Chapter 3

Research Design

3.1 PROLOGUE

"Research Design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance" - Kerlinger Fred N. (p.300)

Research is thus a systematic and scientific approach to a problem in order to solve it. Therefore it is necessary to plan the activities in a systematic manner in advance. Preparation of a research design becomes important as soon as the research problem has been defined. Research design is a mapping strategy, an activity that leads to the generation of new knowledge so as to bring about changes and progress in the society. Research design explains the entire plan of the study in detail. It includes a detailed description of the tools used for collecting information, sample, methodology of the study and the methods used for data analysis. A careful design of planning enables the researcher to do work in a systematic manner. So planning of a research design is of prime importance for the researcher.

The research design is a conceptual structure within which research is conducted. It constitutes a sort of blueprint for the collection, measurement and analysis of data. It is needed because it facilitates the smooth sailing of the various research operations thereby making a research as efficient as possible yielding maximum information with the minimum of time, efforts and money. It helps the researcher to organize the ideas in such a way wherein it will be possible for the researcher to look for flaws and
inadequacies. It has been rightly said by E.A Schuman (cited in Selltiz et.al ) that research design is not a highly specific plan to be followed without deviations, but rather a series of guide ports to keep one headed in the right direction.

A research design includes the following components:

a. Research Methodology
b. Sampling Design
c. Tools for the research
d. Statistical Techniques used for analysis

There are two major paradigm of Research in Education

a. The Qualitative Paradigm
b. The Quantitative Paradigm

The Qualitative Paradigm deals with soft data and is aimed at developing an ideographic body of knowledge. It gives less importance to developing generalization. On the other hand quantitative paradigm requires quantification of data, testing the hypothesis using statistical techniques and making generalization and makes the research process replicable.

In the present study the quantitative paradigm has been used as it quantifies data, tests the hypothesis statistically and attempts to arrive at generalizations.
3.2 METHODOLOGY OF THE STUDY

In order to carry out the research in a scientific and valid manner it is very important to specify the methodology used for the study. It includes systematic procedures adopted right from the initial identification of the problem to its final conclusion.

The research methodology is broadly classified into three types

i. Historical

ii. Descriptive

iii. Experimental

3.2.1 Historical Method:

It is defined as, “the systematic and objective location, evaluation and synthesis of evidence in order to establish facts and draw conclusions about past events.” Sridhar M.S (cited in Research Methodology Data Collection Methods and Techniques p.7)

This research involves investigating, recording, analyzing and interpreting the events of the past for the purpose of discovering generalization that are helpful in understanding the past and present and to limited extent in anticipating the future. The main purpose of historical research is to arrive at an accurate account of the past so as to gain a clear perspective of the present and could help partially predicting future.

3.2.2 Descriptive Method:

Descriptive studies investigate the phenomena in its natural settings. This method can be applied to obtain the present information of current events and draw a valid general conclusion from the facts discovered. It constitutes a primitive type of research and do
not aspire to develop an organized body of scientific laws. The descriptive research method has undoubtedly been the most popular and the most widely used research method in education. It helps to explain educational phenomena in terms of the conditions or relationships that exist, opinions that are held by the students, teachers, parents and experts, processes that are going on, effects that are evident or trends that are developing. At times, descriptive survey is the only means through which opinion, attitude, suggestion for improvement of educational practices and instructions and other data can be obtained.

3.2.3 Experimental Method:

In this method, the researcher has to deliberately manipulate certain aspects of experiments. The researcher has to control the variables involved in the study and accordingly observe the cause and effect.

3.2.4 Methodology of the present study

The present study is of the descriptive type because it deals with the present status of empowerment of secondary school teachers and their perceived leadership qualities of the school principals.

The Co relational method was found to be appropriate for the present study because

i. It aimed to discover or clarify relationship between the variables of the study.

ii. It helped to find out the magnitude of relationship in the form of mathematical quantity known as the coefficient of correlation.

iii. The variables of the present study and theoretical framework do not lend themselves to the experimental method and controlled manipulation.
The researcher has selected the co relational type of method as it deals with the relationship between teacher empowerment and their perceived leadership qualities. The researcher has also attempted to find out the differences in the teacher empowerment, in terms of self esteem, team work, teacher morale, communication skills and decision making ability of teachers belonging to different types of schools.

