

Chapter I

Introduction

Background of the Study

The word "mathematics" has been derived from ancient Greek word "mathematica" which mean "to learn ". It seems to indicate that mathematics was considered as a process of learning interpreting the natural or surrounding of an individual. The origin of mathematics is based on the human needs for survival. The primitive people had little mathematical needs such as counting but the complex society needed to solve complex logical problems that demanded mathematics to solve,(Eves,1983). Today, Mathematics is used in every activity of human life. When analyzed the history of mathematics, it is considered as the mirror of civilization and it is directly associated with the society and human life. It is believed that the development of human civilization started together. So, the history of mathematics is the part of human civilization .The history of ancient civilization such as Babylonian, Egyptian, Roman and Greek etc. also have well illustrated in the development of the mathematics .From these civilization and the mathematician developed mathematics as a discipline by developing many rules ,axioms, postulates, theorem, and a mathematical system.

Mathematics is essential for understanding every discipline without the knowledge of mathematics it is very difficult for better understanding other discipline like economics, physics, chemistry and soon.Accepting the need and implication of mathematics in human life, Roger bacon says:

"Mathematics is the gate way and key of all science. Neglect of mathematics work injury to all knowledge. Since who ignorant of it cannot know the other science

or thing of the world. And what is worse men who are thus ignorant are unable to perceive their own own ignorance, and so do not seek a remedy."

Many student of our schools are unable to understand the mathematical concept, facts and skills and feel uneasy while solving mathematical problem. Fraction are one of the richest, most important and complex topics of mathematics used in all the field of mathematics such as arithmetic, algebra etc. Such a topic that the acquirements related to the fractions take place from the basic level curriculum of mathematics.(NCF, 2063). However, the creation and comprehension of the concept of fractions is time consuming and teaching fraction is seen as difficult (Smith, 2002). Therefore, fraction are one of the primary mathematics subject which are difficult for students, difficulties related to concept of fraction are arise at every class. The structure of fractions and teaching method will be the basic reason for these difficulties and error committing. More of an operational learning is carried out, rather than the conceptual learning and teaching fractions. If teaching can be made conceptual and the difficulties and errors can be minimized.

An error is deviation from accuracy or correctness. In past, errors were considered as bad sign of learning. But the scenario has been change completely: errors are not taken as bad sign of learning.

Olivier (1989) defines slips, errors and misconceptions as follows:

- Slips are wrong answers owing to processing; they are not systematic, but are carelessly made by both experts and novices; they are easily detected and are suddenly corrected;

- Errors are wrong answers owing to planning; they are systematic in that they are applied regularly in the same circumstances. Errors are the symptoms of the underlying conceptual structures that are the cause of errors; and
- Underlying beliefs and principles in the cognitive structure that are the causes of systematic conceptual errors are known as misconceptions.

Errors arise from students' prior learning, either in the mathematics classroom or from their interaction with the physical and social world. Olivier (1989) claim that errors arise from over-generalization of a concept from one domain to another.

Generally, an error means a simple lapses of care or concentration which almost everyone makes at least occasionally. In mathematics, an error means the deviation from a correct solution of a problem. In this study, an error is regarded as a mistake in the solving a mathematical problem algorithmically, procedurally, or by any other method. Errors could be found in wrongly answered problems which have flaws in the process that generated the answers (Young & O'Shea, 1981).

Error analysis is technique that teacher uses an educational devices for analyzing clues to solve some of the server learning problem of their students. It allows the researcher to pin point the computational mistakes being made by students and interpret the reason for mistake. Asking question to compute a problem while explaining to the teacher the process used can be provided excellent information about the nature and causes of difficulties or errors. Further, the teacher can discover and analyze the student response to detect learning difficulties or error through the intelligence use of inventory and diagnostic test along with personal interviews and plan the specific remedial measure to correct errors and remove difficulties or error.

Error analysis in mathematics teaching strives to identify the nature of error of learner may commit and dealing with a particular type of assignment. The result of

such analysis may help to the teacher to appropriate corrective teaching or the individual learner and make recommendations to the curriculum developers for producing further instrumental materials.

In my experience, students do many errors in solving verbal problem on fraction they have no idea how to operate fractions. I face more problem in secondary level class to teach them while using concept of fractions. So I will like to explore the causes of errors and give remedial ways to minimize these error. Correction of errors and mistakes helps both teacher and students correct in written and oral work, analyze them and provide feedback.

Statement of the Problem

After implementing the new curriculum in school level, arithmetic is also include up to secondary level. The general introduction of fraction is incorporated up to class three as well as operation (addition and subtraction) of fraction are incorporated in class four and five. The verbal problem on fraction incorporated in class VII. To solve problem related to verbal problem of fraction is the main objectives of grade VII (BLC,2069). The verbal problem on fraction include in grade VII.

In my teaching experience, when I teach to secondary class as well as basic level I have found that students do more errors in solving verbal problem on fraction while translating verbal problem into mathematical form as well as operating them. In this case, students do more error on their examination I found while check their paper. I have found a problem to fulfilment of objectives of curriculum.

When I reviewed some articles, thesis which were related to error analysis on mathematics. I found that, In many researches students committed such error like:

computational error, error in process, error in problem solving, comprehension error, encoding error, and error by careless and motivations, conceptual error. Zuhroh (2018) said that, " process skill error is mostly committed error ". Alghazo (2017) concluded that, " many of problems students have with fractions are caused by their lack of understanding of fraction as real numbers". And also says that students should not allowed to use calculators because calculators reduced their sense of number.

Moreover, after reviewed these article I found nobody tell about what are the causes of these error and do not give ways to minimize these error. So, the following questions are arouse towards myself: Why students do these error? What are the main causes of these error? How can minimize them? What are the ways to minimize these error? These questions occur in my mind. So, I am motivated to carry out this research.

Research Questions

- Why do students doing these error when solving verbal problem on fraction in grade VII?
- How can minimize the error on solving verbal problem on fraction in grade VII students?

Objective of the Study

The objective of this study were as follows:

- To explores the causes of the errors doing by students in solving verbal problem of fraction at grade VII
- To find remedial ways to minimize the error in solving verbal problem of fraction at grade VII students

Rational of the Study

As we know the topic fraction is most important part of the mathematics in basic level to higher level. It is clear that, the achievement of mathematics is poor. For improvement, it is necessary to find the errors committed by students while solving the problem of mathematics i.e. fraction. There are many errors as reading error, comprehension error, transformation error, process and encoding error were made by students during the solving word problem of fraction. The main purpose of this study are to explore the causes of the errors doing by students and find remedial ways to minimize the error in solving verbal problem of fraction at grade VII students. It helps to the learner, teacher, curriculum developer, subject exports and other research scholar etc. to take an information about causes students' error and chose better way to minimize these error. In this way the study has following rationales:

- This study helps for learner to minimize their error
- This study helps for teacher to explore the causes and use remedial ways to minimize the error
- This study helps for curriculum developer to rearrange the curriculum of mathematics according to learners' need and interest
- This study helps for the research scholar to further research research in this field.

Delimitation of the Study

In this study the following are the delimitations:

- The study was conducted on grade VII students of Shree Himalaya Secondary School of Gulmi District,

- The study conducted the more error committed students on solving verbal problem on fraction,
- The sample selected from convenience sampling methods,
- Only the government school were selected using convenience sampling,
- For data collection procedure interviews and observation guideline were conducted

Operational Definition of Related Terms

Verbal Problem: If a mathematical problem tells as a story and present a situation in terms of numbers of unknown both first and last sentence of problem ask to answer of the following question then it is called a verbal/word problem.

Fraction: A number written in form of a ratio of two number where the top numbers referred as the numerators and the bottom number referred to as the denominator.

Errors: An "error" is a deviation from accuracy or correctness. Errors refers to the first mistake done by student during the solution of the problem. Sometimes it may regularly in the learners' performance.

Reading error: If the student could not read the key words or symbols of given verbal problem, this type of error is called as reading error.

Comprehension Error: If the student could not grasp the overall meaning of the given problem, these type of error classified as a comprehension error.

Transformation Error: If the student understood the question but could not transform it into mathematical expression, these type of error can be classified into transformation error.

Process Skill error: If the student is able to identify the procedures and does not carry out this operation correctly, these type of error can be classified into process skill error.

Encoding error: If the student correctly worked out the solution to the problem but could not express the solution in an acceptable form is classified into encoding error.

Carelessness Error: If the students commits errors for the first time innocently and if they corrects themselves in the second attempt without providing any clue, such type of error are categorized as a carelessness error.

Chapter II

Review of Related Literature

This chapter deals with the review of the related literature. The review of related literature is an essential aspect to undertaken for documenting the research findings drawn by the different researcher related to present study. Theoretical literature describes learning theories in mathematics which help has helped to construct the framework to achieve the objectives of this study. This section also deals with the review of other related literature about facing problems concerning with curriculum, activities, and theoretical literature. This chapter also describes the conceptual framework of this study.

Empirical Review of Literature

Empirical review deals with the review of some books, theses, journals, articles and web based materials and soon. Empirical review helps to researcher to find the gap of the research work. There are some national and internal theses and articles are included in this section.

In International Context

Zuhorh (2018), Studied on "Analysis on students errors in solving higher-order thinking problems on proportion. This research is aimed to describe students' errors and the underline reasons that caused students' error in solving higher-order thinking problems on proportion. The approach used in this research is a qualitative approach. In this study, researcher used Higher-order thinking is approached as the "top end" of Bloom's (or any other) taxonomy (Bookhart, 2010). Based on Anderson's Taxonomy (Revised Bloom's Taxonomy), higher-order thinking skills is in analyzing, evaluating and creating thinking process, such that not all students are

able to solve higher-order thinking problems as they are having difficulties in the specific phases. Researcher uses qualitative data to describe, analysis about errors committed by students of grade VIII Junior High School in solving higher-order thinking problem on proportion. This research was conducted in class VIII-D and VIII-L of SMPNegeri 2 Taman on second semester of academic year 2016/2017. Class VIII-D consists of 36 students and class VIII-L consists of 35 students. Researcher chose four students to be the research's subjects. Four subjects consist of two students of VIII-D and two students of VIII-L. These four subjects were chosen to be interviewed according to three requirements which are students who commit many types of error in solving the problem of tests given, the variations section, type, and the underline reason of error, and openness and fluency in communicating.

