RESEARCH METHODOLOGY

CHAPTER- III

METHODOLOGY

3.1 INTRODUCTION:

This chapter deals with the methodology employed to achieve the objectives of the study mentioned in chapter one. Keeping in view the nature and objectives of the study, appropriate sample was selected and tool was developed .

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

3.2 Research design

3.3 Sample

3.4 Administration of data gathering device

3.5 Data gathering procedure

3.6 Scoring

3.7 Statistics used.

3.2 RESEARCH DESIGN:

The research design is the detailed plan of an investigation. Infact it is the blue print of the detailed procedure of

testing the hypothesis and analysing obtained data. The research design may be defined as a sequence of those steps taken ahead of the time to ensure that the relevant data permits objective analysis of the different hypothesis formulated with respect to the research problem.

Research design refers to the systematic scheduling of the time in which treatment is administered to subjects and at which observations are made on the performance of the subject. This careful scheduling of the treatment and observation will be very helpful in reducing the threats to the internal validity of research.

3.3. DESIGN OF THE STUDY:

The design followed for the study is experimental two group design. The input given to the both groups were the two approaches of teaching biological science. The investigator used post test design for control and experimental group to find out the effect of laboratory approach on process skills and achievement among IX std. Biology students.

Two groups of the students were equated on the basis of their academic achievement marks. One of the groups called experimental group was exposed to laboratory approach and another one control group was taught through traditional approach. The post tests had taken to see achievement and process skills.

Table 3-3.1 - **Design of the study**

Characteristics	Control Group	Experimental Group
Treatment	Traditional Approach of teaching	Laboratory approach of teaching
Terminal Status	Post Test	Post Test

3.4 SAMPLE :

Most of the educational phenomena consists of a large number of units. It would be impractical to observe each unit of the population under controlled conditions in order to arrive at principle having universal validity. Some populations are so large that their study would be expensive in term of time, money effect and man power. Sampling is a process by which a relatively small number of individual objects of events are selected in order to find out something about entire population from which it was selected.

An appropriately chosen sample size enhances the reliability and validity of research findings .Commonly used sampling techniques are random sampling, stratified random, quota and purposive sampling.

For conducting the present study keeping in view the limitation and resources available with the researcher, the method of simple random sampling has been used.

Guilford Stated that :- The best defination of simple random sampling is that it is selection of cases from the population in such a manner that every individual in the population has an equal chance of being chosen. The selection of any one individual is also in no way tied to the selection of any other.

Sample of the study is drown from one school that is -

Bright Moon Public School Jaipur.

- A preliminary sample of 40 students were obtained to which tools were administered .

Table 3.4.1 – **Details of sample**

Group	**Students**
Experimental	20
Control	20
Total	**40**

3.4. VARIABLES:

A variable is something that varies. It is property that takes in different values. Variables are the conditions or characterizes that the experimenter manipulates, control or observes. There are following type of variables.

1. **Independent Variables:** The independent variables are the conditions or characterization that the experimenter manipulates controls or observes. The independent variables in the present study are laboratory approach and traditional approaches both are teaching approaches. The experimental group was taught by the laboratory approach and control group was taught by the traditional approach.

2. **Dependent Variables:** The dependent variables are the conditions or characteristics that appear or change as the experimenter removes or changes independent variables. The effect studied was in relation to the process skills and achievement in Biological science hence, dependent variables of the study are process skills and achievement.

3.5 DATA GATHERING DEVICES:

To select or construct appropriate tools for the study is an important aspect of any research study. Sometimes the researcher uses tools which have been constructed by others which are standardized. Sometimes the researcher has to construct tools to fulfill his/ her purpose.

In this present study the researcher has constructed two tools and a observation schedule keeping in view the objectives of the study, they are -

1. Achievement test.
2. Practical test.
3. Process skill assessment schedule. (Observation schedule)

All the three above mentioned tools were based on a particular topic of Biological science.

- The achievement test consisted of 25 multiple choice questions, each carrying 1 mark. The time provided for this exercise was 35 minutes.
- The practical test which was based on activities comprised of the following points :-
  - Drawing the diagram.
  - Preparation of slide
  - Spotting
  - Viva-voce

25 marks were allotted for this test the time allotted was 1 hour 30 minutes .

- The third test which was applied by the teacher was an observation schedule. This schedule was based on process skills which could be assessed through activities embedded in schedule.

3.7 ADMINISTRATION OF DATA GATHERING DEVICES:

After developing the appropriate tools, the task was to administer it. Before administering the tools, permission of the principal was taken firstly the researcher established a rapport with the staff members and then with the students. The researcher discussed with the class teacher and got a list of the previous achievement marks of the students. On the basis of

these marks, the respondents were divided in to two equal groups by randomization. Researcher prepared a detailed schedule in which time and dates were allotted. In these two groups one group was control group and another was experimental group, 20 students were taken in each group. The control group was taught through traditional approach and experimental group was taught through laboratory approach. In control group the activities related to the process skill were carried out after completion of the chapter and in experimental group activities were carried out with the particular topic of the chapter. Thus, after a treatment of 7 days, achievement test was administered on both the groups. It was used to measure the achievement of the students of both groups. Next day a practical test was applied on both the groups to see the development of process skills among students. Apart from achievement and practical tests, researcher, to record the performance of process skills while respondents were performing activities, employed an observation schedule.

3.8. TABULATION OF DATA:

With the completion of field work the next task was to score the test sheets and tabulate the obtained data for statistical processing and analysis. Obtained marks in achievement and practical test were tabulated in the data sheet.

3.9 STATISTICAL TECHNIQUES :

The tabulated data was then processed for obtained mean, standard deviation and t. value of the test wise score to analyse the difference as aimed in the objectives of the study.