



**CHAPTER-3**  
**METHODOLOGY**

# CHAPTER III

## METHODOLOGY

### 3.1 Introduction

The preceding chapter has given a broad overview of the researches investigating various material developed and to test effectiveness of the remedial measures given on fraction. On the basis of these research findings, certain generalization can be made which provided a rationale of the present study. This chapter presents that methodology of the study.

The purpose of the educational research cannot be completed without detailed design of investigation. Research methodology involves a systematic procedure, which starts from identification of problems to analyzing the obtained data. This chapter deals with...

- ❖ Research design
- ❖ Variable
- ❖ Sample
- ❖ Tool
- ❖ Procedure of study
- ❖ Data collection
- ❖ Statistics used

### 3.2 Research Design

According to Borg and Gall (1983), "Research design refers to procedure used by the researcher to explore relationship between variable to form subjects into groups, administer the measure apply treatment conditions and analyze the data".

This study used experimental research design; the researcher used single group pre test post test design to study the learning difficulties in arithmetic (fraction) and remedial measures.

**Table No: 3.2.1 The design of the study is specified in table below:**

<b>CHARACTERISTICS</b>	<b>EXPERIMENTAL GROUP</b>
Entry status	Pre test
Treatment	Remedial teaching
Terminal status	Post test

### **3.3 Variables**

The essential feature of experimental research is that the researcher deliberately manipulated controls or observes the condition or characteristics which determine the events in which researcher is interested. These condition or characteristics are called “variables”, **According to Borg and Gall (1983)**, “A variable can be through of as a quantitative expression of construct variable usually takes the form of scores on a measuring instrument”.

#### **❖ Independent variables**

The independent variables are the conditions or characteristics that the researcher deliberately, manipulates and control to determine the events in which researcher is interested and its relationship to an observed phenomenon.

### ❖ **Dependent variables**

The dependent variable is that factor which is observed and measured to determine the effect of independent variable i.e. the factor that appears, disappears or varies, as the experimenter introduces removes or varies the independent variable.

### ❖ **Background variables**

The scores/results of the study analyzed or interpreted through background variables. In this study

**Independent variables:** Remedial teaching

**Dependent variables:** Achievement in fraction

**Background variables:** Gender

## **3.4 Sample**

Data collection is an important part of the research. Data is collected from a selected sample and the sample is the representative of population.

**According to Borg and Gall (1983),** “The larger group we wish to learn is called population, where as the smaller group we actually study is called sample”. Thus sample is a portion of the population which represents most of the characteristics of the population.

A good sample must be as clearly the representative of the entire population as possible and ideally it must provide the whole of the information about the population as from which the sample has been drawn.

Selection of the sample and its size by using correct technique increases the authenticity of research findings therefore keeping the time, objectives and hypothesis of the present study in mind, a **purposive sample** was selected.

Researcher had selected sample of two schools in which one is having two sections of class V and other is having four sections of class V and researcher had chosen two sections of class V one from each school and the sample consisted of 80 students.

### **Classification of the sample**

Thus the total sample of 80 students was classified into sub-sample on the basis of criterion variable such as gender. The resultant classification of the final sample is summarized in the table below:

**Table 3.4.1 Classification of the final sample into sub-sample (N = 80)**

Criterion variable	Sub-sample	No. of students	Total
Gender	Boys	40	80
	Girls	40	

### **3.5 Research tools**

A researcher requires many data-gathering tools or techniques. Each tool is suitable for the collection of certain type of information. One has to select from the available tools these which will provide data she seeks for testing hypothesis.

For the study “Learning Difficulties in Arithmetic (Fraction) of class V students and Remedial Measures”, the achievement test (for

diagnostic purpose) was prepared by researcher herself and administered on students of class V of the selected sample.

**Pre test:** For finding learning difficulties in students in solving problems of fraction.

**Post test:** For finding the achievement of students in solving problems of fraction.

The researcher has taken pre test for finding learning difficulties on the basis of some criteria. Therefore, pre test is a diagnostic test also and post test was conducted for minimizing the difficulties on the basis of given remedial teaching. Therefore, post test is an achievement also. Both these test were based on parallel test.

