

**EFFECTIVENESS OF BHOJPURI LANGUAGE IN LEARNING
MATHEMATICS**

**A
THESIS
BY
PURNA PRASAD GUPTA**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF EDUCATION**

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RECOMMENDATION FOR ACCEPTANCE

This is to certify that Mr. Purna Prasad Gupta has completed his thesis entitled “**Effectiveness of Bhojpuri language in Learning Mathematics**” under my supervision during the period prescribed the rules and regulations of Tribhuvan University, Kirtipur, Kathmandu, Nepal. I recommend and forward his thesis to the Department of Mathematics Education to evaluate in final viva-voce.

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LETTER OF APPROVAL

This thesis entitled “**Effectiveness of Bhojpuri Language in Learning Mathematics**” submitted by Mr. Purna Prasad Gupta in partial fulfillment of the requirements for the Degree of Master of Education has been approved.

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Dedication

I want to dedicate this thesis to my father, Mr. Jekhoo Prasad Gupta and mother, Mrs. Asharphi Gupta. They have always been a source of inspiration in my life who have spent their whole life to transform me from nobody to somebody.

Declaration

I hereby declared that this thesis is my original work. I have prepared this thesis with fully attempt to make unique as possible as I can do has been accepted for the award of other degree in any institutions. To the best of my knowledge and belief that this thesis contains no materials previously published by any authors except due acknowledgement has been made.

.....

(Mr. Purna Prasad gupta)

Date: July 14, 2019

LATTER OF CERTIFICATE

This is to certify that Mr. Purna Prasad Gupta, a student of academic year 2072/073 with Campus Roll No: 439, Exam Roll No: 7228355, Thesis No: 1424 and T.U. Registration No: 9-2-306-88-2010 has completed this thesis under supervision and guidance of Mr. Krishna Prashad Bhatt during the period prescribed by the rules and regulation of Tribhuvan University, Kirtipur, Kathmandu, Nepal. The thesis entitled on “**Effectiveness of Bhojpuri Language in Learning Mathematics**” has been prepared based on the results of his investigation conducted during the prescribed period under the Department of Mathematics Education, Central Department of Education, University Campus, Kirtipur, Kathmandu, Nepal. I recommend and forward that his thesis be submitted for the evaluation as the partial requirements to award the Degree of Master of Education.

.....

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Date: July 14, 2019

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Abstract

This is an experimental research related to find the effectiveness of Bhojpuri language in learning mathematics at Basic Level of Rupandehi district. The objectives of this research were to find effectiveness of Bhojpuri language in learning mathematics in terms of achievements score and to explore feeling and participation of the students in classroom while they are taught in their own language.

The researcher adopted mixed method research design to achieve the objectives. Firstly, the quantitative data collected through achievement test and secondly the qualitative data was obtained through classroom observation form. For this study, the researcher had selected 24 students from two schools as the sample of the study. From grade V, 24 students were Bhojpuri students who were assigned into two non-equivalent groups. Among 12 students as experimental group who taught in Bhojpuri language from Shree Janghatta Basic School and 12 students as control group who taught in Nepali language from Shree Lumbini Basic School samples were selected. The researcher was taken two achievement test were pre-test and post-text. In pre-test, the mean of achievement score of experimental group were 14 and control group were 15.5. Thus, the mean score of experimental group was lesser than control group by 1.5. Also, in post-test, the mean of achievement score of experimental group were 19.50 and control group were 16.83. Thus, the mean score of experimental group was higher than control group by 2.67. The different mean achievement scores were tested by using mean, standard deviation, variance and t-test to compare the achievement of students.

It was concluded that the mean achievement of the students taught in Bhojpuri language become higher than the mean achievement of the students taught in Nepali language along with it students taught in Bhojpuri language more active and participating in all the activities than that the students taught in Nepali language.

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Chapter 7

Introduction

This chapter begins with its introductory part, highlighting the background of study, statement of the problem, objectives of the study, Significance of the study, delimitation of the study and definition of the related terms

Background of the Study

Education is a continuous and life long process. It helps that people to get new experiences and it modifies the behavior of the man. In the field of education there are various Subjects. Among them mathematics is one of them. Mathematics plays a major role in the human life. Mathematics has been explained in various ways. It is the numerical and calculation part of human life and knowledge. The words of mathematics has come from ancient Greek word 'Mathema' it means 'inclined to learn'. Mathematics gave the birth of modern science and needs. Generally, mathematics is defined as the science of calculation.

Mathematics is the study of quantity, structure, space and change.

Mathematics is used throughout the whole world as an essential tool in many fields, including natural science, engineering, medicine and the social science. Mathematics is a practical and dynamic subject which is essential to everyday in life. It is the base of all kind of scientific inventions and technological development. Mathematics is an independent subject of study with its own language, symbols, contents, structure and systematic approaches

In Nepal, with the implementation of NESP (1971), Mathematics has been given a significant place at all levels of school education system. According to NCC (2017), Mathematics is compulsory subject at basic. The main objective of the basic level

mathematics was too developed and applied of mathematical skills and knowledge with logical and behaviorist. It was required as the entire basic formulation and which was pre-requisite to the next level. Basic level math is provides to the guidance and direction to the child for the foundation of future life. In basic level there is several factors which affect student's achievement. These factors may be teachers, parents, school, peer group, social environment, medium of instruction etc.

Language is one of the powerful medium and most highly developed forms of human communication. It is used to perform personal feeling, emotions and thought as well. Language is a universal and recognizable part of human behavior and of the human faculties. Perhaps one of the most essential to human life as we know it and of the most for reaching of human capabilities in relation to the whole span of mark kind's achievements." Language is the most unique gift that sets human beings a part from the rest of living being. Moreover, language is a code for convening the thoughts and feeling of an individual to another which has been accepted and is mutually understood by both.

According to UNESCO (1970), "The mother tongue is still the principal means by which any human being fits into his own society and culture, it is the basic of his intellectual faculties." A child may find difficulty in learning language other than Mather tongue. So, it is important that every effort should be made to provide education in mother tongue. In many research of Basic level shows, medium of instruction is the main factor which effects student's achievement.

Nepal is a multiracial, multicultural, multilingual and multi-regions. Nepal is a country of linguistic diversity. In Nepal, according to National Census 2011 (2068 BS), there are 123 Nepalese language spoken as a mother tongue (first language) in

Nepal. Among them Bhojpuri is the third major language in Nepal. According to National Census 2011, there are 15, 84,958 (5.9822%) people spoken Bhojpuri language of the total population of Nepal. It secures first position in Bara, Parsa, Rupandehi whereas second position on Sarahi, Rautat and Nawalparasi.

Statement of the Problem

Nepal is a multiracial, multicultural, multilingual and multi-regions. Nepal is a country of linguistic diversity but monolingual school in Nepal. Rupandehi is such a district in where have language diversity, among them Bhojpuri community is comparatively higher than other community. Obviously the numbers of the Bhojpuri students are more than other in school. They often speak in their own language and they feel also comfort in communication with their friends in their own language but the teacher coming from the different community who teaches in primary Bhojpuri students, use formal language (Nepali) that cannot be understood consequently concept towards the mathematics of their never be changed and this language problems existed as a great issues.

So, the researcher intends to study the “Effectiveness of Bhojpuri Language in Learning Mathematics at Basic Level of Rupandehi district.” Moreover, Mathematics is an essential part of school curriculum which is taught from basic level to higher level. So, every student should learn it and get better achievement. So that, the researcher want to research in this study. Specifically, this study aimed to answer the following questions.

-) Does the use of Bhojpuri language affect student’s achievement?
-) How does difference in the achievement of mathematics at basic level students taught by using Bhojpuri language and Nepali language?

Objectives of the Study

Objective plays an important role in any study. So, this study was done: To find out the effectiveness of using Bhojpuri language in learning mathematics at basic level. The following specific objective was considered to reach his focal mission:

-) To compare the mathematics achievements of students by learning Bhojpuri language and Nepali language.
-) To explore the feeling, interest, participation and regularity of the students in the classroom while they are being thought in their own language.

Significance of the Study

Every research is important in itself because it give details of various unseen facts in any area of study. This study would be helpful to inform mathematics teachers of using effective medium of instruction. It would be helpful for the students, teachers, textbook writers, syllabus designers and methodologists. It would also be importance for these people who would also be importance for these people who would directly or indirectly be involved in teaching learning activities. This study would be significant for interested researchers on the Bhojpuri language. Hence, this study has the following significance.

-) This study would provide the information about background of Bhojpuri language.
-) This study would beinform mathematics teachers about the achievement level of the students by using effective medium of instruction.
-) This study would beneficial for language teachers who were teaching Bhojpuri and other language.

-) This study would be helpful for the students, teachers, textbook writers, syllabus designers, policy maker, educator and methodologists.
-) The study would help other research to carry out other research on the various areas of the Bhojpuri language.

Research Hypothesis

The null and alternative hypothesis are as follows:

-) **Null hypothesis (H_0):** There is no significant difference between mathematics achievements of students taught in Bhojpuri language and Nepali language. i.e. $\mu_1 = \mu_2$
-) **Alternative hypothesis (H_1):** The mathematics achievement of students taught in Bhojpuri language is greater than Nepali language. i.e. $\mu_1 > \mu_2$

Delimitation of the Study

This study is delimited with following aspects:

-) This study was conducted in only Rupandehi district.
-) This study was limited to the students of Bhojpuri language.
-) It was limited to community school only.
-) This study was limited to only subject mathematics.
-) This study was limited to collected data only two communities.
-) It was limited to study on only selected as experimental and control group of Rupandehi district.

Definition of Related Terms

The definition of related terms are as follows:

Achievement. Achievement test attempt to measure what an individual has learned his\her present level of performance.

Bhojpuri Language. Language that one first learns to speak as a child one's native language.

Control Group. A group in which experimental treatments were not provided to see change results.

Effectiveness. The effectiveness in study is defined in terms of magnitude of the score obtained by experimental and control group in mathematics achievement. This study is mainly concerned with the statement's effectiveness of Bhojpuri language in learning mathematics at basic level. To find out the effectiveness of student's achievement of score, attendance, homework, discipline, interaction, interest etc.

Experimental Group. A group in which experimental treatment were provided to see the change results.

Mother Tongue. The language which a person acquires in early year which normally becomes his natural instrument of thought and communication.

