CHAPTER - III
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METHODOLOGY

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CHAPTER-III

METHODOLOGY

3.0 Methodology

The purpose of this chapter is to provide a clear picture about the design of the study. A design of study helps the researcher to conduct his research in a scientific manner. A scientific research depends largely upon the sampling technique the validity of the instrument control upon the variables as per the need of the research and field experiment design. It has become necessary to employ the recent trends to control the variables taken for studying and to employ the recent methods for measurement of the variables.

In this chapter the researcher has discussed about the universe, sample, Instrument of Tools employed and procedures adopted in this research.

3.1 The Universe:

The investigation has been designed to study the Academic Achievement in pupils of Class XI in Physics & Chemistry as related to school organizational climate. Thus the universe of the study was located only to Higher Secondary Schools of Durg district.

Durg was a very small village in 30's and 40's. Though it was a very small village and almost a backward place but was having a important place on the South Eastern Railway
Zone. It is located about 35 Km on the west of the Raipur Town. It is on the main route of Howrah Bombay railway line via Nagpur. Durg has become an important place on the map of India because of a steel plant named as Bhilai Steel Plant. Nowadays this plant is the biggest plant in Asia. Due to this plant this area is converted into a big industrial town of Madhya Pradesh. In Durg district there are Higher Secondary Schools ( 49 in Durg Township 25 in Bhilai Township ).

The following table reveals the position, number of schools and number of teachers teaching higher secondary classes & number of pupils, enrolled in school in Class XI.

TABLE - III.1
Population of the Different Types of schools of Durg and Bhilai Townships

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Type of School</th>
<th>Teachers Male T Teachers Female SAC</th>
<th>Total Students Male T</th>
<th>Total Students Female SAC</th>
<th>Total Students Male T</th>
<th>Total Students Female SAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Schools run by</td>
<td>194 155</td>
<td>349 1015</td>
<td>949 1964</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public under-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>taken(BSP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>schools)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Govt. school</td>
<td>416 318</td>
<td>734 1761</td>
<td>855 2616</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Run by M.P.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Govt.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Private schools</td>
<td>48 235</td>
<td>283 402</td>
<td>290 692</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>1366</td>
<td></td>
<td>5272</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Detailed information of population of the Teachers & students engaged in teaching learning process is presented in Appendix.
3.2 Sample:

Finding out any research reference by taking the population as a whole will not only be time consuming but also expensive and impractical. To have a scientific finding the investigator has conducted her research by taking a sample from the population. In the selection of the sample the sampling technique was followed so as to get a good sample which can be a true replica of the population which will help the researcher to generalise the findings of the research.

The sample can be selected by adopting various methods and techniques. In the modern the sampling has been discriminated between probability and non-probability sample. In the probability sample one can specify for each element of the population the probability that will be included in the sample whereas in the non-probability sampling there is no way of estimating the probability that each element is being included in the sample. Thus the probability sampling is the only way by which a representative sampling plan is possible.

The main methods for probability sampling are simple Random sample, Stratified Random sample and various forms of Cluster sample. The methods for non-probability sample are Accidental sample, Quota sample and Purposive sample.

For designating the study of organizational climate to the schools the instructions given in the manual of the School Organizational Climate Description Questionaire (adaptation
by Sharma) was followed. 75% of the teachers as per the instruction given in the manual of 'SOCDOQ' were selected on the basis of Stratified Random Sampling Technique because this sampling Technique insures representativeness and avoids biased sampling.

The total number of teachers in the different types of school were 1366 and out of these seventy five percent teachers were selected.

Table III.2 indicates the sample selected from teachers teaching Higher secondary classes of different schools and the students taught by those teachers of the schools.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Types of School</th>
<th>Sample of teachers Male</th>
<th>Sample of teachers Female</th>
<th>Sample of Pupils Male</th>
<th>Sample of Pupils Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>B.S.P</td>
<td>194</td>
<td>155</td>
<td>349</td>
<td>1015</td>
</tr>
<tr>
<td>2.</td>
<td>Private</td>
<td>48</td>
<td>235</td>
<td>283</td>
<td>402</td>
</tr>
<tr>
<td>3.</td>
<td>Government</td>
<td>416</td>
<td>318</td>
<td>734</td>
<td>1761</td>
</tr>
</tbody>
</table>

The detailed information of schoolwise & sex-wise sample, is given in Appendix.

3.3 Instrument :

To obtain a concrete result it is necessary to select a scientific instrument for the measurement of variables under consideration. With a view to use only dependable instruments
it is necessary to screen the materials so that the relatively in the nature can be eliminated.

Instrument used As.

