CHAPTER III

METHOD AND PROCEDURE

The preceding chapter contained a review of the research studies relevant to the study undertaken by the present researcher. The chapter in hand aims to describe the methodology based on the methodology applied by earlier research workers in the studies similar to the research study in hand. The methodology described under the following six successive steps has been chosen for its rationale in achieving the objectives of present study as well as in testing hypothesis contained in the introductory chapter of the present research report:

I. Research Method used for achieving the objectives

II. Research Techniques applied for achieving the objectives

III. Tools used for measuring study variables

IV. Characteristics of Population from where sample of subjects were selected

V. Characteristics of the size of the sample and through which they were selected

VI. Sequential steps of the research procedure of the study
I. Research Methodology used for achieving the objectives:

The study in hand primarily aimed to ascertain the influence of learning climate of an institution on the academic achievement of the learners studying in it. Research conducted during the preceding five decades on the phenomena of the academic achievement has convincingly demonstrated that a host of factors—cognitive, social and emotional influence, the magnitude of academic achievements. Of the various factors entering into achievements phenomena, intelligence and creativity occupy an important place in respect of the quantum of influence on academic achievement phenomena.

Since the study aimed ascertaining the influence of only one factor, namely, learning climate on academic achievement, therefore, it was thought to be necessary to control the influence on academic achievement. This objective was achieved by determining the influence of the learning climate in the context of the selecting the samples of subject characterized by only a specific homogeneity level, i.e. either high or average or low level of their intelligence. A similar treatment was made for controlling the influence of the creativity.

It is in this context of these considerations that researcher administered only those tools which could validity and reliability measure the learning climate, academic achievement, intelligence and creativity on
IXth graders studying in the Meerut City secondary education institutions. How the data yielded to these research tools was used and subjected to what type of statistical treatments will be described elsewhere in this chapter.

It will, however, be agreed that in the context of the above observations as well as the nature of the objectives and hypothesis of the present study. The research methodology which would have most appropriately served the purpose was causal comparative method. As such, this research method has been used for achieving the objectives of the study.

II. Techniques Adopted:

Having given the rationale for choosing the causal-comparative method of research for the researcher applied the second step, namely, choosing the research techniques helpful in the actualizing the objectives as well as in testing the validity of the hypothesis of the study. In this context the researcher chose two techniques; testing and statistical.

Testing technique was chosen in the present study because of its potentiality in the measuring the four variables of the study. These are (1) Learning Climate (2) Academic achievement (3) Intelligence and (4) Creativity. It will be agreed that without the administration of these technique data related to the four study variables, namely, learning climate, intelligence and creativity could not have been collected.
Needless to say, in the absence of data of these variables, the objectives of the present study would have hardly been achieved. The choice of statistical computations was determined by the fact that non-application of the statistical computations, as for examples, mean, S.D. test of significance, transformation of raw achievement scores into T-Scores would have the achievement of objectives and testing of hypothesis of the study impossible. The choice of these two research techniques is therefore, obvious.

III. Tools chosen:

The variables of the study were measured with the help of the tools mentioned below:

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Variable of the study</th>
<th>Tool used for its measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Learning climate</td>
<td>Sharma learning climate scale.</td>
</tr>
<tr>
<td>2.</td>
<td>Intelligence</td>
<td>Raven’s Progressive matrices</td>
</tr>
<tr>
<td>3.</td>
<td>Creativity</td>
<td>Baquar Mehdi test of creative thinking</td>
</tr>
<tr>
<td>4.</td>
<td>Academic Achievement</td>
<td>Total raw achievement scores of IX\textsuperscript{th} graders total annual examination marks (achievement scores) of each of the individual student of IX\textsuperscript{th} class in the science and arts stream normalized in to T-Scores</td>
</tr>
</tbody>
</table>

Each one of the mentioned tools was chosen because of their validity and reliability.
Characteristics of the chosen tools: It seems proper at this stage to enumerate the distinctive characteristics of the tools applied by the researcher for measuring her study variables. The sequence of description of the four tools used for achieving the objectives of the study is as under:

i. Learning climate

ii. Intelligence

iii. Creativity

iv. Academic achievement

1. Sharma Institutional Learning Climate Scale: To measure the classroom learning climate of the class in which the IXth graders were studying, the researcher used this scale. The test has four sections. These are as under:

