

CHAPTER- III

Methodology

3.0 Introduction

The purpose of the educational research cannot be completed without detailed design of investigation. This chapter deals with the methodology employed to achieve the objectives of the study mentioned in chapter under the following headings

- Research design
- Sample
- Tool
- Variable
- Procedure of the study

3.1 Research Design

According to *Borg And Gall (1983)*, "Research design refers to procedure used by the researcher to explore relationship between variable to from subject in to groups, administer the measure apply treatment conditions and analyse the data."

This study used experimental research design, the researchers used single group pre- test post test design to study

the effectiveness of remedial teaching on achievement of IXth standard student in solving problem of polynomials .

Table No. 3.1 The design of the study is specified in table below:

Characteristics	Experimental Group
Entry Status	Pretest
Treatment	Remedial Teaching
Terminal Status	Post Test

3.2. Sample

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

A good sample must be as nearly 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.

The sample school which the investigator had selected have two sections of class IX and each section has the strength of 30 students. The researcher has taken some criteria (students who scored 25 and below in the pre- test) for selecting the final sample for the study by adopting **purposive sampling technique**. So the sample consisted of 40 students.

3.2.1 Classification Of The Sample

Thus the total sample of 40 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 table below:

Table: 3.1 Classification of the Final sample into sub- sample (N=40)

Criterion Variables	Sub-Sample	No. of Students	Total
Gender	Boys	23	40
	Girls	17	

3.3 Variables:-

The essential feature of experimental research is that the researcher can deliberately manipulates controls or observes the condition or characteristics which determine the events in which

researcher is interested. These condition or characteristics are called "Variables."

- **Independent Variables:-** The independent variable 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 polynomials

Background Variables:- Gender

3.4. Tools:

For the study " *The effectiveness of remedial teaching on achievement of IXth standard students in solving problems of polynomials- A study*", the following tools were developed by the investigator herself and then administered on students of class XIth of the selected sample.

Pre- Test- For finding the error committed by students in solving problems of polynomials .

Post- Test- For finding the achievement of students in solving problems of polynomials.

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

3.4.1 Administration Of Tools:

After developing the tool, the researcher personally met the principal of the school and got acquainted with the teachers concerned and established rapport with the students. Prior to the administration of tools, the students were explained about the pre test that they were supposed to attempt.

The significance of 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 grading and the whole process had nothing to do with their school achievement. After this the researcher administered the test on the students.

After the administration of pre test, those students who scored 25 and below were selected and they were given remedial classes. Following this, post test were conducted for these students.

Table 3.3 Showing the duration of administration of tools

S. No.	Days	Treatment
1-	First	Pre-test
2	Second	Activity
3	Third	Activity
4	Fourth	Activity
5	Fifth	Activity
6	Sixth	Activity
7	Seventh	Post- test

Thus, efforts were made to reduced the error committed by the students. There was fixed time limit for the test i.e.60 min were given for each test.

The table below is the detailed distribution of various form of questions with respect to parallel test.

Table 3.4 Showing the detailed distribution of various forms of questions

Type	Form of Questions	No. of Questions	Total Marks
A.	Multiple choice questions	5	14 Marks
	Fill in the blanks	4	
	Match of the following	5	
B	Short answer type of questions.	6	18 Marks
C	Long answer type of questions	3	18 Marks

3.4.2 Treatment

After identification of the students and their weak spots in the given topic the proper remedial teaching was arranged. Various activities to be performed were developed and the remedial teaching on achievement of class IX students in algebra were planned and arranged. The remedial teaching was given to students of class IX by the researcher herself. In this programme

proper remedial teaching aids are used. The researcher herself taught them through these activities for a short duration of time that is for seven days.

Between pre test and post test remedial teaching were given through activities which are as follows.

Activity - I

Objective:- To minimize the error in concept of polynomials .

Material:- Different shapes of paper like, triangle square and rectangle .

Procedure:-

- The teacher divided the class into groups.
- Each group had four students. First the teacher gave different shapes of paper to each group.
- There were 3 different shapes namely, triangle, square, rectangle .
- In this paper the numbers and variables sides were given and students formed the monomial, binomial and trinomial terms according to the formula of the shape which was given to them.

Activity - II, III, IV & V On the error

Objective:- To minimize the error in using the algebraic identifies, splitting of the term, sign and slips the steps.

Material:- Test items

Method : - Inductive methods.

Procedure :- (II, III, IV & V)

The teacher divided the class into groups and provided them test items.

3.5.0 Data Collection

Firstly, pre test was administered on class IX students, to find out the error committed by them in solving problems of polynomials. Those students who had problem in solving polynomials were selected as a sample. Thus, these students were given remedial teaching. After treating with remedial teaching post test was administered on sample for finding the achievement on class IX students in algebra.

The details of both tests are given in the table below.

Table 3.5 Showing the details of pre test and post treatment.

s.No.	School	Pre test	Treatment	Post Test
1.	Demonstration multipurpose school, Bhopal	29 th Jan 09	30 th Jan 09 to 6 th Feb 09	7 th Feb 09

3.6 Statistics Used

The data so collected was subjected to analysis by using 't test'. The analysis was done with a view to study effectiveness 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 researchers tried to study the achievement in mathematics of the students by using remedial teaching. So, descriptive statistics like mean, standard deviation, correlation and 't' test were used. The significant of difference among the categories were determined by calculating 't' value.

Summary

This chapter has been devoted to description of experimental design, variables, sampling, tools, data collection and statistical treatment.