Chapter 7

Review of Related Literature

A literature review is the process of locating, obtaining, reading and evaluating the research literature in the research. The main purpose of review of related literature is to develop some expertise on one's area to see what new contributions can be made and to receive some ideas for developing a research design.

Review of literature is an essential part of studies. It is a way to discover what other research in the area of one's problem has uncovered. A critical review of the literature helps the researcher to develop through understanding and insight into previous researcher works that related to the present study. Review of related literature are research task, calling for a deep insight and clear perspective of the overall field. The purpose of review literature is to upon the text and background of the study. There are so many books report and related studies have been reviewed in order to explain the present problem of the study.

Empirical Literatures

Das (2007), conducted a research on "A Comparative Study of Students Achievement in Mathematics Taught Maithili and Nepali." The researcher selected 70 students of Shree Secondary school of Mahuliya of Dhanusa district. The students were only the Maithli. True experimental design post-test only equivalent control group design was adopted. The researcher selected unit of math to both group experimental and control group design was adopted. The researcher taught the selected units of math to the both group. After the analysis and interpretation the data, the researcher concluded that the achievement of 6th grade students taught by Maithili language was highly benefited then the students taught of Nepali language in Mathematics.

Morgon and Wagner (2014), conducted a research on “Language and Communication in Mathematics Education. “The mathematical language is method of human communication, either spoken or written, coursing of use of words in a structured and conventional way. Also it is a system of communication used by a particular country or communitythe relationships between mathematical and everyday language continue to be a focus of research but we now see more theoretical subtlety in attempts to understand why difficulties arise.

Also, Developments in understanding the way language works challenge some of the assumptions that lie behind such research and have also produced theoretical and methodological tools that contribute to understanding the development of mathematical thinking and enable amore grounded analysis of linguistic data. In the multilingual classroom, especially learners are studying mathematics using a language different from their mother tongue or first language, represent context where some of the above considerations of teaching and learning are significantly more obvious and acute. In some sense almost all studies involving language and communication in mathematics education also address other significant issues learning teaching, affect, identity, curriculum, assessment, etc.

Sarabi and Gafoor (2017), conducted a research on “Linguistics Challenges and Its Influence on perceived difficulty in Mathematics Learning of Elementary School Students of Kerala” According to the researcher, the student’s difficulties in learning mathematics are a concern worldwide. Difficulties in mathematics learning are a multi-faceted issue and the role of language in it is crucial. In this study, the research question are: to what extent students feel difficulty in select components of

language of mathematics if thought Malayalam medium? And do difficulties in language of mathematics contribute significantly to student perceived difficulty in upper primary school mathematics?

Also in this study, a preliminary diagnostic investigation through descriptive survey, with a mathematical language test was done. The percentage analysis and chi-square test of independence were employed for statistical analysis. The sample consisted of 200 students (90 boys and 110 girls) in 7th standard students randomly selected from upper primary school of Kozhikode and Malappuram districts of Kerala. After, Association between perceived difficulty in learning mathematics and difficulties in mathematics of language is also analyzed. The finding of this study, difficulties generated by the components of mathematical vocabulary, morphology and pragmatics are contributing to perception of mathematics as a difficult subject. Most mathematics teachers lack in required preparations for providing support that learners require to meaningfully learn mathematics.

Chiluwal (2014), conducted a research on “Language Problems Faced by Student in Learning Mathematics at Higher Secondary Level” According to researcher, Language plays the role in the socialization process of any children. In this qualitative study has tiesto the hidden feeling, learning difficulties, understanding of mathematics teaching and classroom practices the mathematics teacher and how students perceive it in the classroom. In this study, writer has used ethnographic method of inquiry to explore the experiences and image of mathematics which the mathematics teacher and students carry.

Also, writer has presented the teachers and students views about the mathematics teaching and learning in English at higher secondary level. In this study chosen 6

participants from two each colleges, those students who have passed their SLC from public school where they used to learn mathematics in Nepali and at college they are learning mathematics in English. In study used several round interviews as the main source of information for study. Also taken class observation and talked to related people to ensure the validation of the data. In this study writer found the medium of instruction is the major reason of mathematics teaching and learning. English language instruction promotes the mathematics understanding, mathematical anxiety and classroom teaching and learning activities

Lama (2017), conducted a research on “Effectiveness of Tamang Language in Teaching Mathematics at Primary Level” According to writer, this is an experimental research. The objective of this research were to find effectiveness of Tamang language in teaching mathematics in terms of achievements score and to explore feelings and participation of the students in class room while they are thought in their own language. The design of the study was an experimental study. This experimental study was adopted in two non-equivalent groups for the purpose of the study such as experimental and control groups.

Moreover, in this study researcher used true experimental design pre-test and post-test equivalent group design. The researcher selected one school for this study namely Bhairav lower secondary school, Khotarikhola-6, Makawanpur. In where out of 41 students, there were 32 Tamang students whom writer selected as sample students for this study. Among them experimental group of 16 students and control group of 16 students were decided by coin toss. After that for this a pre-test containing 20 questions among 12 multiple question and 8 subjective questions. Both experimental and control groups were thought in Tamang language and Nepali language respectively. The different mean achievement scores were tested by using

mean, standard deviation, variance and t-test to compare the achievement of students. In this study, researcher was concluded that the mean achievement of the student's thought in Tamang language become thing higher than the mean achievement of the student thought in Nepali language along with students' taught in Tamang language more active and participating in all activities then that students taught in Nepali language.

Bohora (2010), conducting a research on "*Effectiveness of Doteli Language Learning in mathematics*" According to researcher, Mathematics is an independent subject of study with its own language, symbol, concept, structure and systematic approaches. Also language is one of the powerful medium and most highly developed forms of human communication. This research was tried to compare the achievement of students taught by Doteli language and Nepali language at Baitadi district.

Also, this study was an experimental type research. For this research only one school from Baitadi district was selected purposively and among 48 students of grade three, 36 (18 boys and 18 girls) students were selected randomly as sample of the study. These 36 students were assigned into two equivalent groups: experimental and control group, each group contain 9 girls and 9 boys. An achievement test paper being the main instrument for the study, the investigator developed the test consisting of 20 multiple choice items on the basis of textbook in mathematics of grade three. The researcher concluded use of Doteli language helped students both (boys and girls) to understand mathematics and consequently perform better in an achievement test. Moreover, in this study on achievement test was that the students taught in Doteli language in mathematics performed better than the students taught of Nepali language.

Sarabi and Gafoor (2017), conducted a research on “Influence of Difficulty Language of Mathematics on Perceived Self-efficacy in Learning Mathematics among Upper Primary Students of Kerala” According to researcher, The academic language of mathematics include pronunciations, intonation words, preferred sentence structure, accepted discourse patterns, common ways of accomplishing function of language and pragmatics rules. This study was descriptive survey on 200 (90 boys and 110 girls) standard 7th students randomly selected from upper primary schools of Kozhikode and Malappuram districts of Kerala.

And, The test contained items related to verbal and symbolic expressions structural and functional aspects of mathematical language identified after the analysis of contents of mathematics textbooks from standard 1st -7th . Influence of six components of mathematics language on self-efficacy in learning mathematics is discussed separately out of 21 identified language element in elementary school mathematics, difficulty with 7 elements did not influence students self-efficacy in learning mathematics self-efficacy in learning mathematics by difficulties in mathematics terms, symbols, words, syntax, semantics, pragmatics of mathematics language. In conclusion, the rest of low self-efficacy occurs in 20% to 29% more students. If various types of terminology in mathematics then if without such difficulty. The various types of mathematics terminology in Malayalam.

Acharya (2016), conducted a research on “Factors Affecting Achievement of Tharu Students in Mathematics” according to researcher. Tharu are main and largest indigenous ethnic people of Terai and Inner Terai living east to west Nepal. The main objective of the study was to identify the factors affecting achievement of Tharu students in mathematics. This study is the case study of qualitative design. For this research study, sampling to research 5 school and 50 students from grade 8th students

in Shree DurgaBhagawati Higher Secondary School, Samaytahn HSS, Nepal Adarsha HSS, and etc. of Kapilvastu district. To the Tharu were selected to find their problem in mathematics learning. The instruments adopted in this study were observation in check list, interview, open-ended interview and semi structured question.

Also school reports, related magazines were used for collecting secondary data. In this study, to find out the factors affecting in learning mathematics, In-depth interview and class observation was conducted to find the problem of Tharu students in regarding the learning of mathematics. In this study, the researcher found the teaching learning process has become a great issues in different levels of education factors directly and indirectly effect the Tharu student's achievement. Moreover, this study has shown that mathematics learning and achievement need prior knowledge, extra labor as well as strategic teaching technique and regularly of students plays a vital role in student's cognitive development classroom practices and the curriculum are closely linked.

Kandel (2017), conducted a research on "Difficulties of Darai Students in Learning Mathemat" According to researcher, Darai is one of marginalized group of indigenous nationalities of Nepal. The main objectives of this study are to identify causes of difficulties and strategies to address the causes of difficulties of Darai students in learning mathematics at Secondary level. This research is qualitative in design with case study approach. The study site is three school situated in Darai community of Vyas municipality-5, Tanahu, Nepal. There were altogether 18 participants in May study, which was taken by purposive sampling. Classroom observation from and interview guidelines to students, subject teacher and parents were used to collect data. Besides these, unstructured interview of selected students, teachers and parents had also take to analyze difficulties.

Moreover, Darai have their own traditional values, language, they are culturally dominant, parents involve their children in lobar, Darai students have low physical facilities and materials, most of the parents are uneducated, lack of proper interaction between teacher and students, parents careless of their children education, lack of group discussion and lack of inter-relationship between other caste students are the causes of difficulties of Darai students in learning mathematics.

Kayhan and Yeltekin (2017), conducted a research on “8th Grade Students Skill of Connecting Mathematics of Real Life” According to researcher Mathematics has taken its place in our life not only with numbers or calculations but also with way of thinking with its concepts. The purpose of this study to examine 8th grade students skills of connecting mathematics to real life. This research is based on the survey design as it aims to determine the current status group consists of 176 students in total who are attending 3rd grade in a state school affiliated to Etimesgut district of capital Ankara. The students participating in the study, 44% are female and 56% are male students. The connecting mathematics to real life scale which is developed by the researcher used as the data collection tool in this study.

