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CHAPTER – IV
METHODOLOGY

4.1 INTRODUCTION

Research is a systematic process of collecting and analyzing information to increase an individual’s understanding of the phenomenon under study. It is the function of the researcher to contribute to the understanding of the phenomenon and to communicate that understanding to others. According to Best and Kahn (1992), “Research involves formal, systematic and intensive process of carrying out a problem through scientific methods”.

Research is a logical and objective process of gathering information for the purpose of initiating, modifying or terminating a particular investigation or group of investigations. The validity of the problem chosen largely depends upon the systematic methodological procedures. The application of survey method requires systematic procedures for studying a problem. The heart of the survey research lies in careful designing of methodological procedures and administration of tools to obtain objective data from the respondents. The methodological procedures followed in the present study are outlined in this chapter.

4.2 TITLE OF THE STUDY

The title of the present research study is precisely stated below:

“ORGANISATIONAL STRUCTURE, ORGANISATIONAL CLIMATE AND PROFESSIONAL COMMITMENT OF TEACHERS WORKING IN HIGH AND LOW ACHIEVING HIGHERSECONDARY SCHOOLS IN PONDICHERRY UNION TERRITORY”.

4.3 ASSUMPTIONS OF THE STUDY

The following are the basic assumptions of the study:
1. Every Organization has its unique Organizational Structure.

2. The Organizational Structure may be identified and classified.

3. Every school has its own Organizational Climate.

4. The Organizational Climate of each school may be identified and measured.

5. The Professional Commitment of the teachers may differ in terms of certain variables.

6. The Professional Commitment of the teachers may be studied and measured.

7. The Organizational Structure, Organizational Climate and Professional Commitment may influence organizational effectiveness.

4.4 OBJECTIVES OF THE STUDY

The following are the major and specific objectives of the study:

Major Objective of the Study

The major objective of the study is to find out the Organizational Structure, Organizational Climate and Professional Commitment of Teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory.

Specific objectives of the study

The following are the specific objectives of the study:

1. To classify the Higher Secondary Schools in Pondicherry Union Territory as High and Low achieving schools on the basis of their academic achievement.

2. To study the Organisational Structure of High and Low achieving Higher Secondary Schools in Pondicherry Union Territory.

3. To study the Organisational Structural patterns of Government and Private Higher Secondary Schools in Pondicherry Union Territory.
4. To study the Organisational Climate of High and Low achieving Higher Secondary Schools in Pondicherry Union Territory.
5. To study the level of Professional Commitment of teachers working in Higher Secondary Schools in Pondicherry Union Territory.
6. To study whether the High and Low achieving schools differ in terms of Professional Commitment of teachers.
7. To find out whether the male and female teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory differ in their Professional Commitment.
8. To find out whether the teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory differ in their Professional Commitment on the basis of their age.
9. To find out whether the teachers working in the Government and Private Higher Secondary Schools in Pondicherry Union Territory differ in their Professional Commitment.
10. To find out the significance of difference between the teachers working in rural and urban Higher Secondary Schools in Pondicherry Union Territory in their Professional Commitment.
11. To find out whether the teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory differ in their Professional Commitment on the basis of their experience.
12. To find out whether the teachers working in Girls’ and Co-education High and Low achieving Higher Secondary Schools in Pondicherry Union Territory differ in their Professional Commitment.
13. To find out the significance difference in Professional Commitment of teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory on the basis of in-service training attended by them.
14. To employ factor analysis technique to find out the underlying factors that determine the Professional Commitment of Higher Secondary School teachers.
4.5 HYPOTHESES OF THE STUDY

The present study has both major and specific hypotheses.

**Major Hypothesis**

The major hypothesis of the study is given below:

There exists significant difference between the High and Low achieving Higher Secondary Schools in terms of Organizational Structure, Organizational Climate and Professional Commitment of teachers.

**Specific Hypotheses**

The following are the specific hypotheses of the study:

1. There exists significant difference between High and Low achieving Higher Secondary Schools in Pondicherry Union Territory on the basis of academic achievement of learners.
2. The High and Low achieving Higher Secondary Schools differ in their Organizational Structure.
3. The Organisational Structure of Government Higher Secondary Schools belonging to High and Low achieving schools differ from that of private Higher Secondary Schools.
4. There exists significant difference between the High and Low achieving Higher Secondary Schools in Pondicherry Union Territory in their Organizational Climate.
5. There is higher level of Professional Commitment among teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory.
6. There exists significant difference between the teachers working in High and Low achieving schools in their Professional Commitment.
7. The male and female teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory differ in their Professional Commitment.
8. The teachers below the age of 35 and above the age of 35 working in High and Low achieving Higher Secondary Schools of Pondicherry Union territory differ in their Professional Commitment.


10. The teachers working in rural and urban Higher Secondary Schools of Pondicherry Union Territory differ in their Professional Commitment.

11. The teachers working in High and Low achieving Higher Secondary Schools differ in their Professional commitment on the basis of their teaching experience.

12. The teachers working in Girls and Co-education High and Low achieving Higher Secondary Schools differ in their Professional Commitment.

13. The teachers working in High and Low achieving Higher Secondary Schools of Pondicherry Union territory differ in their Professional Commitment on the basis of in-service training attended by them.

4.6 OPERATIONALIZATION OF VARIABLES

The meaning of important terms used in the study is given below:

**Organizational Structure**

Organizational Structure is a formal structure that shows the intended configuration of positions, jobs, duties and line of authority among different parts of the enterprise. It outlines the job to be done the person(s) in term of positions that will perform specific activities and the ways, in which the total tasks of the organization will be accomplished, in other words, it is the skeleton of the organization.