According to data analysis, there were five students' errors in solving higher-order thinking problems on proportion which are: reading, comprehension, transformation, process skill and encoding error. Type of error students mostly committed is process skill error, which they made error in processing mathematical concept and arithmetical error. The underline reasons of the reading error are can't able to interpret and not understand key terms. Causes of comprehension error is misinterpretation and transformation error are cannot determinant mathematical operations. Causes of process skills error are lack of awareness in processing the problem.

Alghazo&Alghazo (2017) studied on "Exploring Common Misconceptions and Errors about Fractions among College Students" in Saudi Arabia. The purpose of this study was to investigate what common errors and misconceptions about fractions exist among Saudi Arabian college students. Moreover, the study aimed at investigating the possible explanations for the existence of such misconceptions

among students. A researcher developed mathematical test aimed at identifying common errors about fractions as well as short interviews, aimed at understanding the thought process while solving problems on the test, were conducted among a total of 107 college students. The findings suggested that the majority of college students in Saudi Arabia hold common misconceptions about fractions and mathematical calculations involving fractions, such as thinking that all fractions are always part of 1 and never greater than 1, and using cross multiplication to solve multiplication problems involving fractions.

Since research shows that many of the problems students have with fractions are caused by their lack of understanding of fraction as real numbers, we need to find ways to help introduce fractions to students in a more simple and comprehensible manner. One approach for this is to start introducing fractions as pictorial and visual images long before the actual symbolic fraction format is introduced. This will help students gain a deeper understanding of the “part of whole” concept of fractions.

Another way to help students conceptualize fractions and the four operations is using word problems that would help support their conceptual understanding of fractions. Another issue is that students should not be allowed to use calculators at early grades to calculate fractions. This will help students learn to rely more on paper and pencil calculations, which will allow a more persistent and deeper understanding and memorizing of calculation methods with fractions. When students use calculators their sense of number is reduced. They give complete trust to the calculator and they end up being convinced by false answers, generated by mistaken finger hits perhaps, yet the students will lose the ability to use any reasoning in examining their answers.

Aksoy&Yazlik (2017) studied on "Student Errors in Fractions and Possible Causes of These Errors". In this study, it was aimed to determine the errors and

misunderstandings of 5th and 6th grade middle school students in fractions and operations with fractions. For this purpose, the case study model, which is a qualitative research design, was used in the research. In the study, maximum diversity sampling, which is a purposeful sampling method, was used. For this reason, this study was conducted in a state and a private secondary school on a voluntary basis with 105 5th graders and 84 6th graders, with a total of 189 secondary school students from different levels of achievement. In order to determine students' errors and misconceptions about fractions, two tests were prepared by researchers, ten open-ended questions for 5th graders and twelve open-ended questions for 6th graders. Before these tests were formed, the related field was scanned and the existing misunderstandings were determined. Content analysis method was used on the analyzing of the data.

When the findings are examined, it is seen that students made errors in the equalization of the parts that takes place in the concept of fractions, identification of complex fraction on model, expressing complex fraction as fraction, conversion of complex fraction to compound fraction, multiplication and division with fractions, the relationship between part and whole, understanding what they read and the mathematical discourse. It has been determined that, the students did not pay attention to the equality of the parts that take place in the definition of the fraction when modeling or showing fractional expressions on the number line. It was observed that the students were successful in modeling the given fraction but didn't try to divide parts equally when modeling.

It can be said that students couldn't comprehend the equalization of the parts during primary school. Therefore, the source of the student errors in equalization of the parts, that takes place in the concept of fraction, is the misunderstandings in the

primary school. It is seen that, the students fell into error when they expressed the fraction on the model, they wrote the numerator and denominator in place of each other, and expressed the numerator up to the number of the no scanned division and the denominator up to the number of the scanned division. In these works, it was emphasized that the part-whole relationship in the concept of fraction should be explained on concrete objects and then by using geometrical shapes such as triangles, rectangles and circles. It has been determined that the students made error in determining the integer part of the complex fraction, when they were asked to express the fraction corresponding to the point in the given model or on the number line as a complex fraction. It has been seen that students also had difficulty in expressing integers as a fraction.

It was also found that students made errors while converting complex fractions to compound fraction. Identified errors are; omitting the integer part in the complex fraction and translocation of numerator and denominator in remaining statement, adding up numerator and denominator and writing it to the denominator or adding up the value in the numerator and denominator and writing it to the numerator. It is understood here that, students had difficulty in converting complex fraction to compound fraction and they turn to different ways to get a compound fraction. It can be argued that students made errors because they did not know why they do these transactions, that they operate by rote and meaningful learning didn't occur. Another finding in this study is that in the questions that require addition with fractions that have equal denominator, students added up the statements in numerators and wrote it to the numerator; added up the statements in denominators and wrote it to the denominator. In addition, during the subtraction with fractions, students continued to make the same errors and they found the denominator by subtracting the

denominators from each other. In addition, it has been determined that the students had transactional difficulty in multiplication of an integer with a fractional expression and because of having troubles in determining the denominator of the integer, they prefer adding up the same fractional statement, that requires multiplication, by writing it alongside the insomuch as necessary.

In this research, it has been determined that students in general cannot make sense of the expressions in the problems and have difficulty in understanding the mathematical discourse. However, it is found that as for some students, they apply random operations with the given numerical statements in the question. One of the causes that lead students to make errors in problem solving is that even though they understand the problem, they incorrectly operate it because of the previous errors that they have while operating with fractions. Misunderstandings not only prevent students to learn the topic but also they negatively affect the subsequent learning of students.

Mustafa (2017), Dumlupinar University studied on "Errors Made by Elementary Fourth Grade Students When Modelling Word Problems and the Elimination of Those Errors through Scaffolding". This study aims to identify errors made by primary school students when modelling word problems and to eliminate those errors through scaffolding. A 10-question problem-solving achievement test was used in the research. The qualitative and quantitative designs were utilized together. The study group of the quantitative design comprises 248 elementary 4th grade students attending nine classes at three state schools in the city centre of Kütahya, chosen with the cluster sampling method. Frequency analysis and discriminant analysis were performed to analyze the quantitative data. The qualitative data were collected through clinical interviewing. The study group with whom the clinical

interviews were performed comprises 30 primary school students in the class closest to the average problem-solving achievement among the nine classes.

Mustafa classified the errors caused as: missing critical information, incorrect relations, inability to determine structure and relation, incorrect diagrams, number consideration, number operator. As a result, it was observed that most of the errors made by the students were caused by the use of the number operator model, which was followed by incorrect relations, number consideration, missing critical information, an inability to determine structure and relation and incorrect diagrams. The discriminant analysis shows that the biggest contribution to discriminating between students with high and low levels of modelling achievement is made by errors originating from using the number operator model, and this type of error is followed by incorrect relations, an inability to determine structure and relation and number consideration models respectively. It was concluded that errors originating from missing critical information are mostly made by successful students and the ratio of errors originating from incorrect diagrams does not affect the distinction between successful and unsuccessful students. The research also found that the modelling cycle of students does not benefit from the interpretation and validation stages. Finally, it was seen that more than half of errors made during modelling can be corrected through scaffolding.

Abosalem (2013) Studied on "The relationship between the learning styles of students in grades five and six and their held misconceptions about dividing fractions based on Kolb's Model" at The British University in Dubai. The objectives of this was to examine the relationship between two grade five and six students' learning styles according to the Kolb's Learning Style Inventory, and their misconceptions in dividing fractions. The study was conducted on a sample of 1864 students from

grades five and six selected randomly from fifteen public schools in Abu Dhabi in the academic year 2011/2012. A quantitative approach and two data collection instruments (Kolb's LSI and mathematics diagnostic test) were employed to gather data. The data were analyzed by using descriptive statistics specifically proportion tests, and the Chi-Square (χ^2) Independence Test.

The results of this study revealed that the dominant learning style of both grades is convergent with 724 students (38.84%), 34.70% for grade five and 42.92% for grade six. The next dominant learning styles were assimilating with 23.35% and accommodating with 21.73% for grade five. While diverging and accommodating in grade six are the next dominant learning styles with 23.54% and 18.00% respectively. Moreover, the analysis of the Chi-Square (χ^2) independence test indicated that students' learning styles varied from grade to grade. With respect to students' misconceptions on dividing fractions, the results indicated that the two grades hold the same misconceptions. The first one is flipping the dividend with 31.81%. Coming in at the close second is the lack of fraction concepts with 28.96%, and finally multiplying without flipping with 28.70%. The answer to the main question, which aimed to examine the relationship between students' learning styles and their misconceptions in dividing fractions, is that the relationship is indeed statistically significant at $\alpha = 0.05$

Mathematics teachers in Abu Dhabi should stay away from a teacher centered approach that contradicts or conflicts with their students' learning approaches and they should give more time to their students to employ hands-on activities and use of concrete equipment to maintain their understanding and help them implement fractions in real-life contexts. Also, using different fractions' representations would help to enhance the students' understanding of the reasons behind applying different

algorithms and procedures in solving fractions' operations such as division.

Additionally, teachers should clarify for their students that some whole number rules cannot be generalized and used in fractions. For instance, the commutative property in adding whole numbers should not be implemented or over-generalized in dividing fractions.

Mahlabela (2012) Studied on "Learners errors and misconceptions on ratio and proportions (A case study of 9 grade learners from a rural KwaZulu-Natal School). The purpose of the study is to explore learner errors and misconceptions on ratio and proportion. The study intends to explore errors and misconceptions that Grade 9 learners from a school in KwaZulu-Natal exhibit when they solved problems on ratio and proportion.