Also, in this study, finding indicate that participating 8th grade student's skills of connecting mathematics to real life is not at sufficient level. It's found out that students usually establish superficial connections between mathematics and real life. Mathematics is not just a set of rules to be applied in life. For that reason the meanings of mathematical concepts and their use in the real life should be emphasized and discussed a part from the solely teaching of these rules.

Khanal (2017), conducted a research on “Preference of Mathematics Learning Strategies Based on Gender” This study highlights the differences between boys and

girls in their preference regarding learning strategies in mathematics. In this study, mixed method sequential explanatory design was employed. Data were collected with a survey from 1394 students (652 boys and 742 girls) of grade nine from 24 schools of three geographical regions of Nepal.

Moreover, the author adopted a mix method sequential explanatory design using a questionnaire observations and interviews. The result shows that boys and girls have significant difference in their preferred learning strategies. The boys preferred elaboration, effort management and critical thinking whereas girls preferred peer learning, help seeking and rehearsal strategies. There were marked differences between boys and girls in their interest and enjoyment of mathematics as well as in their self-related beliefs, emotions and learning strategies related to mathematics with respect to student's use of learning strategies. Girls need to manage time and study environment to promote their learning achievement in mathematics.

Theoretical Literature

In the section, the researcher introduced the theoretical discussion which is relevant for the interpretation of the finding of the study. There are various learning theories related to children's learning and development. Some of them are classical conditioning, Social development, Constructivism, Cognitive learning, Socio-Cultural, Multiple intelligence and so on.

Cultural difference and discontinuity theory.Ogbu(2000), delineates about the cultural differences and cultural discontinuity theory that deals with the problem of students learning caused by the discontinuous between the culture of home and school. Those children whose home cultures are much similar to the culture of the school can easily with system that may result better learning achievement. Similarly

the children with unmatched or dissimilar home culture with school cultures and they do not have enough attention in their learning and do not get much recognition of their culture they have to work achieving learning outcomes compared to the children with good matched. (Lama, 2017)

Ogbu (2001), emphasized learning not only as the product of the culture and language difference but rather the nature of the relation between the culture and language of minority disadvantage and dominants groups. The dominant group control the school system through implementation of their curriculum and using their language as only means of instruction regarding cultural difference, identity and school learning, he has put the examples on the case of the United State of America.(Lama, 2017)

However, he developed the theory of culture difference on the case of U.S.It might have implication to this study that is related to cultural discontinuity and learning difficulties in mathematics of Bhojpuri community who also disadvantage group in terms of culture of discrimination, domination and backward from mainstream. Mainly, the Bhojpuri community children at home learnt by observing and engaging in the work of their father, mother and elders. But they do not get opportunity in the school expecting listening which is dominate activity during the day at school.

Furthermore argues that discontinuity is also accrued in the area of language, thought and measurement. It happens mainly due to the difference between the teaching and learning strategies in home school i.e. formative education. Similarly, since children learn in school environment without natural context in their experience learning may have no any significance to their everyday life. Ogbu (1982). Further

illustrate that primary cultural discontinuity is generated by primary cultural development before members of a given population come in to contact with existing culture of dominating group of population.

Conceptual Framework

A conceptual framework is much more than a literature review. It does not just summarize current published research. Generally a conceptual framework is either in graphical form which describes the relation between the variables a complete conceptual framework will help you assist the goal of our own research and developed appropriate research question and methodology.

Conceptual framework is way to reach a comprehension understanding of the origin and it complies all theoretical concept in other more our way of reality. The education which is given on the basis of society is succeeding and long life sustained. During this study I am keen interested to know how mother tongue language Bhojpuri is interlinked with the mathematics learning at basic level learning. The diagrammatic representation of the conceptual framework is presented below.

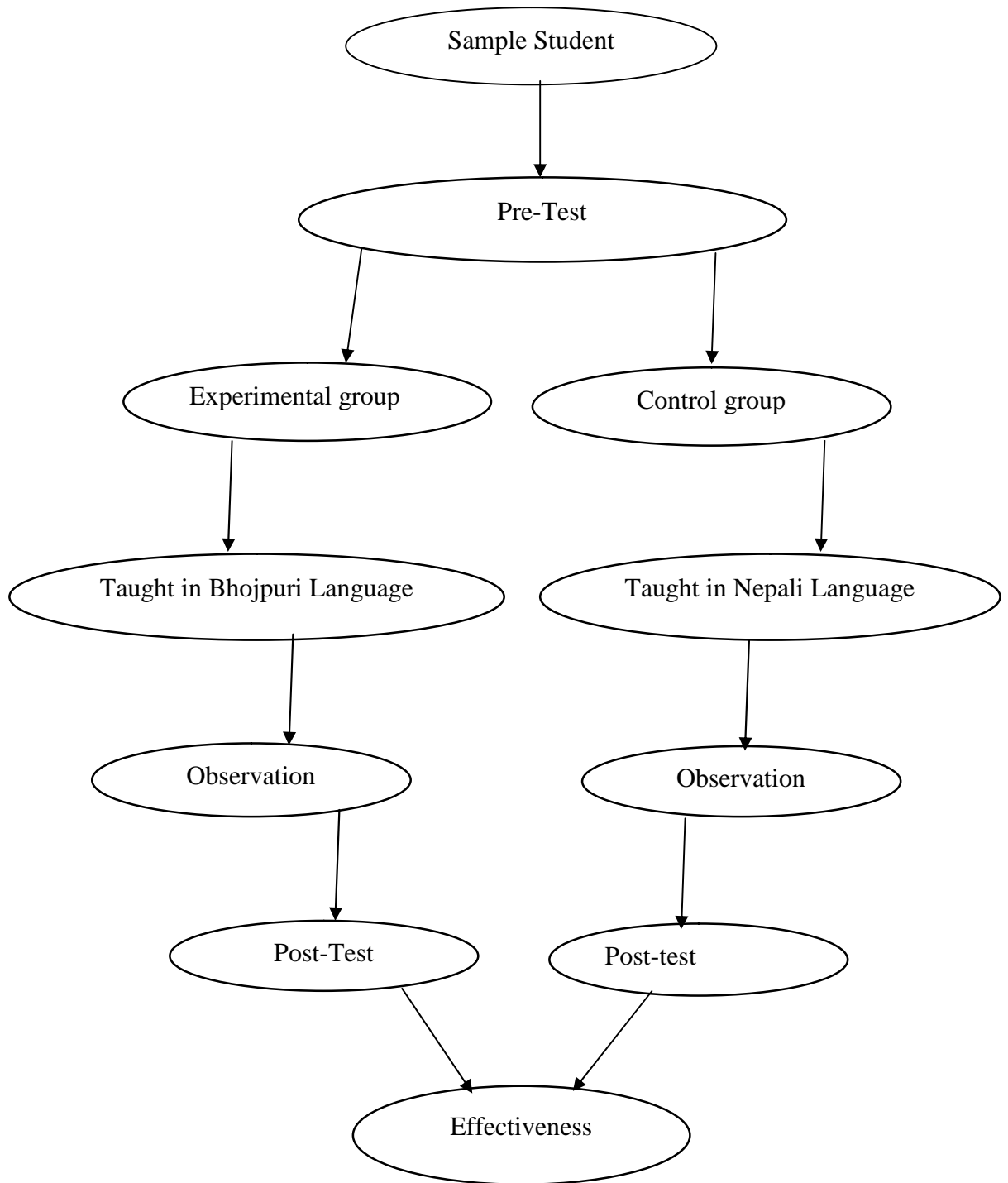


Figure 2.2: Conceptual Framework of the role of Language in teaching Mathematics

The above figure represents conceptual framework of my student and shows the way to meet my research objective. Firstly, Sample students are selected out of

total students from selected sample school and group is divided. After that researcher take test and class observation of mathematics subject to meet motto of my research.

Chapter III

Methods and Procedures

Research methodology is considered as blood circulation of the study.

Research methodology is a science which is needed to achieve systematically objective of the study. In this chapter design of study, the population of study, sample of the study, tools and techniques of data collection, data collection procedure and data analysis procedures are discussed and presented in details.

Design of the Study

Research design is the plane, structure and strategy of investigation. The research designs for this study was an experimental study. So, researcher used mixed method research design study. Creswell & Hanson (2003), state that mixed method study involves the data collection or analysis of both quantitative and qualitative data in a single study. In this study researcher was selected sample for the study in two non-equivalent groups such as experimental group and control group. Experimental group was taught a lesson of mathematics in Bhojpuri language and control group was taught a lesson of mathematics in Nepali language. This design is done using popularly is known pre-test and post-test nonequivalent groups design. This design was presented in the following table.

Table 3.1 *Design of the study*

Group	Pre-test	Treatment	Post-test
E _R	O ₁	X	O ₃
C _R	O ₂	-	O ₄

Where,

E_R = Randomized experimental group

C_R = Randomized control group

O_1 & O_2 = Pre-test for experimental and control group respectively.

O_3 & O_4 = Post-test for experimental and control group respectively.

X = Treatment (teaching in Bhojpuri language)

\bar{X} = Treatment (teaching in Nepali language)

Population and Sample of the Study

To carry out the research objectively, Lumbini cultural municipality and Siyari Rural Municipality of Rupandehi district was selected. The population of the study was student of grade five in academic year 2019. The researcher were selected two government schools by convenience sampling method, namely Shree Janghatta Basic School and Shree Lumbini Basic School of Rupandehi district. There were 24 students selected as sample students for this study. Experimental group of 12 students from Shree Janghatta Basic School and control group of 12 students were selected as sample of students.

Tools for Data Collection

In this research the researcher was used only two types of instrument. These are mathematics achievement test and classroom observation.

Achievement Test. In this study, the researcher was used achievement test as main tool of the data collection. Also, Researcher was developed the following achievement test consisting multiple items based on the selected unit of mathematics book of grade five.

Pre-Test. Pre-test was taken as purpose to find out the level of achievement scores in the mathematics of the both non-equivalent group, experimental and control group before conducting the treatment x. This test consists of only 18 items, 11 were of 1 mark and 7 were of 2 marks. (See appendix “A”)

Post-Test. Post-test was taken as purpose to find out the level of achievement scores in the mathematics of the both non-equivalent group, experimental and control group after conducting the treatment. This test consists of only 18 items, 11 were of 1 mark and 7 were of 2 marks. (See appendix “B”)

Classroom Observation. Observation is the assistance tool of the data collection which helps to fulfill second objective of this study and the purpose of collecting qualitative data. It was the best approach to collect the required information which the researcher was find facts knowledge. For this study, the researcher observed the behavior of the students during the experimentation and recorded after completion of activities. Researcher noted the student’s participation in learning, interaction, regularity in doing homework and class attendance rate etc. of both group by regular class observation form. (See appendix “K”)

Interview. In this study, the researcher used unstructured interview to Head teacher and subject teacher whatthe Bhojpuri language as medium of instructions method developed the student’s behavior and improved achievement in Mathematics at basic level.

