also math teacher and head teacher of selected school were selected purposively for interview.

This chapter includes the analysis and interpretation of the information obtained from the field of the study. The data collected from field are not in proper manner, so first they are coded and according to theme of information. The data were presented in term of following difficulties; language difficulties, organizational difficulties, teaching method and material, learning environment, participation in learning arithmetic, practice of arithmetic at home and practice of arithmetic at home. The data were collected through interview and observation. I took interview with the student, mathematics teacher, and head teacher with the help of interview guidelines tools respectively. Also researcher had done class observation with the help of class observation form to observe the activities of student and teacher at the teaching arithmetic. At that period I observed carefully and recorded each and every notable activity of students and teacher. The data were analyzed

and interpreted by the information taken from, math teacher interview, student's interview, and head teacher interview and classroom observation. These data were analyzed by analytical method..

Difficulties in Learning Arithmetic of Grade X Students

Learning difficulties is a general term which refers to children or students who experience difficulties with their learning. In this research, most of the student's result of the arithmetic test is very poor. Some of the students were not organized and mismatch steps. They were not complete accurate value of the problem. In arithmetic content, there are some difficult areas. Which become students feel difficulties in arithmetic like as; organizational difficulties and language difficulties?

Organizational Difficulties

I discussed about some difficulties faced by students in arithmetic learning. Among them organizational difficulty was one of the main difficulty areas in learning arithmetic. An organizational difficulty means that the student's weak aspects of making sequential order of solution, steps mismatch for making final solution of any problems. Also it can be seen particularly in word problem or other problem solving situation. In organizational difficulty, the students randomly wrote steps of the problem. In organizational difficulties at arithmetic class students show the following activities. They are; difficulties in sequencing multiple steps, unable to manage the time, unable to identify major aspects of a mathematical situation particularly in word problems where some information is not relevant etc.

I asked with the students "which term or procedure especially confuses for you, So that your learning is affected?" And how are mathematical terms dealt by your teacher? How do you feel?

"Arithmetic is difficult for us because in mathematics the problems of arithmetic related topic especially compound interest problems are not organized easily. So we feel very difficult and confused" (student's view)

From the above statement of the other four students were similar to the statement of the student above. So, we concluded that the compound interest related problems are not organized easily. They have lack of concept of arithmetic. So they feel difficulty in learning arithmetic.

When I observed the class then he got some organizational difficulties of students in arithmetic. In arithmetic problems, students were not sequencing multiple steps. They were mismatching some steps. Also students were unable to identify the major aspects of mathematical situation where some information is not relevant. They could not distract between relevant and irrelevant terms. Arithmetic content was hardly be finished with the limited time so the students were not organized in their many aspects of learning. I took a class test which makes an organizational difficult for the students in arithmetic. The question was, find the compound interest and amount of a sum 4500 at interest rate 5% per year in 3 year?

2. समाधान
दिए

$$\text{मात्रा (P)} = ₹ 4500$$

$$\text{दर (R)} = 6\%$$

$$\text{समय (T)} = 3 \text{ वर्ष}$$

$$\text{प्रतिशत (C.I)} = ?$$

सूत्रानुसार

$$C.I = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$

$$₹ 4500 \left[\left(\frac{106}{100} \right)^3 - 1 \right]$$

$$= ₹ 4500 \left[\left(\frac{6}{100} \right)^3 - 1 \right]$$

$$= ₹ 4500 [(0.06)^3 - 1]$$

$$= ₹ 4500 [(0.000216 - 1)]$$

$$= ₹ 4500 \times 0.999784$$

$$= ₹ 4499.028$$

अतः

$$\text{प्रतिशत निम्नलिखित} = \text{मात्रा} + \text{प्रतिशत मात्रा}$$

$$= ₹ 4500 + 4499.028$$

$$= ₹ 8999.028$$

$$\begin{aligned}
 & \text{कि प्रमाण } P = 8400 \\
 & \text{दरदर } R = 5\% \\
 & \text{समय } T = 3 \text{ वर्ष} \\
 & \text{अन्तिम मूल्य} = ? \\
 & \text{अन्तिम निशाना} = ? \\
 & \text{अन्तिम मूल्य} = P \left[1 + \frac{R}{100} \right]^T \\
 & 8400 \left[1 + \frac{5}{100} \right]^3 \\
 & 8400 \left[\left(1 + \frac{5}{100} \right)^3 - 1 \right] \\
 & 8400 \left[(1.05)^3 - 1 \right] \\
 & 8400 \left[(1.05)^3 - 1 \right] \\
 & 8400 (1.157625 - 1) \\
 & 8400 \times 0.157625 \\
 & = 707.3125
 \end{aligned}$$