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>Dependent variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Organizational Climate Descriptive</td>
<td>Academic Achievement</td>
</tr>
<tr>
<td>Questionnaire by Dr. M.L. Sharma (1978) (An Indian Adaptation of Halpin and Crafts SOCDQ test)</td>
<td></td>
</tr>
</tbody>
</table>

Description of sub-tests of the SOCDQ:

Eight dimensions of Organisational Climate was selected for SOCDQ of which four dimensions were common as identified by Halpin & Croft. They are:

(i) Disengagement
(ii) Espirit
(iii) Intimacy
(iv) Production Emphasis

Sharma (1973) identified four more new dimensions they were:

(i) Psycophysical Hinderance
(ii) Alienation
(iii) Controls and
(iv) Humanized Thrust.
These dimensions were grouped under two categories 'Group Behaviour Characteristics' and 'Leader Behaviour Characteristics';

Definitions of Dimensions (Sub-Tests)

I: Group Behaviour Characteristics

(i) Disengagement - It refers to the teachers tendency to be "not with it". It describes about a group that is 'going through the motions' and is 'not in gear' with respect to the task at hand. It describes about teachers behaviours in a task-oriented situations. (Halpin, 1969, p. 150).

(ii) Alienation - It describes about the principal who is the leader and the group (faculty). their behavioural pattern. It indicate how the principal deals with the teachers and the emotional distance among the group members as well as between group and the leader. (Sharma, 1973, p. 199)

(iii) Espirit - It refers to morale. In this the teachers along with job satisfaction have a feeling of their social needs also being satisfied.

(iv) Intimacy - It describes that the teachers enjoy a good social relationship with one another (Halpin, 1969, p. 151)

II: Leader Behaviour Characteristics.

(v) Psycho-Physical Hinderance - In this the group members consider principal to be highly dictatorial and they have a feeling that they are unnecessarily burdened by duties,
demands of management and other administrative requirements (Sharma, 1973, p. 204).

(vi) Controls describe the behaviour of principal that way by which he helps the group in raising the effectiveness and efficiency. He gives operational guidance and Secretarial Services. Through the behaviour of principal is task-oriented it can be characterized as bureaucratic and impersonal (Sharma, 1973, p.205).

(vii) Production-Emphasis - It indicates the role of principal which he plays that of a 'Straw Boss'. He is directive and is not sensitive to feedback from staff. It also refers to principals behaviour which is closely supervised by the staff. (Halpin, 1969, p.151).

(viii) Humanized thrust describes about the principal behaviour how he motivates the teachers by setting personal Examples. He treats the teacher humanly and tenderly and helps them in one way or other. He never force a teacher to do or give something which they are not willing. And his behaviour is favoured by the teacher. (Sharma, 1973, p.209)

Organizational Climate

Different definitions have been given by different authors. According to Halpin and Crofts (1963) the 'Organizational Climate' can be constructed as the 'organisational personality of a school'. Analogously "personality" is to individual what
organizational climate is to organization. Sharma (1971). after going through the different definitions given by different authors finally said that organizational climate could be defined in terms of interaction that takes place between members of the organizational who after getting their individual needs satisfied, fulfill their prescribed roles. In the context of school, Sharma specified it to be the resulting condition within the school of social interaction among the teachers and between teachers & principal.

Definitions of Climate

1) Open Climate is characterized by the environment in which the teachers apart from enjoying social need satisfaction and job satisfaction have a sense of accomplishment in their job. Teachers see their principal to be highly considerate and democratic and hence enjoy a high degree of integration as well as authencity of behaviour (Sharma, 1973, p.252).

2) Autonomous Climate - In this there is a friendly relationship and a high group morale among teachers. They enjoy social need satisfaction as well as job-accomplishment. There is no active leadership shown by principal. This is seen as an element of Psycho-Physical hinderance (Sharma, 1973, pp.254-55).

3) Familiar Climate- In this type of climate there is a friendly behaviour of both principal & teachers. The principal
gets his work done by the teachers by not thrusting work upon them but in an indirect manner. It helps the teachers in having a friendly relation with one another and can satisfy their social needs also. Behaviour of principal is job-oriented (Sharma, 1973, pp. 256-57).

4) Controlled Climate – It is characterised by an environment in which there is no job satisfaction among teachers. Their social needs are not satisfied. Leadership is seen and in a dictatorial manner communication is one sided. Group involvement is not there. (Sharma, 1973, p.261).

5) Paternal Climate – In this type of climate principal exhibits a leadership quality but also is considerate towards individual interest. Though there is a little scope of teachers satisfying their social needs and having job satisfaction. (Sharma, 1973, p.264).