<table>
<thead>
<tr>
<th>Section</th>
<th>No. of Items</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>18</td>
</tr>
<tr>
<td>C</td>
<td>21</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
</tr>
</tbody>
</table>

Total Items = 65

After entering in the classroom the investigator told the students about the purpose of the scale. She gave them a booklet, consisting of 65 items and arranged in the above four sections, each item is to be rated against a 07 point scale.
The testees were asked to fill in the identification data. Besides, they were asked to read the instructions given in the booklet. After reading the instructions by the testees they were to open their booklet and to finish the test as early as they can. Thus, Rating point on each of the items of scale were summed up and a mean Learning Climate score was obtained.

2. Raven’s Progressive Matrices (Measurement of Intelligence): To measure the intellectual ability of the subjects of the sample, Raven’s progressive matrices test has been used. The choice of this test was made for two reasons. The first being its non-verbal contents and the second being its high validity and high reliability.

The test as constructed by Raven consists of sixty items divided into five sets. Each set has twelve multiple choice types of items. All of these items are arranged in a progressive order of difficulty.

Raven’s progressive matrices were designed to cover the widest possible range of mental ability. These can measure the intellectual capacity of persons of all ages, irrespective of differences in their education, nationality or physical condition.

The investigator administered the test on the IXth graders of her study as per directions contained in the manual of matrices. The test was scored with help of scoring key which enabled her to identify the correct response of each of the sixty items. One mark was credited to each correct
response and the total correct responses were deemed to give an index of the testee’s intellectual capacity.

3. **Baquar Mehdi Test of Creative thinking:** To Measure the creative potential of the IX\(^{th}\) graders, the researcher chose Torrance creative thinking. She used the adapted version made by Baquar Mehdi. Besides, being selective, valid and reliable, the content of the items of the test was drawn from Indian socio-cultural intellectual situations. In addition, the test developed its norms on Indian population.

   The test has the following sub tests:
   
   a. Consequence test
   b. Unusual use test
   c. New relationship test
   d. Product improvement test

   The consequence test presents before the testees three hypothetical situations: These are:
   
   (1) What would happen if man could fly like bird.
   
   (2) What would happen if our school had wheels, and
   
   (3) What would happen if man does not have any need for food?

   The testees are required to think as many consequences to each one of these three situations as he can.
All consequences thought by the testee to a situation are to be written by him in the space provided in the test booklet. The time limit for this purpose is five minutes per situation.

The unusual uses test presents the name of three common objects, namely, a piece of stone, a wooden stick and water to the subject’s testees. They are required to write as many novel, interesting and unusual uses of these objects or situations as they may think of in a four minutes period is allowed to the testee for responding to a situation.

New relationship test presents three pairs of words which are apparently different from each other. The relationship ability of the testee is to be ascertained between seven pairs of words. For example, he has find out the relationship between chair & ladder and air & water. The situation of the test requires him to think & write as many novel relationships as he possibly can think of between two objects of each pair in the space provided. Time allowed to the testee for giving new relationship for each pair of words is five minutes.

Finally, the fourth sub test, the product improvement test requires the subject’s testees to think of simple wooden toy of a horse and then suggest improvement to it within a period of six minutes so that it becomes interesting for the children to play.

The total time required for completion of the test by the testee is 48 minutes. All sub tests are scored for fluency, flexibility, originality and total creativity as per directions contained in the manual of the test.
4. **Measurement of academic achievement**: Composite examination marks obtained in half and annual examination by the IX\textsuperscript{th} graders were transformed into T-achievement scores characteristics from which sample were drawn.

**IV. Population of the study:**

Nine hundred IX\textsuperscript{th} Graders studying in intermediate colleges of Meerut city and were chosen as the population of the study.

**V. Sample and Sampling Technique:**

**A Sample Size:** The study was conducted on three hundred IX\textsuperscript{th} graders in the three institutions located in the Meerut City.

**B. Sampling Technique :** Having selected the three institutions in the Meerut City, sample of the IX\textsuperscript{th} graders was chosen with the help of Triplets Random Number Series.