**Organizational Climate**

Organizational Climates refers to ‘the social climate among principals and teachers, including both formal and informal patterns of interaction’. It
involves ‘the general flow of behaviour, feeling and interaction among teachers and principals in the school’.

**Professional Commitment**

Professional Commitment means mobilising to the best of one’s ability, the knowledge of the individual and also calls for training to keep both up to date. It requires personal commitment and a willingness to take on the tasks assigned and to acquire knowledge necessary to do the job. It implies the effective contribution of each person in caring particularly for the environment and for individual health and safety.

**Higher Secondary School**

Higher Secondary School is a grade of education of standards XI and XII. Higher Secondary education is characterized by transition from the typically compulsory, comprehensive primary education for minors to the optional, selective tertiary, "post-secondary", or "higher" education.

4.7 **RESEARCH STRATEGY**

The following research strategy is planned in the present study:

i) **Stage 1: Problem Clarity**

At this stage, literature scanning is done to conceptualize the variables involved in this study and their relationships.

ii) **Stage 2: Selection of Research Method**

In the second stage, an appropriate research method is selected for the present problem on the basis of literature review and expert opinion.

iii) **Stage 3: Developing Research Tool**

In this stage, relevant questionnaire is developed and validated to collect data from the teachers working in High and Low achieving Higher Secondary Schools.
iv) Stage 4: Selection of the schools

The High and Low achieving schools in Pondicherry Union Territory have been selected on the basis of 12th standard public examination marks for the past six years. This has been done for studying the Organizational Structure, Organizational Climate and Professional Commitment of teachers working in High and Low achieving schools.

v) Stage 5: Fixing the Sample

In this stage, the target population is identified; then the size of the sample is fixed.

vi) Stage 6: Administration of Tools and Collection of Data from the Sample

This stage involves the administration of validated tools and collection of relevant data from the teachers working in High and Low achieving schools. The possible response errors are identified and appropriate measures are taken to control them. Further, the threats that affect the internal validity of the study are identified and appropriate measures are taken to control them.

vii) Stage 7: Data Analysis

The classified and tabulated data are analyzed using appropriate statistical techniques.

viii) Stage 8: Presentation of Results

The analyzed data are presented in terms of findings.

4.8 RESEARCH APPROACH

There are several research paradigms for discovering ‘truth’ and understanding (Egan Guba, 1981). Among these paradigms, ‘Rationalistic’ and ‘Naturalistic’ paradigms are the two dominant paradigms used for studying the educational problems, practices and programmes.
The rationalistic approach is more widely accepted in educational research. The rationalistic approach has a number of research techniques and is essentially associated with deductive thinking and logical positivistic views of ‘knowing’ and ‘understanding’ the social and organizational phenomena. It stands clearly as the dominant approach in education (Owens, 1987).

The rationalistic approach incorporates both controlled experimental methods and non-experimental research methods. It uses formal instruments for categorizing as the primary basis for collecting data. Then it transforms the data into quantitative expression of one kind or another and attempts to generalize the findings in a formal way to some universe beyond that bounded by the enquiry. The next step is to convert the problem into dependent and independent variables. Having done this, the researcher proceeds to develop strategies and instruments, attempting to control uncovered relationship between the naturally occurring variables through the design. The researcher finally returns to the theory to interpret the results.

In this enquiry, the researcher aims at knowing the real world which is comprehensive enough to be generalizable. Therefore, in studying the design of such a study, one looks for representativeness of the sample (Owens, 1987). If the response rate is adequate, then it is possible to generalize the results to a large population which the sample represents. This is commonly referred to as ‘external validity’. Certainly a preordinate research is essential in rationalistic enquiry. It should specify in advance the initiating study each step that will be taken to collect and analyze the data in order to test the hypothesis or answer to research questions (Owens, 1987). It is important to design the specified procedures by which the investigator deals with the issues of external validity, objectivity, internal validity and reliability. These are the important criteria by which the adequacy is judged (Owens, 1987). Taking all these facts in mind, the investigator has employed rationalistic approach to study the present problem.
4.9 RESEARCH METHOD

Research method is a systematic procedure through which the desired outcomes are achieved by setting up of situations in such a form that the investigator gathers information and draws conclusions on the basis of the collected data (Good, 1945).

In this study, survey method is considered as the appropriate method. The main purpose of selecting survey method is to study the Organizational Structure, Organizational Climate and Professional Commitment of teachers working in High and Low achieving Higher Secondary Schools in Pondicherry Union Territory.

4.10 RESEARCH TOOLS

The general type of data gathering instrument used in survey research is called ‘Questionnaire’ through which respondents respond to statements given in the questionnaire. It is used to collect factual information from the target population. Investigators consider four basic standards of survey questionnaire. They are as follows:

i) Common items for all individual respondents

ii) Mode of presentation of items in the questionnaire

iii) Ability to respond the items by the respondents and

iv) Willingness to respond the items in the questionnaire (Floyd Fowler, 1989).

In the survey research, the type of the question and mode of responding the items are important to obtain appropriate response. In the present study, close ended type of questionnaires are used as they are easy to use, score and code for analysis on a computer.

In the present study, the following research tools were used for data collection.

2. School Organizational Climate Description Questionnaire (SOCDQ) - constructed and validated by Mothilal Sharma (1978).

