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CHAPTER III

DESIGN OF THE STUDY

A scientific research depends largely upon the nature of methodological sophistication that the investigator employs in his investigation. The purpose of this chapter is to provide an overview of the design of the study. Keeping in view the vast advancements in sampling techniques, tools control of variables and field experiment designs, it has become necessary to employ the recent trends in measurement of the variables selected for the study. The nature of the problem determines as to which design is most appropriate and how that design should be tailored to meet the needs of the investigator. This chapter deals with the universe, sample, tools employed and procedures adopted in this research.

3.1 The Universe

The universe of the study in this investigation was included higher secondary schools of Bhilai Steel Plant, Government Higher Secondary Schools and Higher Secondary Schools run by private managements of Bhilai and Durg.

(30)
Durg was a very small village in forties. Though it was a small village, it was an important place being placed on the South-Eastern Railway. It is located about 40 Kms on the West of Raipur and on the main route of Howrah-Bombay railway line. Bhilai was a very small village in forties, but after the foundation of steel plant at Bhilai, it has now become one of the biggest industrial towns of Madhya Pradesh in India. This township has been designed in collaboration with the Russians. Now Bhilai Steel Plant has been transferred to the Public Undertaking. The plant is running 14 higher secondary schools to meet the educational needs and demands of its employees as well as different categories of people residing in the vicinity. Almost each sector of the township has one fullfledged higher secondary school, besides many primary and middle schools. There are 11 government schools in Bhilai and Durg, which cater the educational needs of Durg township. Besides these, 14 schools are managed by the private management and by public undertakings. The types of schools, number of teachers of senior secondary classes and number of students enrolled in class X of that schools are given in Table III.1:
Table III.1
Population of the Different Types of Schools of Durg and Bhilai Townships

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of School</th>
<th>Teachers</th>
<th></th>
<th>Students</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
</tr>
<tr>
<td>1.</td>
<td>Schools run by Public Undertaking (BSP Schools)</td>
<td>326</td>
<td>268</td>
<td>594</td>
<td>2365</td>
</tr>
<tr>
<td>2.</td>
<td>Govt Schools (Run by M.P. Government)</td>
<td>89</td>
<td>138</td>
<td>227</td>
<td>890</td>
</tr>
<tr>
<td>3.</td>
<td>Private Schools</td>
<td>102</td>
<td>176</td>
<td>278</td>
<td>1141</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>517</td>
<td>582</td>
<td>1099</td>
<td>4396</td>
</tr>
</tbody>
</table>

The detailed information of population of teachers and students engaged in teaching/learning process is presented in Appendix A.

3.2 Sample

Sampling is an important aspect of research. Sampling is a true replica of the population on the basis of which a researcher can generalize the findings of the research. Finding out any research inference by taking the population as a whole will be time consuming, expensive and will be impractical. To have economic ones, the researcher has conducted her research by taking a sample from the population.
The sample can be selected by adopting various methods and techniques. The basic distinction in modern sampling theory is between probability and non-probability sampling. The probability sampling is that one can specify for each element of the population the probability that it will be included in the sample. In non-probability sampling, there is no way of estimating the probability that each element is being included in the sample. Probability sampling is the only approach that makes representative sampling plans possible.

The main forms of probability sampling are simple random sample, stratified random sample and various forms of cluster samples.

The main forms of non-probability sampling are accidental samples, quota samples and purposive samples.

For the study of School Organizational Climate as per the instructions given in the manual of School Organizational Climate Description Questionnaire (adaptation by Sharma), 'SOCDQ' 75 per cent of the teachers were selected on the basis of stratified random sampling technique, because stratified random sampling ensures representativeness and avoids bias by use of a modified random sampling technique.
The total number of teachers in different types of schools were 1099 and out of these, 75 per cent teachers which comes to 823, were selected. Table III.2 represents the sample selected from teachers and students from different schools.

Table III.2
Sample of Teachers and Pupils drawn from the Population of Different Kinds of Schools

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Types of School</th>
<th>Sample of Teachers</th>
<th>Sample of Pulils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Fem.</td>
</tr>
<tr>
<td>1.</td>
<td>Public Undertaking Sch. (BSP Schools)</td>
<td>243</td>
<td>202</td>
</tr>
<tr>
<td>2.</td>
<td>Govt Schools</td>
<td>69</td>
<td>104</td>
</tr>
<tr>
<td>3.</td>
<td>Pvt. Schools</td>
<td>75</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>387</td>
<td>436</td>
</tr>
</tbody>
</table>

The detailed information of sample (school-wise and sex-wise) is given in Appendix B.

