

CHAPTER THREE

Methodology

- 3.1 Introduction
- 3.2 Sampling
- 3.3 Variables
- 3.4 Tools and Techniques
- 3.5 Administration of Tools
- 3.6 Scoring
- 3.7 Statistical Techniques used

3.1 Introduction

Research Methodology is a systematic procedure which involves sampling, construction of tools, administration of tools for collecting data and statistical technique.

3.2 Sampling

Most of the educational phenomena consist of a large number of units. Sampling is the process by which a relatively small number of individuals or measures of individual objects or event is selected and analyzed in order to find out something about the entire population from which it was selected.

For selecting a representative sample research scholar identified three schools (affiliated to Madhya Pradesh Board of Secondary Education, Bhopal) which were located around Arera Colony. The Principals of these schools were contacted to seek the permission to carry out the present research project. Principal of Sholars' Home Public School granted the permission.

For the present study the research scholar used simple random sampling technique. To draw a simple random sample a table of random numbers was used. For this purpose names of all the students studying in three different sections of grade VIII were listed alphabetically

Numbers of students in three sections are shown in the table 3.1

Table 3.2.1: Section wise distribution of boys and girls.

S No.	Section	Total number of students	Boys	Girls
1.	VIII A	37	22	15
2.	VIII B	36	20	16
3.	VIII C	38	23	15
		Total 111	65	46

In all, there were 111 students in VIII grade including 65 boys and 46 girls. Out of these, research scholar selected a sample consisting of 75 students. 5 students were dropped due to certain reasons. Finally a sample of 70 students was selected. Keeping in mind the proportion of boys and girls in total strength of the class the sample identified consisted of 41 boys and 29 girls.

3.3 Variables

A variable is a property that takes on different values, it is something that varies. The nature of variables i.e. dependent or independent based upon the statistical treatment given by the investigator in a particular study.

Variables of this study were

- Achievement in Science
- Classroom Environment
- Sex

3.4 Tools and Techniques

In order to assess the classroom environment and achievement in science of the selected sample, the research scholar used three different tools. They were,

- Science Achievement Test
- Classroom Observation Schedule
- Classroom Environment Scale

Science Achievement Test

While preparing the preliminary draft of the test, the research scholar reviewed the existing tests and also created some original items from the text book of science of grade VIII. Those items were prepared keeping in mind Bloom's Taxonomy i.e. knowledge understanding, application and skill. The preliminary draft was tried out on a group of five students taken from the selected sample. An idea of the difficulty of the items was obtained and then the items were edited. The final manuscript of the preliminary draft was then discussed with experts for their opinion and criticism. After the necessary modification in the light of experts' suggestions, preliminary draft was

printed. At the try out stage the time limit was generous so that individuals in the sample might complete the test.

The final draft of test consisted of questions carrying fifty marks. Types of items, number of items and their weight age was as follows:

Table 3.4.1 : Distribution of items and their weight age.

S No.	Type of Item	Number of Items	Weight age
1.	Definitions	5	10
2.	Very short answer	4	8
3.	Short answer	3	12
4.	Descriptive answer	2	10
5.	One word answer	5	5
6.	Fill ups	5	5
		Total 24	Total 50

Classroom Observation Schedule

For the assessment of classroom environment, an observation schedule was developed. While planning and constructing the schedule, the activities taking place in the class were visualized and discussed with

classroom practitioners and then the format was discussed with the experts for criticism and modified accordingly. There were 35 statements. The statements were related to teaching- learning environment of the class. The purpose of the observation was to assess what sort of activities were taking place in the class.

Classroom Environment Scale

For the evaluation of pupils' perception about classroom environment, a three point scale was used by the research scholar. The scale was a compilation of 20 statements. The statements were related to teacher and teaching-learning environment of the class.

3.5 Administration of Tools

After selecting and developing the appropriate instruments the task was to administer it. Before administering the test, permission of the Principal was taken. To carry out the tests, research scholar prepared a detailed schedule in which time and dates were allotted.

Three classes of science taught by the same teacher were observed through non-participatory method of observation so that the class did not get disturb. The concerned teacher and students extended their full support during observation.

Classroom Environment Scale was administered to students. Through this scale students gave a numerical value for their judgment about classroom environment.

As per the schedule, science achievement test was administered next day. All the 70 students were asked to assemble in assembly hall. Students took their seats according to roll number. Before distributing the test papers a brief description of the test and its purpose was told to students. It was made clear that the results the test will not have any effect on their school marks.

After that test papers and answer sheets were distributed to the students by the research scholar and class teacher of grade VIII.

Students were asked to give their identification data on answer sheets provided to them before writing answers. The identification data included:

- Name of student
- Father's name
- Mother's name
- Age
- Class
- Section

Time of 1:30 hours was allotted to students. After completion of test, the test papers and answer sheets were collected back by the research scholar and the class teacher.

The research scholar consulted class teacher of grade VIII and collected the data regarding half yearly achievement of students in science from the scholar register available in the office.

3.6 Scoring

The instructions given in Classroom Environment Scale were:

- If the activity takes place then tick (3)
- If the activity takes place sometimes then tick (2)
- If the activity does not take place then tick (1)

If they marked (3) then they got 3 points, if they marked (2) then they got 2 points and if they marked (1) they got 1 point. In this way the maximum possible score was 60 while minimum possible score was 20. Other possible scores would range in between 20 and 60.

Science Achievement Test was evaluated by the research scholar herself.

3.7 Statistical Techniques Used

The data collected was tabulated and for analysis some statistical techniques like mean, standard deviation, coefficient of correlation and t-test were used. The data was also analyzed qualitatively using logical method.