3.1 INTRODUCTION:

In the previous chapters the study has been presented in theoretical reference-frame. In any system or organisation, the most difficult task is to understand how the input variables are processed into output variables. The present investigation, as mentioned in the objectives, is designed to understand the process variables. It tries to explore how the process of planning, implementation and dissemination of microteaching as an innovation in the colleges of education takes place. The present investigation proposes to collect data through the use of questionnaire, interview schedule and attitude scale from different respondents and therefore the study falls in the category of survey method. For this purpose the selection of a sample, the judicious selection of a number of tools and techniques are necessary steps. The collection, analysis and interpretation of data is an extremely crucial step of research. All these are important ingredients of any piece of research. The present chapter is designed to explain these ingredients of research.

3.2 LOCATION OF THE STUDY.

As mentioned in the first chapter an effort has been made to introduce microteaching in the student teaching programmes of the colleges of education all over the country. This requires that a
decision should be taken about the location of the study. For this purpose, the areas which should be included in the study need to be located. The following geographical areas have been included in the sample:

1. Gujarat
2. Himachal Pradesh
3. Jammu & Kashmir
4. Haryana
5. Maharashtra
6. Madhya Pradesh
7. Rajasthan
8. Punjab
9. Union Territory of Chandigarh
10. Union Territory of Delhi.

The inclusion of these states in the sample is based on the logic that these states have been found to be quite active in the area of microteaching. This is not to say that other states were not doing anything in this area. There is evidence that states like Karnataka, Tamil Nadu, Bengal, Orissa etc. have shown keen interest in adopting microteaching in their student-teaching programmes. After the data for the present study were collected, the universities in Karnataka also introduced microteaching as a technique for
developing teaching skills. But they have been excluded from the study for reasons of physical distance. It is assumed that the above-mentioned sampled states would represent the total population of the colleges of education which have introduced microteaching.

3.3 SAMPLE OF THE STUDY

It has been mentioned earlier that an effort has been made to institutionalise microteaching as a training technique in colleges of education in India. The purpose of the study is to unveil the process that was followed for planning, implementation and dissemination of microteaching. This would help us to understand the process of introducing an innovation in general and microteaching in particular.

The history of microteaching in India is nearly two decades old. During this period a number of institutions and individuals got themselves involved. Though the different parts of the process of introducing an innovation are so interlinked that it is difficult to visualise them separately, still for the sake of developing better perspective it has been conceived in terms of planning, implementation and dissemination. Again it is difficult to demarcate the role played by individuals and institutions in the introduction of microteaching as an innovation because some of the individuals and institutions who at one stage
were involved in the process of planning became implementors at another stage and later on assumed the role of disseminators.

The present investigator proposes to bring into focus the process of introducing microteaching as an innovation in colleges of education in India. Therefore keeping in view the objectives of the study it is obligatory for her to gather information from different sources so that she may be able to conceptualise on the basis of her research a comprehensive model/strategy of the process of implementing innovations in colleges of education.

In the first chapter it has been explained that C.A.E., Baroda attempted to improve the student teaching programme by the introduction of microteaching as a training technique. It provided leadership and training facilities to teacher educators who in turn took the idea of microteaching to the different parts of the country. They tried to carry the concept of microteaching to their colleges and also to the colleges of education located in the adjoining area. In this way a movement started all over the country for the introduction of microteaching as an innovation.
a majority of the teacher educators and administrators were in one way or the other associated with CASE, Baroda. CASE acted as a nucleus point for them. In this way Microteaching is now considered to be an innovation which seems to have been adopted all over the country in one form or the other.

The present investigator is keen to find out the processes by which Microteaching was able to establish itself as an innovation in colleges of education. For this purpose she gathered information from different sources which are as under:

SAMPLE OF THE COLLEGES OF EDUCATION

It was important to find out the number of colleges of education in sampled states. As per directory of the colleges of Education published by NCERT there are 195 colleges of education in the sampled regions. A preliminary questionnaire was sent to all the colleges in the sampled regions to find out whether they have introduced Microteaching not or not. The preliminary questionnaire was sent to all the 195 colleges of education. The responses received are as under:
TABLE 5.1  
CHECKING THE STATUS OF MICROTEACHING  
IN THE COLLEGES OF EDUCATION IN THE  
SELECTED REGIONS OF INDIA