3.3 Instrument

To obtain a valid finding it is necessary for the researcher to select a scientific instrument for the measurement of variables under consideration. Since psychological measures are relative in nature, it becomes necessary for researcher to screen the materials with a
view to use only dependable instruments. The researcher, keeping in view the hypotheses formulated earlier, has carefully selected and employed the following instruments:

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Dependent Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. School Organizational Climate Descriptive Questionnaire by Dr. M L Sharma (1978). (An Indian Adaptation of Halpin and Crofts SOCDQ Test)</td>
<td>1. Educational Attainment of the Pupil. (Attainment scores obtained by pupils in one term exam and annual exam conducted by Board).</td>
</tr>
<tr>
<td>2. Job Satisfaction Scale by Promod Kumar and D. Mutha (1985)</td>
<td>2. Indian Adaptation of Cattel's Culture Fair Intelligence Test for matching the Groups of pupils.</td>
</tr>
</tbody>
</table>

3.31 Description of School Organizational Climate Description Questionnaire

The SOCDQ has eight dimensions of organizational climate similar to that of Halpin and Crofts (1963). The four sub tests of these dimensions differ in structure and content from those identified by Halpin and Crofts (1963). Disengagement, Esprit, Intimacy and Production Emphasis are the dimensions which were common in both the tests.

The test can be applied to teachers either in groups or individually. During administration and for a good result, the Principal of the school should be requested
not to be present at the time of administration (Appendix of Test $T_1$).

3.3.11 Administration of SOCDQ

The SOCDQ was administered on 1099 teachers of different schools and individually. It was instructed to the teachers that the responses given by them will be kept confidential and they should respond frankly and fearlessly as it is purely a research work. During the instruction emphasis was given to report the first reaction which comes to their minds after reading the question.

3.3.12 Scoring Technique of SOCDQ

The test is having 64 items which are distributed over eight dimensions. The respondents were asked to indicate the extent to which each statement characterizes his/her schools. The statements were defined in four categories: (1) rarely occurs, (2) sometimes occurs, (3) often occurs and (4) very frequently occurs. Four integers, namely, 1, 2, 3 and 4 were assigned to these categories of responses. Then each respondent's eight sub test scores were calculated by simple summation of each respondent's item scores, sub test by sub test and dividing each eight sums by the number of items in the corresponding sub test. Details of the items in each test are given in Appendix C. The same
serial numbers were allotted to each item in booklet as well as in tests.

To prepare a profile for each school, as per instruction given in the manual of SOCDQ by Sharma (1978), the raw scores were converted into doubly standardized scores (first by normative standardization and then by ipsatively standardization procedures). For normative standardization, each sub test score was standardized across the total sample of schools according to the mean and standard deviation of the total sample for that sub test, which is presented in Appendix D. For Ipsative Standardization, each sub test score was standardized with respect to the mean and standard deviation of the profile scores for each school. A mean of 50 and SD of 10 were used for both the standardization processes. Thus the standard score would represent the school profile which is presented in Appendix E.

To designate the school climate to each school of the sample, each of the profiles was compared with six prototypic profiles which are given in Appendix F. Then a profile score was calculated for each school. This score helped in determining to what extent the different school profile is congruent with the proto-typical profile which were characterized by six climates. Thus scores were computed by computing the absolute difference between each sub test score in school's profile and the corresponding
score in the first proto-typic profile, then in the second one, and so on. A low sum of this indicates that the two profiles are similar and the climate was assigned to that school, whereas a large sum indicates that these two profiles are dissimilar. Thus, the climate of the each school was designated.

3.3.13 **Rationale for Selection of SOCDQ**

There are four psychological tools for the measurement of School Organizational Climate which are standardized. Halpin and Croft (1963) are pioneers in developing a standardized test of SOCDQ. Robert (1965), Samarong Pengnu (1976) and Sharma (1978) also have developed a test for measuring SOCDQ.

Dr M L Sharma (1978) has adapted in India the SOCDQ test of Halpin and Croft. The Indian adaptation of SOCDQ by Sharma was selected on the basis of its higher relevance, higher dependability and its easier applicability and suitability.

(i) This test has high index of objectivity in Indian climate and culture and Indian school condition.

(ii) This test has been validated against face as well as content validity. The co-efficient of correlation is .63 at .01 level of significance. This test has been
validated against the Halpin and Croft's study and thus ensures a high order of validity.

(iii) This test can be administered individually as well as in groups. Thus, it becomes an economical test in terms of time and energy. It is also convenient and suitable in administration.

(iv) The subjects, on which the test is administered, do not face any language barrier. The test is available in Hindi as well as in English versions.