Item Analysis. The difficulty level and discrimination index of the test was computed to check the quality of the test item. Item analysis indicates which items are very easy and which item are very difficult. Mathematics achievement test level difficulty (p-level) and index of discrimination (d-index) of each item was calculated from the tabulated 27% of higher scores i.e. 5 students of higher score and 27% of

lower score i.e. 5 students of lower scores. The criteria for acceptance or the rejection of items were given in appendix “C” and “D”. Two item were cancelled from the test-land test-λλ and per-test and post-test 18 items were accepted from the final form.

The split half reliability was found by scoring 1 for correct response and 0 for incorrect response on each item. After cancelling and modifying the items the refinements of achievement test (I and II) were prepared which are mentioned in Appendix “C” and “D”

Difficulty Level (P-level)

It is percentage of students able to pass each item. It takes the values ranging from the 0 to 100. On the basis of criteria given in appendix “C” and “D”.

Reliability and Validity of Tools

Reliability is the degree to which a test consistency measures whatever it measure. For the reliability of the instruments the researcher was conduct a pilot study taking 16 students. The researcher was established the reliability of tools by item analysis of the test and reliability coefficient using the split-half method. The students which was taken for pilot study would not be included in this research. For the establishment of the validity of tools researcher was consult thesis supervisor, subject expert, teachers guide and textbook for validation of tools.

Data Collection Procedure

Firstly, Researcher was visited each selected schools. After that, Researcher was also visited Head teacher, mathematics teacher, examination committee and student of grade five. After that, Researcher was explained about the nature and purpose of the study. For that, Researcher was discussed and take permission to Head teacher, examination committee, mathematics teacher of sample schools to teach in Bhojpuri language in five class and take achievement test of sample students. Also,

class observation was born during teaching learning activities in both language classes Bhojpuri and Nepali. Researcher was divided the selected sample into two non-equivalent groups such as experimental group and control group. Each group contained 12/12 students. The researcher taught on both groups separately during one month. . Pilot study was adopted to established validity and reliability of the test item. For the pilot study 18 were kept among them 11 were objective and 8 items were subjective.. After that, researcher was used the class observation from for qualitative data collection.

Data Analysis Procedure

The collected set of data analyzed and interpreted statically. The data was collected by administering achievement test paper among the sample student and observation of teaching learning activities of teachers using observation form. For then, the answer sheets of the administered achievement test score was analyzed using pre-determined scoring keys. In the first stage all the paper was checked. After that the collected data was analyzed by using mean, standard deviation, correlation coefficient and t-test at 0.05 level of significance. After that, researcher was used the class observation from for qualitative data collection. This data was analyzed by grouping the similar information in description method. The researcher analyzed, qualitative information student's activities during experimental period on the both group on the basis of category given in (Appendix "J") with the help of classroom observation form. (See Appendix "K")

Chapter IV

Analysis and Interpretation

This study was an experimental study. The data for the study were collected from grade V students. The main objective of this study were to find effectiveness of Bhojpuri language i learning mathematics at basic level. For this 24 students were chosen as sample from the selected two sample schools. I determined two groups with the experimental group containing 12 students from Shree Janghatta Basic School and control group containing 12 students from Shree Lumbini Basic Level.

In this chapter, the collected were tabulated and analyzed according to the objectives of the study and verification of the hypothesis. This chapter deals with the analysis and interpretation of the data obtained from the field of the study. The collected data and things were analyzed and interpreted statically in terms of the following basic.

Comparison of mean achievement score of experimental and control group on pre-test and post-test. I have presented the data in details. The scores of students have been given in Appendix A and B with the mean, standard deviation and variance along with t-test analysis of pre-test and post-test are presented in the following table.

Analysis of the Students Achievements on the basic of Pre-test Result

The mean, standard deviation, variance and t-value of the scores obtained by experimental and control group students are presented in the table 1, the raw scores of which are given in Appendix "E"

Table4.1*Comparison of Achievement of Pre-test in Mathematics*

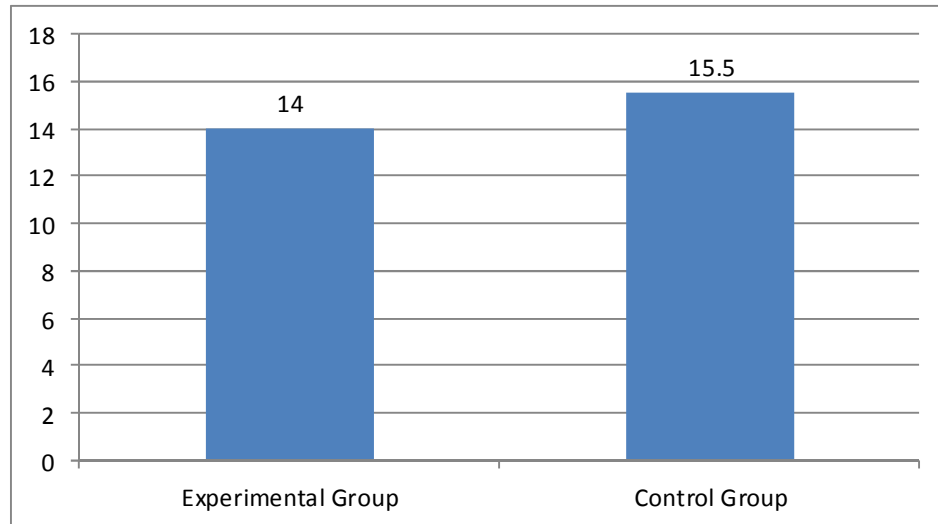
Comparison	No. of student	Mean	SD	Variance	Mean diff.	t-value	Remarks
Experimental Group	12	14	3.16	9.98	1.5	1.45	Null Hypothesis was accepted
Control Group	12	15.5	1.71	2.92			

The analysis of the information mentioned above table 1 represents the pre-test result of 12 students in experimental group and 12 control group. Pre-test was taken as purpose to find out the level of achievement scores in the mathematics of the both non-equivalent group, experimental and control group before conducting the treatment. From the above table, researcher found t-value for independent sample is 24 whereas the tabulated at t-value of 22 degree of freedom is 1.717 at 0.05 level of significance. The calculated t-value is smaller than the tabulated t-value. Therefore, the null hypothesis was accepted and it was concluded that there is no significance difference in the achievement scores of both groups.

Experimental group and control group were independent sample. The mean score obtained by student of experimental group and control group where 14 and 15.5 respectively and were presented in bar diagram in below.

Figure 4.1

Comparative bar graph showing achievement of experimental and control group in pre-test in mathematics



The above diagram shows that the two pillar for experimental and control group in where the mean of experimental group is 14 and the mean of control group is 15.5. Thus, the mean of experimental group was lesser than control group by 1.5. The control group was seen little bit greater than experimental group but there is no significance difference in their achievement score of the both groups. This means that before conducting the treatment to the both groups experimental and control group has the same level of the achievement scores in mathematics.

Analysis of the Students achievements on the Basis of Post-Test Result

The mean, standard deviation, variance and corresponding t-value of the scores obtained by experimental and control group students are presented in the table 2, the raw scores of which are given in Appendix "F".

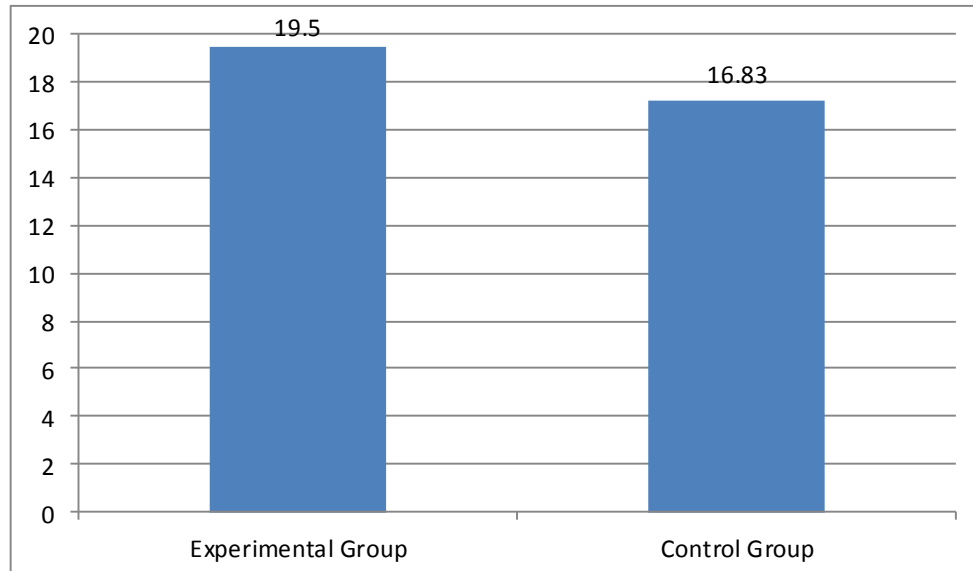
Table4.2***Comparison of Achievement of Post-test in Mathematics***

Comparison	No. of student	Mean	SD	Variance	Mean diff.	t-value	Remarks
Experimental Group	12	19.50	2.66	7.08	2.67	2.51	Null Hypothesis is rejected
Control Group	12	16.83	2.53	6.40			

According to the table 2 mentioned above represents the post-test result of 12 students in experimental group and 12 control group. Post-test was taken as the purpose to find out the level of achievement scores in mathematics of both control and experimental group after conducting treatment. From above table 2, the research found t-value for independent sample is 24 whereas the table tabulated t-value of 22 degree of freedom is 1.717 at 0.05 level of significance. The calculated t-value was 2.51 then the tabulated t-value of thus the null hypothesis was rejected and concluded that there is significant different in the achievement of the both groups. The achievement of experimental group taught in Bhojpuri and control group taught in Nepali language was compared by using their mean score which are presented in bar graph below.