The above example was one of the class test question which was solved by one girl and one boy students of grade 10. From this example we can analyze that the student had organizational problem. In above example, it was seen that there is lack of sequencing in multiple steps. In the solution of the above question the student has to write

105/100 out of the compound interest and write 6/100. The student could not solve the problem completely. Therefore it was found that there were organizational difficulties. Similarly in the solution done by the second student 105/100 should be written in the second step, $1+5/100$ should be written, so that the student can also do not whole solution. So they were not organized mathematical terms, lack of sequencing in multiple steps that become difficulty in learning.

Finally it could be concluded that students did not correct solution of the problem, they are not sequencing the multiple steps of the problem, and students could not compute the accurate value. Also other students have incorrect the formula. So there were organizational difficulties in learning arithmetic. The class observation (episode 2) indicates he/her get so many poor in problem such as there is not compute the exact value, hand writing is not clear, there is difficulties in sequencing multiple steps, students are not apply exact formulas, they are confused by language in word problem etc. In this time researcher cross- checked in other students activities. They are not interest in learning activities but most of the students are silent and some students are discussing about out of things. Also, they are not attention to the background when the teacher solved any problems.

Language Difficulties

A language difficulty means that student were confused about terminology, difficulty with verbal explanations and weak verbal skills for monitoring the steps of complex calculation of the arithmetic. Language difficulties become students output result because they did not understand arithmetic problems, they solved in wrong order. In language difficulties researcher may found some difficulties with arithmetic problems,

such as: difficulty reading texts to direct their own learning, difficulty with the vocabulary of math, word problem, trouble learning or recalling abstract term, etc.

I raised the question with the student "how is language of arithmetic in your learning? The terminology and vocabulary are harmful in learning arithmetic? What is your opinion towards it?" then their answer is follows.

"Arithmetic is difficult topic because in the verbal problem are confusing for us. We do not understand tax and money exchange related problems. So we do not internally participate in arithmetic class." (Students view)

From the above statement of the other four students were similar to the statement of the student above. The above students views shows that teacher does not use child center method, he always uses only lecture method and he did not focus about terminology of arithmetic, its concept and procedure which makes the arithmetic learning difficult.

"In mathematics it has more difficult terms, such as vocabulary terms of arithmetic, also its notations are difficult to understand for student. Also in word problem they are not able to change language into mathematical expression. If students don't understand those difficult terms they would not learn arithmetic easily. For our students, there are many difficulties to teach. Also arithmetic is one of the difficult topic because its vocabulary terms, language is not learn too easily. So the langue problem is one of the greatest difficulties in learning arithmetic". (Teacher view)

From the above views we conclude that the students feel a great difficulty to understand the arithmetic problems. They don't understand the sense of the problem said. In arithmetic learning was most difficulty for students and also for teacher because of

technical word problem. Students have difficulties while learning arithmetic is not developing clear conception on verbal problems, to generalize the learned concept due to fast forgetting. During observation, most of the students have confused to change language into own word in arithmetical problems.

I took a class test which makes a language difficulty for the students in arithmetic. The question was, market price of gas burner was marked Rs 7000. If it was sold at 5% discount and 13% Vat add in selling price. Then find out the real selling price.

1) समाधान
 प्रयोगे बाजार मूल्य (MP) = ₹ 7000
 छूट = 5%
 VAT = 13%
 प्रयोगे वास्तविक मूल्य = ?
 समाधान भाग 5
 छूट रकम = ₹ 7000 का 5%
 $= \frac{7000 \times 5}{100}$
 $= 350$
 फिरी - VAT रकम = ₹ 7000 का 13% + 350
 $\frac{7000 \times 13}{100} + 350$
 $= 910 + 350 = 1260$
 अन्त में प्रयोगे वास्तविक मूल्य = 7000 - 350 + 1260
 $= ₹ 7910$

classmate
Date _____
Page _____

समुझ (क)

9 ⇒ अस. का मूल्य = 6000

दु. 1. = 4%

मूल्य अभावितुकि का = 4% न.