3.314 **Designating School Climate to Schools**

The raw scores obtained by the administration of this test on teacher's response were summed up separately and then divided by the number of items assigned to each of the dimensions as per the directions given in the manual. Further pooled, summated scores for each dimension for each school were obtained. The mean and standard deviation for each dimension were calculated. The means of each dimension thus represented eight dimensions scores for that school. Each school was assigned eight dimensions. Thus for 40 schools of Bhilai and Durg townships, 320 scores were obtained for all the dimensions. The 40 scores were summed separately for each dimensions and for each dimensions means and standard deviations were calculated. Then all the 320 scores (40 x 8) were further converted into
standard scores with a mean of 50 and standard deviation of 10. Thus eight normative scores for each school were again summed (n = 8) and mean and standard deviations were obtained for each school which is presented in Appendix E.

The eight normative scores with their respective mean and standard deviation were further standardized for each school with a mean of 50 and standard deviation of 10. Thus doubly standard scores were obtained by this doubly standardized process (normatively and ipsatively). These doubly standardized scores are presented in Appendix G.

The total of all the eight dimensions on the SOCDQ profile of each school was compared with the total of all the eight dimensions of the first prototype profile, then the second and so on.

The difference between the totals of the two was considered as the criterion for designating school climate under any one of the six climates. For all the six prototype profiles approximate dimension the difference so obtained are presented in Appendix G.

After designating the climate to each school of the sample taken for study, the sample of teachers and pupils were tabulated which are given below in Table III.3:
Table III.3
Analysed Sample on the Basis of School Climate

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Nomenclature</th>
<th>Teachers</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Fem.</td>
</tr>
<tr>
<td>1.</td>
<td>Open Type of Climate</td>
<td>182</td>
<td>181</td>
</tr>
<tr>
<td>2.</td>
<td>Autonomous</td>
<td>82</td>
<td>89</td>
</tr>
<tr>
<td>3.</td>
<td>Familiar</td>
<td>84</td>
<td>60</td>
</tr>
<tr>
<td>4.</td>
<td>Controlled</td>
<td>64</td>
<td>71</td>
</tr>
<tr>
<td>5.</td>
<td>Paternal</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>6.</td>
<td>Closed</td>
<td>85</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>517</td>
<td>582</td>
</tr>
</tbody>
</table>

3.32 Description of Teacher's Job Satisfaction Questionnaire

The present teacher's job satisfaction questionnaire was developed by Promod Kumar and D N Mutha to provide a handy instrument to assess the job satisfaction of secondary school teachers or college teachers, both for fundamental and applied researches.

Initially, job satisfaction questionnaire consisted of 40 'yes / no' type items selected on the basis of previous studies and following interviews with teachers, principals of the higher secondary schools and teacher
educators. These items were classified into four different aspects of job satisfaction in teaching. These included:

(a) satisfaction with work and work conditions;
(b) satisfaction with salary, security and promotion policies;
(c) satisfaction with institutional plans and policies; and
(d) satisfaction with authority, its competence and functioning.

27 items of the questionnaire were positively worded and 4 were negatively worded. All these items were scored '1' or '0' depending on the direction of the items. The sum of these values gave the job satisfaction score for the subject. The total score varied from 0 to 31, showing lowest job satisfaction to highest job satisfaction.

The Teacher Job-Satisfaction Questionnaire (TJSQ) consisted of 29 highly discriminating 'yes/no' type items (Kumar and Mutha, 1978), (Appendix of Test T₂).

3.321  Administration of Job Satisfaction Questionnaire

The purpose of the questionnaire was frankly explained to the subjects. It was assured that their replies would be kept confidential. The subject was requested to read the instructions carefully and to ask the researcher, if there be any difficulty in understanding the instructions.
It was emphasized that no item should be omitted and there is nothing 'right' or 'wrong' about these questions. It was also instructed that there is no limit of time. However it takes approximately 20 minutes to complete it.

3.322 Scoring Job Satisfaction Questionnaire

All the items except 6 and 29 were positively worded. All these items were given a score of '1' for positive responses except for items 6 and 29, in which case reverse is applicable. The sum of these values would give the job-satisfaction scores for the subject. The total score varies from 0 to 29, showing lowest job-satisfaction to highest for the subject.

3.323 Rationale for selecting the Job Satisfaction Questionnaire

For over 30 years job satisfaction have received a considerable place in research. Worthy (1950), Guttman (1944), Bray-field and Rotbe (1951) have discussed in their papers about the kinds, dimension and measurement of Job Satisfaction. Bray-field and Rotbe (1951) have constructed a scale to find out the index of 'overall' job satisfaction rather than of specific aspects of the job environment. They advocated that the job satisfaction
could be inferred from the individual's attitude toward the work in which he is employed. The test constructed by Brayfield and Rotte has a very high reliability coefficient \( .87 \), but the test was not in Hindi as the 99 per cent population of Durg and Bhilai have come from Hindi speaking environment.