Researcher use qualitative research design. The findings of the study are that learners have a limited knowledge and understanding of ratio and proportion, hence their performance in items on the topic is poor. A great proportion of the learners have serious misconceptions of ratio and proportion. They use incorrect strategies to solve problems on ratio and proportion that produce errors. The errors and misconceptions they exhibit are not different from those observed by similar studies conducted in other parts of the world.

Clements (2004) believes that at the upper primary level most of errors on mathematics tests and examinations are caused by Reading, Comprehension or Transformations errors or by Careless errors. Often, pupils are able to carry out one or more of the four operations (+, -, x, ÷) needed to answer a question, but they do not know which operations to use.

Newman (1983) defined five specific literacy and numeracy skills as crucial to performance on mathematical word problems: reading, comprehension, transformation, process skills, and encoding. Newman's Error Analysis (NEA) provided a framework for considering the reasons that underlay the difficulties students experienced with mathematical word problems and a process that assisted teachers to determine where misunderstandings occurred. NEA also provided directions for where teachers could target effective teaching strategies to overcome them. NEA experienced a reawakening in Australia and has been included in a number of programs such as the Counting On program in the Australian state of New South Wales.

Summary Literature Review

Many of the problems students have with fractions are caused by their lack of understanding of fraction as real numbers (Alghazo,2017).We need to find ways to help introduce fractions to students in a more simple and comprehensible manner. One approach for this is to start introducing fractions as pictorial and visual images long before the actual symbolic fraction format is introduced. This will help students gain a deeper understanding of the “part of whole” concept of fractions. Another way to help students conceptualize fractions and the four operations is using word problems that would help support their conceptual understanding of fractions. These word problems should connect their daily life activities with concepts they would encounter when learning about fractions. Another issue is that students should not be allowed to use calculators at early grades to calculate fractions. When students use calculators their sense of number is reduced.

Error made by students were caused by use of number operator mode which was followed by incorrect relations numbers consideration missing critical

information an inability to determine structure and relation and incorrect diagrams and also says more than these error can be corrected through scaffolding (Mustafa,2017).

After review these above articles and thesis they use qualitative as well as quantitative method use Newman procedure for error analysis, interview schedule and questionnaire were as a data collection tools.

In Nepalese Context

Laudari (2014) Studied on, "An error analysis grade v students solving mathematical word problem". The main objective of this study were ,find out errors of grade v student in solving mathematical word problem with respect to gender and also find the way to minimizing error on solving word problem. The study made use of both quantitative and qualitative method. Researcher finds the following facts during this research as: Transformation error was more committed by students in comparison other error. There is no more difference between boys and girls to errors occurrence but comprehension errors, transformation error, encoding error, were committed by boys more than girls and process skill errors were committed by girls more than boys. No such errors found in reading level.

Adhikari (2012) Studied on," An errors analysis in solving verbal problem on probability (secondary level)" The main objectives of this study were ,identify the error committed by the student of secondary level on solving problem of probability ,analyze the errors committed by the student in problem solving with respect to gender. The researcher use quantitative and qualitative methods for this study. On the basis of this study researcher find these result as: Public students committed more errors than institutional school students, comprehension error was more committed by

students of each class than other error, error was less committed by boys than girls' students, and students committed more error at skill, application level than knowledge and problem solving level.

Dawadi (2011) Studied on, "An Error Analysis in fraction of Grade V students in Gorkha District". The main objectives of this study were, to identify and compare the error made by students in fraction. Researcher use descriptive research design and Newman's theory for error analysis as a theoretical base. Researcher suggested that student do error on comprehension, transformation, process skill, and encoding and carelessness stage. This study shows that error committing by student is more in comprehension stage on comparison of other stages.

Acharya (2010) Studied on "An error analysis in solving verbal problem in Arithmetic (a study in primary level)". The main objective of this study were ,analyze the errors made by student in solving problem of arithmetic with respect to gender and also compare the error made by students in knowledge, skill, application and problem solving in verbal problem in arithmetic.

The study made use of only quantitative method. This research held in the government school of Kaski district. Researcher suggested the following result as: GradeIV students committed more errors than grade v students. The comprehension error was more committed by students of each class than other errors. Error committed by girls were more than the error committed by boy.

Sharma (2010) Studied on, "An error analysis on solving verbal problems of Algebra by grade VII student". The main objectives of the study were, to identify, analyze and also compare (Government and Private) the error made by student of grade VII in solving problem on Algebra. Researcher use quantitative technique and

Newman's theory as a theoretical base. Researcher shows reading, comprehension, transformation, process skill and encoding error committed by students. This study revealed that students had committed numbers of error on solving verbal problem in algebras. The concentration of error was seen on the phase of transformation, process skill and comprehension of the problem. In comparison of Government school students commit more error than private school students.

Summary of Literature Review

I have reviewed some articles, international published thesis and national unpublished thesis which are related to my topic. There are many thesis in context of Nepal, used Newman theory and procedure for identify the error. In Nepalese context I review five thesis such as: Laudari (2014)), Adhikari(2012),Dawadi(2011), Acharya(2010) and Sharma (2010). All of them use Newman Theory of Error Analysis and procedure for error Analysis.

They mainly used quantitative, qualitative and both method and used Newman Procedure of Error as: reading, comprehension, transformation, process skill and encoding error. Comprehension error was more committed by students i.e. percentage of comprehension error was more than with the comparison of other types of error (Laudari, 2014). High percentage of comprehension and transformation error were found (Acharya, 2010). The concentration of error was seen on the phase of transformation, process skill and comprehension of the problem. In comparison of Government school students commit more error than private school students. (Sharma, 2010).

Reflection

After reviewing above mentioned research articles thesis and several many documents which are related to errors analysis verbal problem of fraction. I have found that all of them tell about what are the error committed by students. Nobody tell about causes of doing these error and don't give ways to minimize these error. So, I'm motivated to do this work. I concluded that the Newman Theory of Error Analysis is a suitable for my study on title "Causes of error analysis on verbal problem on fraction: A case study". There are several model i.e. Kolb's model, Kingfong model and theory Newman theory for error analysis are use in these above research article and the thesis. They use quantitative as well as mixed method design therefore I concluded use qualitative case study design.

Theoretical Literature

This chapter deals with the review of the related literature. The review of related literature is an essential aspect to document the research findings drawn from the different researchers related to present study. Theoretical literature describes learning theories in mathematics. It supports to construct the framework to achieve the objectives of this study. This chapter also deals with the review of other related literature about errors analysis in mathematics. Various textbooks, Journals, magazines which are related to the research topic will be reviewed.

Newman Criteria for Error Analysis

Newman (1977), An Austrian language educator in the mid 1970 s developed systematic procedures for analyzing the error made by students while computing the mathematical task. By reading and analyzing several thesis and article I decided to adopt Newman procedure for errors analysis on mathematical task. According to

Newman (1977, 1983), if the person wishing to obtain a correct solution in mathematical word/verbal problem then must ultimately proceed according to following hierarchy:

1. Read the question,
2. Comprehend what is read,
3. Carryout the transformation from the words of the question to the selection of appropriate mathematical strategy,
4. Apply the process skills demanded by selected strategy
5. Encoding the answer in an acceptable written form.

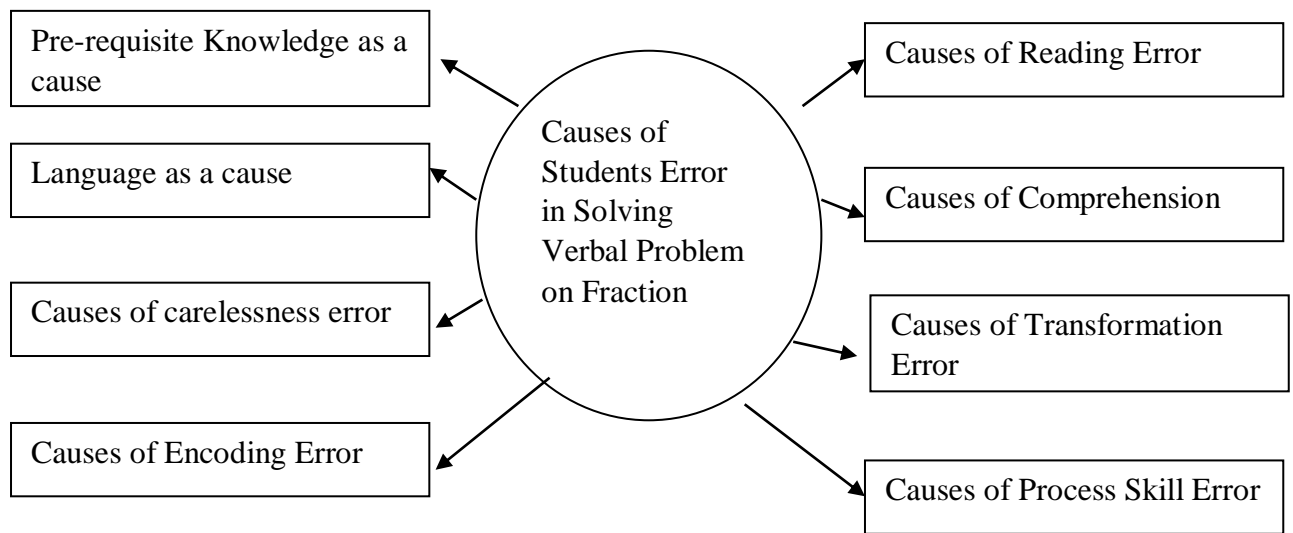
And, the errors was classified into five categories by Newman these categories are given below:

- 1. Reading error:** If the student could not read the key words or symbols of given verbal problem, this type of error is called as reading error.
- 2. Comprehension Error:** If the student could not grasp the overall meaning of the given problem, these type of error classified as a comprehension error.
- 3. Transformation Error:** If the student understood the question but could not transform it into mathematical expression, these type of error can be classified into transformation error.
- 4. Process Skill error:** If the student is able to identify the procedures and does not carry out this operation correctly, these type of error can be classified into process skill error.
- 5. Encoding error:** If the student correctly worked out the solution to the problem but could not express the solution in an acceptable form is classified into encoding error.