Figure 4.2

Comparative Bar Graph showing Achievement of Experimental and Control Group in Post Test in Mathematics



According to the above Bar graph, there are two parts in which one part is for experimental group and another part of control group. These two parts were drawn after treatment. Students of experimental group were taught in Bhojpuri language and students of control group were in Nepal language. From the above bar graph, mean scores of experimental group and control group are 19.50 and 16.83 respectively. After treatment mean score of experimental is increased by 2.67 then the mean score of control group and it was seen that after experiment, achievement of the students of experimental group taught in Bhojpuri language is higher than the students of control group taught in Nepal language.

Analysis of Qualitative Data Collected During the Experiment and Control Group

Qualitative analysis was done with the help of the information collected by daily classroom observation. I observed noted the behavior and activities shown after they are taught in their own mother tongue language Bhojpuri and taught in Nepali

language. I used in daily classroom observation form to record the student's participation, discipline, learning interaction, attendance, language, interest, homework, classroom and regularity.

After starting the teaching learning activities in their own language Bhojpuri, I observed student's activities in the classroom with the help of regular observe from when I went into the classroom of the experimental group and gave my introduction in my mother tongue language Bhojpuri then they were found so excited, active and more interested to learn. Similarly, I found them becoming more attentive in class and I did not find them making the classroom messy. On the other hand I could not find students paying attention toward the study in the control group. They were not excited and interested to learn and felt bore towards the subject in control group. I analyzed student's activities during experimental period on the both group on the basis of category given in (Appendix "J") with the help of classroom observation form. (See Appendix "K")

In the experimental group I found students working in the group where they were used to interact. Students were found more active and interested to take park in the interaction and they did not fell hesitation to ask me the question in their own language. They used to fell hesitation to ask question and to interact with the teacher because of the unmatched language but when I was found teaching in their own language Bhojpuri then they started to enjoy and explore their feelings to me. Positiveness towards the education was developed and they started to come school regular and was seen slowly being improved thus achievement of experimental group was also found better than control group too.

On the other hand, the students of control group were not excited to learn mathematics, they did not take mathematics as an interesting subject. They do general

error in simple addition and subtraction. They did not execute their homework and also they were often found to be irregular in class. There were vast difference between active learner and passive learner only the active learners participated in the classroom activities, they often sat on the first row of the classroom but the weak students rarely participated in classroom activities and found to be back benches. The attendance rate of control group was lower than experimental group. But during the experimental period teaching. Students of experimental group were regular in classroom. They were found cooperative in learning and doing homework classroom activities. They were engaged in solving mathematics problem in the classroom cooperating with their fellow. They were found more disciplined and civilized during the class.

Thus, it is concluded that experimental group taught in their mother tongue language is better and effective than control group in Nepali language. To assist above information I asked some questions to the head teacher and subject teacher which were as follows:

Researcher:*How was the interaction that you found form the students?*

Head Teacher:*Bhojpuri have their own language. They do not speak Nepali language at their home but in school used Nepali. The language at home and school doesn't match. After your performance don in their own language they too much admired your style of teaching. They were interested in learning mathematics and they clarified that it became very clear and easy because of the class taught in their own language Bhojpuri. They were positive change in learning mathematics.*

Researcher:*What influence did you find the class conducted in their own language?*

Subject teacher:*Actually, Bhojpuri students are poor in language pattern. They always spoke in Bhojpuri language. They always used to sit together in group.*

They used mixed language in classroom. Sometimes I asked question but they could not response. So, I did not like to ask question to them. After your performance I also tried to learn Bhojpuri language. So, I could speak Bhojpuri language to them while teaching of course! There is positive impact to the students. Now they are found to be quite clear in mathematics concept and they are capable to do the mathematics.

Students come to the school from different community. Each they have own language. Generally, class V students in community school of rural areas students speak of their home still they have been using that language at school too. It doesn't matter the teacher teaching in basic level, come from which ever community but they must study the psychology of the students along with the society where they are teaching. To be familiar with the students of primary level of rural area or wherever teacher must learn community language so that the teacher can diagnosis the real problem and it becomes easy to teach the basic level as well as make effective teaching.

The conclusion of analysis of qualitative data in following points:

-) I was found teaching in their own language Bhojpuri then they started to enjoy and explore their feelings to me. Positive ness towards the education was developed and they started to come school regular and was seen slowly being improved thus achievement of experimental group was also found better than control group too.
-) Students of experimental group were regular in classroom. They were found cooperative in learning and doing homework classroom activities. They were found more disciplined and civilized during the class.
-) In the experimental group I found students working in the group where they were used to interact. Students were found more active and interested to take

part in the interaction and they did not feel hesitation to ask me the question in their own language.

) From the observation form, students of experimental group were found to be more active in interaction in learning mathematics activities and also attendance of students was higher than students of control group.

) Experimental group taught in their mother tongue language is better and more effective than control group in Nepali language.

Chapter V

Summary, Findings, Conclusion and Recommendations

This chapter includes the summary of finding, conclusion, recommendation and suggestion for the further study. After analyzing and interpreting the collected data an attempt has been made to summarize and enlist of the finding and some recommendation for the further study. The first, second, third and last section of this chapter represent respectively summary of research, finding, conclusion and recommendation based on the finding of the study.

Summary

Mathematics plays an important role in the development of the human civilization. Mathematics learning helps students to understand and interpret the important quantitative aspect of living. Mostly mathematics taught in all level of the school with limited medium of instructions. Medium of instruction plays vital role to achieve the goal and objectives. Primary mathematics teaching can be made effective if the medium of instruction is appropriate. Thus considering these things, I selected the research topic "Effectiveness of Bhojpuri language in learning mathematics at Basic Level" to know which medium of instruction is more effective in primary teaching mathematics and the objective was to compare the mathematics achievement of the students of grade V taught in Bhojpuri language and Nepali language.

For this purpose, I developed achievement test for the grade V on the basis of mathematics text book and curriculum. The item of achievement test was developed on the basis of taught lesson and it was administered to the two non-equivalent group experimental and control group containing 12/12 students were selected from sample schools are Janghatta Basic School and Lumbini Basic School. At first pre-test was

administered to both group and then experimental group was taught in Bhojpuri language and control group was taught in Nepali language. The scores of 12/12 students were analyzed qualitatively and quantitatively along with mean, standard deviation, variance and t-test for independent samples under the following heading:

-) Comparison of achievement scores of experimental group and control group on pre-test.
-) Comparison of achievement scores of experimental group and control group on post-test.
-) Analysis of qualitative data collected during the experiment.

Finding and Discussion

On the basis of analysis and interpretation of the data obtained from the achievement test of experimental group taught in Bhojpuri language and control group taught in formal language Nepali.

-) The mean achievement of score of pre-test in mathematics of experimental group was found less than the control group by 1.5. The mean difference was not significance at 0.05 level of significance.
-) The mean achievement score of post-test in mathematics of experimental group was found higher then control group by 2.25. The mean difference was significance at 0.0 level of significance.
-) From the observation form, students of experimental group were found to more active in interaction in learning mathematics activities and also attendance of students was higher than students of control group.

I found the students of experimental group about nearest achievement score with control group in mathematics before experiment but after experiment experimental group were found extremely improved in learning mathematics. In

addition the above point's while they were taught in their own language and they felt pleasure and excited then they were curious and taught interested then the students of control group in learning mathematics activities. During the experiment, they did not feel hesitation to explore their felling as well as problems existing since they were admitted to school but in students of experimental group were found to more active in interaction in learning mathematics activities. Regarding their attendance the rate of attendance of students of experimental group was higher than the students of control group.

Conclusion

The use of Bhojpuri language as medium of instruction in teaching mathematics helped the students to understand mathematics well and consequently perform better in an achievement test. Thus, the conclusion of the study on the achievement test was that the student taught in Bhojpuri language in mathematics performed better than the student taught of the Nepali language. The second objectives of this research was to explore the felling and change the behavior of the students which was done qualitatively with the help of informative collected through daily classroom observation. Before the experimental students did not find themselves free in learning mathematics thought the language. They did not get chances to learn mathematics in their own language which they often used in their home. There were so difference in language used in school and home where they have grown up with language.

Consequently the language Bhojpuri students mathematics achievement was so poor but after teaching in Tamang language, I observed that the attendance rate of the student become higher. The students were found to be participating actively in interaction to solve the problem in team. Especially medium of instruction had crucial

role to improve the ability of weaker students by providing environment where students felt free to share their feeling to each other without hesitation.

Recommendation

After conducting any study, recommendation has to be made so teaching community along with related field can get benefit from the study. On the basis of finding obtained from the analysis of the collected data of this study under taken to explore the effectiveness of Bhojpuri language in learning mathematics of Basic level. The following recommendation was made.

-) Mother tongue language influence in learning mathematics so while teaching mathematics a teacher should see what difficulties that learners are facing in their mother tongue.
-) The mathematics teacher should use appropriate local teaching material as far as possible during the classroom teaching.
-) Mathematics teacher should analyze what are the similarities and difference between the Nepal language of learner and the Bhojpuri or other mother tongue language to learn mathematics in Basic level.
-) The course designer and text writer should be more conscious while designing the syllabus and writing the text book for the Bhojpuri language.

Suggestion for the Further Study

The conclusion of the study can't generalize to the level of schooling throughout the country due to the limitation contained in the study so considering the limitation of the study, the following suggestion can made for the study.

-) Randomized samples covering the country should be selected in order to obtain much broader and valid generalizations.

-) Beside mathematics, other areas relating to mathematics should be considered in the study.
-) Similar studies should be considered in to other grade of primary level and samples should be selected from different district.

Finally, I want to request to the concerned authority to take the above mentioned recommendation into consideration. Further, I would like to request to authority to carry out other research on the various areas of the Bhojpuri language.

Appendix "A"

Pre-test Paper

Subject: Mathematics

Time: 1 hrs.

Class: 5

Full Marks: 25

School's name:

Pass Marks: 10

Student's name:

Roll No.:

Multiple Choice Questions

(1 X 11 = 11)

Tick (\checkmark) the best answer.

1) $F = \{\text{Mango, Apple, Banana, Papaya, Orange}\}$ is the set of.....

- a) Animal b) Fruit c) trees d) Vegetable

2) Letter are used to indicate the sets?