For the present study the data were collected from secondary school teachers to find out their perceived leadership qualities and their empowerment. As the study dealt with the relationship between teacher empowerment and their perceived leadership qualities, the descriptive method of the co relational type was used.

In order to find out the above relationship the researcher had to select a sample from the total population.

3.3 DESCRIPTION OF THE POPULATION

Population is a statistical concept. It refers to a collection of a specific group of human beings or non-human entities such as objects, educational institutions, and geographical areas taken into consideration for a study. For the present study the population consists of secondary school teachers of greater Mumbai from SSC, CBSE & ICSE schools with English as a medium of instruction. Though this population is finite, due to limitation of time and other resources the sample of individuals from the total population have been selected, which could represents the total population. The individuals, representing the population is termed as the sample.
3.4 SAMPLING

Data collection is the next and most important part of the study. It is practically impossible to collect all the necessary and valid information from each and every individual in the population related to the study for data collection. Hence, it is necessary to select a finite number of individuals from the population for a study. Sample consists of a number of selected individuals, objects, events which represents the total population. The systematic process of selecting a limited number of individual, institution or objects from the population for the study is called Sampling.

A carefully, well planned selected sample helps in saving time, money and efforts of the researcher without jeopardizing the reliability and validity of the findings.

3.4.1 Methods and Techniques of Sampling

A sample is a small proportion of population selected for analysis. By studying the sample, certain inferences about the population could be made. The nature of population and the information required for study determine the type of sampling.

Sampling is broadly classified into probability and non-probability.

Probability Sampling: In probability sampling the units of the population are not selected at the discretion of the researcher but by means of certain procedures which ensure that every unit of the population has one fixed probability of being included in the sample.

Non probability sampling: In non- probability sampling, the units are selected at the discretion of the researcher. Such samples derive their control from the judgment of the researcher.
There are different methods of sampling

a. Simple random sampling
b. Systematic sampling
c. Stratified Sampling
d. Cluster sampling
e. Incidental sampling
f. Purposive sampling

3.4.1.1 Simple random sampling: In this type of sampling, each member of the population under study has an equal chance of being selected. A researcher may use lottery method or the table of random numbers or toss a coin to draw a sample.

3.4.1.2 Systematic Sampling: This method is a modified form of simple random sampling. It involves selecting subjects from the population list in a systematic rather than a random fashion. For example, from a population of 5000, a researcher wants a sample of 500 then every tenth person could be selected.

3.4.1.3 Stratified Sampling: When a researcher divides the population into different strata on the basis of some characteristics and selects a sample, the technique is known as 'stratified random sampling'. For example, a researcher can divide the population into two strata, namely male and female.

3.4.1.4 Cluster Sampling: In ‘cluster sampling’, the unit of sampling is not the individual but rather a naturally occurring group of individuals. It is used when it is more feasible or convenient to select groups of individuals than it is to select individuals from a defined population. This situation occurs when it is either impractical or impossible to obtain a list of all members of the accessible population.
For example, a few municipal wards in the city of Mumbai can be selected randomly and all the schools situated in these wards can be included in the sample. This method of selecting a sample is known as ‘cluster sampling’.

3.4.1.5 Incidental Sampling: Sometimes it is also called as accidental sampling. It is a term which is applied when such groups are used as sample as are easily available.

3.4.1.6 Sampling Methodology of the study

In the present study, a two stage sampling procedure is used where at the first stage the schools were selected and at the second stage teachers were selected.

In the first stage of sampling, the researcher initially collected the list of the schools. For the purpose of the study the researcher selected the schools on the basis of their types namely SSC, ICSE and CBSE. Thus the researcher used stratified random sampling for selecting the school. The simple random sampling is also used for selecting the schools in each stratum.

At the second stage the teachers were selected. The simple random sampling technique was used to select teachers.

The researcher met the secondary school teachers herself and most of them were willing to fill in the tool and so it can be said that the incidental sampling technique was used.

3.5 The Sample- Its size and nature

The sample consisted of teachers from 34 SSC schools, 13 ICSE schools and 9 CBSE schools of Greater Mumbai, where the medium of instruction is English. The total
sample consisted of 480 secondary school teachers of which there were 260 SSC school teachers, 130 ICSE school teachers and 90 CBSE school teachers of Greater Mumbai who were currently employed in their respective schools.