The reliability of the Teachers' Job Satisfaction Questionnaire TJSQ was found out by split half method and test retest method, the \( r \) values \( .95 \) and \( .73 \) have been found out to be significant at \( .01 \) level, showing that the questionnaire is highly reliable both in terms of its internal consistency and stability of scores.

Thus, the researcher has selected the Teacher's Job Satisfaction Questionnaire by Kumar and Mutha (1985), on the following grounds:

1. This test ensures high indices of objectivity in the measurement of job satisfaction of school teachers.

2. This test can be administered individually as well as in groups. Such tests are more economical in all respects, such as time and energy.

3. This test can be easily administered and does not have any language barrier.

4. This test is easily available and can be administered easily.
3.33 **Description of Indian Adaptation of Culture Fair Intelligence Test**

The Indian Adaptation of Culture Fair Intelligence Test measures individual intelligence in such a way that the influence of verbal fluency, culture, climate and educational standard is reduced. The test is in the form of non-verbal and requires only paper pencil to respond. The individual is to perceive relationships of shapes and figures. The test contains four sub-tests which have different perceptual tasks. The test is divided into three scales. The scale 1 is designed for children of 4-8 years of age. Scale 2 and 3 consist of four sub-tests and is designed for adults. The classification sub-test differs slightly between scale 2 and 3. A question can arise in the mind of the experimenter as to which scale is appropriate in the given situation. So, it was specified in the manual that scale 2 can be used with children as young as 8 years and equally appropriate with older children.

From age 13 or 14 years onward, either scale 2 or scale 3 can be used. Scale 2 can be used in all cases, but greater refinement in the higher intelligence ranges is obtained with scale 3 because of higher difficulty level of the items in this scale (Appendix of Test T3).
3.331 Administration of Culture Fair Intelligence Test

For the study of Educational Attainment and to obtain a reliable and valid inference from this research, the Indian Adaptation of Culture Fair Intelligence Test of Cattel was administered on 3139 students of class X in different BSP schools, private schools and government schools. These students were selected randomly.

3.332 Scoring of Culture Fair Intelligence Test

The scores obtained from 3139 pupils were converted into IQ equivalents with the help of Appendix H, as per instructions given in the manual of Indian Adaptation of Cattel's Culture Fair Intelligence Test.

Those pupils, who secured IQ equivalents between 100 to 131 were considered for the study. It was also considered that the number of students in each school should not exceed 10% of the total number of students, so that the sample can act as a true replica of the population.

The means and standard deviations of pupils, on the basis of IQ equivalents were calculated of each group in each school. The means and standard deviations are presented in Appendix I.
With a view to test whether the groups of students, formed on the basis of IQ equivalents, are identical, the 't' test was employed to test the level of significance between each group of pupils formed in different schools for the study of Educational Attainment. The 't' value is shown in the chart of Appendix J. The chart indicates that the 't' value between the groups of pupils have no significant difference by which it can be inferred that the groups formed for the study of EA in different schools are similar on the basis of the IQ equivalents. Thus, on the basis of IQ equivalents, the groups of pupils of different schools were matched.

3.333 Rationale for Selecting Indian Adaptation of Cattel's Culture Fair Intelligence Test

For measuring the IQ of the pupils, there are many tools, such as Raven's Standard Progressive Matrices, Non-verbal Intelligence Test of Sharma, Indian Adaptation of Binet Simon Scale (1960). But these tests are in English version which cannot be administered on the subjects belonging to different languages. The Intelligence Test in Hindi constructed by Srivastava, Verma and Raj, which has .63, .72 and .69 reliability respectively, whereas the Indian Adaptation of Culture Fair Test has a very reliability and validity. There are many other
reasons given below on which basis the Indian Adaptation of Cattel's Culture Fair Test was selected which is presented in Appendix of Tests $T_3$:

1. The Culture Fair Test tried to make a separation of natural ability from specific learning which helps in making a better analysis of the individuals.

2. This test is in the form of figures, so there is no problem of language for the subjects.

3. This test can be employed on English or non-English pupils. Thus, this feature contributes to the accuracy of cross cultural comparisons with the Culture Fair Scales.

4. The test is easily available.

5. This test contains a very high reliability of .85 and validity of .92.

6. The test can be administered to groups or individuals.

7. The scoring of test and its conversion into IQ equivalents are very simple.

8. The subject upon whom the test is to be administered, need not require many instructions as it is easy to understand the test.
9. The test has separate answer-sheet which helps in fast scoring.

10. The test booklet can be used again as it has a separate answer-sheet.

The results on correlational and differential were, thus, obtained by analysing and processing the data by employing Pearson’s Product Moment Correlation for correlational studies and 't' value for the differential studies. The graphical representation was drawn to enhance the meaningfulness of the result and also to get clarity and vividness.

The results so obtained have been presented in the next chapter.