आस वि विक्री मूल्य = ?

आस वि विक्री मूल्य =

दु. मूल्य = असुको 10-1.

$$6000 \times \frac{4}{100}$$

$$= 340$$

व्य लावने रकम = 6000 - 340

$$= 6,640$$

आस वि विक्री मूल्य = ...

The above question was solved by the one boy and one girl of grade 10. It shows that he/her didn't understand the vocabulary term or language of this question. In the above problem the student has done wrong without understanding the question due to the difficulty of language. The student has made a mistake in adding value added tax to the solution of this question. Where the language is wrong without understanding. Similarly another student also wrote $13\% + 350$ out of 7000 due to language problem. Which is wrong? So it can be said that language is difficult. They didn't understand the concept of discount percent, discount amount, tax and vat amount. Also he had not clear concept about arithmetic related problems. The research of cognitive theory shows that hampered by the language aspects of arithmetic resulting in confusing about terminology difficulty

following verbal explanations and weak verbal skills for monitoring the steps of complex calculation. Also above test question students were confusion about the discount amount and vat amount.

It could be concluded that the language difficulties in learning arithmetic were students had difficulty with the vocabulary of math, student were confused by language in word problem. They did not know when irrelevant information was included or when information was given out of the sequence. They had trouble learning or recalling abstract term and translating it. They had difficulty explaining and communicating about arithmetic including asking and answering questions. Students had difficulty reading texts to direct their own learning. According to the constructivism learning theory, to avoid the language problem in arithmetic, teacher could be encouraged students to put problems into their own words. Teach children to read for meaning when trying to identify the operation to use for solving an arithmetic problem. Also teacher should encourage of students to be clear about each and every terminology of arithmetic.

Causes of Difficulties in Learning Arithmetic

There are so many which arises difficulties in learning arithmetic. Researcher had described some of the causes which were; teacher-student interaction, teaching method and material, student's participation in learning arithmetic learning and practice of arithmetic at home.

Teacher- student's interaction

Interaction is the social activity and may be within person or in group. Personal interaction refers to the mental activities with his/ her mind and soul. It depends upon the

personal intellectual capacity. Inter-individual interaction refers to the sharing, co-operation and adjustment between two or more persons. Interaction brings the maturity in learning. Interaction helps people in imitation of social model. I may show in the interaction between students and teacher.

"Our mathematics teacher is helpful. If we ask question in out of class he can give answer and solve question also give more suggestion in subject matter" - (Student's views)

From the above statement of the other four students were similar to the statement of the student above .The above quoted of students shows that mathematics teacher solve question and also give more suggestion in subject matter out of class time also.

"Our students are laborious. But he can't give sufficient time in mathematics. If the can ask question in out of class time I well solve question and give more suggestion about subject matter." (Teacher's views)

The above quoted view of teacher shows that he is helpful. Student can't give sufficient time in mathematics. Student ask question any time. Teacher will solve question and give more suggestion about subject matter.

"There is good relationship between teacher, students and our school family. Our teacher are helpful students can ask question in class time and out of school time" (head teacher views)

The above quoted view of head teacher shows that there is good relationship between teacher and students. Teacher are helpful students can ask question out of school time also.

Hence, it is concluded that there is good relationship between teachers, students and school family. Teacher are help full, student can ask question out of school time also. Teacher gives more suggestion in subject matter. But students can't give sufficient time in out of school time.

Teaching method and material

The selection and use of teaching method and instructional material plays a crucial role the effective classroom practices. There are various types of teaching methods that can be used in classroom practice. The selection of appropriate teaching method for a particular topic can be considered as the measure aspect of effective classroom practices. The selection of appropriate teaching learning strategies reflects the curriculum developer's professional understanding of the task at handling the needs of students given directions from the earlier curricular elements.

Teaching method is a way of communication from which students can be able to gain knowledge about the subject matter and materials that provide the mental picture of abstract things and help student to make strong concept about this subject matter for a long time. Because mostly teacher used lecture method, problem and lack of used question-answer method, discussion method.

The class observation (episode 1) indicates that there is lack of participatory approach between the students and teachers in the classroom. Teacher solve problem of arithmetic without participation of arithmetic all first then he defined at once. There is lack of using teaching material in classroom teaching. Student less involvement in

classroom activities. Teacher only look on white board. He cannot seen students activities and use like method.