The following table shows the school wise sample distribution

**Table 3.1**

<table>
<thead>
<tr>
<th>Number</th>
<th>Type of school</th>
<th>No. of schools included</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SSC</td>
<td>34</td>
</tr>
<tr>
<td>2.</td>
<td>ICSE</td>
<td>13</td>
</tr>
<tr>
<td>3.</td>
<td>CBSE</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 3.1 indicates the distribution of the sample school wise. The researcher selected teachers from 34 SSC schools, 13 ICSE schools and 9 CBSE schools for the purpose of the study.

The following table shows the sample size of secondary school teacher

**Table 3.2**

<table>
<thead>
<tr>
<th>Number</th>
<th>Type of school</th>
<th>No. of teachers included</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>SSC</td>
<td>260</td>
</tr>
<tr>
<td>2.</td>
<td>ICSE</td>
<td>130</td>
</tr>
<tr>
<td>3.</td>
<td>CBSE</td>
<td>90</td>
</tr>
</tbody>
</table>
Table 3.2 indicates the distribution of the sample on the basis of the number of school teachers selected. The researcher selected 260 teachers from SSC schools, 130 ICSE schools and 90 CBSE schools for the purpose of the study.

3.6 THE TOOLS OF RESEARCH

Many tools are easily available and accessible that could be used in collecting the data. Every tool has its own advantage and limitations. It is the task of the researcher to find out and select an appropriate tool according to the study.

The major data gathering tools of research may be broadly classified into the following categories

i. Psychological test

ii. Interest inventories

iii. Observation schedules

iv. Interview schedules

v. Socio metric techniques

vi. Rating scales

vii. Attitude scales

For the present study, the researcher used rating scales. As the researcher was interested in gathering information regarding the empowerment of secondary school teachers and their perception of the leadership qualities of their school principal, the rating scale was thought to be the most appropriate tool.
3.6.1 PREPARATION OF TOOLS

For the present study, to measure the empowerment of secondary school teachers, the tools were prepared by the researcher. The researcher also prepared a tool to measure the perceived leadership qualities of school principal.

3.6.1.1 The Personal Data Sheet: The personal data sheet included the information regarding the respondent such as name, age, school, teaching experience and affiliation of board. The personal data sheet is given in Appendix A.

The Rating Scale

The rating scale is a type of tool which attempts to measure the quality, judgment or opinion and indicate their degree or amount.

3.6.1.2 Empowerment of Secondary School Teachers Scale

The study is concerned with empowerment of secondary school teachers. As no tool was found to be suitable for this study, a rating scale for the following dimensions were prepared namely

1. self esteem
2. team work ability
3. teacher morale
4. communication skills
5. decision making
The following table shows the number of statements prepared for dimensions mentioned above.

**Table No. 3.3**

**Dimensions of Teacher Empowerment**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Statements prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self esteem</td>
<td>47</td>
</tr>
<tr>
<td>Team working</td>
<td>46</td>
</tr>
<tr>
<td>Teacher morale</td>
<td>37</td>
</tr>
<tr>
<td>Communication skills</td>
<td>44</td>
</tr>
<tr>
<td>Decision making</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 3.3 indicates the number of statements prepared initially by the researcher. For self-esteem the researcher had prepared 47 statements. Team work ability initially had 46 statements. Teacher morale had 37 statements. Communication skills had 44 statements and decision making had 50 statements.

3.6.1.2.1 **VALIDITY**

If a tool measures what it intends to measure, it can be termed as valid. There are four types of validity namely

i. Construct validity

ii. Criterion related validity

iii. Concurrent validity

iv. Content validity
Construct validity

This validity is concerned with the meaning and interpretation of the test scores obtained in terms of psychological or theoretical constructs. A construct is a trait of ability, temperament, or attitude which is hypothesized to explain certain aspects of behavior. Eg. achievement motivation.

Criterion related validity

This validity refers to the association between present results as indicated by a test and future behavior; and in order to determine the predictive validity of a test the results from it must be compared with the actual performance in future.