**VI. Procedure followed:**

The study was conducted in accordance with the steps as under-

**A. Contacting the principals of colleges:** The investigator personally contacted the Principal of the selected three intermediate colleges, namely, Bal Vidhya Mandir, B. B. S. S. Mandir, Ambedkar Inter College. She explained to them the significance of the study in hand and secured their permission for the conduct of the study their colleges.
B. Contacting the class-teachers: After securing the Principal’s permission for the conduct of the study, she contacted the class teacher of each of the selected colleges constituting the sample of the study, she sought their co-operation in the context of the relevance of the study.

They agreed to extend such co-operations as was necessary for the conduct of the study.

C. Selection the sample: In each secondary school there are more than one section at IXth grade. If the study is conducted on all those students, the total number of the respondent’s was exceeding two thousand. Therefore, to select nine hundred from the above population, she applied simply random techniques to select one section from several section of the IXth grade of the School.

D. Establishing Repapering with the Sample: The subject’s of the sample chosen in the manner described above personally contacting by the investigator for establishing rapport. This objective was achieved by explaining to the subjects of the sample, the purpose and significance of the study.

E. Administering the tools: After establishing a rapport with the subjects of the sample, the data pertaining to such characteristics of the sample as their intelligence, Creativity, Intelligence learning style, learning climate and concept formation states were estimated with the help of their manuals and the procedure laid down in their manuals.
1. No two tests were simultaneously administered on the same group of object and on the same day. This was considered to be necessary for minimizing, fatigue, monotony and anti-reaction towards the second test among the testees.

2. Each subject’s testee who took a test was allotted a separate and comfortable chair & table.

3. Enough spacing between the seats of the testees was kept so to minimize mutual discussion among them as well as to prevent the tendency of copy on their part.

4. A proper arrangement for light and air was also made during the period the subject’s testees took the test.

5. The testing room located at a place which was relatively free from the general noise in the institution.

6. Each subject was given a pencil for responding to the test when a testee completed the test, the pencil was taken back from him.

7. A proper arrangement for drinking water was made for the testees.

8. All the tests were administered during morning hours, a period when the subject’s testees are relatively fresh and free of the effects of mental fatigue caused owing to their mental
participation during the teaching learning process.

9. After supplying the test booklet, each subject’s testee was asked to fill information with regard to her name, school’s name, age and the date on which the test was administered.

10. Each testee was asked, after supplying him the test booklet and filling in the preliminary data to start only when he was asked to do so.

11. The testees were instructed to start attempting the question only when specific instructions related to the test were read aloud to them.

12. Doubts or confusion raised by any of the testees in regard to a list were immediately clarified and removed.

13. Testees were asked to begin from the first-page and to continue to attempt the items of test up to its last page.

14. The testees were asked not to waste their time on attempting items which they felt cannot attempt.

15. Testees were asked to change an answer if they wish to make a change only by cutting the first and writing the second a fresh neatly and legibly.

16. Testees were requested not to whisper or talk while taking a test.
17. If any test had proactive examples, the testees were asked to silently read this practice example carefully and start attempting items similar to them.

18. If any test has a time limit for its completion, this time was strictly adhered to. However, tests which did not have any time limit, the subjects were not pressed for the return of the test booklet till they have completed it.

VII. Collection of the test answer sheet:

The test answer sheets after being completed by the testees were personally collected by the investigator.

**Scoring the test:** Each one of the test answer sheet of the testees on whom the test, namely, learning climate, creativity and intelligence were scored exactly in accordance with the procedure laid down in the manual of these test. However, the academic achievement status of the subject’s testees forming the sample of the study was determined by summing up the percentages of marks of the testees in Half yearly examination.

**Processing the data:** The data pertaining to Learning climate, Achievement, Creativity, Intelligence of IX\(^{th}\) graders, obtained as per scoring procedure described above, was subjected to two types of statistical treatments namely-One way analysis of variance followed by ‘t’ test of significance.
VIII. Analyzing and Organizing data:

All the computation work have been done by computer.

IX. Interpreting the data:

The ’F’ and ‘t’ values contained in various tables of the succeeding chapter have been interpreted in the context of existing theoretical concepts and earlier researchers in chapter V of the present research report.

X. Drawing findings/conclusions:

Finally, the findings and conclusions emerging after interpreting the data find place in the last chapter, namely the VI chapter of the present research report.