<table>
<thead>
<tr>
<th>Status of Microteaching</th>
<th>No. of Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both in theory and practice</td>
<td>93</td>
</tr>
<tr>
<td>In theory</td>
<td>123</td>
</tr>
<tr>
<td>Yet not introduced</td>
<td>72</td>
</tr>
</tbody>
</table>

Out of 125 colleges of education to whom the preliminary questionnaire was sent, it has been reported that there are seventy two colleges of education which are yet to start microteaching whereas microteaching has been introduced in theory curriculum only in 123 colleges of education. The number of the colleges of education which have accepted microteaching as a regular programme of their student teaching has been found to be ninety three. Out of these ninety three colleges, the complete information was received from eighty one colleges of education which constitute the sample of the study. The details of the number of colleges and their responses are given in the table given below:-
<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the state</th>
<th>No. of colleges of education</th>
<th>No. of colleges of education associated with Microteaching</th>
<th>No. of colleges of education responded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sujrat</td>
<td>41</td>
<td>32</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>Himachal Pradesh</td>
<td>3</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>3</td>
<td>Haryana</td>
<td>20</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Jammu &amp; Kashmir</td>
<td>6</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>5</td>
<td>Maharashtra</td>
<td>53</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>Madhya Pradesh</td>
<td>28</td>
<td>21</td>
<td>18</td>
</tr>
<tr>
<td>7</td>
<td>Punjab</td>
<td>18</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Rajasthan</td>
<td>21</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>9</td>
<td>Union territory of Chandigarh</td>
<td>2</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>10</td>
<td>Union territory of Delhi</td>
<td>3</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>195</td>
<td>93</td>
<td>81</td>
</tr>
</tbody>
</table>

**Note:**
As mentioned above, only eighty one colleges of education sent back the completed questionnaire. A questionnaire was sent to all the teacher educators.
working in these eighty one (81) colleges of education. The distribution of sample of teacher educators is given below:

**Table 3.3**

<table>
<thead>
<tr>
<th>States</th>
<th>Total No. of colleges of education included in the sample</th>
<th>Total No. of teacher educators to whom questionnaire was sent</th>
<th>Total No. of teacher educators from whom questionnaire was received back</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gujarat</td>
<td>29</td>
<td>320</td>
<td>138</td>
</tr>
<tr>
<td>Haryana</td>
<td>2</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>16</td>
<td>87</td>
<td>85</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>18</td>
<td>196</td>
<td>137</td>
</tr>
<tr>
<td>Punjab</td>
<td>1</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>13</td>
<td>137</td>
<td>73</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>81</strong></td>
<td><strong>775</strong></td>
<td><strong>450</strong></td>
</tr>
</tbody>
</table>

It is evident from the table No.3.3 that there are 775 teacher educators working in the sampled college of education. A mailed questionnaire was sent to all the 775 teacher educators of which only 450 completely filled in questionnaires were received back.

It is, therefore, evident that 450 teacher educators working in these eighty one colleges of education constitute the sample for the purpose of the study.
SAMPLE OF THE STUDENT TEACHER:

One of the purposes of the study is to ascertain the attitude of student teachers towards microteaching. There are more than 5000 teachers in these eighty one colleges of education. It was decided to include ten percent of them in the sample of the study. Keeping this in view ten attitude scales were sent to each sampled college of education with the request that these may be got filled from at least five student teachers of the college and be sent back. In all 405 attitude scales duly filled in by student teachers were received back which were used as the sample of the study.

SAMPLE OF THE PIONEER IN THE AREA OF MICROTEACHING:

It is proposed to explore the process of introducing innovation through this piece of research. The scales, questionnaires help to get factual information but sometimes this information is insufficient for developing integrated understanding of the situation. In such a situation it is the interview technique which can be profitably used to fill the missing gaps. Through interview one can understand the whole process in a better way by putting supplementary and probing questions. The investigator while reviewing the literature in the area of Microteaching, came across a number of names of individuals
who directly or indirectly or in one way or the other were found to be responsible for introducing microteaching in the colleges of education in India. The investigator felt that personal interviews with these individuals would provide useful information and, therefore, she prepared a list of nearly forty persons who are considered to be pioneers in the area of microteaching. She wrote personal letters to all these persons requesting them to give the date and time for interview as she wanted to discuss the process of the introduction of microteaching with them. She got replies thirty persons whose addresses are given in the appendix. She tape-recorded the whole interview with each of these persons.

The nature of the sample may be summarised as under:-

A. All the 195 colleges of education in the sampled states of the study provided information about the acceptance or otherwise of microteaching.