6) Closed Climate – It refers to that type of Climate in which Principal shows his leadership behaviour. The organisation is not moving and group members do not have social as well as job satisfaction (Sharma 1973, p.266).

Administration of the Tool :-

The SOCDO was administered indivdually. They were given the instruction to report the first reactions which came in their mind after reading each questions. They were given the instruction to report the first reactions which came in their
mind after reading each questions. They were also asked not to discuss with other members while answering the questions. The test was administered on 75% of the school members in order to maintain its reliability.

Scoring

In total there are 64 Likert type items distributed over the eight dimensions. The respondents indicate their answers by any one of the four categories:

(1) rarely occurs (2) Sometimes occur
(3) often occurs (4) Very frequently occurs,

which they feel describes about their school climate. These four categories are assigned four integers viz. 1,2,3 and 4 and then eight sub-tests score of each respondent are calculated by simple summation of each item scores subtest by subtest and dividing each of the eight sums by the number of items in the corresponding subtest.

Table II shows the details of the subtest preparing School Climate Profile:

Firstly raw scores are converted into doubly standardized score by normative standardization then by ipsatively standardization procedures.

Designating Climate Type

A comparison of six prototypic profiles given in Table
III and other profiles is done and profile similarity score is calculated on this basis Schools are assigned different Climate types. This helps us to know that to which extent school profile is congruent with prototypic profile. By finding the absolute difference between each subtest score in a school’s profile and the corresponding score in the first profile the similarity score can be calculated. In this we can find for the second one and so on. Highly similar and dissimilar profiles are indicated by low sum and large sum respectively. And the Schools are (characterized) designated with the name of prototypic profile the characteristic of which is similar to the school.

Reliability and Validity of SOCDQ

(1) Reliability :-

The coefficients of reliability i.e. internal consistency for each sub-tests were calculated by using KR-20 (Kuder-Richardson Formula). Communalities for each subtest were calculated if it resulted in high communalities then it was considered as evidence of equivalence or adequacy of item sampling and communality itself may be viewed as coefficient of equivalence (Halpin and Crafts, 1963). Coefficients of internal consistency and communality estimates are given in Table IV.
(11) Validity:

The validity of SOCDQ was found to be very high. 15 experts in the field of educational administration examined the content of each subtest for this they were provided with the definition of different subtests and climates to find out whether the content of the subtests of SOCDQ measured what investigators intend to measure. Moreover it was also found that there was no significant difference between the proportionate climate. Distributions in the two samples of Halpin and Crafts study (1963) and Sharma's study (1973) which was having different organizational structure and were located in two different cultures.

Sharma (1973) developed and sent the rating scale to the district inspectors of schools in every district and asked them to rate the schools of their district on the basis of definitions of eight dimensions and climate types. Coefficient of correlation was found to be .63 which was significant at .01 level of significance. This further indicated the validity of the tool SOCDQ.

Prototypic Profiles

Prototypic profiles describes the central tendency of the scores within each of the six sets for those schools which secured high loadings on a single profile factor. These profiles were the descriptions of six different organizational climates which were ranked in order of open to closed.
Functional flexibility characterized open climate and functional rigidity characterized closed climate. Table III gives the prototypic profiles for Indian schools developed by Sharma (1973). From this table it was found that Espirit becomes increasingly smaller as one moves from more open to move closed climate. And thus school's organizational climate is described by 'Espirit'.

Academic achievement test of Physics and Chemistry was prepared by Dr. Srivastava and Ku. George. The test was of objective type which comprised of 100 questions.

**Administration of the Test:** For the pre-test 100 questions were administered to the students of class XI.

**Scoring of the Test:** One mark was awarded for every correct answer whereas no marks was given for wrong answers. The discriminating value was found out statistically by employing the following formula.

\[
D = \frac{F_1 - P_e}{\sqrt{F_1 Q_1 + P_e P_{ne}}} \]

In which 
\( D \) = Discriminating Value.
\( F_1 \) = Percentage of student doing the item
correctly in the upper group.

\[ P_m = \text{Percentage of Student doing the item correctly in the lower group.} \]

\[ Q_m = \text{Percentage of student doing the item incorrectly in the upper group.} \]

\[ Q_m = \text{Percentage of student doing the item incorrectly in the lower group.} \]

\[ N_u = \text{Number of students in the upper group.} \]

\[ N_l = \text{Number of students in the lower group.} \]

After the treatment of each items of test by item analysis discriminating value was calculated. Items with a discriminating value more than 1.96 were selected for the standardised test. 40 questions were found to have a discriminating value more than 1.96.

The prepared test was again administered on 600 pupils of Class XI for final try out and then it was again checked.

The reliability of the test was found to be which was estimated by Split Half Method and was verified by Rulon's Method.