### **Constructing Achievement Test**

In education, the term “achievement test” has been borrowed from medicine, where it is used to find out the root cause of a symptom: fever, pain etc. the achievement is followed by the appropriate treatment. The evaluation in the form of achievement testing could be both formative and summative evaluation. Achievement test is used to measure the achievement of the learners after duration of the teaching learning process. The purpose of achievement test is to evaluate and accumulate data regarding the finding of the root cause. In education, achievement testing is a multi-dimensional process that requires well planned efforts on the part of the teacher. When conducted in a systematic manner, it could help to identify the root cause of the problem and subsequently remove learning impediments. As a result the learning could turn out to be more meaningful to the learners and satisfying to the teacher. A variety of strategies could be used to diagnose the learning impediments. In this study, the researcher prepared a achievement test for identifying

difficulties. For constructing it, the items were framed on the basis of selected content of unit, “Fractions” of mathematics of class V.

Before constructing the test, the teachers of mathematics were consulted regarding the types of difficulties that student make under this topic.

The sub topics included in the test are given below:

- ❖ Fraction
- ❖ Types of fractions
- ❖ Addition and subtractions

The test consisted in 3 types of questions like previous knowledge, application and high order thinking base. These test items covered the above contents of the units. The number, type and marks of test items are shown in the table below:

**Table No: 3.5.1 Showing the detailed distribution of marks , types and number of questions**

S.No.	Types of questions	No. of questions	Total marks
1.	Previous knowledge	3	12
2.	Application	4	12
3.	High order thinking	8	26
	Total	15	50

### **Pilot testing of the tool (Try out)**

To analyze the items in terms of their clarity, time, duration and appropriateness, to find out the discriminating power of the items and difficulty index, the pilot study was under taken; pilot study was

conducted in order to establish the reliability, validity and usability of the test items. The achievement test consisting of 18 items was administered to students of class V of private schools. This school was different from school selected for the main study. The test scores were analyzed to find out questions which could not be adopted by the students. The students took 50 minutes to complete the test was modified as per the analysis with respect to the language and number of items. There was no limit of the time in the administration of test.

The test paper was also discussed with the teachers teaching the students of class V and the subject expert of the college and according to their suggestions; the necessary changes were made in the questions and now the achievement test is consisting of 15 items.

### **Administration of tools**

After developing the tool, the researchers personally met the principal of the schools and get acquainted with the teachers concerned and established rapport with the students. Prior to the administration, the students were supposed to attempt. The significant of the test and necessary instructions were given to them. The students were made clear that this test is designed to help them and is not for grade and the whole process had nothing to with their school achievement. After this, researcher administered the test on the students. The study was conducted on both male and female students. They were given question paper and asked to answer the questions which they thought correct. Adequate time was given to the students to complete the test. The students were observed during the test.

The atmosphere created at the beginning and during the test situation and the rapport achieved between taster and taste throughout the



examination are of importance in respect to both the quantitative and quantitative results obtained, after completion of the test, the test papers were collected.

Now the experimental group was given treatment of remedial teaching. After treatment, the experimental group was given post test (the same test administrated as pre test). The same test was used as pre test as well as post test.

### **3.6 Treatment**

After identification of the students and their weak spots in the given topic, the proper remedial teaching learning was arranged.

The remedial teaching learning situations was given to students of class V by the researcher herself. In this program, proper teaching learning situations are used. The researcher herself taught them through these situations for a short duration of seven days.

### **3.7 Data Collection**

After treating with remedial teaching again the achievement test was administrated on sample for finding achievement of class V student on fractions. The same achievement test was administered as given in pre test and same instructions were given. The details of both the tests are given in the table below:

**Table 3.7.1 Showing the details of pre test, treatment and post test**

S.No.	Name of the School	Pre test	Treatment	Post test
1.	Vikram Senior Secondary School	01/02/11	02/02/11 To 10/02/11	11/02/11
2.	Dr. Radha Krishnan Senior Secondary School	01/02/11	02/02/11 To 10/02/11	11/02/11

The researcher expressed gratitude to the teachers and students for their cooperation.

### **3.8 Statistics used**

The data so collected was subjected to analysis by using t test. The analysis was done with a view to study the influence of remedial teaching on students achievement. For the analysis and interpretations of the data raw scores were classified and tabulated into different categories.

In this study, the researcher tried to study the achievement in arithmetic (fraction) of the students by using remedial learning situations so descriptive statistics like mean, standard deviation and some quantitative analysis like t test were used. The significance of difference among the categories was determined by calculating t value.