Conceptual Framework of the Study

A conceptual framework is a representation, either graphically or in narrative form, of the main concepts of variables and presumed relationship with each other. A conceptual framework covers the main features of the study and their presumed relationship.

To conduct the research on cause of students error in solving verbal problem on fraction at grade VII. The factor motivations and carelessness has key role in learning process of students. The some factor such as pre-requisite knowledge, language, school and home environment, cultural background of students, teacher and students relation, carelessness, language, mix-up the rules are affecting factor that help to make error in students learning. The researcher read several thesis and research article, journal and adopt following conceptual framework.



Conceptual Framework

Reading Error: If the student could not read the key words or symbols of given verbal problem, this type of error is called as reading error.

Comprehension Error: If the student could not grasp the overall meaning of the given problem, these type of error classified as a comprehension error.

Transformation Error: If the student understood the question but could not transform it into mathematical expression, these type of error can be classified into transformation error.

Process Skill Error: If the student is able to identify the procedures and does not carry out this operation correctly, these type of error can be classified into process skill error.

Encoding Error: If the student correctly worked out the solution to the problem but could not express the solution in an acceptable form is classified into encoding error.

Carelessness Error: If the students commits errors for the first time innocently and if they corrects themselves in the second attempt without providing any clue, such type of error are categorized as a carelessness error.

Language: Nepal is a multilingual country. Students comes from having neweri, magar and Nepali language as a mother tongue. But Nepali as a medium of instruction. So, language is a most affecting factor of learning.

Pre-requisite Knowledge of Students: Student are able to gain the knowledge of new knowledge they already have common basic knowledge of the related subject matter. In this research, operation on fraction be the basic knowledge to compute the verbal problem on fraction.

Chapter III

Methods and Procedures

Rajasekar (2013) states that: Research method is a systematic way to solve a problem. It is a science of studying how research is to be carried out. This chapter presents the procedures of the study to achieve the objectives of this study and to get the answer of the statement of problem. The present research will focus on the causes of errors in solving verbal problem on fraction at basic level. It also describes the design of the study, data collection tool, and procedure of data collection, validation of tools, analysis and interpretation of data.

Design of the Study

A research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan is the complete scheme or program of the research (Kerlinger, 1986:279 cited as Kumar, 2009). In this study I applied qualitative case study research design because of case study helps in depth study to explore the cases.

Study Side

There are 10 rural municipality and 2 municipality were habituated in Gulmi district. Among them Dhurkot rural municipality has total 11 secondary school. By convenience sampling Shree Himalaya Secondary School selected as my study side because I'm a teachers of this school.

Selection of Participant

All students of class VIIsec-A (Total 39 student 18 boys and 21 girls) of Shree Himalaya Secondary School are the participant of my research. By purposive

sampling I had select participant, Mathematics teacher of Shree Panchayan Secondary School and another Mathematics teacher of my school.

Tools of the Study

The main tools to collect the necessary data in this study would the interview and observation guideline. The above tools are used in the following ways.

Observation Guideline. Observation guideline is applicable to collect the information for the purpose of causes of student's error on verbal problem on fraction. I have take class on 8 teaching hours and I observed the student's classroom performance. In observation process I observed the students note, homework and classroom performance on the basis of observation guideline form included in Appendix A as well as separate the students who does more error for the in depth interview.

Interview. Kumar (2009) states that: Any person-to-person interaction between two or more individuals with a specific purpose in mind is called an interview. Open ended unstructured interview conducted for the selected students. And also conducted this interview with another teacher of my school and mathematics teacher Mathematics teacher of Panchyan Secondary School of Dhurkot who teach class seven mathematics on the basis how can minimize the error on solving verbal problem on fraction.

Data Collection Procedures

At first, take class and observed the students classroom performance, their homework, classwork during teaching learning activities. After this task, for the collection of necessary data and information with the help of unstructured interview was conducted for selected students why they are making error on solving verbal

problem on fraction. I'm a teacher of sampled school so there is no need to approval. For fulfillment of my second objectives, the open ended unstructured interview was conducted to the two teacher i.e another teacher of my school; Shree Himalaya Secondary and teacher of Shree Panchyan Secondary School Dhurkot R.M- 5 JaisithokGulmi on the basis of how can minimize the students error while solving the verbal problem on fraction.

Quality Standard

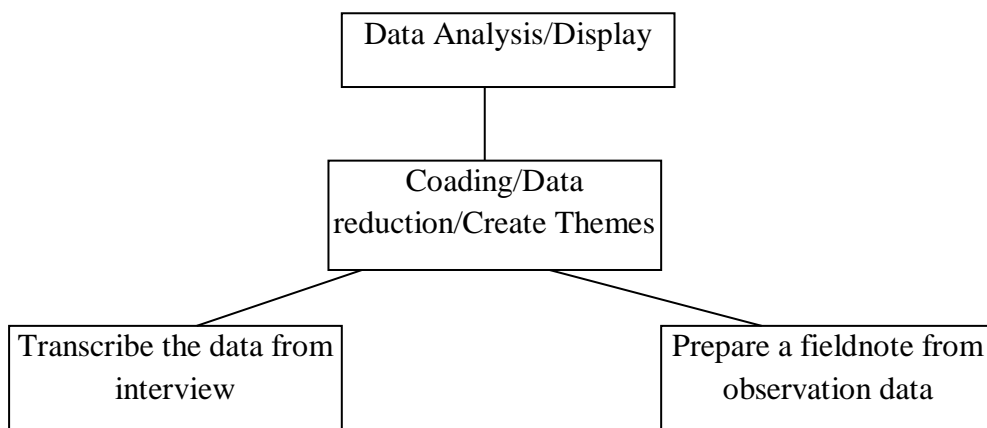
It is necessary for every research the collected data are valid and reliable. Reliability and Validity were established with the help of internal supervisors, experts, subject teacher and other related documents such as text book curriculum and teacher guide. The collected data would be valid if credibility, transferability, dependability, conformability were ensured.

- **Credibility:** The credibility is involved in establishing that the result of research are believable. I had triangulate the data which are collected from different sources methods and respondents to establish credibility.
- **Transferability:** Transferability refers to the degree in which the research can be transferred to other context. I would take thick description about respondents and study side to established transferability.
- **Dependability and Confirmability:** Dependability ensures that the research findings are consistent. Confirmability ensures that the collected data are truth and real. I would established dependability and confirmability through external auditing of research process.

Data Analysis Process

According to Kothari (2004), data analysis is a process of editing, coding, classification and tabulation of collected data. The analysis of data is important thing while preparing research report. The collected information from the primary source such as interview, and observation observation guideline were analyzed and interpreted by triangulation, thematic and narrative approach in qualitative methods. Data analysis procedure for this research was thematic. After collecting the data through interview and observation guideline; analysis procedure had done in following steps:-

- Transecting data taken from interview into written form
- Summarize the data from observation data and formulating code
- Formulating initial codes from the data.
- Data reduction.
- Searching for themes.
- Naming the themes.
- Analyzing the data on the basis of themes



Ethical Consideration

Ethical issues arise in every research work as well as other fields. To ensure the ethical issues following are the ethical considerations that will be used.

- Give detailed information to respondents about my research work
- Written approval would be taken to collect data and for participation of respondents for data collection procedure
- The rules and regulations of school and community would be followed.
- I would ensure that no effect of physically and mentally about the respondents
- I would provide research work for all that they were easily seen and understood.

Chapter IV

Analysis and Interpretation

In this chapter, the collected data were analyzed and interpreted. While collecting the data, to select the case student I had teach in class VIIsec'A' students and observed the classroom performance, homework sheet under the observation guideline submitted an appendix A. After observing the classroom performance and homework sheet of the students and I select the case students 3 boys and 3 girls out of 39 students who had done maximum error on solving the homework sheet of verbal problem on fraction. And this task, interview was conducted to case student (3 boys and 3 girls) on the basis of interview guideline for students mentioned on Appendix B for the purpose of the causes of students on solving verbal problem on fraction. Second, interview was conducted to the mathematics teacher who were participate of this research. For the purpose of how can minimize those students error in verbal problem of fraction and the technique they were used to minimize the students error on solving verbal problem on fraction.

Introduction of Sample School

Gulmi district lies in the Lumbini province of Nepal and one of the best educational places in this province. The climate and geographical structure of this place is very good. Shree Himalaya Secondary School is one of the oldest educational institutions of Gulmi district, Dhurkot Rural Municipality. It is located at ward no. 5 of Dhurkot Rural Municipality. This school was established on 2016 B.S. The surrounding place of the school are the also having such type of diversities. Usually, people migrated from different hilly area of the district. Beside this, some people from different parts of the nation are migrated. Bramins, Dalit's, Chhetri, and other ethnic

group such as Newar, MagarKumal are also the local people of this area. Many parents of the students were mostly found in agriculture profession. Very few were engaged in government service, abroad work, business, solders as well as labour. Economically, some peoples in the community were rich and some people of them had difficulty even for hand and mouth. Initially, at the time of establishment, there was temporary building, but not enough physical facilities i.e not enough playground right now.

Introduction of Case

Case study is the process or record of research into the development of a particular person, group or situation over a period of time (Wikipedia, 2019). The case study method is an approach to studying a social phenomenon through an analysis of an individual case. The case may be person, group, episode, process, community, society or any other unit of social life. (Kumar 2009 p.113)

In this study, the researcher did the case study of 6 students of grade VII sec 'A'. A students who make maximum error on solving verbal problem on fraction are the case of this research.

Respondent A

Respondent A is 13 years old girl studying at grade seven sec A. She lives in Isma Rural municipality-6, AmarpurBulmaGulmi. She takes 1:30 minutes to reach in school from his home. There were five family members in her home. He spokes Nepali language with her family, relative and friends. Her parents were uneducated. Economically, her family was medium. Her father was engaged in the profession of Government service (Army) and mother used to do farmer. Her brother and sister were studying in same school.