3. Professional Commitment Questionnaire (PCQ) - constructed and validated by the researcher.

4.10.1 ORGANIZATIONAL STRUCTURE QUESTIONNAIRE

Organizational Structure Questionnaire adopted for this study was constructed and standardized by Sashikin and William (1984), based on topology suggested by Bruns and Stalker (1950). It consists of 10 items and each item has five alternatives. All the items are in positive terms. For the positive items, the following scoring procedure is adopted. A score of ‘5’ is assigned to ‘to a great extent’ response, score ‘4’ is given to ‘to considerable extent’ response, score ‘3’ is assigned to ‘moderate extent’ response, ‘2’ is given to ‘slight extent’ response and ‘1’ is assigned to ‘almost no extent’ response.

The scores are summated and mean scores are calculated for each independent sample. Then the mean values are plotted in the continuum of scores ranging from 10 to 50. Based on the continuum, three Organizational Structural characteristics are plotted. Thus a score of 10 explains highly organic structural characteristics, a score of 30 depicts mixed characteristics incorporating both organic and mechanistic form and a score of 50 indicates highly mechanistic characteristics. In the continuum, the researchers can easily plot the mean scores calculated. Thus the scores are spreading from 10 to 50 in the continuum.
The format of Organizational Structure Questionnaire is presented below:

**Table 4.1: Format of Organizational Structure Questionnaire**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Statement</th>
<th>To a great extent</th>
<th>To a considerable extent</th>
<th>Moderate extent</th>
<th>Slight extent</th>
<th>Almost no extent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>This organization has clear rules and regulations that everyone is expected to follow closely.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4.10.2 SCHOOL ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE (SOCDQ)**

The Organizational Climate Description Questionnaire (SOCDQ) was constructed and standardized by Mothilal Sharma (1978). This tool can be used for diagnosing the school environment. The scale consists of 63 Likert type items distributed over 8 dimensions (sub-tests). In this 4 sub-tests provide the opportunities to test the group behavior characteristics and the next 4 sub-tests provide the opportunities to test the leader behavior characteristics. It is designed to cover the widest possible range of school environment. The respondents are asked to indicate the extent to which each statement characterizes his/her school. The scale against which the respondents indicate the extent to which each statement characterizes their
schools are defined by four categories 1) Rarely occurs, 2) Sometimes occurs, 3) Often occurs and 4) Very frequently occurs. For scoring these four categories of responses are assigned four successive integers viz 1, 2, 3, and 4 respectively. Then each respondent’s eight sub-test scores are calculated by simple summation of each respondent, item scores, subtest by subtest, and dividing each of the eight sums by the number of items in the corresponding subtest.

The Format of School Organizational Climate Descriptive Questionnaire (SOCDQ) is tabulated below:

**Table 4.2: Format of School Organizational Climate Descriptive Questionnaire (SOCDQ)**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Statement</th>
<th>Rarely occur</th>
<th>sometimes occur</th>
<th>Often occur</th>
<th>Very frequently occur</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The mannerism of teachers of this school is annoying</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>The headmaster tries to get financial benefit for the teachers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The dimensions of school organizational climate and items relating to them are presented below:

**Table 4.3: School Organizational Climate dimensions and items relating to them**

<table>
<thead>
<tr>
<th>S.NO</th>
<th>DIMENSIONS</th>
<th>ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Disengagement</td>
<td>9</td>
</tr>
<tr>
<td>2.</td>
<td>Alienation</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Esprit</td>
<td>9</td>
</tr>
<tr>
<td>4.</td>
<td>Intimacy</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Physical Hindrance</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>Controls</td>
<td>6</td>
</tr>
<tr>
<td>7.</td>
<td>Production Emphasis</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>Humanized Thrust</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>63</strong></td>
</tr>
</tbody>
</table>

**4.10.2.1 RELIABILITY AND VALIDITY MEASURES OF SCHOOL ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE**

**i) RELIABILITY**

Mothilal Sharma (1978) used internal consistency method for establishing the reliability for all the subtests. The communalities of each subtest were also calculated. High communalities could be regarded as evidence of equivalence or adequacy of item sampling and consequently the communality itself would be viewed as coefficient of equivalence. The coefficient of internal consistency and the communality estimates calculated by Mothilal Sharma (1978) are presented below:
Table: 4.4 Estimates of Internal Consistency and Equivalence for the Eight SOCDQ Subtests

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Disengagement</td>
<td>0.67</td>
<td>0.18</td>
<td>0.51</td>
</tr>
<tr>
<td>Alienation</td>
<td>0.61</td>
<td>0.24</td>
<td>0.52</td>
</tr>
<tr>
<td>Esprit</td>
<td>0.73</td>
<td>0.43</td>
<td>0.69</td>
</tr>
<tr>
<td>Intimacy</td>
<td>0.34</td>
<td>0.28</td>
<td>0.10</td>
</tr>
<tr>
<td>Physical Hindrance</td>
<td>0.68</td>
<td>0.61</td>
<td>0.60</td>
</tr>
<tr>
<td>Controls</td>
<td>0.59</td>
<td>0.37</td>
<td>0.50</td>
</tr>
<tr>
<td>Production Emphasis</td>
<td>0.81</td>
<td>0.54</td>
<td>0.70</td>
</tr>
<tr>
<td>Humanized Thrust</td>
<td>0.72</td>
<td>0.51</td>
<td>0.65</td>
</tr>
</tbody>
</table>

The above table reveals the reliability of SOCDQ.

ii) VALIDITY

This tool was given to 15 experts in the field of educational administration. They were requested to examine the content of each subtest, in the light of the definitions of different subtests and climates which were provided to them, whether the content of the subtests of the SOCDQ measure what it is intend to measure. All the experts, with minor difference were found to agree with each other to a great extent. This indicated a high face validity of the SOCDQ.