When used questionnaire for interview, we found following data:

"We did not know that our teacher used any materials expect daily use materials to teach arithmetic related problems. Why he could not able to support and teach with interaction between us" (Students views)

From the above statement of the other four students were similar to the statement of the student above .The above quoted views of students indicated that there is lack of teaching materials to teach any topic of mathematics as well as arithmetic related problem. Teacher cannot interact with students in classroom.

"I haven't taken any formal training about teaching method and materials. But I always use child centered method and I used materials rather than daily user and made students concept clear of arithmetic" (teacher views)

The above quoted views made a contradiction with the researcher's class observation. Teacher mostly used lecture method in the classroom. But he said I always use child center method and teaching materials rather than daily use.

"All known truth the economic status depend vital role to fulfill all thing in everywhere some as we have crisis of economic. Now we are going to fulfill crisis by searching found. We hope provide sufficient teaching materials"(head teacher views)

The above view head teacher shows that there is a lack of economic resource. In near future the school administration is going to manage required teaching materials for mathematics.

Hence , it is concluded that the cause of becoming difficulties in teaching learning arithmetic was teacher applied generally traditional teaching methods like lecture method, problem solving method and less used to question answer method, discussion method etc. Because, teacherhasn't taken any formal training about teaching about teaching method and materials. Teacher was not using any teaching materials rather than daily used material marker, duster, textbook and lack of physical facilities. Because economics crisis of school to add material for teaching mathematics and there is not available separate mathematics lab. So, learner less participation at arithmetic and feel difficulties.

Student's participation in arithmetic learning

Teaching and learning are the main aspects of classroom practice. Learning is the process of progressive behavior adaption (Skinner) and also the process of acquiring new knowledge and new response (woodworth). In any learning process, students should actively participate, without actively participate learning may not be possible.

Different aspects should be suitable for learning. Such as educational background of family, learning environment at home and school, interest of learner, qualified teacher, subject matter or curriculum. Lack of any one of these aspects, effective learning should not go continuity. If the students participation and interest, they would progress in learning arithmetic. Student's participation can be defined through following factors:

Time given to mathematics practice

Extra classes, tuition in addition to class

Irregular in school and class

Mathematics needs more time for practice and repletion. Extra class, tuition class were also support for their arithmetic learning. But students should be involved in household work during the leisure time or out of school. They could not involve such type of extra class and tuition class, also they being irregular in class.

"Mathematics is abstract subject. Also arithmetic is one of this. Its problems are confused for solving because it is long process for solving. We are forget formula, some steps and be confused how to write. So we are not internally participating in learning arithmetic"

(Student views)

"Students are frequently absent and do not complete home work so that they are poor in arithmetic. Also, arithmetic is most of difficult problem of the student. Student have verbal problem, organizational problem in arithmetic. They don't want to be asked difficult problem by the teacher. Students are not internally participating in learning arithmetic. They are noising each other but don't interact for subject matter" (teacher view)

"We can easily distinguish such type of weak students but we could not provide them tuition and extra class. Due to large number of student, we could not support them rather than regular classes. (Head teacher view)

From the above views of students, teachers and head teachers we can conclude that, students were very poor in learning arithmetic. Lack of enough time, situation for help in household work, irregular in school and class etc. were the cases of learning difficulty. When students did not internally participate in arithmetic learning that affected their output or result.

Practice of arithmetic at home

There are so many causes of difficulties in learning arithmetic. Among them practice of arithmetic at home is one cause of difficulties in learning arithmetic. Uneducated and illiterate parental generation could not feel the nature of education, as it should be which eventually result in high rate of failure and dropout. In this study most of the student's parents were illiterate. So, the students were not help from their parents. So, they fell difficult in learning. Home is regarded as the first school to all individuals. They learn how to behave, how to respect elders, how to cooperate to each other. Home environment plays a vital role in learning. Arithmetic is affected by everyday life of all individuals. So it's more practice at home. But some students and teachers views that;

"We cannot understand arithmetic terms as well. In school teacher can teach any problems but we forget how to solve in terms of the problem at home. Also we are not using arithmetical terms in daily life. So arithmetic is difficult for learning" (student's views)

From the above statement of the other four students were similar to the statement of the student above .From the above students views showed that, student did not well understand in mathematics terms. In school, they copied from the teacher, but when they

reached to home they forgot how to solve problems of arithmetic. It showed that, students fell difficulty in arithmetic.