- a) A, B, C, D..... b) a, b, c, d,..... c) 1, 2, 3, 4,.... d) I, II, III,....

3) Which is the denominator of the fraction $5/6$

- a) 5 b) 6 c) Bath d) None

4) What is the value of the shaded portion in fraction given in figure?

- a) $3/6$ b) $4/6$ c) $2/6$ d) $5/6$



5) What is the sum of $1/2 + 2/2$?

- a) $1/2$ b) $1/4$ c) $3/4$ d) $3/2$

6) What is the value of $1/3 \times 2/5$?

- a) $3/8$ b) $2/8$ c) $2/15$ d) $3/15$

7) What is the value of $1/100$ in decimal?

- a) 0.01 b) 0.10 c) 0.001 d) 100

8) What is the fraction of the decimal 0.12?

- a) $12/10$ b) $12/100$ c) $3/100$ d) $12/1000$

9) Write the 5.207 is rounding up to two place is

- a) 5.2 b) 5.20 c) 5.21 d) 5.207

10) If the price of a copy is Rs.10 then what is the price of two copies?

- a) Rs.10 b) Rs.20 c) Rs.30 d) Rs.40

11) What is the sum of $2a$ and $4a$?

- a) $2a$ b) $6a$ c) $4a$ d) $8a$

Short Question

(2x7 =14)

12) Write a set of days of a week in listing method.

13) Add: $5\frac{3}{8} + 3\frac{3}{4}$

14) Subtract: $4\frac{1}{5} - 2\frac{3}{10}$

15) Simplify: $5.01 + 3.25$

16) Multiply: 17.32×2.3

17) If price of one packet bisket is Rs.20 then how many price of 4 packet biskets.

18) If $x=4$ and $y=3$ then find the value of given expression $x + 3y$.

Appendix "B"

Post-test Paper

Subject: Mathematics

Time: 1 hrs.

Class: 5

Full Marks: 25

School's name:

Pass Marks: 10

Student's name:

Roll No.:

Multiple Choice Questions

(1 X 11 = 11)

Tick (\checkmark) the best answer.

1) $F = \{\text{Cow, Dog, Elephant, Tiger}\}$ is the set of.....

- a) Animal b) Fruit c) trees d) Vegetable

2) Which Letter are used to indicate the sets?

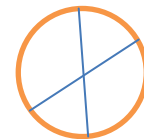
- a) A, B, C, D..... b) a, b, c, d,..... c) 1, 2, 3, 4,..... d) I, II, III,.....

3) Which is the numerator of the fraction $\frac{5}{6}$

- a) 5 b) 6 c) Bath d) None

4) What is the value of the shaded portion in fraction given in figure?

- a) $\frac{1}{4}$ b) $\frac{4}{4}$ c) $\frac{2}{4}$ d) $\frac{3}{4}$



5) What is the sum of $\frac{1}{4} + \frac{2}{4}$?

- a) $\frac{3}{8}$ b) $\frac{1}{4}$ c) $\frac{3}{4}$ d) $\frac{3}{2}$

6) What is the value of $\frac{1}{2} \times \frac{2}{4}$?

- a) $\frac{3}{8}$ b) $\frac{2}{8}$ c) $\frac{2}{6}$ d) $\frac{3}{4}$

7) What is the value of $\frac{1}{1000}$ in decimal?

- a) 0.01 b) 0.10 c) 0.001 d) 100

8) What is the fraction of the decimal 0.123?

- a) $\frac{12}{10}$ b) $\frac{123}{100}$ c) $\frac{3}{100}$ d) $\frac{123}{1000}$

9) Write the 5.2074 is rounding up to two place is

- a) 5.2 b) 5.208 c) 5.21 d) 5.207

10) If the price of a copy is Rs.12 then what is the price of two copies?

- a) Rs.12 b) Rs.24 c) Rs.36 d) Rs.14

11) What is the sum of 3a and 4a?

- a) 3a b) 6a c) 4a d) 7a

Short Question

(2x7 =14)

12) Write a set of months of a year in listing method.

13) Add: $7\frac{3}{8} + 4\frac{3}{4}$

14) Subtract: $3\frac{1}{5} - 5\frac{3}{10}$

15) Simplify: $6.21 + 3.25$

16) Multiply: 12.32×2.4

17) If price of one packet bisket is Rs.10 then how many price of 4 packet biskets.

18) If $x=2$ and $y=3$ then find the value of given expression $2x + 4y$.

Appendix “C”

Item Analysis of Pre-Test

Item No.	Upper 27% students with correct response						Lower 27% students with correct response						Correct response	R _U	R _L	P Value	D Value	Remarks
	1	2	3	4	5	Total	1	2	3	4	5	Total						
1	1	1	1	1	1	5	0	1	0	1	0	2	7	5	2	0.70	0.60	
2	0	1	1	1	1	4	0	1	1	1	0	3	7	4	3	0.70	0.20	
3	1	1	1	1	0	4	1	0	1	1	0	3	7	4	3	0.70	0.20	
4	1	1	1	1	1	5	1	0	0	0	0	1	6	5	1	0.70	0.80	
5	1	1	1	0	1	4	1	0	0	0	0	1	5	4	1	0.50	0.60	
6	1	1	1	1	1	5	1	1	1	0	0	3	8	5	3	0.80	0.40	
7	1	1	1	1	1	5	0	0	0	0	1	1	6	5	1	0.60	0.80	
8	1	1	1	1	1	5	0	1	0	1	0	2	7	5	2	0.70	0.60	
9	1	1	1	1	0	4	0	0	0	0	1	1	5	4	1	0.50	0.60	
10	1	1	1	1	1	5	0	1	0	0	0	1	6	5	1	0.60	0.80	
11	1	0	1	1	1	4	0	0	0	0	0	0	4	4	0	0.40	0.80	
12	1	1	1	1	0	4	0	0	1	0	0	1	5	4	1	0.50	0.60	
13	1	1	0	1	1	4	1	0	0	0	0	1	5	4	1	0.50	0.60	
14	1	1	1	1	1	5	0	0	1	0	0	1	6	5	1	0.60	0.80	
15	1	1	1	0	0	3	1	1	0	0	0	2	5	3	2	0.50	0.20	
16	1	1	1	1	1	5	0	1	1	1	1	4	9	5	4	0.90	0.10	C
17	0	1	0	1	1	3	0	0	0	0	1	1	4	3	1	0.40	0.40	
18	1	1	1	1	1	5	0	0	0	0	0	0	5	5	0	0.50	1	C
19	1	1	1	0	1	4	0	1	0	0	0	1	5	4	1	0.50	0.60	
20	1	1	1	0	0	3	0	0	0	1	0	2	5	3	1	0.50	0.40	

Appendix “D”

Item Analysis of Post-Test

Item No.	Upper 27% students with correct response						Lower 27% students with correct response						Correct	R _U	R _L	P Value	D Value	Remarks
	1	2	3	4	5	Total	1	2	3	4	5	Total						
1	1	1	0	1	1	4	0	1	1	1	0	3	7	4	3	0.70	0.20	
2	1	1	1	0	1	4	0	0	1	0	1	2	6	4	2	0.60	0.40	
3	1	0	1	1	1	4	0	0	1	0	0	1	5	4	1	0.50	0.60	
4	1	1	1	1	1	5	0	1	0	0	0	1	6	5	1	0.70	0.80	
5	1	1	1	0	1	4	0	0	1	0	0	1	5	4	1	0.50	0.60	
6	1	1	1	1	1	5	1	0	0	0	0	1	6	5	1	0.60	0.80	
7	1	1	1	1	1	5	1	0	0	1	0	2	7	5	2	0.70	0.60	
8	1	0	1	0	1	3	0	0	1	1	0	2	5	3	2	0.50	0.60	
9	0	1	0	0	0	1	1	0	0	0	0	1	2	1	1	0.20	0.00	C
10	1	1	1	1	1	5	0	1	0	0	0	1	6	5	1	0.60	0.80	
11	1	0	1	1	1	4	0	0	0	0	0	0	4	4	0	0.40	0.80	
12	0	1	1	1	1	4	0	0	0	1	1	2	6	4	2	0.60	0.80	
13	1	1	1	0	1	4	0	0	1	0	0	1	5	4	1	0.50	0.60	
14	0	1	0	1	0	2	0	0	0	1	1	2	4	2	2	0.40	0.00	C
15	1	1	1	1	1	5	0	0	1	0	0	1	6	5	1	0.60	0.80	
16	1	1	0	0	0	3	0	0	1	1	0	2	5	3	2	0.50	0.20	
17	1	1	1	1	0	4	1	0	1	0	0	2	6	4	2	0.60	0.80	
18	1	1	1	1	1	5	0	0	0	0	0	0	5	5	0	0.50	0.30	
19	1	1	0	0	1	4	0	1	0	0	0	1	5	4	1	0.50	0.60	
20	1	1	1	1	1	4	1	0	1	0	0	2	6	4	2	0.60	0.40	

Appendix-E

Pre – Test Scores of Experimental and Control Group of 25 Full Marks

(Arranged in Descending Order)

S.N.	Experimental Group		Control Group	
	Score	Frequency	Score	Frequency
1	19	1	18	2
2	18	1	17	2
3	17	1	16	1
4	16	2	15	4
5	15	1	14	2
6	13	2	12	1
7	11	2		
8	10	2		
Total Students		12	Total Students	12
Mean		14	Mean	15.5
S.D.		3.16	S.D.	1.71
Variance		3.98	Variance	2.92
Mean difference			1.5	

Appendix-F

Post-Test Scores of Experimental and Control Group of 25 Full Marks

(Arranged in Descending Order)

S.N.	Experimental Group		Control Group	
	Score	Frequency	Score	Frequency
1	24	1	20	2
2	23	1	19	1
3	21	3	18	2
4	20	2	17	3
5	19	1	16	2
6	17	2	12	2
7	16	1		
8	15	1		
Total Students		12	Total Students	12
Mean		19.5	Mean	16.83
S.D.		2.66	S.D.	2.53
Variance		7.08	Variance	6.40
Mean difference			2.67	

Appendix “G”

Statistical Formula Used For Data Analysis

- Mean (\bar{X}) = $\frac{\sum fx}{N}$
- Standard deviation(S) or () = $\sqrt{\frac{\sum fx^2}{N} - \left(\frac{\sum fx}{N}\right)^2}$
- Variance (S^2) = $\frac{\sum fX^2}{N} - \left(\frac{\sum fX}{N}\right)^2$
- t-Test to determine significant to compare the mean difference between two groups

$$t = \frac{|\bar{X}_1 - \bar{X}_2|}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Where,

\bar{X}_1 = Mean score of Experimental Group.