Again to validate the results of the study, Mothilal Sharma (1973) developed a rating scale and the same was sent to the district inspectors of the schools along with the definitions of 8 dimensions and climate types and requested them to rate schools of their respective districts included the
author’s study (1973). Coefficient of correlation between the ratings of the inspectors and the results observed by the investigator (Sharma, 1973) by administering the SOCDQ was calculated. It was found to be 0.63 which was significant at 0.01 level of significance. This further indicated the validity of the tool SOCDQ.

4.10.3 DEVELOPMENT OF PROFESSIONAL COMMITMENT QUESTIONNAIRE

This sub-section deals with the process involved in the development of the Professional Commitment Questionnaire.

Reasons for Selecting Questionnaire

In the present study, questionnaire is selected due to the following reasons:

1. Uniformity

Questionnaire largely helps the researcher in obtaining uniform response through standardized sequence of items and standardized instruction.

2. Economical

The use of a questionnaire in survey research helps in saving money, time and energy by covering a large number of respondents have at a given time.

3. Chance to reveal the purpose

It is an opportunity for the investigator to explain the purpose of the study so that the respondents could respond promptly and objectively.

4. Comprehensive Nature

Sometimes, the respondents may not be in a position to understand the meaning of the items given in the questionnaire. At that time, the
investigator may explain the real meaning of the items so as to help the respondents to get clarity about the concept.

5. **Anonymity**

Normally, the respondents do not like to indicate their names and do not feel free to express their views and opinions. Questionnaire helps the researchers to collect data in a confidential way and even the researcher does not know from whom she has collected a particular set of responses. The anonymity ensures frank response and leads to objective collection of data from the respondents.

6. **Pressure on the part of the Respondents**

The questionnaire reduces the burden of the respondents and permits to get immediate and proper response.

7. **Flexibility**

Questionnaires are the most flexible tools which possess unique advantages over other kind of tools in collecting both quantitative and qualitative data.

8. **Easiness**

The data obtained from the questionnaire could easily be scored, tabulated and analyzed.

9. **Establishing Rapport**

In survey method, the investigator may directly meet the respondents and has an opportunity to establish a rapport with them. This kind of rapport motivates the respondents to respond all the items in the questionnaire in an enthusiastic way.
4.10.3.1 STAGES INVOLVED IN THE DEVELOPMENT OF PROFESSIONAL COMMITMENT QUESTIONNAIRE

The following three stages are involved in the development of Professional Commitment Questionnaire:

i) Pre-pilot stage, ii) Pilot stage and iii) Final stage.

Fig 4.1: STEPS INVOLVED IN THE DEVELOPMENT OF PROFESSIONAL COMMITMENT QUESTIONNAIRE
4.10.3.2 PRE-PILOT STAGE

The pre-pilot stage is primarily concerned with three important activities. They are i) Locating the sources for identifying the aspects of the variable taken for the study, ii) Identifying the appropriate aspect of the variable chosen and iii) Pooling of items under each aspect.

Location of Sources

Books, journals and periodicals, encyclopedias, survey reports, research reports, technical reports, reports of committees and commissions, web-sites, internet browsing, ERIC, dissertations abstracts and monographs published by experts and institutions in the field of management were the sources located for the identification of the aspects of the selected variable.

Pooling of items

The next step in the Pre-pilot stage is to pool the items under each aspect of professional commitment which are identified for the research. The following sources were consulted in pooling the items.

i) The available literature on professional commitment in the field of education.

ii) Consultation with University faculty in the Department of Education

iii) Consultation with the experts in the Department of Education.

v) Consultation with the Teacher Educators in the Colleges of Education.

vi) Consultation with the Principals of the Higher Secondary Schools.

Criteria for selection of items

The aim of the study must be kept in mind by the researcher while selecting the items for the questionnaire. Then only, appropriate questions can be posed to the respondents. It is the task of the investigator to depend
on certain aspects such as use of language, care in phrasing the items to have clarity, precision in the nature of items and framing the items to fulfill the objectives of the study. While pooling the items for designing Professional Commitment Questionnaire, the following precautionary measures were taken:

- Interpreting the technical terms in right sense and avoiding misinterpretation
- Avoiding double negatives
- Avoiding inadequate alternatives
- Avoiding ambiguous and vague statements
- Avoiding double barreled items
- Avoiding unwarranted assumptions
- Phrasing the items appropriately to make suitable to all respondents
- Making the respondents to give complete response to the items
- Avoiding the items which indicated the past
- Selecting interesting items
- Avoiding complex sentences

Thus items were pooled under each aspect of professional commitment of teachers. Then it was decided to go to the next stage namely, pilot stage.

**4.10.3.3 PILOT STAGE**

Pilot study is a preliminary study conducted before the main research in order to check the feasibility or to improve the design of the research. Pilot stage is concerned with refining items collected during the pre-pilot stage. The refinement of the items is done on the basis of judgment analysis. It implies eliciting the opinion of the experts in the area of the study regarding the suitability and objectivity of the items collected. For this purpose, a jury council consisting of four teacher educators working in the colleges of education
belonging to different departments and two university faculty members belonging to the department of education was constituted. The items collected during the pilot stage were submitted to jury council and on the basis of jury council’s judgment, some items were modified, restructured and some were eliminated. The following table shows the number of items retained at the end of the pilot stage.