"The parents of students do not come in school and also they do not try to understand their children's behavior, learning ability etc. Most of the parents leave the whole responsibility for their children to the school. But if they are not cared for their children at home that students can't cover in their learning. Also most of the students can't take homework." (Teacher view)

"In our society most of the parents for their children fully depends upon in school. But they do not care in their children at home. They are not responsible in learning for their children at home."(Head teacher view)

From the above mathematics teacher and head teacher view we know, parents were not conscious about their children's learning at home. Parents were not home and school had to be fully responsible towards their children. Students do not practice arithmetic at home. They depend fully in school. So, the difficulties in arithmetic are caused by lack of practice for students.

It could be concluded that home environment of students were not favor able for learning mathematic. Students had lack of practice for arithmetical terms in behavioral life then they felt difficulty in learning. Students did not sufficiently practice arithmetic at home and they were not using arithmetic at daily life practice.

Finally, as a whole, students did not have sufficient practice in arithmetic at home and school. Low practice of arithmetic at home, not sufficient learning opportunity at home, student- teacher interaction, participation in learning. I found that students had

many difficulty areas such students had not organized arithmetical problem. In arithmetic problems, students were not sequencing multiple steps. They were mismatching some steps. Students had forgotten formulas and steps very fast. Also Students have difficulties while learning arithmetic is not develop clear conception on verbal problems, to generalize the learned concept due to fast forgetting. During observation, most of the students have confused to change language into own word in arithmetical problems. Also, they were unable to understand the vocabulary of mathematical terms. They had difficulty explaining and communicating about arithmetic including asking and answering questions. Students had difficulty reading texts to direct their own learning. According to the constructivism learning theory, to avoid the language problem in arithmetic, teacher could be encouraged students to put problems into their own words. Teach children to read for meaning when trying to identify the operation to use for solving an arithmetic problem. Also teacher should encourage of students to be clear about each and every terminology of arithmetic.

CHAPTER V

SUMMARY, FINDING, CONCLUSION, AND RECOMMENDATION

This chapter deals with the summary, finding, from the discussion for chapter and conclusion and recommendation for further study. This chapter concerns the following sections.

Summary of the study

Mathematics is a language which is basic of communication. Daily communication involves the frequent use of mathematical concept and skills so mathematics is essential for understanding and interpreting of every discipline. Now every human economics, psychology, etc. are interrelated mathematical knowledge, it is very difficult techniques are essential tools for the development of every field of knowledge.

The students of problem of this study are taken as difficulties and cause of difficulties in arithmetic for secondary school students. Also the main objectives of these studies were to explore the different kind of difficulties in learning arithmetic and to analyze the cause of difficulties in learning arithmetic at secondary level. To fulfill this objective the researcher selected Shree jana jagriti secondary school in Rolpa. The design of the study was case study in which meaning were derived from the total study, logic and reasoning of why and how it was difficulty that linking with theories. The case study of six students sample was carried out. The major tools used for this study were in depth classroom observation form and mathematics achievement test to support the finding of the study constructivist theory and connective theory were also.

Finding

The researcher finds the following major finding of difficulties in learning arithmetic at grade x.

-) Students have not followed the sequential order of solution steps mismatch for making final solution.
-) Students are confused by the language of arithmetic in technical word problem, vocabulary of math.
-) There is lack of teaching materials and teacher can't use teaching materials in mathematics class. Teacher applied traditional methods.
-) Students are more weeks, irregular. They haven't sufficient time to practice in classroom.
-) There is good relationship between teacher, students, and school family, teacher are help full, students can also question out of school time all teacher gives more suggestion in subject matter. But students can't give sufficient time.
-) Students did not have sufficient practice of mathematics at home because they were forgetting complex terms and formulas very fast.
-) School is not supporting providing extra classes and not introducing new policy for learning easily.

Conclusion

From above stated finding of this study we can draw the conclusion that the learning environment of students is not supportive. the theories and related document to find the difficulties of grade X students in arithmetic learning. I could get that students

have many of the weakness in arithmetic learning such organizational difficulties, language difficulties. Students do not have clear solution of the problems. They are forgetting formula or any steps of the arithmetic very fast. They are unable to understand the complex terms the arithmetic problems.. Also Students have difficulties while learning arithmetic is not develop clear conception on verbal problems, to generalize the learned concept due to fast forgetting. During observation, most of the students have confused to change language into own word in arithmetical problems.