B. Out of these 195 colleges of education ninety-three responded giving information about microteaching in one form or the other.

C. On scrutiny it was found that only eighty-one colleges of education supplied complete information and hence constitute the sample of the study.

D. There are 775 teacher educators working in sampled colleges of education. Only 450 responded and as such became the sample of the study.

E. Under the ten percent quota of the student
Teachers of eighty one colleges of education 405 student teachers were taken as sample of the study.

3.4 TOOLS EMPLOYED FOR THE STUDY

As mentioned earlier, the major objectives of the study are to understand the process of planning, implementation and dissemination of Microteaching as an innovation. In order to realise this, the investigator required some tools to collect information regarding different aspects of the introduction of Microteaching as an innovation. The investigator attempted a review of the literature and researches in the area of Microteaching but could not lay her hands on any tool which could be readily used in the context of present research. There were a number of questionnaires available which could profitably be used for investigation in the area of Microteaching, but available tools and questionnaires were related only to the input and output variables and not to the process variables. The non-availability of tools for process variables compelled the investigator to construct tools which may help her to investigate the process dimensions of planning, implementation and dissemination of Microteaching.

In order to construct tools, a thorough study of the methodology of the construction of research tools was required. She made herself acquainted with the different steps and techniques that should be followed.
in the construction of the research tools. The tools were constructed with two objectives. One, to ascertain information from different respondents about the process of planning, implementation and dissemination of Microteaching as an innovation. Second, to obtain qualitative information from the different respondents.

**CONSTRUCTION OF QUESTIONNAIRE**

In order to study the different dimensions of the process of planning, implementation and dissemination a questionnaire was constructed. For this purpose the investigator verified the literature and discussed it with different experts in the area of Microteaching. They were requested to give their opinions for modification, deletion and addition of statements which may help us to elicit information regarding the process of planning, implementation and dissemination. Each statement which was approved by more than seventy-five percent respondents was included in the questionnaire. On the basis of an analysis, it was found that nearly fifty percent statements were considered to be not such relevant to the topic and therefore in all seventy-five statements were selected which constituted the first draft of the questionnaire.

This questionnaire consisting of seventy-five
statements was administered to a group of ten teacher educators. An analysis of their responses further made us eliminate eleven more statements because they were not found to be suitable as they were vague in nature. On suggestions of the respondents some of the statements were readjusted and their language was modified to make them more simple and direct. The questionnaire has no time limit.

The final draft of the questionnaire consists of fifty eight statements which cover the following areas:

I. Process of Planning.
II. Process of Implementation.
III. Process of Dissemination.
IV. Questions for Improvement.

The statements of the questionnaire are divided into three categories. They are:

(a) Multiple choice type.
(b) Yes/No type.
(c) Rating scale type.

For the last fifteen years efforts are being
made to introduce microteaching as an innovation for improving the general teaching competence of student teachers. It is, therefore, assumed that student teachers as well as teacher educators would have developed certain attitudes or opinions with regard to the effectiveness of microteaching as a training technique and that attitude of teacher educators and student teachers towards Microteaching is closely related to the process of planning, implementation and dissemination. This made the investigator search for a tool which may help to measure these attitudes towards Microteaching. One such tool, of course is available which has been prepared in CAFE, Baroda, since this attitude scale prepared at Baroda was prepared in a different context and for a different purpose, the present investigator used its modified form.

The Students Attitude Towards Microteaching Scale consists of thirty five statements. It is a five point rating scale. Each respondent is requested to put a (✓) tick mark at the appropriate place. There is no time limit for the completion of the scale. The instructions that are to be followed are given on the top of the attitude scale.
The attitude scale has two dimensions - the knowledge dimension which has twenty seven statements at serial numbers 2, 3, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 19, 20, 21, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and eighty statements indicating attitude at serial numbers 1, 4, 5, 11, 18, 22, 23, 24.

Scoring:

There are two types of statements in the attitude scale. There are twenty six positive and nine negative statements. The positive statements are to be scored as under:

- 5 marks to 'strongly agree'
- 4 marks to 'agree'
- 3 marks to 'neutral'
- 2 marks to strongly di
- 1 mark to 'strongly disagree'

The negative statements are to be marked in reverse order:

- 1 mark to 'strongly agree'
- 2 marks to 'agree'
- 3 marks to 'neutral'
- 4 marks to 'disagree'
- 5 marks to 'strongly disagree'
The total score obtained by each respondent is taken as an index of student's attitude towards microteaching. The raw scores were converted into stanine scores for the purpose of presenting them against the standard norm.