Content Validity

In order to determine the content validity of both the scale namely empowerment of secondary school teachers, the tool was given to 10 experts in the field of education and management and their opinion was obtained about the relevance of each item. The items which were agreed by 85% of the experts were retained and the other items were either discarded or modified. Thus after determining the content validity and item analysis, the valid statements were retained.

3.6.1.2.2 PILOT STUDY

The pilot study was conducted in order to carry out item analysis and establish the validity and reliability of the scale. For the pilot study, all the rating scales i.e. for empowerment of secondary school teachers- self esteem, team work, teacher morale, communication skills, decision making and the rating scale for perceived leadership qualities-intellectual, psycho-social, personality were administered to 35 secondary
school teachers from different types of schools. After administering the tool, the responses were quantified.

3.6.1.23 ITEM ANALYSIS

The main objective of item analysis was to determine the discrimination index of each item. According to the total scores on the rating scales the forms were arranged in an ascending order. This was followed by taking the uppermost 27% and the lowermost 27% forms. i.e. uppermost 13 and the lowermost 13 were taken out. Scores for each item from higher and lower group were written down and the discriminating index was calculated using the formula

\[ D.I = \frac{N_H - N_L}{\sqrt{2} N} \]

Where \( N_H \) = Number of correct responses in the group high on the rating scale

\( N_L \) = number of correct responses in the group low on the rating scale

\( N \) = sample size

Those items with discriminating index of 0.20 or more were regarded as satisfactory and they were retained. The items with discriminating index lying between 0.18 to 0.20 were modified. Items with discriminating index less than 0.18 were discarded. The details are mentioned in table 3.4
### Table 3.4

**Teacher Empowerment Scale**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Items prepared</th>
<th>Items selected</th>
<th>Deleted items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self esteem</td>
<td>47</td>
<td>38</td>
<td>9</td>
</tr>
<tr>
<td>Team working ability</td>
<td>46</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>Teacher morale</td>
<td>34</td>
<td>34</td>
<td>NIL</td>
</tr>
<tr>
<td>Communication skills</td>
<td>44</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td>Decision making ability</td>
<td>50</td>
<td>44</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 3.4 indicates that for self esteem the total number of items prepared was 47. Out of which 38 were selected and 9 items were deleted. For team work, out of 46 items initially prepared 40 were selected and 6 were rejected. For teacher morale, out of 34 items prepared, all were accepted and none was rejected. For communication skills, out of 44 items prepared, 30 were accepted and 14 items were rejected. For decision making out of 50 items initially prepared 44 items retained and 6 items were deleted.

### 3.6.1.2.4 RELIABILITY OF THE TOOLS

Reliability is the consistency with which a tool measures what it measures (Garrett, 1979). It centers on the degree of repeatability and consistency of empirical measurement (Zeller and Carmines, 1980).

The reliability of a tool can be established by

1) The test-retest method
2) Internal consistency reliability

3) The parallel form reliability

4) Internal Consistency Reliability

The researcher established the reliability of the tools through Split Half and Cronbach Internal Reliability. The results of the reliability of the tools are as follows.

**Table 3.5**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Split Half</th>
<th>Cronbach Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self esteem</td>
<td>0.90</td>
<td>0.92</td>
</tr>
<tr>
<td>Team work ability</td>
<td>0.86</td>
<td>0.89</td>
</tr>
<tr>
<td>Teacher Morale</td>
<td>0.87</td>
<td>0.91</td>
</tr>
<tr>
<td>Communication skills</td>
<td>0.75</td>
<td>0.85</td>
</tr>
<tr>
<td>Decision making ability</td>
<td>0.93</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Table 3.5 indicates the results of the reliability of the tools using Split Half and Cronbach Internal Consistency Reliability. It was found that Split Half, reliability for self esteem was 0.90, for team work the reliability was 0.86, for teacher morale the reliability was 0.87, for communication skills the reliability was 0.75 and decision making had 0.93.

On the other hand, with Cronbach alpha internal reliability, self esteem had 0.92, teamwork had 0.89, teacher morale had 0.91, communication skills had 0.85 and decision making had 0.92.
Interpretation: Reliability of teacher empowerment scale was very high and hence the scale is internally consistent.

3.6.1.2.5 Final form of Teacher Empowerment Scale

After establishing the validity and reliability, the final form of empowerment scale was prepared.