Table 4.5: Judgment Analysis: Items Pooled and Discarded

<table>
<thead>
<tr>
<th>Tool</th>
<th>No. of Items Pooled</th>
<th>No. of Items Discarded</th>
<th>No. of Items Retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Commitment Questionnaire</td>
<td>66</td>
<td>32</td>
<td>34</td>
</tr>
</tbody>
</table>

From the above table, it is known that 66 items were pooled for professional commitment questionnaire during the pre-pilot stage and 32 items were eliminated during the pilot stage. Finally, 34 items were retained for inclusion in the questionnaire.

4.10.3.4 FINAL STAGE

This stage involves the random distribution of final items in the tool. The collected items under each aspect were randomly distributed. All copies of the final tools are presented in the appendix section.

4.10.3.5 SCORING OF PROFESSIONAL COMMITMENT QUESTIONNAIRE

Professional Commitment Questionnaire was constructed based on Likert's attitude scale. It consists of 34 items and each item has four alternatives. The item number 5 and 15 are in negative terms. All the other items are given in positive terms. The following scoring procedure is adopted for the items in positive terms:

a score of 4 is given to ‘to a great extent’ response,
a weightage of 3 is assigned to ‘to some extent’ response, 
a score of 2 is given to ‘to a lesser extent’ response and 
a score of 1 is assigned to ‘not at all’ response.

For negative items, the scoring procedure is reversed.

The format of Professional Commitment Questionnaire is presented below:

Table 4.6: Format of Professional Commitment Questionnaire

<table>
<thead>
<tr>
<th>S.No</th>
<th>Statement</th>
<th>To a great extent</th>
<th>To some extent</th>
<th>To a lesser extent</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Teaching profession is the noblest profession, when compared with other professions</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>34</td>
<td>I exhibit my inventiveness based on my overall professionalism</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

4.10.3.6 VALIDATION OF RESEARCH TOOLS

In any research, the quality of the instrument is very important to draw valid information from the respondents. In the process of validation, the investigator uses appropriate statistical techniques in order to determine or to improve the degree of the validity and reliability of the measuring tools. The detailed reliability and validity measures of the Professional Commitment Questionnaire are discussed below:
4.10.3.7 RELIABILITY

Reliability refers to the consistency of scores from one administration of a tool to another and from one set of item to another (Jack and Norman, 1993). It deals with the degree to which a test measures accurately what it intends to measure (Ebel, 1972).

Validity is a measure in which the quality of being applicable to a given situation and acceptable to logical reasoning and good judgment. It is an extent to which a test measures what it purports to measure (Cartor V. Good, 1945). It refers to the appropriateness, meaningfulness and usefulness of the inferences that a researcher makes (Jack and Norman, 1993). In the present study, face validity, content validity and intrinsic validity were employed to ensure the validity of the tools.

Reliability measures of the Professional Commitment Questionnaire

In the present study, the rational equivalence method was used to calculate reliability. This is otherwise known as ‘internal consistency reliability’ (KR 20 formula). This formula is applied by the researchers to the tools comprising items which could elicit more than two categories of response. The formula suggested by Ferguson (1976) was used to calculate the internal consistency co-efficient. For this purpose, 66 subjects were randomly selected; then variance for each item was found out. The standard deviation of the total scores of the 66 subjects in the sample was calculated and these values were used in the following formula to compute internal consistency co-efficient.

\[
r_{tt} = \left( \frac{n}{n-1} \right) \times \left( \frac{\sigma_i^2 - \sum s_i^2}{\sigma_i^2} \right)
\]

Where,
- \( r_{tt} \) = reliability coefficient of the test
- \( n \) = number of items in the tool
- \( \sigma \) = standard deviation of the total scores
- \( \sum s_i^2 \) = total sum of variance of individual items
In the present study, \( n = 34, \sigma = 11.01 \) and \( \sum s^2 = 12.02 \). By substituting these values in the KR 20 formula, the researcher calculated the value of reliability coefficient as below.

\[
\begin{align*}
 r_{tt} &= \left( \frac{34}{34 - 1} \right) \times \left[ \frac{(11 .01)^2 - 12 .02}{(11 .01)^2} \right] \\
 r_{tt} &= 0.900
\end{align*}
\]

The calculated value 0.900 shows the high reliability of the Professional Commitment Questionnaire.

**Further Reliability of the Professional Commitment Questionnaire**

In the present study, an attempt was made to apply factors analysis technique to the Professional Commitment data. By employing factor analysis technique, a reliability co-efficient known as ‘theta’ was calculated. Theta is a maximized alpha co-efficient (Green and Carmines, 1979). The reliability co-efficient was calculated by using the following theta formula:

\[
\theta = \left( \frac{N}{N - 1} \right) \times \left( 1 - \frac{1}{\lambda_1} \right)
\]

Where,
\[
\theta = \text{reliability coefficient} \\
N = \text{number of items} \\
\lambda_1 = \text{largest (i.e. the first) Eigen value}
\]

In the present study, \( N = 34 \) and \( \lambda_1 = 26.878 \). The value of ‘\( \theta \)’ is calculated as below.

\[
\theta = \left( \frac{34}{33} \right) \times \left( 1 - \frac{1}{26.878} \right)
\]

\[
\theta = 0.992
\]

It is known that the Professional Commitment Questionnaire proves to a reliable tool.
4.10.3.8 VALIDITY

Validity is a measure in which the quality of being applicable to a given situation and acceptable to logical reasoning and good judgment. It is an extent to which a test measures what it purports to measure (Cartor V. Good, 1945). It refers to the appropriateness, meaningfulness and usefulness of the inferences that a researcher makes (Jack and Norman, 1993). In the present study, face validity, content validity and intrinsic validity were employed to ensure the validity of the tool.