INTerview SCHEDULE

Another tool that has been employed is the interview schedule. It is often seen that information collected through questionnaire is not complete or sometimes more information is required which is only possible by putting sample entry questions. Good and Carter support this contention when they say that the dynamics of interview schedule is situational in nature as it permits explanation, adjustment and variations according to the demand of the situation.

As mentioned earlier the present investigation concentrates on the exploration of the process of introducing an innovation, since the attitude scale and questionnaire may not provide an in-depth information about the process of planning, implementation and dissemination of microteaching as an innovation in colleges of education, the investigator prepared an interview schedule which may help her to view the whole process in proper perspective.
A list of forty statements/questions were prepared which would provide a format for conducting the interviews. The statements of the interview schedule cover almost the same dimensions of the process of planning, implementation and dissemination of microteaching as an innovation which have been used in the questionnaire and the attitude scale. But the questions in the interview were designed to provide a deep analysis of the whole process of introducing microteaching.

Besides taking notes of the interviews, the investigator tape-recorded the interviews. She interviewed nearly thirty experts working in the area of microteaching. The group consists of pioneers, experimenters, researchers, administrators and trainers in the area of microteaching.

35: COLLECTION OF DATA

The study covers a vast geographical area and the colleges of education included in the sample are spread far and wide. This fact is evident from the table No. 3.2 of the sampled states. It was therefore not possible for the investigator to visit each and every institution for the collection of data. He adopted
a three dimensional approach for it.

A. Through mailing of questionnaires and attitude scales.

B. Through personal visits to the colleges of education.

C. Through seeking interviews with the individuals who are pioneers in the field of Microteaching.

One of the techniques that has been adopted to collect data is mailing the questionnaire and attitude scale to the teacher educators and student teachers, since the investigator did not have the information about individual teacher educators and also she did not know who and how many teacher educators are involved in the introduction of Microteaching in a particular college, she mailed a packet of ten copies of questionnaires and ten copies of attitude scales to the principals of each sampled college of education. As the questionnaire was self contained, there was no need for on the spot instructions for filling up the questionnaire. The principals were requested to get the questionnaires filled from those teacher educators who are directly or indirectly associated with the
introduction of Microteaching in the college of education. A stamped addressed envelope was enclosed to enable the principals to send back the duly completed questionnaires.

In the first instance the investigator could not get back many questionnaires. She, therefore, sent another request to send back the duly filled questionnaires. He, of course, took the precaution of sending another set of questionnaires to each college of education. In due course of time she received the questionnaires back from ninety three colleges of education. On scrutiny it was found that complete information is available only from eight, one colleges of education and, therefore, for purpose of analysis and interpretation of the data the questionnaires of these eighty one colleges of education were used.

It is one of the objectives of the study to ascertain the attitude of student teachers towards Microteaching. Similar procedure was adopted to know the attitude of student teachers towards Microteaching.
A package of fifteen attitude scales was mailed to principals of the ninety three sampled colleges of education. They were requested to get these attitude scales filled in from any ten student teachers and send them back. Five attitude scales each from eighty one colleges making a total of 405 were used for the purpose of analysis and interpretation.

B- THROUGH PERSONAL VISIT TO THE COLLEGE OF EDUCATION

The study basically wants to bring into limelight the process of introducing an innovation in general and Microteaching in particular. It is a fact that questionnaires is a convenient technique of collecting information. This is more suitable when some factual information is to be sought. But here the nature of investigation demands in-depth information. In the opinion of investigator the personal visits might help in providing data of trends which the questionnaires may not be able to project. He therefore, took the decision to visit some of the institutions personally for the purpose of discussions both at the individual and group levels with faculty members and also to meet student teachers. It may not be out of place
to mention that some of the useful information was gathered during personal visits and this helped the investigator to describe the process of planning, implementation and dissemination of Microteaching as an innovation in a more clear perspective.