Respondent B

Respondent B is 14 years old boy studying at grade seven sec A. He lives in Dhurlot Rural municipality-5, AmaraiBastuGulmi. He takes 10 minutes to reach in school from his home. There were six family members in his home. He speaks Nepali language with his family, relative and friends. His parents were uneducated. Economically, his family was hard to maintain the daily needs. His father was engaged in the labour work and mother used to do farmer. Her brother and sister were studying in same school.

Respondent C

Respondent C was 14 years girl studying in grade seven sec A. She lives in Dhurlot Rural municipality-5, PauwakolaBastuGulmi. She takes 20 minutes to reach in school from his home. In her family there were four members. Her parents were engaged in agriculture. Her parents used to busy in their work. Her main work was to take care of her younger brother and to work the household. She did not have good family environment to study. Her mother used to think that a daughter must do household activities.

Respondent D

Respondent B is 13 years old boy studying at grade seven sec A. He lives in Dhurlot Rural municipality-5, SaunekholaBastuGulmi. He takes 25 minutes to reach in school from his home. There were five family members in his home. He speaks Nepali language with his family, relative and friends. His parents were uneducated. Economically, his family was medium in income level. His father was up and down forlabour work in India and different places of Nepal and mother used to do farmer. His brother and sister were studying in same school.

Respondent E

Respondent E is 15 years old boy studying at grade seven sec A. He lives in Isma Rural municipality-3 Doholi, NepaneGulmi. He takes 1:45 minutes to reach in school from his home. There were five family members in his home. He speaks Magar language with his family. His parents were uneducated. Economically, his family was hard to maintain the daily needs. His father was engaged in the agriculture. Her brother and sister were studying in same school.

Respondent F

Respondent F was 14 years girl studying in grade seven sec A. She lives in Dhurlot Rural municipality-5, HatiyaBastuGulmi. She takes 15 minutes to reach in school from her home. In her family there were five members. Her parents were engaged in business. Her parents used to busy in their work. Her main work was to take care of her younger brother, sister and to work the household. She speaks Newari language with his family. Economically, her family was medium.

Classification of Errors

Table 4.1 shows the errors in five categories along with total number of errors and their percentage on the basis of observation of students homework was given after classroom teaching. This table shows all the 39 students of grade seven sec 'A' to make the errors in the different categories.

Table 4.1 Classification of Errors

Errors	Students Making	Students Making	Remarks
	Error(In Numbers)	Error(In Percentages)	
Reading error	8	20.52%	
Comprehensive error	12	30.76%	
Transformation error	10	25.64%	
Process Skill Error	5	12.82%	
Encoding error	4	10.26%	
Total	39	100%	

The table 4.1 shows that lowest number of errors was committed on the encoding error, whereas the highest number of error was committed on comprehension error. This indicates that students commit less error in process. They always commits the error in solving the problem comprehension stage because they can't comprehend and transform the problem. They give less time to read the problem. They only focus on solving problem and to get answer.

Reading error

The error related to the reading of the question is called reading error. If the students do not read the question carefully and they do not recognize key word or symbols, lack of vocabulary and meaning of mathematical term such type of error occurs. This error is especially occurs to difficulty with the vocabulary, language symbol and meaning of mathematical terms that used in verbal problem. Grade seven students of Himalaya secondary making such type of error are eight students out total thirty nine students.

Comprehension error

An error would be classified as comprehensive error, if the students can read the problems well but cannot comprehend the meaning of words, symbols or question. Students can not grasp over all meaning of the words given in problem and then can not solve the problem appropriately.

Some example of the comprehension errors committed by students are illustrated below.

Question: What is the product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$?

Handwritten student work on a notebook page:

6
2

b. What is the product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$?

$$\frac{2}{3} + \left[\frac{8+1}{4} \right] = \frac{2}{3} + \left[\frac{8 \times 4 + 1 \times 3}{3 \times 4} \right]$$

$$\frac{2}{3} + \left[\frac{32+3}{12} \right]$$

$$\frac{2}{3} + \frac{35}{5}$$

$$\frac{2 \times 12 + 35 \times 3}{3 \times 12}$$

$$\frac{24 + 105}{36}$$

$$\frac{129}{36}$$

After the student had read the question correctly can not convert in mathematical form appropriately. Then the interviewer compile the the following dialogue. [I: Interviewer, S: Student]

I: What is the question asking you to do?

S: It is asking to find the product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$

I: All right. Tell me what a method you can use to simplify this problem?

S: *First adding then multiplying.*

I: Now write down this problem into mathematical form

$$S: \frac{2}{3} + (2\frac{2}{3} + \frac{1}{4})$$

I: Oh you put the plus sign instead of multiply. (Comprehension error)

Show me how you can use to find an answer to the question explain to me put multiply sign, what you are doing as you do it?

$$S: \frac{2}{3} \times (\frac{2x3+2}{3} + \frac{1}{4})$$

$$= \frac{2}{3} \times (\frac{8}{3} + \frac{1}{4})$$

$$= \frac{2}{3} \times (\frac{8}{3} + \frac{1}{4})$$

$$= \frac{2}{3} \times (\frac{8x4}{3x4} + \frac{1x3}{4x3})$$

$$= \frac{2}{3} \times (\frac{32}{12} + \frac{3}{12})$$

$$= \frac{2}{3} \times (\frac{32+3}{12})$$

$$= \frac{2}{3} \times \frac{35}{12}$$

I: Now write down answer to the question.

$$= \frac{35}{18}$$

$$= 1\frac{17}{18}$$

The students had been able to read all the words in the question but hadn't grasp the overall meaning of the words. Such type of error is classified the comprehension error.

Transformation Error

An error was categorized as transformation error if the students had understood what the question was asking about but unable to identify the question

sequence of operation needed to solve problem. In otherword, the students have understood the problem but cannot transform sentences into mathematical form.

Some example of the transformation errors committed by students are illustrated below.

Question: A post has $\frac{1}{4}$ of its length in the mud, $\frac{1}{3}$ of the remaining portion in the water and 12 meter above the water. What is its length?

11) A post has $\frac{1}{4}$ of its length in the mud, $\frac{1}{3}$ of the remaining portion in the water and 12 metres above the water. What is its length?

$$= \frac{1}{4} + \frac{1}{3} + 12$$

$$= \frac{1 \times 3}{4 \times 3} + \frac{1 \times 4}{3 \times 4} + 12$$

$$= \frac{3}{12} + \frac{4}{12} + 12$$

$$= 3 + 4 + 12$$

$$= 12$$

$$= \frac{7}{12} + \frac{12}{1}$$

$$= \frac{7 \times 1}{12 \times 1} + \frac{12 \times 12}{1 \times 12}$$

$$= \frac{7}{12} + \frac{144}{12}$$

$$= \frac{7}{12} + 12$$

$$= 12$$

Teacher's Signature.....

After the student had read the question correctly can not convert in mathematical form appropriately. Then the interviewer compile the the following dialogue. [I:

Interviewer, S: Student]

I: What is the question asking you to do?

S: It is asking to find the whole length of post?

I: All right. Tell me what a method you can use to simplify this problem?

S: First convert mathematical form and after than simplification.

I: Now write down this problem into mathematical form

S: Writing in mathematical form $\frac{1}{4} + \frac{1}{3} + 12$

I: Is it correct?

S: No, I can not convert it in mathematical form?

I: Yes, you can convert and solve as following?

Let, total length of post= x mtr.

Length of post in mud= $\frac{1}{4}$ of x

Length of post in water= $\frac{1}{3}$ of $(x-\frac{x}{4})$

Length of post above water= 12

Now, total length= $\frac{x}{4}+\frac{1}{3}\times(x-\frac{x}{4})+12$

S: Now I can do it

$$x=\frac{x}{4}+\frac{1}{3}\times(\frac{4x-x}{4})+12$$

$$\text{Or, } x=\frac{x}{4}+\frac{1}{3}\times(\frac{3x}{4})+12$$

$$\text{Or, } x=\frac{x}{4}+\frac{x}{4}+12$$

$$\text{Or, } x=\frac{x+x+48}{4}$$

$$\text{Or, } x=\frac{2x+48}{4}$$

$$\text{Or, } 4x=2x+48$$

$$\text{Or, } 2x=48$$

$$x=24$$

I: Now write down answer to the question.

S: Total length of post = 24 meter

The students had understand what the question was asking about but did not transform into suitable mathematical form. Such type of error is classified the transformation error.

Process Skill Error

An error is categorized as process skill error when student were able to identify the error operation but did not know the procedure to carry out this operation but cannot complete the operation correctly is called skill error. If the student can

choose an appropriate operation cannot complete the operation correctly. Some example of the process skill errors committed by students are illustrated below.

Question: What is the product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$?

Q8. b) What is product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$?

$$\Rightarrow \frac{2}{3} \times (\frac{8}{3} + \frac{1}{4})$$

$$\Rightarrow \frac{2}{3} \times (\frac{8 \times 4 + 1 \times 3}{3 \times 4})$$

$$\Rightarrow \frac{2}{3} \times \frac{32 + 3}{12}$$

$$\Rightarrow \frac{2}{3} \times \frac{35}{12}$$

$$\Rightarrow \frac{2 \times 4 \times 35}{3 \times 4 \times 12}$$

$$\Rightarrow \frac{8 \times 35}{12 \times 12}$$

$$\Rightarrow \frac{8 \times 35}{12}$$

$$\Rightarrow \frac{280}{12}$$

$$\Rightarrow 23.333$$

After the student had read the question correctly can not convert in mathematical form appropriately. Then the interviewer compile the the following dialogue. [I: Interviewer, S: Student]

I: What is the question asking you to do?

S: It is asking to find the product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$?

I: All right. Tell me what a method you can use to simplify this problem?

S: First convert mathematical form and after than do simplification.

