CHAPTER III

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        **** THE PROBLEM AND PROCEDURE
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THE PROBLEM AND PROCEDURE

3.1 Introduction

In the preceding two chapters, the researcher has given the background leading to the development of innovative techniques for teacher training, the importance of microteaching as a new technique for development of teaching skills in teachers and has outlined and reviewed the development and researches done in the field of microteaching. The present chapter gives the problem of the study, explanation of certain terms used in the problem, delimitations of the study, objectives of the study and hypotheses formed, the procedure followed for the study and the system of data-analysis.

3.2 The Problem

Teaching is a complex of verbal and non-verbal acts and in the conventional method of teacher training, a student-teacher is required to master all the skills at a time in a lesson of thirtyfive or forty minutes. He tries to gain insight into the complex process of teaching through the observation of the model lessons of his supervisors as well as the practice-teaching lessons of the peers. Although providing some good experience to the beginners, this approach to training is inadequate and there is a number of studies that have pointed out the flaws in the programme.

Microteaching is an analytical approach to the problem where teaching is analysed into a number of component skills, each skill can be practised at a time and the complex teaching acts can be mastered gradually. Apart from the two advantages of the approach viz.the lessening of time factor and the practice of simulation, One most obvious advantage is that the student is phased into real teaching gradually instead of being dropped suddenly into the complex environment and activities of a classroom. There is also an added consideration that the pupils are less at risk in the hands of novice teachers. Microteaching focuses upon specific teaching skills and it enables the student-teachers as well as supervisors in mastering the teaching model as against imitating a practised performance of a master teacher in the conventional approach.

Studies in microteaching, abroad as well as in India ; have shown the efficacy of this training approach. A number of studies has been conducted at the Centre of Advanced Study in Education, Faculty of Education and Psychology, Baroda, that have shown that microteaching helps student-teachers in developing teaching skills, ensures better pupil-participation, student-teachers' attitude towards microteaching is favourable and micro-teaching significantly changes the behaviours of student-teachers (Chudasama, 1971) Marker, 1972, Passi et. al., 1974 ; Singh,1974). Other aspects of microteaching like feedback and modelling have also been studied at CASE and as an outcome of these researches, a number of teaching skill handbooks has been made available (Thresiamma, 1975; Vaze, 1976 ; Joshi, 1977 ; Lalithamma, 1977 ;

Passi, 1977; Sharma, 1977). These studies have proved the
effectiveness of microteaching and have developed a number of
tools that can help in adopting the training approach but the
question of planning and implementing microteaching approach
as a regular training college programme is only partially
answered.

There is one another aspect of teacher training that needs
a little more thinking. Microteaching aims at the planned
development of teaching skills, but these skills are practised
and mastered by real teachers with all the confounding effects
of personality variables and other personal variables. The inter-
action between the two works both ways i.e. the demographic
variables will contribute to the development of teaching
competence, and on the other hand, the acquisition of teaching
competence will itself contribute to the development of
demographic variables, especially like personality traits. There
are several studies that point out the effect of these variables
on teachers and their teaching. Deva (1966) studied the prediction
of teaching success where the chief aim was to select a set of
predictors with a view to using them to prognosticate teaching
efficiency. It was found that personality was the most important
and intelligence the least important in predicting success in
student-teaching. In one study by Debnath (1971), some determinants
of teaching efficiency were studied and it was revealed that
professional training, intelligence, interest in teaching,
friendliness, democratic behaviour, ability to judge reactions of

others and possession of allround information were related to

teaching efficiency. In a study by Mehta (1972) factorial

analysis of teaching ability of student-teachers was attempted.

Measures of personality, values, scholastic aptitude, graduation

marks, age, experience etc. were taken up as independent variables

and marks in theory and practice were the dependent variables.

It was hypothesised that the composite score was the best measure

of teaching ability and the constellation of abilities was a

factor pattern which was different in low and high achievers and

the student-teachers and the study supported the hypothesis.