In difficulties in learning arithmetic due to lack of time and students are poor, irregular. Students did not have sufficient practice of mathematics at home because they were forgetting complex terms and formulas very fast. Teacher use traditional method can't give sufficient time classroom. There is good relationship between teacher, student and school family. Teacher are help full students can ask question out of school time also. Teacher gives more suggestion in subject matter. In teaching learning arithmetic was applied generally traditional teaching method like lecture method. Teacher was not using teaching materials. School is not supporting providing extra classes and not introducing new policy for learning easily. So learner participation at arithmetic class and fill difficulties.. Also Students have difficulties while learning arithmetic is not develop clear conception on verbal problems, to generalize the learned concept due to fast forgetting. During observation, most of the students have confused to change language into own word in arithmetical problems. According to the constructivism learning theory to avoid the language problem in arithmetic, teacher could be encouraged students to put problems into their own words. Teach children to read for meaning when trying to identify the

operation to use for solving an arithmetic problem. Also teacher should encourage of students to be clear about each and every terminology of arithmetic.

According to the constructivism learning theory it encourage the student to involved themselves actively and use techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement in mathematics rather that classroom it focus on real life learning environment. Therefore, the students were taken from the discussion in the interview and while observing, the whole aspect of the students as well as the class of the teacher was observed.

Recommendations for further study

This is the case study of learning difficulties in arithmetic at secondary school of rolpa district. According to the fining and conclusion provided by the study, recommendations for further study can be presented as:

-) A similar study can be done for primary and lower secondary level and other topics.
-) A study can be done why mathematics is difficult most of the people.
-) Teacher can used discussion, question-answer, inductive, deductive, child center method in classroom practice.
-) School administration should manage compulsory extra mathematics class to the student according to their level.
-) Teacher gives and checks home-work, class-work on every day.

-) This study is done with limitation and particular area. The broad and general study may be done for overall district.
-) The school administration should interact with teacher, students, parents and other related persons to discuss the arithmetical problem. It help to identify the difficulties in learning arithmetic.

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Appendix-A

The question for the class test to know language difficulties and organizational difficulties.

विषय : गणित

पूर्णाङ्क : २०

कक्षा: १०

उत्तिर्णाङ्क: ८

समुह क ४ ३ = १२

१. एउटा विद्युतियचुलोको अंकितमुल्य रु ७००० छायदिउक्तचुलो विक्रि गर्दा ५ % छुट दिएर १३ % भ्याट लगाउदाउत्तलचुलोको वास्तविकविक्रि मुल्यकति हुन्छ ?पत्तालगाऊ ।

२. १ क्यानेडियन डलरको कतिजापानि येन हुन्छ ?पत्तालगाऊ ।

१ क्यानेडियन डलर = रु ७६.१९

१० जापानि येन = रु ८.७७

३. रु ४५००० लाई ५% प्रतिवर्ष ब्याजदरमालगानीगर्दा ३ वर्षमाप्राप्तहुने चक्रियब्याज र चक्रियमिश्रधनपत्तालगाऊ।

४. रु ९६० माकिनेको एउटा साडि रु १२०० मा बेच्दाकतिप्रतिशतनाफा हुन्छ ?

समुह ख

५. एउटा मोबाइल सेटमा १०% छुट दिई १३% भ्याट लगाउदा केताले रु १५२५५ तिर्नु पर्छ भने उक्तमोबाइलको अंकितमुल्यपत्तालगाऊ ।

६. कुनै धननिश्चतबार्षिक चक्रियब्याजमा ३ बर्षमा रु ६६५५० र ४ बर्षमा रु ७३२०५ हुन्छ भने ब्याजदर र मुलधनपत्तालगाउ ।

Appendix-B

Interview Guidelines With Respondent Class Students

Name of the Student:.....

Caste:.....

Class:.....

Roll No:.....

Age:.....

Gender:.....

Address:.....

Position in the class:.....

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

a. Language difficulties in arithmetic learning

) Difficulty with the vocabulary of arithmetic.

) Confused by language in word problems.