I: Now write down this problem into mathematical form

S: Writing in mathematical form $\frac{2}{3} \times (2\frac{2}{3} + \frac{1}{4})$

I: Simplify it.

$$S: \text{Now, } \frac{2}{3} \times \left(2\frac{2}{3} + \frac{1}{4}\right)$$

$$= \frac{2}{3} \times \left(\frac{8}{3} + \frac{1}{4}\right)$$

$$= \frac{2}{3} \times \left(\frac{8x4}{3x4} + \frac{1x3}{4x3}\right)$$

$$= \frac{2}{3} \times \left(\frac{32}{12} + \frac{3}{12}\right)$$

$$= \frac{2}{3} \times \frac{35}{12}$$

$$= \frac{2x4}{3x4} \times \frac{35}{12} \quad (\text{Process Skill Error})$$

$$= \frac{8}{12} \times \frac{35}{12}$$

$$= \frac{8x35}{12}$$

$$= \frac{280}{12}$$

$$= 23.333$$

The students had understand what the question was asking about but did not transform into suitable mathematical form. Such type of error is classified the transformation error.

Encoding Error

An error was classified as encoding if the students correctly worked out the solution to the problems but not express the solution in an acceptable written form. In other word, the student can perform the correct operation but not write the answer correctly. Some of the encoding errors committed by the students are illustrated below:

Question: The fraction $\frac{1}{2}$ is subtracted from the sum of $\frac{1}{3}$ and $\frac{1}{4}$. If it is multiplied by $1\frac{2}{3}$ find the resulting fraction.

Q.10 The fraction $\frac{1}{2}$ is subtracted from the sum of $\frac{1}{3}$ and $\frac{1}{4}$. If it is multiplied by $1\frac{2}{3}$, find the resulting fraction.

$$\Rightarrow \left(\frac{1}{3} + \frac{1}{4} - \frac{1}{2}\right) \times 1\frac{2}{3}$$

$$= \left(\frac{1 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3} - \frac{1}{2}\right) \times \frac{5}{3}$$

$$= \left(\frac{4}{12} + \frac{3}{12} - \frac{1}{2}\right) \times \frac{5}{3}$$

$$\Rightarrow \left(\frac{4+3}{12} - \frac{1}{2}\right) \times \frac{5}{3}$$

$$\Rightarrow \left(\frac{7}{12} - \frac{1}{2}\right) \times \frac{5}{3}$$

$$= \frac{7}{12} - \frac{1 \times 6}{2 \times 6} \times \frac{5}{3}$$

$$\Rightarrow \frac{7}{12} - \frac{6}{12} \times \frac{5}{3}$$

$$\Rightarrow \frac{7-6}{12} \times \frac{5}{3}$$

$$\Rightarrow \frac{1}{12} \times \frac{5}{3}$$

$$\Rightarrow \frac{5}{30}$$

After the student had read the question correctly can not convert in mathematical form appropriately. Then the interviewer compile the the following dialogue. [I: Interviewer, S: Student]

I: What is the question asking you to do?

S: It is asking to find the resulting fraction of "The fraction $\frac{1}{2}$ is subtracted from the sum of $\frac{1}{3}$ and $\frac{1}{4}$ and is multiplied by $1\frac{2}{3}$ "

I: All right. Tell me what a method you can use to solve this problem?

S: First convert mathematical form and after than do simplification.

I: Now write down this problem into mathematical form

S: Writing in mathematical form $[(\frac{1}{3} + \frac{1}{4}) - \frac{1}{2}] \times 1\frac{2}{3}$

I: Can you simplify it? Simplify and explain to me.

S: Yes I can do

Now, $[(\frac{1}{3} + \frac{1}{4}) - \frac{1}{2}] \times 1\frac{2}{3}$

$$= [(\frac{1 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}) - \frac{1}{2}] \times \frac{5}{3}$$

$$= [(\frac{4}{12} + \frac{3}{12}) - \frac{1}{2}] \times \frac{5}{3}$$

$$= [\frac{4+3}{12} - \frac{1}{2}] \times \frac{5}{3}$$

$$= [\frac{7}{12} - \frac{1 \times 6}{2 \times 6}] \times \frac{5}{3}$$

$$= [\frac{7}{12} - \frac{6}{12}] \times \frac{5}{3}$$

$$= \frac{7-6}{12} \times \frac{5}{3}$$

$$= \frac{1}{12} \times \frac{5}{3}$$

$$= \frac{5}{30}$$

(Encoding Error)

The students had worked out the solution to the given problem correctly but they couldn't express the solution into accurate form. Such type of error is called encoding error.

Carelessness Error

If the students commits errors for the first time innocently and if they corrects themselves in the second attempt without providing any clue, such type of error are categorized as a carelessness error.

Some of the encoding errors committed by the students are illustrated below:

Question: The product of $1\frac{2}{3}$ and $5\frac{2}{5}$ is divided by $7\frac{1}{2}$. Find the quotient?

Qa The product of $1\frac{2}{3}$ & $\frac{5}{5}$ is divided by $7\frac{1}{2}$. Find the quotient.

$$= \frac{5}{3} \times \frac{27}{5} \div \frac{15}{2}$$

$$= \frac{5 \times 5 \times 27 \times 3}{3 \times 5 \times 5 \times 3} \div \frac{15}{2}$$

$$= \frac{25 \times 81}{15} \times \frac{2}{15}$$

$$= \frac{5}{3} \times \frac{27}{5} \times \frac{2}{15}$$

$$= \frac{9 \times 2}{5}$$

$$= \frac{18}{5}$$

$$= \frac{6}{5}$$

After the student had read the question correctly can not convert in mathematical form appropriately. Then the interviewer compile the the following dialogue. [I: Interviewer, S: Student]

I: What is the question asking you to do?

S: It is asking to find the quotient of "the product of $1\frac{2}{3}$ and $5\frac{2}{5}$ is divided by $7\frac{1}{2}$ "

I: All right. Tell me what a method you can use to solve this problem?

S: First convert mathematical form and after than do simplification.

I: Now write down this problem into mathematical form

S: Writing in mathematical form $(1\frac{2}{3} \times 5\frac{2}{5}) \div 7\frac{1}{2}$

I: Can you simplify it? Simplify and explain to me.

S: Yes I can do

$$\text{Now, } (1\frac{2}{3} \times 5\frac{2}{5}) \div 7\frac{1}{2}$$

$$= (\frac{5}{3} \times \frac{27}{5}) \div \frac{15}{2}$$

$$= \frac{5}{3} \times \frac{27}{5} \times \frac{2}{15}$$

$$\begin{aligned}
 &= \frac{9 \times 2}{5} && \text{(Carelessness error)} \\
 &= \frac{18}{15} \\
 &= \frac{6}{5}
 \end{aligned}$$

The students had been doing the mistakes and error due to careless but another attempt to solve these problem without providing any clues and hint they corrects themselves. Such type of error are classified as carelessness error.

Causes of Error Committed by Students while Solving Verbal Problem on Fraction

The objectives this research is to find the cause of student's error while solving verbal problem on fraction. To find the causes of error, I have taken within 8 teaching hours and provide homework during the classroom teaching, observing the homework done by students day by day that helps to find where students makes error and how these error made by students. Furthermore, during observing the homework separate the students made error on the basis of Newman procedure of error analysis. Also separate the maximum error making six students i.e. three boys and three girls from whole class thirty nine students of grade seven 'A'. After selecting more error making six students in depth interview was conducted on the basis of interview guideline for students mentioned in appendix B.

At the time of interview students were students feel uneasy to present their view because they unable to give why they made error while solving verbal problem on fraction. Some suggestion were collected from the internal supervisor of this research. The different views or causes presented by students about the errors while solving verbal problem on fraction are as follows.

- The causes of error is no reading habits of students while staying at home on solving verbal problem on fraction
- The causes of error is less concerning about teaching learning activities on solving verbal problem on fraction
- Causes of error arise from less repetition on solving verbal problem on fraction
- Causes of error arise from unfamiliar to the subject matter and technical term on mathematics on solving verbal problem on fraction
- Lack of chance to read at home as a cause of error on solving verbal problem on fraction
- Lack of vocabulary as causes of error on solving verbal problem on fraction
- Students have not essential pre-requisite knowledge that helps to make error on solving verbal problem on fraction
- Less manage classroom is a causes of error on solving verbal problem on fraction
- Mother tongue is a causes of students making error on solving verbal problem on fraction
- Laziness of the students is causes of error on solving verbal problem on fraction
- Low use of teaching learning materials is a causes of error on solving verbal problem on fraction
- Lack of motivation by mathematics teacher is causes of error on solving verbal problem on fraction

Causes of Reading Error

The error related to the reading of the question is called reading error. If the students do not read the question carefully and they do not recognize key word or symbols, lack of vocabulary and meaning of mathematical term such type of error occurs. This error is especially occurs to difficulty with the vocabulary, language symbol and meaning of mathematical terms that used in verbal problem. Grade seven students of Himalaya secondary making such type of error are eight students out total thirty nine students. At the time of the interview about the causes of reading error mathematics teacher of Himalaya secondary school told that:

Being English as a communication language in between teacher and students in mathematics classes, students are unable to understand the mathematical vocabulary, as they have poor cognition in English.

At the time of the interview about the causes of reading error mathematics teacher of Panchayan secondary school told that:

Students making reading error because they read the question without giving proper attention or lack of deep study of the question.

Besides the above statements the following are the causes of reading errors.

- Most of the errors are committed by the students because of poor background of language
- Less important is given on reading question in classroom by the mathematics teacher
- Lack of knowledge to recognize the symbol which are used in mathematics
- Students commits the reading error because some of them are Nepali as second and English as a third language but their dally practice they used mother language and English is a medium of instruction.

It is the best way to minimize the reading error were teacher pay special attention to develop and improve their language skill, students should be read the question carefully and sincerely, before teaching verbal problem on fraction state the symbol and mathematical term which are used in verbal problem on fraction.

At the time of the interview about the causes of reading error mathematics teacher of Himalaya secondary school told that:

Being English as a communication language in between teacher and students in mathematics classes, teacher should pay special attention to develop language skill.

At the time of the interview about the causes of reading error mathematics teacher of Panchayan secondary school told that:

Students should read the question giving proper attention to read the question and try to develop the language skill and care about mathematical terms.