Following table indicate the final form of Teacher empowerment scale with number of positively and negatively worded statements

**Table No. 3.6**

**Final form of Teacher Empowerment Scale**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Total no. of items</th>
<th>Positively Worded</th>
<th>Negatively Worded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self esteem</td>
<td>38</td>
<td>24</td>
<td>14</td>
</tr>
<tr>
<td>Team working</td>
<td>40</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>Teacher morale</td>
<td>34</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Communication skills</td>
<td>30</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Decision making</td>
<td>44</td>
<td>32</td>
<td>12</td>
</tr>
</tbody>
</table>

Table No.3.6 shows the number of positively and negatively worded statement for each of the components of empowerment of secondary school teachers. Self esteem has 24 positively and 14 negatively worded statements. Team work has 24 positively and 16 negatively worded statements. Teacher morale has 21 positively and 13 negatively worded statements. Communication skills has 14 positively and 16 negatively worded
statements whereas decision making has 32 positively and 12 negatively worded statements.

### 3.6.1.2.6 Quantification of Scale

Quantification of response is necessary in order to use statistical techniques, for analyzing the data.

**Teacher Empowerment Scale:** A four point rating scale has been used for

a. Self esteem  

b. Team work  

c. Teacher morale

The teacher empowerment scale has five dimensions out of which Self esteem, Team work and Teacher Morale has the following rating and scoring

i. Strongly Agree (SA)  

ii. Agree (A)  

iii. Strongly disagree (SD)  

iv. Disagree (D)  

The other two dimensions Communication skills and Decision making ability has rating points and its scoring is as follows

i. Always  

ii. Frequently  

iii. Sometimes  

iv. Never  

For the negatively worded items, the scoring pattern was reverse in order.
The scoring for positively and negatively worded items was given in such a way that higher the score more is the empowerment of secondary school teachers.

The above scale is attached in Appendix B. The section I deals with the empowerment dimensions namely SE, TW, TM and section II deals with the empowerment dimensions namely CS and DM.

3.6.1.3 Perceived Leadership Qualities Scale

To study the perceived leadership qualities, the researcher prepared a rating scale considering the following qualities:

i. intellectual qualities

ii. psycho-social qualities

iii. personality qualities

The following table shows the number of statements prepared for each rating scale:

<table>
<thead>
<tr>
<th>Table No.3.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived leadership qualities scale</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Items prepared</th>
<th>Items selected</th>
<th>Deleted items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual</td>
<td>31</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Psycho social</td>
<td>27</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Personality</td>
<td>27</td>
<td>26</td>
<td>1</td>
</tr>
</tbody>
</table>
Table No. 3.7 indicates that for intellectual qualities the total number of items prepared was 31. Out of which 30 were selected and 1 was deleted. For psycho social qualities, out of 27 items initially prepared 26 items were selected and 1 was rejected. For personality qualities, out of 27 items initially prepared, 26 items were retained and 1 was deleted.

**Validity of PLQ:** The validity of the tool as it is discussed earlier in this chapter was established for this tool also.

### 3.6.1.3.1 PILOT STUDY:

The pilot study was done in order to carry out item analysis and establish the validity of the scale. For the pre-pilot study, all the rating scales i.e. for perceived leadership qualities-intellectual, psycho-social, personality was administered to 35 secondary school teachers. After administering the tool, the responses were quantified.

**Item Analysis**

The researcher followed the same procedure of item analysis which is followed for teacher empowerment scale.

### 3.6.1.3.2 RELIABILITY OF THE PLQ

The researcher established the reliability of the tools through Split Half and Cronbach Alpha. The results of the reliability of the tools are as follows.

The following table shows the reliability for perceived leadership qualities of secondary school teachers.
Table No. 3.8

Reliability of Perceived Leadership Qualities Scale

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Split Half</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual</td>
<td>0.94</td>
<td>0.95</td>
</tr>
<tr>
<td>Psycho social</td>
<td>0.96</td>
<td>0.96</td>
</tr>
<tr>
<td>Personality</td>
<td>0.96</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Table No. 3.8 indicates the reliability established for perceived leadership qualities scale using Split Half Reliability and Cronbach alpha. For perceived intellectual leadership qualities the reliability was 0.94. The reliability for perceived psycho social leadership quality it was 0.96. Personality perceived leadership qualities got 0.96.