\bar{X}_2 = Mean score of Control Group.

N_1 = Number of the students in Experimental Groups.

N_2 = Number of the students in Control Groups.

S_1^2 = Variance Score of Experimental Groups.

S_2^2 = Variance Score of Control Groups.

- Degree of freedom = $N_1 + N_2 - 2$
- Pearson's Coefficient of correlation

$$r_{xy} = \left(\frac{N \sum XY - \sum X \sum Y}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}} \right)$$

- Split-half reliability = $\frac{2r_{XY}}{1+r_{XY}}$

Where, r_{tt} = reliability coefficient of whole test

r_{xy} = correlation coefficient between two groups

Appendix "H"

Reliability Coefficient of Pre-Test Item

Students	X(odd)	Y(even)	X ²	Y ²	XY
1	10	8	100	64	80
2	11	9	121	81	99
3	10	11	100	121	110
4	8	9	64	81	72
5	12	11	144	121	132
6	9	8	81	64	72
7	7	6	49	36	42
8	5	7	25	49	35
9	8	9	64	81	72
10	7	8	49	64	56
11	9	8	81	64	72
12	6	5	36	25	30
N=12	ΣX=102	ΣY=97	ΣX ² =914	ΣY ² =851	ΣXY=872

Where, X=Number of correct response for odd question

Y=Number of correct response for even question

Now, Karl Pearson's Coefficient of Correction

$$r_{xy} = \left(\frac{N \sum XY - \sum X \sum Y}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}} \right)$$

$$= 0.76$$

So, Reliability of whole test = $\frac{2r_{xy}}{1+r_{xy}} = 0.8$

Appendix "I"

Reliability Coefficient of Pre-Test Item

Students	X(odd)	Y(even)	X ²	Y ²	XY
1	11	9	121	81	99
2	12	9	144	81	108
3	11	10	121	100	110
4	9	6	81	36	54
5	12	12	144	144	144
6	9	7	81	49	63
7	8	9	64	81	72
8	6	6	36	36	36
9	7	6	49	36	42
10	9	7	81	49	63
11	6	5	36	25	30
12	10	8	100	64	80
N=12	∑X=110	∑Y=94	∑X ² =1058	∑Y ² =782	∑XY=901

Where, X=Number of correct response for odd question

Y=Number of correct response for even question

Now, Karl Pearson's Coefficient of Correction

$$r_{xy} = \left(\frac{N \sum XY - \sum X \sum Y}{\sqrt{\{N \sum X^2 - (\sum X)^2\} \{N \sum Y^2 - (\sum Y)^2\}}} \right)$$

$$= 0.83$$

So, Reliability of whole test = $\frac{2r_{xy}}{1+r_{xy}} = 0.91$.

Appendix "J"

Classroom Observation Report

Topic	Category					
	Learning Interaction		Participation		Attendance Rate	
	Experimental	Control	Experimental	Control	Experimental	Control
Fraction And Decimal	More Students could add, subtract and multiples of fraction and decimal	Only some Students could add, subtract and multiples of fraction and decimal	All students were active and involve in discussion also do homework	Some students were active and some were passive	All the students were present	Some students were present
Percentage	Many students can solve percentage related problem	few students only can solve percentage related problem	Every students were active and involve in discussion About percentage	Few students were active and discusses about it topic	99% students were present	65% students were present
Unitary Method	Few students only confused about unitary method	Many students confused about unitary method	All students were active and do classwork with help of teacher	Some students were active and some were passive	Most students were present	Some students were present
Sets	All students were interested this topic and understood it	Some students only interested this topic	Many students were active and interested of sets topic	More students were passive. They not interested it	All the students were present	75% students were present
Algebra	Many students can solve algebra related problem	More students were confuse of this topic related problem	Most students were active and involve in discussion about algebra	More students were not participated in learning activities	All the students were present	few students were present

Appendix "L"

Lesson plan 1

School: Shree Janghatta Basic School

Date: 2075/10/21

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

- Identify the proper and Improper fraction.
- Change the Improper fraction into proper fraction.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling short story.
- After then teacher writes some fractions on the board and asks students which is proper fraction or improper fraction.
- Also, teacher shows chart to make clear about proper and improper fraction.
- Then the teacher teaches, how to change improper fraction into proper fraction.
- The teacher write some improper fraction on the board and asks to students and solve it.

The teacher facilitates them.

4) Evaluation

Which is proper fraction?

- a) $\frac{5}{4}$ b) $\frac{2}{3}$ c) $\frac{7}{5}$ d) $\frac{1}{2}$

5) Homework

- Write any 5 improper fractions.
- Change to the improper fraction into proper fraction of question No.1.

Lesson plan 2

School: Shree Janghatta Basic School

Date: 2075/10/22

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

- Introduce about the mixed fraction.
- Add the mixed fraction.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by singing song and checks homework given by previous days.
- After then teacher asks to students about mixed fraction and correcting their answer. In last I explains about mixed fraction with suitable examples.
- Same way I teach them how to add mixed fraction.
- Also, the teacher gives them tasks to add mixed fraction.
- In last, the teacher facilitates them. With showing chart paper.

4) Evaluation

- define mixed fraction.
- Add the following mixed fraction.
 - $2\frac{1}{3} + 1\frac{2}{6}$
 - $6\frac{2}{12} + 5\frac{4}{6}$

5) Homework

- Write the five mixed fraction.
- Add: $2\frac{1}{3} + 1\frac{5}{6}$

Lesson plan 3

School: Shree Janghatta Basic School

Date: 2075/10/23

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

i) complete the exercise 12.1 correctly.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short story and checks homework given by previous days.
- After then teacher asks same question to students about mixed fraction and correcting their answer.
- Then the teacher solve one question from exercise 12.1 and make student clear about them it.
- Also the teacher asks question to students to solve another question from the exercise 12.1. And teacher facilitates them with showing chart paper.

4) Evaluation

i) define mixed fraction.

ii) Add the following mixed fraction.

a) $4\frac{1}{4} + 1\frac{3}{8}$ b) $5\frac{2}{12} + 3\frac{4}{6}$

5) Homework

Complete the exercise 12.1 correctly.

Lesson plan 4

School: Shree Janghatta Basic School

Date: 2075/10/24

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

i) subtract the mixed fraction.

ii) complete the question No.1 of exercise 12.2.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by singing song and checks homework given by previous days.
- After then the teacher teaches students how to subtract the mixed fraction.
- Then same way teacher gives some classwork to subtract of the mixed fraction.
- Then also, the teacher solve one question from exercise 12.2 and make student clear about them it.
- Also the teacher asks question to students to solve another question from the exercise 12.1. And teacher facilitates them with showing chart paper.

4) Evaluation

i) Subtract the following mixed fraction.

a) $4\frac{1}{4} - 1\frac{3}{8}$ b) $8\frac{2}{12} - 1\frac{4}{6}$

5) Homework

Complete the question No.1 of exercise 12.2 correctly.

Lesson plan 5

School: Shree Janghatta Basic School

Date: 2075/10/25

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

i) complete the exercise 12.2 correctly.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by singing song and checks homework given by previous days.
- After then the teacher asks question to students how to subtract the mixed fraction.
- Then also, the teacher solve question No.2 (a) from exercise 12.2 and to make student clear about it.
- Also the teacher asks question to students to solve another question from the exercise 12.2.

And teacher facilitates them with showing chart paper.

4) Evaluation

i) Subtract the following mixed fraction.

a) $14\frac{1}{14} - 2\frac{3}{28}$ b) $18\frac{2}{12} - 4\frac{4}{6}$

5) Homework

Complete the exercise 12.2 correctly.

Lesson plan 6

School: Shree Janghatta Basic School

Date: 2075/10/26

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

- i) multiply fractions with whole number.
- ii) complete the question No.1 of exercise 12.3.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short joke and checks homework given by previous days.
- Then the teacher teaches students how to multiply fractions with whole number.
- Then the teacher shows chart of solving a question to make clear them with suitable examples.
- Also same way teacher gives some classwork to students. i.e
 - a) $2 \times \frac{1}{5}$ b) $6 \times \frac{2}{7}$

And teacher facilitates them.

4) Evaluation

i) multiply the following question.

- a) $8 \times \frac{2}{3}$ b) $6 \times \frac{4}{5}$

5) Homework

Complete the question No.1 of exercise 12.3 correctly.

Lesson plan 7

School: Shree Janghatta Basic School

Date: 2075/10/27

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

- i) multiply the fraction of the fraction
- ii) complete the question No.2 of exercise 12.3.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short joke and checks homework given by previous days.
- Then the teacher teaches students how to multiply fractions to fraction.
- Same way the teacher shows chart of solving a question to make clear them with suitable examples.
- Also same way teacher gives some classwork to students. i.e

a) $\frac{2}{3} \times \frac{1}{5}$

$$= \frac{2 \times 1}{3 \times 5} = \frac{2}{15}$$

And teacher facilitates them.

4) Evaluation

- i) multiply the following question.

a) $\frac{8}{5} \times \frac{2}{3}$ b) $\frac{7}{6} \times \frac{4}{5}$

5) Homework

Complete the exercise 12.3 correctly.

Lesson plan 8

School: Shree Janghatta Basic School

Date: 2075/10/28

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

- i) Introduce the decimal number.
- ii) Change the fraction into decimal.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short joke.
- Then the teacher asks question to students about decimal.
- By correcting their answer and teacher make clear about decimal by showing chart.
- Same way teacher teaches students how to change fraction into decimal.
i.e. $5/10 = 0.5$
- Also same way teacher gives some classwork to students for solving.
i.e. a) $6/10$ b) $14/100$

And teacher facilitates them.

4) Evaluation

- i) what is decimal number?
- ii) Change the following fraction into decimal.

$2/100$ $456/1000$

5) Homework

Complete the exercise 12.4 correctly.