Causes of Comprehension Error

An error classified as comprehensive error, if the students can read the problems well but cannot comprehend the meaning of words, symbols or question. Students can't grasp over all meaning of the words given in problem and then can't solve the problem appropriately. These errors occur owing to failure to grasp the concepts involved in the problem or failure to appreciate the relationships involved in the problem. Comprehension knowledge is a kind of knowledge which links the problem representation to math concepts and structures. The problem solver with such knowledge is able to select the appropriate schema from the math concepts in order to find the relevant solution. In fact, after understanding the problem, the problem solver examines some ways through which it is possible to find coordination between the

situation described in the problem and appropriate math concepts and structures. At the time of the interview about the causes of comprehension error mathematics teacher of Himalaya secondary school told that:

"The students who have the difficulty with concept are due to monotonous environment of classroom."

Also the causes of conceptual error mathematics teacher of Panchayan secondary school told that:

"Some students are confused on the meaning of words used in solving verbal problems on fraction of their own meaning."

Beside the above, the following are also the causes of conceptual errors

- lack of pre-requisite knowledge
- due to lack of knowledge on technical term on mathematics
- due to lack of classroom management and noise
- tension of the home is one of the reason of conceptual error
- students only listen and not participate in discussion

It was the best way to minimize the comprehension error were teacher pay special attention to develop the concept of fraction by using teaching materials appropriately and to develop knowledge on technical term on solving verbal problem on fraction.

Causes of Transformation Error

An error was categorized as transformation error if the students had understood what the question was asking about but unable to identify the question sequence of operation needed to solve problem. In otherword, the students have

understood the problem but cannot transform sentences into mathematical form. These errors arise when students behave arbitrarily and fail to take account of the constraints laid down in what is given. Transformation errors arise when students have lack of concept and meaning of mathematical words, technical term on mathematics etc.

At the time of the interview about the causes of transformation error mathematics teacher of Himalaya secondary school told that:

"Sometimes the students pay only partial attention to the teacher explanation as a result of boredom, tiredness or monotonous tone of teacher consequently they can recollect only part of explanation and then try to patch it up with their logic which may be faulty."

Causes of transformation error mathematics teacher of Himalaya secondary school told that:

"Students often mix-up rules because they do not really have relation understanding of what they are doing."

Besides the above statement the following were also the causes of transformation error:

- Students commit transformation error due to the lack of concept and meaning of mathematical words/ terms
- Students commit transformation error because teacher focuses on the calculation but do not give emphasis or do not explain about question properly
- Students commit transformation error because of students have not essential prerequisite knowledge of their previous classes.

- Students commit transformation error because they unable to identify the suitable operation to solve the problem

It was the best way to minimize the transformation error were teacher pay special attention to develop the fundamental concept of fraction and their related term, should be emphasis rather than only calculation, also students should have essential pre-requisite knowledge and fundamental concepts of related content.

Causes of Process Skill Error

An error is categorized as process skill error when student were able to identify the error operation but did not know the procedure to carry out this operation but cannot complete the operation correctly is called skill error. If the student can choose an appropriate operation cannot complete the operation correctly. In these errors students fail to carry out manipulations or algorithms although they understand concepts in the problem. Students make process skill error in mathematics learning they were failure to follow required procedures or failures to consider relevant evidence.

At the time of the interview about the causes of process skill error on solving verbal problem on fraction the mathematics teacher of Himalaya secondary school told that:

"Most of the teacher as well as students focus on finding the answer of the problem but they do not take care about keeping the solution procedure in order."

Also the causes of process skill error on solving verbal problem on fraction the mathematics teacher of Panchayan secondary school told that:

"Students commit the procedural error because of themselves do not practice and revised at home that the text they have read in classroom.

Besides the above the following were also the causes of process skill error:

- lack of teaching materials which are used in teaching verbal problem on fraction
- lack of revision and practice at home
- lack of mathematical skill to which are essential to solve verbal problem on fraction
- Mix-up rules lack of thinking alternatively

It was the best way to minimize the procedural error were teacher must force for the students to solve the verbal problem on fraction time and again at home as well as school.

Causes of Encoding Error

An error was classified as encoding if the students correctly worked out the solution to the problems but not express the solution in an acceptable written form. In other word, the student can perform the correct operation but not write the answer correctly. The researcher found that the following causes of making encoding error. At the time of the interview about the causes of encoding error on solving verbal problem on fraction the mathematics teacher of Himalaya secondary school told that:

Teachers do not focus on summarizing the answer in detail while solving the verbal problem.

Also the causes of encoding error on solving verbal problem on fraction the mathematics teacher of Panchayan secondary school told that:

Sometimes mathematics teacher solve the problem on classroom during that period they provide only hint, write up- down left right haphazardly due to the condition of board so encoding error occur.

Besides the above the following were also the causes of encoding error:

- Encoding error occurred due to the carelessness of students
- Lack of examination and providing feedback
- Lack of homework and classwork checking
- Students desire how to fast solve the problem

It was the best way to minimize the encoding error were teacher must focus on the checking the homework and provide feedback, students care about reduce encoding error, to avoid the phobia of exam take more exam and provide feedback to the students time to time continuously.

Causes of Carelessness Error

If the students commits errors for the first time innocently and if they corrects themselves in the second attempt without providing any clue, such type of error are categorized as a carelessness error.

Students commit error in solving mathematics problem by their ignorance. Errors occurs by carelessness of the students towards their learning simply because they are not paying working too fast. Many students are copying the problem wrong to begin with writing wrong number that leads to creates error. Students dropping an alternate sign to solve the problem on fraction and they were not following the directions and instruction provided by teacher. Also they were typing the wrongly into their calculator. Therefore, students made the error on solving verbal problem on fraction.

At the time of the interview about the causes of carelessness error mathematics teacher of Himalaya secondary school told that:

"Students commit the error because of students their own carelessness i.e they are copying the problem wrong and dropping alternate sign that given in problem."

The mathematics teacher of Panchayan secondary school told that:

"Students are not following the directions and instruction of teacher and they typing the wrongly into their calculator and do negligence to each of the activities, if not so the error were decrease."

Carelessness and ignorance to the learning process that was done by students as well as teacher like it will be read tomorrow and goes always tomorrow that effects the students learning.

It is the best way to minimize the carelessness error students should be followed the teacher instruction carefully, students should be careful where dropping the sign on the problem, teacher need to encourage to solve the many more problem on fraction.

Pre-requisite Knowledge of Students as Causes of Error

Student are able to gain the knowledge of new knowledge they already have common basic knowledge of the related subject matter. In this research, operation on fraction be the basic knowledge to compute the verbal problem on fraction. Lack of basic knowledge of fraction the students cannot solving the problem of fraction and other mathematical problem. While I had teach the verbal problem of fraction many of students are comes without having basic knowledge i.e they cannot understand the

verbal problem firstly and they have no idea upon the basic computation skills of fraction such as addition, multiplication, and division of fraction.

"If they have general concept of fraction i.e addition, multiplication, subtraction and division make easier to solve verbal problem on fraction."(Teacher)

Pre-requisite knowledge of the students was affecting factor to make error on solving verbal problem on fraction. It is the best way to minimize the prerequisite knowledge of the students as a causes of the student's error were teaching learning activities should be the students need based and should be provide basic knowledge require to learn related subject matter.

Language

Nepal is a multilingual and multicultural country. Language is means of communication where the students communicate to share their knowledge. Students comes from having Newer, Magar and Kumal community and NewariMagar and Nepali language as a mother tongue. But English as a medium of instruction. In this study area, Newar and MagarKumal and other castes were living. So that they used their own language at home so they were poor in Nepali Language as well as English language and other students use Nepali language at home so that students were poor in English language. When teacher used to teach English language to solving verbal problem of fraction, he used to teach in English language as a medium of instruction. Because of language, there was not good communication in the mathematics classroom. Teacher could not speak ethnic language and students were not perfect in Nepali as well as English language so that there was no interactive environment in the classroom. In this regard sayings were as follows:

"We are poor in English because English is our second language but our teacher all the time speaks and teach in English language, he never speaks in our language so we feel uneasy to share the problem in the mathematics classroom and if we speak our language our class caption take a fine. And we cannot understand the language wrote on book as one third of, two third of, two times of, three times as a mathematical language." (Students).

"Being English as a communication language between teacher and students in mathematics classes, students are unable to understand the mathematical vocabulary, as they have poor cognition in English."(Teacher)

In this study, it was found that the mathematics teacher was teaching in the English language. Teacher used English language as the means of communication in the classroom but student were from the Newar and Magar community. Therefore, students were not able to understand the language spoken by the teacher that created the weakness in solving verbal problem on fraction on mathematics.

By the above saying there was language problem in this study where teacher could not speak the local language and student could not understand proper English language in the classroom. While teaching verbal problem on fraction, teacher used all the time Nepali language as well as English language so that students could not understand the lesson taught by the teacher in the classroom. Therefor I concluded that language is also a cause of making error on solving verbal problem on fraction.

Language is affecting factor to make error on solving problem. It is the best way to minimize the language as a causes of the student's error were teacher should speak in mother language as well as Nepali language as far as possible. And in the side of students, they try to improve language skill.

Chapter IV

Summary, Findings, Conclusions and Recommendations

This chapter deals with the result of the study " Causes of the students error in solving verbal problem on fraction: A case study". This chapter is divided into four sections; summary, findings conclusion and recommendation. The data are analyzed to find out the conclusion which helps to fulfill the objectives of the study.

Summary

This study seeks to answer mainly two questions there were: Why do students doing these error when solving verbal problem on fraction and how can minimize the error on solving verbal problem on fraction in grade VII students. This study aim to fulfill the two objectives: to explain the causes of student's errors of verbal problem on fraction and to give remedial ways to minimize the error on solving verbal problem on fraction at grade VII. This is a case study and Himalaya Secondary school is a sampled school where three boys and three girls are case student of this study were selected by convenience sampling. The major tool of the study is interview and observation guideline. The qualitative case study research design was used in this study. Newman's theory for error analysis was used for error analysis in whole study.