Face Validity

Face validity is restricted to the fact that a test 'looks' valid. In the present study, the research tool developed by the investigator aimed at measuring what she thought in her mind. The investigator thought that the items in the questionnaire measured what she intended to study namely ‘Professional Commitment’. Therefore, it was decided that the tool developed for the study possessed face validity.

Content Validity

Content validity is a type of examination of the equal and valid distribution of units in the content. Nunnally (1978) maintains that it is more meaningful that one should ensure the validity of tools by the plan and procedure of test construction rather than establishing the validity of measures after their construction. According to Nunnally, there are two standards for ensuring content validity. They are

i. a representative collection of items and

ii. a sensible method of test construction

In developing the questionnaire for the present study, the above guidelines were followed. The procedures employed in the development of tool were adequately outlined in this chapter under the caption “Stages Involved in the Development of Professional Commitment Questionnaire”. In
the light of the procedures followed in developing the tool, it is confidently said that the tool has sufficient content validity.

**Intrinsic Validity**

The degree of which a test measures what it measures may be called its intrinsic validity. It is indicated by the square root of the reliability co-efficient.

The validity of the professional commitment questionnaire is indicated by the square root of the reliability co-efficient. The intrinsic validity measure calculated for professional commitment questionnaire is found to be 0.992. This indicates high validity of Professional Commitment Questionnaire.

**4.11 SAMPLE OF THE STUDY**

In the present study, the unit of analysis is the teachers working in High and Low achieving schools. All the teachers in the High and Low achieving schools were considered for the inclusion of the study. The application of the percentile score yielded 8 high achieving schools and 7 low achieving schools. The teachers in High and Low achieving schools are considered by means of purposive sampling.

The following table explains the school wise distribution of sample under high achieving and low achieving categories.
Table 4.7: School wise Distribution of Sample

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>School</th>
<th>No of Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>High Achieving School</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Amalorpavam Higher Secondary School, Puducherry.</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>Alpha Matric Higher Secondary School, Puducherry.</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Immaculate Higher Secondary School, Puducherry</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>Maruthi Matric Higher Secondary School, Puducherry.</td>
<td>19</td>
</tr>
<tr>
<td>5</td>
<td>Petit Seminaire Higher Secondary School, Puducherry.</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>St. Joseph of Cluny Higher Secondary School, Puducherry</td>
<td>11</td>
</tr>
<tr>
<td>7</td>
<td>St. Patric Higher Secondary School, Puducherry.</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>Vivekanandha Higher Secondary School, Puducherry.</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>140</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Low Achieving School</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Govt. Girls Higher Secondary school, Thondamanatham.</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Govt. Girls Higher Secondary School, Thavalakuppam.</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Govt. Girls Higher Secondary School, Oulgaret</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>Kasturibai Gandhi Govt. Girls Higher Secondary School, Bahour</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>Maraimalai Adigal Govt. Higher Secondary School, Eambalam.</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>T.P. Govt. Higher Secondary School, Ariankuppam.</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Rajah Govt. Higher Secondary School, Muthialpet.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>
4.12 DATA COLLECTION PROCEDURES

In the present study, direct questionnaire administration approach was employed in order to ensure objective collection of data from the respondents. This approach is preferred by the researchers because it ensures a high response rate from the subjects and it gives an opportunity to the researcher to clarify the doubts raised by the respondents.

In the process of data collection, necessary permission was obtained from the Principals of the schools. Then, on the particular day permitted by the management, the validated questionnaires were administered to the teachers of the 15 selected schools. Prior to the tool administration, proper instructions were given by the researcher for responding the questionnaires properly. The respondents were assured that the data collected would be kept confidential and would be used for the research purpose only. The respondents were informed to respond all the items in the questionnaires. No time limit was fixed while responding the items in the questionnaires. The congenial environment was maintained by the investigator in order to get objective and valid data from the respondents. Thus attempts were made to collect objective data from the target group.

4.12.1 CONTROLLING RESPONSE ERRORS IN DATA COLLECTING ENVIRONMENT

Hansion et al. (1953) observe that the paucity of dependable data and response errors are unquestionably the greatest obstacles to survey design. For each subject covered by the survey, there is an Individual True Value (ITV). This is the value quite independent of the survey of the way the items in the questionnaire are responded. It is noted that many are not so simple and for instance, with opinion questions, it would often be difficult to define the Individual True Value. It is pointed here that there is an Individual True Value for each subject. This is the concern of the researcher. In only few cases, the researcher may succeed and the success depends on the nature of the items stated in the questionnaire, the way it is put and by whom and how much precaution is rendered to minimize the chance error. In any case, the
difference between an ITV and the value recorded in the questionnaire is the Individual Response Error (IRE).

The response errors are otherwise termed as ‘Measurement Errors’. In the present study, the possible response errors are identified and attempts are made to control them through the following ways:

**Characteristics of Data Collectors**

The personal characteristics of a researcher such as sex, position and experience may influence the response of the subjects. Some types of temperament and personality characteristics of the researcher may lead to errors. Hence in the present study, the researcher herself had administered the questionnaires to the respondents with good temperament. A good rapport was established with the respondents. The researcher had moved with the respondents in a free and friendly manner for getting the objective responses from them.