The origin of any innovation results from dissatisfaction with the existing conditions. As is well known, there has been dissatisfaction with the existing programme of student teaching, so educationists and educational planners were keen to bring about improvement. Microteaching is one such innovation which was envisaged to bring about improvement in student teaching programme. The professors of education and other educationists working in CACF, Mysore, institutions of teacher training and university departments of education were fascinated with the idea of Microteaching and got involved in the efforts to introduce the concept of Microteaching in India. To put across
An innovation requires careful planning at multi-levels. It involves training of personnel to spread the innovation far and wide, the preparation of material and other aspects of the introduction of Microteaching. In a way, when an innovation reaches the grass root level, it has already passed through the process of planning, implementation and dissemination. The present investigator felt that those professors of education, principals of teacher training colleges and other educationists who were initially involved directly or indirectly in introducing Microteaching in this country should be contacted personally to find what have been their experiences with regard to the introduction of Microteaching. She prepared an interview schedule for seeking their reactions. Letters were written to these pioneers in the field of Microteaching requesting them to give interviews. The list of persons who were interviewed are given in Appendix No.2. Average time for each interview was two to three hours.
3.6 USE OF STATISTICAL TECHNIQUES TO ANALYSE THE DATA

The statistical techniques to be employed in any study depend upon the objectives of the study and the nature of the hypotheses to be examined. The present study aims at studying the process of planning, implementation and dissemination of Microteaching as an innovation and also to see the attitude of student teachers towards Microteaching. The following statistics were used for the purpose of the quantification of the data.

PERCENTAGE

The mean scores of the variables were converted into percentage. Simple arithmetic was employed to evaluate the percentage and the mean.

MEAN

Garrett and Woodworth (1967) have defined mean as the sum of the separate scores of measures divided by their number. The formula for the mean (M) of a
A series of ungrouped measures is:

\[ M = \frac{X}{N} \]

in which \( N \) is the number of measures in the series, \( X \)
stands for a score or other measure, and the symbol
means 'sum of', here sum of separate measures. Mean
is used (i) when the scores are distributed
symmetrically around a central point, i.e., when the
distribution is not badly skewed. (ii) when the measure
of central tendency having the greatest stability is
wanted. (iii) when other statistics are to be computed
later. Many statistics are based upon the mean.

**STANDARD DEVIATION.**

The standard deviation or S.D., is the most
stable index of variability and is customarily
employed in experimental work and research studies.
It tells the degree to which the scores are clustered
around the mean. The following formula has been used
for standard deviation:
STANINE SCALE

Stanine scale is a condensed form of T scale on which stanine scores run from 1 to 9 along the base line of normal curve constituting a scale. In the present study the raw scores of the attitude of student teachers have been converted into stanine scores. Following formula has been used to convert the raw scores into stanine scores.

\[
\begin{align*}
\text{Stanine} & = \frac{M \times 1.75}{1.5} + M \\
& = \frac{M \times 1.25}{1} + M \\
& = \frac{M \times 0.75}{1} + M \\
& = \frac{M \times 0.25}{1} + M
\end{align*}
\]

CONCLUSION

The research design, instrumentation and procedures are treated in this chapter. Having described the research design, the method and procedure, the collection and analysis and interpretation of data will be presented in the chapter that follows.
CHAPTER IV

COLLECTION, ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction
4.2 Origin of microteaching
4.3 Sources of information to teacher education about microteaching
4.4 Time gap between the knowledge gained and procurement of literature
4.5 Type of literature
4.6 Time gap between the knowledge gained and orientation program extended and organizing agencies
4.7 Function and content of the orientation program
4.8 Participation in collaborative projects of microteaching
4.9 Sharing experiences of orientation programs with colleagues
4.10 Chronological order of the discussion of microteaching in colleges of education
4.11 Status of microteaching in colleges of education
4.12 Strategies for introducing microteaching in colleges of education.

4.13 Satisfaction regarding preparation for introducing microteaching.

4.14 Number of teaching skills used in colleges of education.

4.15 Types of conditions used in microteaching.

4.16 Types of modelling used in colleges of education for training student teachers in microteaching.

4.17 Number of microcycles required for attaining mastery over teaching skills.

4.18 Sources of feedback.

4.19 Conducting of feedback sessions.

4.20 Attitude of student teachers towards microteaching.

4.21 The time sequence of the training and duration of microteaching programmes.

4.22 Linkage between microteaching and traditional teacher training.

4.23 Effectiveness of the programmes of microteaching.

4.24 Evaluation of the process of implementing microteaching.

4.25 Continuation of microteaching as an innovation in the colleges of education.

4.26 Process of dissemination in the colleges of education.
4.27 Role of boards of studies in education in the process of dissemination
4.28 Emerging trends
4.29 Attitude of student teachers towards microteaching
4.30 Conclusions