Lesson plan 9

School: Shree Janghatta Basic School

Date: 2075/10/29

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

- i) Change the decimal number into fraction.
- ii) complete the questions No.1 and 2 of exercise 12.5

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short story and checks homework given by previous days.
- Then the teacher asks question related to the topic.
- Then the teacher teaches students how to change decimal number into fraction.

i.e. $3.06 = 3.06 \times 100/100$

$$= 306/100$$

- Also same way teacher gives some classwork to students for change.

i.e. a) 0.64 b) 1.62

And teacher facilitates them by showing chart.

4) Evaluation

- Change into fraction.

5.06

5) Homework

Complete the exercise 12.5 correctly.

Lesson plan 10

School: Shree Janghatta Basic School

Date: 2075/10/30

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

i) Add and Subtract of decimal number.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short story and checks homework given by previous days.

- Then the teacher asks question related to the topic.

- Then the teacher teaches students how to add decimal number.

i.e. $5.02 + 3.56 = 8.58$

- The teacher gives one question to students

i.e. $6.26 + 4.25$

The teacher facilitates them to solve it.

- Again, the teacher teaches students how to subtract decimal number.

i.e. $15.26 - 11.54 = 3.72$

And teacher facilitates them by showing chart.

4) Evaluation

- Simplify: $0.65 + 1.26$

5) Homework

Complete the exercise 12.6 correctly.

Lesson plan 11

School: Shree Janghatta Basic School

Date: 2075/11/01

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

i) multiply decimal number to whole number.

ii) multiply decimal to decimal.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short story and checks homework given by previous days.

- Then the teacher asks question related to the topic.

- Then the teacher teaches students how to multiply decimal to whole number.

i.e. $2.51 \times 4 = 10.04$

- Also same way the teacher teaches students how to multiply decimal number to decimal number.

i.e. a) 2.6×1.62

And teacher facilitates them by showing chart.

4) Evaluation

a) 8×0.4

b) 16.32×2.3

5) Homework

Complete the exercise 12.7 correctly.

Lesson plan 12

School: Shree Janghatta Basic School

Date: 2075/11/02

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 12

No.of students: 12

Topic: Fraction and Decimal

1) Specific Objective: After the end of this lesson students will be able to

i)

ii) complete the exercise 12.8.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first of all, teacher motivates to the students by telling short story and checks

homework given by previous days.

- Then the teacher asks question related to the topic.

- Then the teacher teaches students how to

And teacher facilitates them by showing chart.

4) Evaluation

a) b)

5) Homework

Complete the exercise 12.8 correctly.

Lesson plan 13

School: Shree Janghatta Basic School

Date: 2075/11/03

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 13

No.of students: 12

Topic: Percentage

1) Specific Objective: After the end of this lesson students will be able to

- Introduce about the percentage.
- Change the fraction into percent.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first, teacher motivates to the students by singing song and checks homework given by previous days.
- After then teacher asks to students meaning of percentage. Then correcting their answer.

In last I explains about mixed fraction with and teacher make clear about meaning of percentage with suitable examples.

- Then the teacher teaches students how to change fraction into percentage.

i.e. $25/100 \times 100\% = 25\%$

- Also, the teacher gives them tasks to solve a question of exercise 13.1
- In last, the teacher facilitates them. With showing chart paper.

4) Evaluation

i) what is the meaning of the percentage?

ii) change into percentage. a) $3/4$ b) $2/10$

5) Homework

Complete the question No.1 and 2 of exercise 13.1 correctly.

Lesson plan 14

School: Shree Janghatta Basic School

Date: 2075/11/04

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 13

No.of students: 12

Topic: Percentage

1) Specific Objective: After the end of this lesson students will be able to

- Change percentage into fraction.
- complete the exercise 13.1.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first, teacher motivates to the students by asking question related to lesson and checks homework given by previous days.
- After the teacher teaches students how to change percentage into fraction.

i.e i) $25\% = \frac{25}{100}$

$$= \frac{1}{4}$$

ii) $40\% = \frac{40}{100}$

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

- Also, the teacher gives them tasks to solve a question of exercise 13.1
- In last, the teacher facilitates them. With showing chart paper.

4) Evaluation

Change into fraction.

i) 30%

ii) 75%

5) Homework

Complete the exercise 13.1 correctly.

Lesson plan 15

School: Shree Janghatta Basic School

Date: 2075/11/05

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 14

No.of students: 12

Topic: Unitary method

1) Specific Objective: After the end of this lesson students will be able to

- define unitary method.
- find the total price with help of unit price and number of things.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling short story.
- After then teacher asks question to students about unitary method.
- By correcting their answer and also, teacher shows chart to make clear about unitary method.
- Then by correcting their answer and teacher make clear about unitary method by showing chart.
- Same way teacher teaches them, how to find the total price.

i.e. 1 pen price = Rs.15 and No.of pen = 4 then

$$\text{Total price of pen} = 15 \times 4 = \text{Rs.60}$$

- Same way teacher write one question on the board and asks to students to solve it.

4) Evaluation

- If price of a copy is Rs.20 then find the total price of 5 copies.

5) Homework

Complete the question No.1 and 2 of exercise 14.1.

Lesson plan 16

School: Shree Janghatta Basic School

Date: 2075/11/06

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 14

No.of students: 12

Topic: Unitary method

1) Specific Objective: After the end of this lesson students will be able to

- find the unit price with help of total price and number of things.
- complete the exercise 14 correctly

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling joke. And asking question related to lesson.
- The teacher checks homework given by previous day.
- Same way teacher starts his class, first of all teacher teaches to students how to find out unit price with help of total price and number of things.

i.e. total price of 10 copies = Rs.250

Then, price of 1 copy = $250/10$

= Rs.25

- Same way teacher write one question on the board and asks to students to solve it.
- The teacher facilitates them.

4) Evaluation

- If price of 11 copy is Rs.220 then find the price of 1 copy

5) Homework

Complete the exercise 14 correctly.

Lesson plan 17

School: Shree Janghatta Basic School

Date: 2075/11/07

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 17

No.of students: 12

Topic: sets

1) Specific Objective: After the end of this lesson students will be able to

- Define the sets.
- Change the descriptive sets into listing method.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling joke.
- Then the teacher teaches students, what is the sets?
- The teacher shows chart and to make clear about sets.
- Then the teacher teaches students how to change descriptive sets into listing method.

i.e. the set of first five odd number.

$$A = \{ 1, 3, 5, 7, 9 \}$$

- Then the teacher asks question to students about this lesson.
- The teacher facilitates them.

4) Evaluation

- Change into listing method.
 - a) The set of five fruit.
 - b) The set of vowels letters.

5) Homework

Complete the question No.1 of exercise 17.

Lesson plan 18

School: Shree Janghatta Basic School

Date: 2075/11/08

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 17

No.of students: 12

Topic: sets

1) Specific Objective: After the end of this lesson students will be able to

- Define the sets.
- Change the descriptive sets into listing method.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling joke.
- Then the teacher checks homework given by previous day.
- The teacher shows chart and to make clear about sets.
- Then the teacher teaches students how to change listing method sets into descriptive method.

i.e. $A = \{ 1, 3, 5, 7, 9 \}$ = the set of first five odd number.

- Then the teacher asks question to students about this lesson.
- The teacher facilitates them.

4) Evaluation

- Change into descriptive method.

a) $A = \{ 1, 3, 5, 7, 9 \}$

b) $V = \{ a, e, i, o, u \}$

5) Homework

Complete the exercise 17 correctly.

Lesson plan 19

School: Shree Janghatta Basic School

Date: 2075/11/09

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 18

No.of students: 12

Topic: Algebra

1) Specific Objective: After the end of this lesson students will be able to

- define the algebraic expression.
- Change mathematical statements into algebraic expression.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling short story.
- After then teacher asks question to students about algebraic expression.
- By correcting their answer and also, teacher shows chart to make clear about algebraic expression.
- Similarly, teacher teaches students how to change mathematical statements into Algebraic expression.

i.e Two time of addition of x and y. = $2(x+y)$

- The teacher asks same question to students and he facilitates them.

4) Evaluation

- What is meaning of $3a$.
- Change into algebraic expression.
 - a) Three time of multiples of p and q.

5) Homework

Complete the question No.1 and 2 of exercise 18.1.

Lesson plan 20

School: Shree Janghatta Basic School

Date: 2075/11/11

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 18

No.of students: 12

Topic: Algebra

1) Specific Objective: After the end of this lesson students will be able to

- complete the exercise 18.1 correctly.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling short joke. And

Checked homework given by previous day.

- Then the teacher teaches exercise 8.1 of question no.5 to make clear about

Algebraic expression.

- i.e If $x = 2$, find the value of $3a$.

$$3a = 3 \times 2 = 6$$

- Then the teacher asks question to students to solve question No.6, 7 and 8.

- The facilitates them it.

4) Evaluation

- If $x=2$ find out the value of $3x + 2$.

5) Homework

Complete the exercise 18.1 correctly.

Lesson plan 21

School: Shree Janghatta Basic School

Date: 2075/11/12

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 18

No.of students: 12

Topic: Algebra

1) Specific Objective: After the end of this lesson students will be able to

- Add algebraic expression.
- complete the question No.1 of exercise 18.2

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling short joke. And Checked homework given by previous day.
- Then the teacher teaches students how to add algebraic expression.

$$\text{i.e } 3a + 5a = 8a$$

- Again teacher, asks one question for students.

$$\text{i.e } 4a + 5a. \text{ Teacher facilitates them.}$$

- Then the teacher asks question to students about algebraic addition and Subtraction.

4) Evaluation

- Add: $3x + 4x + x$ $3y + 5y$
 $5y + 8y$

5) Homework

Complete the question No.1 of exercise 18.2 correctly.

Lesson plan 22

School: Shree Janghatta Basic School

Date: 2075/11/14

Class: 5

Period: Second

Subject: Mathematics

Time: 40 minutes

Unit: 18

No.of students: 12

Topic: Algebra

1) Specific Objective: After the end of this lesson students will be able to

- subtract algebraic expression.

2) Teaching materials:

Daily used materials and chart.

3) Teaching learning activities:

- At first teacher motivates to the students by telling short joke. And

Checked homework given by previous day.

- Then the teacher teaches students how to subtract algebraic expression. i.e $7b - 4b = 3b$

- Then the teacher asks question to students about algebraic addition and Subtraction. And teacher facilitates them.

4) Evaluation

- subtract: $4x - x - 2x$ $5y - 3y$

$12x - 7x + x$

5) Homework

Complete the question No.2 to 3 of exercise 18.2 correctly.

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