Shree Himalaya Secondary School was selected as a sample school by convenience sampling. The students of class seven section A was a sample of this study and out of them 6 students (3 boys and 3 girls) were students selected by convenience sampling. To fulfill the first objectives of this study open ended in depth interview was taken to the case students was selected on the observation guideline of homework sheet where maximum error committing students were selected as case students. And also take interview to the mathematics teacher of Panchayan Secondary

and Himalaya Secondary School to find the ways to minimize the error of students on solving verbal problem on fraction.

While collecting data preparing the field note for observation and transcribe the interview in written form. After collecting the data thematic and narrative approach was used for analyzing the collected data. Thus, the causes of students making error were identified and the ways to minimizing the errors were found which were done by students while solving verbal problem on fraction.

Findings

The main findings the study are following:

- Causes of making errors was found as lack of motivation, lack of fundamental concepts of fractions, lack of language skill, carelessness and laziness of the students in this study.
- The causes of reading error are poor background of language, less important is given on reading question in classroom, lack of knowledge to recognize the symbol which are used in mathematics
- To minimize the reading error were teacher pay special attention to develop and improve their language skill, students should be read the question carefully and sincerely, before teaching verbal problem on fraction state the symbol and mathematical term which are used in verbal problem on fraction.
- Causes of comprehension errors were monotonous environment of classroom, lack of pre-requisite knowledge, technical term on mathematics, classroom management and noise, tension of the home and students only listen and not participate in discussion.

- To minimize the comprehension error were teacher pay special attention to develop the concept of fraction by using teaching materials appropriately and to develop knowledge on technical term on solving verbal problem on fraction.
- The causes of transformation error were found as the lack of concept and meaning of mathematical words/ terms, focuses only the calculation, students have not essential prerequisite knowledge, unable to identify the suitable operation to solve the problem.
- To minimize the transformation error were teacher pay special attention to develop the fundamental concept of fraction and their related term, should be emphasis rather than only calculation, also students should have essential pre-requisite knowledge and fundamental concepts of related content.
- The Causes of process skill error were found as focus only finding the answer of the problem, lack of use of teaching materials, revision and practice at home, mathematical skill to which are essential to solve verbal problem and thinking alternatively.
- To minimize the process skill error were teacher must force for the students to solve the verbal problem on fraction time and again at home as well as school.
- The causes of encoding error was found as due to the carelessness of students, lack of examination and providing feedback, lack of homework and classwork checking.
- To minimize the encoding error were teacher must focus on the checking the homework and provide feedback, students care about reduce encoding error, to avoid the phobia of exam take more exam and provide feedback.

- The causes of carelessness error were found as student's ignorance themselves, copying the problem wrongly and dropping alternate sign and not following the directions and instruction of teacher.
- To minimize the carelessness error were students should be followed the teacher instruction carefully, students should be careful where dropping the sign on the problem, teacher need to encourage to solve the many more problem on fraction.
- Language is also a cause of making error on solving verbal problem on fraction because teacher could not speak local language and student could not understand, they were poor in English language and English language is a medium of instruction.
- Teacher should speak in mother language as well as Nepali language as far as possible. And pay special attention to develop the language skill.
- Pre requisite knowledge of the student was one of the cause of the making error on solving verbal problem on fraction on mathematics because students have not knowledge of previous class and have not fundamental concepts on fractions.
- To minimize the prerequisite knowledge of the students as a causes of the student's error were teaching learning activities should be the students need based and should be provide basic knowledge require to learn related subject matter.

Conclusions of the Study

The present study "Causes of the student's error in solving verbal problem on fraction" aimed to find the causes of student's error and minimize these error. For this researcher was used the qualitative case study research design and observation

guideline and in depth interview to the teacher and students were taken as a major tools of this study. The error analysis was conducted Newman's theory as a theoretical guideline. The following are the conclusions of the study.

Repetition and practice, using students centered method, develop language skill to the students, use appropriate teaching materials to develop the fundamental knowledge on fraction, provide physical and educational facilities provided on the school and home and provide appropriate and suitable environment to the students were the main strategies taken by the teacher of that school to minimize the error in solving verbal problem on fraction. Furthermore, students should study the verbal problem by concept learning rather the parrot learning. Teacher should improve the teaching strategies, should use conceptual teaching rather than exam oriented teaching, provide clear concept and pay special attention to create positive attitude and craziness towards to the mathematics. Thus, the quality of mathematics education should be improved to reduce the student's error and failure rate.

Implications of Study

This study clearly show that the cause and way to minimize the students error in solving verbal problem on fraction. This research helps to improve pedagogy of the teacher to minimize the student's error in solving verbal problem on fraction.

- Applicable for further study
- A similar study can be done for basic level and other subjects.
- A study can be done on the causes of school, dropout problem of error committing students.
- The concerned authority can decide about what should be done for improving basic education.

- The findings of this research can be applied in other area of mathematics and other district of Nepal.
- It is applicable for curriculum developer, subject experts, to develop the strategies to minimize the error.

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Appendices

Appendix A

Homework Sheet for the Students

1. What is the product of $\frac{3}{4}$ and $\frac{1}{2} \div \frac{3}{4}$?
2. What is the product of $\frac{2}{3}$ and $(2\frac{2}{3} + \frac{1}{4})$?
3. What is the product of $(1\frac{2}{3} - \frac{1}{4})$ and $\frac{3}{5}$?
4. The product of $1\frac{2}{3}$ and $5\frac{2}{5}$ is divided by $7\frac{1}{2}$. Find the quotient?
5. What is the fraction which is equal to $3\frac{2}{3}$ divided by the product of $1\frac{3}{4}$ and $\frac{1}{14}$?
6. The fraction $\frac{1}{2}$ is subtracted from the sum of $\frac{1}{3}$ and $\frac{1}{4}$. If it is multiplied by $1\frac{2}{3}$ find the resulting fraction.
7. The difference of $\frac{2}{5}$ from $\frac{1}{3}$ multiplied by $\frac{1}{4}$. The product is divided by $\frac{1}{2}$. What is the quotient?
8. A pond has $\frac{1}{4}$ of its length in the mud, $\frac{1}{3}$ of the remaining portion in the water and 12 meter above the water. What is its length?
9. A man gives $\frac{1}{4}$ of his property to his son, $\frac{2}{5}$ of the remainder to his daughter and the rest part of his wife. What portion of his property did his wife get?
10. Rabina have some electric wire. She used $\frac{1}{2}$ of in wiring the room, gave $\frac{1}{3}$ of the remaining to her friend and 30 meters reminded with her. What is its length?

Appendix B

Observation guideline

Observation of students will be taken accordingly

S. N	Statement	Yes	No	Remarks
1	Students regularly doing homework			
2	Student participation in classroom activities are satisfactory			
3	Pre-requisite knowledge of students are sufficient			
4	Students make reading error			
5	Students make comprehension error			
6	Students are motivated to learning			
7	Marks secured in previous exam is satisfactory			
8	Students doing error in encoding			
9	Students make error in process of solving problem			
10	Student make error while interpretation of problem			
11	Students make error in process of solving problem			
12	Students have facing language problem in learning			

APPENDIX C

Guidelines for the Interview with Mathematics Teacher

Respected Teacher

I am a students of mathematics education in central department of mathematics education in Kirtipur. I am doing a research on causes of the student's error in solving verbal problem on fraction. To fulfill my objectives, I would like to take your view and idea on how can minimize students error in solving verbal problem on fraction. Your views and idea are only used to complete this study not for other purpose. I hope you do not feel any difficulties to help me to complete my study.

1. What type of error is made by your students while solving verbal of fraction and why?
2. Do you know about types of error in solving verbal problem on fraction?
3. What are the methods/strategies used to teaching verbal problem of fraction in mathematics?
4. What type of behavior were shown by students in solving verbal problem of fraction, homework, classwork and extracurricular activities?
5. What are the student's attitudes towards solving verbal problem on fraction?
6. What are the causes of error in solving verbal problem on fraction?
7. Why you do if the students don't understand clearly problem based on verbal problem on fraction?
11. Language is effective factor or not for solving verbal problem on fraction? Why?
12. Pre-requisite knowledge is necessity for solving verbal problem fraction? Why?

14. What are the methods used to minimize the error in solving verbal problem on fraction? Are these methods are effect to minimize?

APPENDIX D

Guidelines for the Interview with Students

Name of Students:

Dear students, Give the answers of the questions sincerely and unbiasedly ask by researcher.

1. Give your full introduction including family profile?
2. Which language are used to spoke in school and home? Are you facing any language problem in your class?
3. Are you interested to learn verbal problem on fraction? If not, why?
4. Are you read or not fraction? Tell me whatever you read in previous class?
5. Do you understand the problem in solving verbal problem on fraction? If not what problem you are facing?
6. Can you read the problem? If cant when?
7. Do you understand the problem? If not why?
8. What are the error you make while solving verbal problem on fraction?
9. In how many methods can you solve these problem? How many methods and strategies are used your teacher on solving verbal problem on fraction?
10. You face the difficulties in which steps solving verbal problem on fraction?
11. Why have you done such type of error in solving verbal problem on fraction and how?
12. This type of error happened accidently or frequently in solving verbal problem on fraction?

13. This type of error is committed in this type of question or other question also?
14. Why did you use this procedure? This procedure is relevant for solving verbal problem on fraction?
15. In how many method you can solving verbal problem on fraction? Can you solve other problem by using the same procedure?
16. How many method/strategies are used your teacher in solving verbal problem on fraction? How many methods can you solve these problem?
17. If you don't understand solving verbal problem on fraction then do you ask again and again to the teacher?
18. Are you interested in solving verbal problem on fraction? Express your view towards solving verbal on fraction?
19. Tell me your teacher help or not to finding and correcting the error in solving verbal problem on fraction?

APPENDIX D

Name List of Case Students Participated teacher

1. AratiKumal
2. Mahesh Nepali
3. ManishaSunar
4. KushamKunwar
5. PuskarThapaMagar
6. Bandana Shrestha

Participated teacher

1. ManojChaudhary
2. NawarajKhanal

Appendix E

Photos of Participate and Case Students