**Errors Arising from Respondents**

i) **Lack of Knowledge**

The error may arise when the respondents are having lack of knowledge in the content. In this study, the concepts are well known to the subjects and further explanation was offered to overcome this error.

ii) **Supply of Background Variables**

When the questionnaire is furnished with background variables of the respondents, they may hesitate to do so; particularly they do not want to reveal their names. In the present study, the respondents were informed about the study and their names were not asked. Thus attempts were made to keep the confidentiality of the respondents.

iii) **Fear Psychosis of the Respondents**

It is common that the collection of confidential data may lead to response errors. In order to save themselves from embarrassment, the
respondents prefer neutrality rather than manifesting true value because of fear psychosis. This situation is very common in rating the behavior of heads by students and faculty. But in this case, the variables selected were not controversial and did not create any embarrassment among the respondents.

iv) Interest in the Survey

The accuracy of response probably depends on the respondents’ interest on the subject matter of the survey. In this case, the willingness on the part of the teachers in responding the tools clearly revealed the interest shown by them to the present study.

v) Data Collection by Third Person

There is a possibility of error, if the data are collected by other than the researcher. In this study, the data were collected by the researcher herself and nobody was entrusted with the responsibility of collecting the data from the respondents.

Errors Arising from the Tools

i) Length of the Questionnaire

Respondents may tend to be less attentive when the questionnaire is lengthy. To overcome this error, very short and precise statements are used and the respondents were given adequate time to respond according to their convenience.

ii) Direction

Less clarity of instruction to respond the items leads to more proneness to errors. In the present study, clear cut directions regarding the mode of responding the items in the questionnaires were given to the respondents.

iii) Order of Items

Orderly arranged questions may lead the respondents to make careful and correct responses. In the present study, items in each questionnaire were
in uniform structure and thus adequate safeguard was made against response errors.

**iv) Item Structure**

Items involving sub-items may lead to more response errors, because the respondents may avoid responding in a way which leads to supplementary items. Open ended questionnaires have more scope for response errors than closed questionnaires. In the present study, all the questionnaires were made up of closed in form and thus this threat was avoided.

**v) Item Content**

Items involving prestige, social gain and personal circumstances may lead the respondents consciously or otherwise to give inaccurate data. In this study, the items in the questionnaires never indicated elements of prestige, social gain etc.

**vi) Item Wording**

The use of words of technical or uncommon terms, ambiguous or vague words and phrases may lead to error. In this case, perfection of item wording was ensured through judgment analysis. The jury council procedures conducted in the present study, to a greater extent, has minimized the response errors.

**vii) Designated Respondents**

The accuracy of information may depend on the persons from whom it is collected. Less accuracy comes into surface when a piece of information is obtained from respondents having less education. In this study, data were obtained only from the teachers who had sound qualification in their disciplines.
viii) Place of Questionnaire Administration

The physical location of the questionnaire administration may influence the respondents' behavior. To overcome this error, all the questionnaires of the present study were administered among the teachers working in high and low achieving higher secondary schools in their respective school campuses having good physical environment.

ix) Presence of Third Person

The presence of a third person in the data collection process may lead to bias in the response, particularly, the research problems related to sexual and alcoholic behavior of individuals may create problems. The researcher may not expect true responses related to the above issues, because of either the presence of a third person or failure to keep the data confidential. To minimize this error, in the present study, the data were collected in the absence of third person. Particularly, the Heads of the institutions were avoided during data collection process. Further no third person was appointed to collect data from the respondents. The data were collected by the researcher herself by establishing a close rapport with the subjects. The respondents were given a brief account of the present investigation and they were assured that the data given by them would be kept in utmost confidential and would not be revealed to any one in any circumstances.

x) Time

Researchers maintain that the time in responding the questionnaires may have an influence upon response errors. Requesting the respondents to give data when they are pre-occupied with their work may lead to inaccuracy of response. Inaccuracy may arise when the respondents feel tired and fatigue. Hence, responses might be obtained in a free time. In this study, the respondents were given a free hand in responding the items. The teachers were given adequate time to respond the items in the schools. Adequate caution was taken to collect data when the teachers were relaxed and not pre-occupied with their normal teaching work. The teachers were approached when they were free from tired and fatigue.
4.12.2 THREATS TO INTERNAL VALIDITY AND THEIR CONTROL

There are many threats to internal validity of the survey method. Efforts were made to locate and control such threats. This sub-section deals with such threats and measures taken to control them.

1) Location

Data collection in an unknown place to the subjects may affect the internal validity of the survey. In the present study, data collection was done in the respective schools. Moreover, the location was familiar to them.

2) Mortality

Mortality threat mainly occurs due to loss of subjects during the course of the study. Mortality is also perhaps the most difficult of all the threats to internal validity to control. In this study, no one has left in the middle of the study. Hence, there was no necessity to replace the lost subjects.

3) Subject Characteristics or Selection Bias

It is said that imperfect selection of subjects may affect the study. In the present study, the teachers working in high and low achieving schools were designated as subjects. The selection bias did not arise as all the teachers were selected.

4) Attitude of Subjects

The way in which the subjects view a study and their participation in it can affect internal validity. This is known as ‘Hawthorne Effect’. No special attention was given to any teachers. While administering the tools, utmost care was taken to prevent the novelty of the questionnaire administration.

5) History Threat

No unanticipated or unplanned events occurred during the course of study. Therefore, the threat had not affected the result of the study.
6) **Maturation Threat**

The maturation of subjects affects the results of the study, if the study takes a number of years. In this study, the question of maturation did not pose a threat as the present study was survey in nature and the data were obtained from the respondents on one time basis within a shorter duration of time.

