CHAPTER III

RESEARCH METHODOLOGY

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3.1 INTRODUCTION

Research methodology involves the systematic procedure by which the researcher starts from initial identification of the problem to its final conclusion. The role of methodology is to carry on the research work in a scientific and valid manner.

The methodologies of educational research are based, in most instances, on research method in the behavioural and social sciences, relying most heavily on psychology, sociology, and anthropology because researches in these fields emphasises logical – positivism, which uses experimental and quantitative research methods, most education research also utilizes these methodologies. Still some research concerns may be addressed more appropriately with a phenomenological, or qualitative, research approach derived from the humanities, particularly history and philosophy, or with qualitative methods from the social sciences.

This research is a kind of Ex-post facto research which is a descriptive and correlation type of research. A descriptive study describes and interprets 'what is'. It is concerned with conditions or relationships that exist, opinions that are held, processes that are going on.

Descriptive research studies are designed to obtained pertinent and precise information concerning the current status of phenomena and whenever possible, to draw valid general conclusion from the facts discovered. The descriptive research method has undoubtedly been the most popular and most widely used

research method in education. It helps to explain educational phenomena in terms of the conditions and relationships that exists, opinions that are held by the students, teachers, parents, and experts, processes that are going on, effects that are evident, or trends that are developing.

Ex-post facto or causal-comparative studies are a kind of descriptive research. Ex-post facto or causal-comparative studies are based upon **John Stuart Mill's methods of discovering causal relationships.** These studies are employed when a researcher cannot manipulate the independent variable and established the controls that are required in experiments. But because of the complexity and nature of the social phenomena, a researcher while using educational phenomena cannot always select, control, and manipulate the factors necessary to study cause-effect relationships.

3.2 SAMPLE

Data collection is essentially an important part of research process so that the inferences, hypotheses, or generalizations tentatively held, may be identified as valid and verified as correct or rejected. In order to collect the requisite data for any research problem, the researcher has to sample the population concern.

Most of the educational phenomena consist of large number of units. It would be impractical to observe each unit of the population under controlled conditions is in order to arrive at the principle having universal validity. Some populations are so large that their study would be expensive in terms of time, money, effect, and manpower.

Sampling is a process by which a relatively small numbers of individual objects of events selected in order to find out something about the entire

populations from which it was selected. An appropriately chosen sample size enhances the reliability and validity of research findings.

A sample is a small portion of a population selected for observation and analysis. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn.

For this study, researcher administered a survey research. A sample of 280 students of 4 C.B.S.E. schools in Bhopal city was selected using random sampling technique. There were 50% girls and 50% boys in the sample.

TABLE-3.3.1

DISTRIBUTION OF SAMPLE

S.N.	Name of the school	Girls	Boys	Total
1	Bonnie Foi H.S. School, Ayodhya bypass	35	35	70
2	Heroes Convent School, Sonagiri	35	35	70
3	International Public School, J.K. Road	35	35	70
4	Hema Higher Secondary School	35	35	70
TOTAL		140	140	280

3.3 VARIABLES

Variables are the conditions or characteristics that the experimenter manipulates, controls, or observes. The independent variables are the conditions or the characteristics that the experimenter manipulates or controls in his or her attempt to ascertain that relationship to observed phenomena. The dependent variables are the conditions or characteristics that appear, disappear, or change as the experimenter introduces, removes, or changes independent variables.
In this study following variables are used

1. **Dependent Variable**
   a. Environmental Awareness
   b. Eco-friendly Behaviour

2. **Independent Variables**
   a. Gender
      i. Boys
      ii. Girls
   b. Achievement
      -Science Achievement

3.4 RESEARCH INSTRUMENTS

1. **ENVIRONMENTAL AWARENESS SCALE (EAS)** – Researcher used environmental awareness scale constructed and validated by Haseen Taj to know the current level of environmental awareness of students. The tool is in English language which contains various aspects of environment. The scale reflected various aspects of environment such as:

a. Biodiversity (animals and plants)
b. Relationships (among elements of ecology)
c. Over population
d. Food production
e. Health and hygiene (diet and communicable diseases)
f. Deterioration of habitats, and
g. Pollution of air, water, and soil.

There are 117 questions in the scale which is divided into 3 parts:

a. 66 multiple choice questions
b. 35 true/false questions
c. 16 fill up the blanks

The score for every correct response is of 1 mark. Maximum score is 117 marks. Environmental awareness scale is in appendices (A).

Reliability of the scale

Two types of reliability have been established in the scale

a. Split half 0.78
b. Test retest 0.76

Validity of the scale

Validity of the scale is found high in every type of validity.

2. ENVIRONMENTAL BEHAVIOR SCALE (EBS-svs)

Researcher used EBS-svs to measure current level of eco-friendly behaviour of students. This scale is a standardized tool developed by Archana Singhal, Urmilla Verma, Pradee K. Singhal; Jabalpur.

There are 60 statement related to daily behaviour with yes/no response. The framing of the statement was based on the following component of environmental behaviour:

1. Social desirability
2. Environmental concerns
3. Environmental knowledge
4. Environmental values

The statements were used to elicit the present and future responses and are either related directed to lifestyle of respondent or most talked about in media and curricula. The questionnaire has a judicious mixing of easy and difficult statement. 44 statements are positively worded and remaining 16 statements are negatively worded. One mark is to be awarded for a yes response and 1 mark is awarded for response. The scale has the maximum score of 60 marks and a minimum of 0 marks.

VALIDITY OF THE SCALE

Face and content validity was determined by the well known experts in the field of education, environmental sciences, linguistics, and psychology.

RELIABILITY OF THE SCALE

Two types of reliability have been established.

Split-half	0.76
Test retest	0.79

ACHIEVEMENT

Researcher collected achievement from school records. Science achievement of mid-term exams is collected in the form of marks of 9th class students.

3.5 DATA COLLECTION

- Ten days (31 Feb to 11 Mar) were given to researcher for field work. Students of class 9th of C.B.S.E. schools of Bhopal city were chosen for data collection.
- The researcher got acquainted with the school administration, teachers, and established rapport with the students.
- Before administration of test, students were motivated and psychologically prepared by the researcher to do their almost sincerely respond to the test items. Students were assured that the test would not measure of their intelligence and the whole process had nothing to do with their school achievement.
- Environmental awareness scale and eco-friendly behavioural scales were given to the students. At the end researcher expressed gratitude to the students for their cooperation.

- Science achievement was also collected by the researcher with the help of class teacher from school records. The cooperation of the teachers was remarkable.

Table-3.5.1

Distribution of data

S No	School	Gender	Environmental Awareness score	Eco-friendly behaviour score	Science Achievement
1	1	1	54	31	45
2	2	2	59	34	46
3	.	.	.	.	.
4	.	.	.	.	.
5	.	.	.	.	.
6	.	.	.	.	.
7	4	2	113	60	80

Gender – Male – 1/Female – 2

School – Bonnie Foi Higher Secondary School – 1

Heroes Convent School -2

International Public School -3

Hema Public School – 3

3.6 STATISTICS USED IN THE STUDY

In this study, mean, standard deviation, t-test and correlation are used to analyze the data.

- t-test is used to know the environmental awareness and eco-friendly behaviour of boys and girls.
- Correlation r (Pearson product moment method) is used for the relationship of science, environmental awareness, and eco-friendly behaviour.