) Difficulty in reading text at arithmetic.

b. Organizational difficulties in arithmetic learning

) Difficulties in sequencing of multiple steps.

) Particularly in word problems or other problem situations.

) How are mathematical term dealt by teacher in your class? how do you feel?

c. teacher-student interaction

) Teacher helps in students at arithmetic problems.

) Response between regular and irregular students.

d. Teaching method and materials

) Teaching method

) Teaching materials

e. Students participation in arithmetic learning

) Attention in arithmetic class

) Disturb from any other friends.

Appendix-C

Interview Guidelines With mathematics Teacher

Name of Teacher:.....

Qualification:.....

Triaining:.....

Experience:.....

Gender:.....

Class:.....

Address:.....

Age:.....

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

- a. Teaching strategies.
 - Using teaching materials.
 - Different teaching strategies.
- b. Participation in the class.
 - Student are regular or irregular in class.
- c. Interaction between teacher and students.
 - Ask any problems by students.
 - Discuss about many examples of arithmetic.
- d. Practice of arithmetic at home.
 - Students are taken to the homework.
- e. Effect of language in learning arithmetic.

-Difficulty with the vocabulary of math

-Confused by language in word problems.

Appendix-D

Interview Guidelines With Respondent Head Teacher

Name:.....

Date:.....

Gender:.....

Qualification:.....

Teaching experience:.....

Address:.....

The Interview with the head teacher had been taken on the basis of following main topics.

- a. Students participation in school and learning.
 - Students are regular or irregular in school.
 - Students interest in mathematics.
 - Participation in mathematics class.

- b. Students and teacher relation.
 - Students are openly talking with teacher.
 - Students opportunity for learning with teacher.

- c. Teacher-students interaction.
 - Sufficiently interaction between teacher and students.
 - Student are openly ask any questions.

- d. Difficulties things for week student at school.
 - Checking homework daily.
 - Extra class provided by school for week students.

-Math teacher can involve for week students.

Appendix-E

Episode 1

The teacher went to class, and researcher also entered in the class with teacher. There were 45 students in the class. Teacher took the attendance of the students. There were 35 students present in that day. Teacher said open your book and he wrote the topic money exchange. And he describe about chapter with some example but he hadn't any kind of teaching materials to be showed to the students to cleared the concepts of money exchange. He wrote problem on the blackboard and solve it. All of the students were busy to write the solution from the board. Most of the students were slow hand writing to copy from board, they were not finished all. The teacher did not review the pervious class and also did not check the homework. Also he did not give the class work for students. Students were very show to retrieve the process of the problem. They were not clear concept of this problem. After some time teacher asked with the students "Do you understood or not?" Some of students said " yes sir ".At last the teacher gives some problems for homework, and then finished in this class".

Episod 2

"When the researcher entered in the class room all of the students are said "good morning sir". Also researcher said that " good morning students " After then, the researcher asked to the students " do you finish the homework?" some student said "yes sir" but most of the students said that "we can't solve the problems sir " The researcher check the some of the student copy. Then he/her get so many poor in problem such as

there is not compute the exact value, hand writing is not clear , there is difficulties in sequencing multiple steps, students are not apply exact formulas, they are confused by language in word problem etc. In this time researcher cross- checked in other students activities. They are not interest in learning activities but most of the students are silent and some students are discussing about out of things. Also, they are not attention to the background when the teacher solved any problems. Most of the students are hesitated to ask the question with teacher. It seemed that lack of interpersonal relational so they are not easily learned arithmetic. The researcher said that "if you not understood about money exchange please you can ask question". But students said "we are understanding sir". After then researcher asked question in there one students but this students seemed that he is very afraid, he don't saying anything. It seemed that student's interpersonal relation with their friends, teacher not developed nicely. At last the researcher gives some problems for homework, and then finished in the class".

APPENDIX-F

Observation Form for Student's Participation in Learning Arithmetic in the Class

Children's attendance	Teacher's activities	Topic	Children participation in individual	Children participation in group	HW	CW	Observation comment

The observation of the students were taken on the basis of following main topic and noted in details every day.

- a. Friend's behavior toward week students.
- b. Main interesting area in learning arithmetic.
- c. Organizational difficulties of students arithmetic.
- d. Teacher's behavior toward the students.
- e. Language difficulties in learning arithmetic.
- f. Teaching method and material.