7) **Instrumentation**

The way in which instruments are used may constitute a threat to the study. The instrumentation effects include unstable instrumentation, instrument decay and data collector characteristics and data collector bias.

i) **Instrumentation Decay**

Instrument decay occurs, if the scoring procedure is changed in some way or other. In the present study, a uniformity of procedure was followed for responding the items and scoring the items. The questionnaires were structured in such a way to facilitate easy interpretation of results. No fatigue was experienced by the investigator while scoring the items in the questionnaires as the investigator had frequent breaks for the refreshment of mind.

ii) **Unstable Instrumentation**

It is shown that unstable instrumentation may pose threats to the internal validity of the investigation. In the present study, the stability of the instruments was established in a systematic way. The tools were developed in a rigorous way. Reliability and validity of the tools were established in perfect terms.

iii) **Characteristics of Data Collector**

A difference in terms of personality skills among the data collectors may affect the study. This threat was controlled as the investigator herself collected and scored the responses of the subjects.
iv) Data Collector Bias

In certain cases, the data collector may unconsciously distort the data due to lack of training and ignorance. In the present study, this problem did not arise as the investigator herself collected the data from the respondents. The investigator had an adequate training in research methodology and well versed in data collection procedures.

v) Implementation

There exists a threat when two or more persons of different abilities and personality are involved in the data collection process. In the present study, this did not pose any problem to the internal validity as the investigator was only the implementer of the questionnaires.

4.12.3 THREATS TO OBJECTIVITY AND CONTROL MEASURES

Objectivity is the quality of dependence on impersonal, factual evidence and established universal truth rather than judgement, personal opinion, especially as manifested in research or in test or any other measuring instrument (Cartor V.Good, 1945). In this study, attempts were made to avoid subjectivity. The following threats to objectivity were identified and controlled:

1. Personal Motives
2. Personal Emotions
3. Self-Interest
4. Complexity of the subject matter
5. Customs and Superstitions
6. Lack of Uniformity
7. Qualitative nature of subject matter
8. Ethnocentrism
9. Lack of knowledge by misunderstanding the concepts
10. External pressure and ignorance
Further, the following measures suggested by Manheim (1981) were followed to increase objectivity.

1. Use of Mechanical Devices

The collected data were analyzed with the help of computer (mechanical device) which could reduce the chance of subjectivity. In this study, the SPSS Package was used to analyze the data through computer.

2. Use of Standardized Terms and Concepts

In this study, the terms or concepts were clearly defined and used. Moreover, confused concepts were avoided in order to reduce personal bias.

3. Group Research

An attempt was made to review the previous pertinent studies in order to obtain clarity of the concept, method and tools.

4. Use of Quantitative Method

Different statistical techniques were used in this study. All these statistical techniques were free from subjective bias.

5. Use of Empirical Method

In the present study, survey method was employed. Clear hypotheses were set forth; standardized procedures were employed and the data were collected through relevant tools.

4.13 DATA ANALYSIS

Data analysis is a process in which the statistical techniques are applied for compilation, presentation, discussion and interpretation of numerical data (Carter V. Good, 1945). After collecting the data through reliable and valid tools, it was decided to conduct editing (Checking the accuracy, utility and completeness of data), classifying (Classifying the data into various categories) and tabulating data of the classified material in accurate mathematical terms to ensure perfect interpretation of the data. The entire
collected data were analyzed and interpreted with the help of a computer by using SPSS package. The perfection of data was maintained through the following terms:

i) **Homogeneity of Data**

In the present study, homogeneity of the data was maintained based on standardized procedures, uniformity in responding and standardized scoring of items.

ii) **Accuracy**

A better analysis of data largely depends upon the extent to which maximum accuracy is ensured in the data collection process. In this study, attempts were made to ensure internal and external validity of the study. The possible response errors were identified and controlled during the data collection process. The situational errors were also identified and controlled. Thus accuracy of data was ensured in all stages of the study.

iii) **Sufficiency of Data**

Researchers point out that adequate collection of data may lead to better analysis and interpretation of data. In the present study, adequate and sufficient data were collected from the teachers to facilitate better analysis and interpretation of data.

iv) **Proper Method of Classification and Tabulation**

In this study, a systematic classification of data was done. The data collected were analyzed at three levels – descriptive, differential and factorial.

v) **Possibility of Statistical Treatment**

Appropriate statistical treatments were carefully applied in the present study in order to get accurate and reliable statistical inferences.
vi) **Application of Statistical Techniques**

In the process of analyzing and interpreting the data, the following statistical techniques were applied to arrive at valid conclusions after consultation with statisticians and experts in computing.

a. Percentages were calculated to study the global view of the teachers working in High and Low achieving schools.

b. Mean and Standard Deviation scores were calculated for the descriptive analysis of data.

c. In the differential analysis, ‘t’ test is applied to find out the significance of difference between two means.

d. Factor Analysis was resorted to ‘Commitment’ data by employing Principal Component Analysis Technique for identifying the underlying factors in the Professional Commitment Questionnaire.

**4.13 DELIMITATIONS OF THE STUDY**

The following are the delimitations of the study:

i) The study was confined to Pondicherry Union Territory only.

ii) For classification of schools, the Higher Secondary Schools were alone considered.

iii) To classify the schools on the basis of academic achievement, \( P_{10} - P_{90} \) formula was used.

iv) The marks secured by the Higher Secondary students during the last six years were the criterion for classification of schools as High and Low achieving schools.

v) Of many Organizational variables, only the variables such as Organizational Structure, Organizational Climate and Professional Commitment of teachers were alone considered.
vi) Survey method with questionnaire was selected to study the present problem.

4.15 CONCLUSION

The detailed methodology for studying the present problem is presented in this chapter. In order to put the study in right perspective, appropriate hypotheses are formulated. The research strategy planned for the study is also presented. The selection of tools and their construction, their validation, sampling technique, data collection procedures are explained in this chapter. The delimitations of the study are also focused. The next chapter deals with the analysis and interpretation of the data collected from the Higher Secondary School teachers.