On the other hand, reliability, calculated by Cronbach for perceived intellectual leadership qualities, is 0.95, for perceived psycho social leadership qualities the reliability is 0.96 and for perceived personality leadership qualities the reliability is 0.96.

**Interpretation:** Reliability of perceived leadership qualities is very high and hence the scale is internally consistent.

The rating scale of the perceived leadership qualities is therefore reliable over the time.

3.6.1.3.3 Final form of PLQ

The following table depicts the final form for perceived leadership qualities of secondary school teachers.
Table No.3.9

Final form of perceived leadership qualities scale

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Total no. of items</th>
<th>Positively worded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intellectual</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Psycho social</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Personality</td>
<td>26</td>
<td>26</td>
</tr>
</tbody>
</table>

Table No. 3.9 shows the number of positively worded items for each of the dimensions of perceived leadership qualities. The perceived intellectual qualities have 30 items positively worded. Psycho social leadership qualities has 26 items positively worded and Personality leadership qualities has 26 positively worded leadership qualities.

3.6.1.3.4 Quantification of Scale

Quantification of response is necessary in order to statistical techniques, for analyzing the data.

A five point rating scale was used for perceived leadership qualities rating scale. The response categories of this scale are as follows:

i. Always (A) 5
ii. Frequently (F) 4
iii. Occasionally (O) 3
iv. Sometimes (S) 2
v. Never (N) 1
There were no negatively worded statements for perceived leadership qualities rating scale.

The above scale is attached in Appendix C

3.7 COLLECTION OF DATA

Data collection is an important step in the research process. In order to collect information from the secondary school teachers, it was necessary to seek the permission from the school principals. The researcher personally went to each school to take permission for data collection at least thrice to each school; the researcher gave the tool to the principals who in turn gave it to the teachers to fill in the necessary details. The researcher then went on the appointed day to collect back the tools. The researcher had to revisit the school to collect the remaining data sheet if not given by the teachers. Incomplete sheets were checked on the spot and were re given to fill it.

In some schools, principals asked researcher to directly approach the teachers, in such cases the incidental sampling technique has been used, as the teachers willing to give information were selected in the sample.

3.8 Quantification of the data

After the data collection, the responses of the secondary school teachers were quantified by giving scale values to each item as discussed earlier. For each secondary school teacher, the total scores of empowerment and its five dimensions i.e self esteem, team work, teacher morale, communication skills and decision making and the total scores of perceived leadership qualities and its components ie intellectual, psycho social and personality were quantified.
3.9 Tabulation of Data

It refers to a recording of classified scores. The researcher tabulated the scores keeping in mind the aims and objectives of the study, the master sheet was prepared indicating the scores of empowerment, self esteem, team work, teacher morale, communication skill and decision making and also the scores of leadership, intellectual, psycho social and personality. For the present study the table was computerized.

3.10 Analysis of Data

Analysis of the data means a study of systematically organized material in order to discover inherent relationship and differences. Statistically techniques have been used extensively in analyzing the data. For the present study two types of analysis were done.

I) Descriptive Analysis

A descriptive statistical measure studies the characteristics of a particular group. The generalization is limited upto that particular group studied. The conclusions cannot be extended beyond this group. For the present study the statistical measures used for descriptive analysis were as follows:

a. Measures of central tendency: This includes mean, median and mode.

b. Measures of variability: This includes standard deviation, skewness and kurtosis are included.

c. Graphical method: This includes bar diagrams.
II) Inferential Analysis

To study the nature of the data and relationship between various variables of the study, the researcher made use of inferential statistical technique.

Generalizations made by inferential analysis can be extended to infer population characteristics. For the purpose of inferential analysis of the data in the present study, the following techniques have been used.

Coefficient of co relation:

This technique was used to find out the relationship between various dimensions of Empowerment and Leadership. The Pearson's product moment co efficient of correlation was calculated for the purpose.

Analysis of variance (ANOVA)

This technique has been used to study the difference in variables on the basis of types of schools.

t-test

In case, F is found significant, to study the difference in the variable of two groups t-test was computed.