Nair (1974) reports that teachers' parental socio-economic

conditions had a negative influence on the teaching ability and

that sex was not found to be affecting teaching ability. Grewal

(1976) reports that main predictors of teacher effectiveness were

home, health, social-emotional and total adjustments, dominance,

submission and verbal and non-verbal intelligence. Gupta (1976)

studied the prediction of teacher effectiveness through Cattell's

16 PF questionnaire and it was found that high effective teachers

differed significantly from the general population with respect

to nine personality factors out of sixteen. In a similar study,

Gupta (1977) found that success in teaching was significantly

related to twelve out of sixteen personality factors, adjustment

in home, health as well as social, emotional and total adjustment.

Patel (1977) studied the performance of student-teachers of

Gujarat in relation to their achievement motive, socio-economic

status and the level of anxiety. The study revealed that there

was significant positive relationship between nAch and
SES and performance
performance and that there was no effect of the interaction

of the variables under study on the performance of the student-

teachers. Goel (1978) studied behaviour patterns of extrovert

and introvert teachers and reports that extrovert teachers had

greater interchange of classroom events, provided more opportunity

for pupil participation and tended to break the silence or

confusion by asking questions more frequently than introvert

teachers.

The above discussion of the studies in the field of

relationship of teaching efficiency with demographic variables

makes it clear that teaching is not only a complex of various

teaching skills but is also the product of the composite effect

of personal variables of a teacher. The studies cited above have

mainly taken into consideration the end-product of the training

programme and the question of the effect of these variables on

the training itself; and the acquisition of teaching competence

through training is only answered to some extent by two studies

of Bell (1968) and Das et. al. (1978). Bell has shown that there

was no significant relationship between the improvements made

in teaching by experimental group and control group and certain

demographic variables and that microteaching can be used

successfully regardless of students background. Das et. al. have

found that there are no sex differences in the development of

general teaching competence of student-teachers trained through

microteaching technique but qualification is a variable that affects their development of general teaching competence.

Keeping in view the above facts, it was decided to study the development of teaching competence of student-teachers through conventional approach coupled with auto-instructional material and through microteaching, and to study the effect of some demographic variables like sex, intelligence, socio-economic status, need for achievement, teacher attitude, anxiety and personality factors on this development of teaching competence. Thus the problem for the study was taken up as under :

DEVELOPING INSTRUCTIONAL SKILLS IN TEACHERS USING AUTO-INSTRUCTIONAL MATERIAL AND USING MICROTEACHING APPROACH UNDER SIMULATED CONDITIONS AND REAL SITUATION - A COMPARATIVE STUDY.

3.3 Explanation of the Terms

The topic under study refers to certain terms like instructional skills, auto-instructional material, microteaching, simulated condition and real situation. These terms are used in the study in the context mentioned below :

3.3.1 Instructional Skills : Classroom teaching is a complex process and microteaching approach to training analyses this complex process into a number of components. Teaching consists of a number of verbal as well as non-verbal acts like introducing, demonstrating, explaining, questioning, responding to pupils, rewarding them, movements, gestures etc. These instructional skills are used in a classroom by a teacher to produce the desired behaviour

change. They are specific instructional techniques. and procedures and they represent an analysis of the complex teaching process into relatively discrete components. Thus, instructional skills are those components into which the task of classroom instruction is analysed and which can be taught, practised, evaluated and controlled. Allen et al (1969) list fourteen such skills and Passi et al (1974) gives eighteen such skills. In the present study, the following four skills were taken up for training the student-teachers :

(A) <u>Introducing a Lesson</u> : Introducing a lesson refers to a brief introduction about the lesson or unit which a teacher makes in order to induce maximum pay-off in learning by pre-disposing pupils' minds to the topic to be taught. Its purpose is to clarify the goals of instruction by using pupils' present knowledge and skills. It can vary in length as well as in elaborateness and can take forms like analogy, demonstration or posing a problem.

(B) <u>Stimulus Variation</u> : Boredom is a major problem in the classroom, as the pattern of student-teacher interaction is generally teacher to student. It is important for a teacher to draw and to sustain the attention of the pupils and this can be achieved by changing his behaviour patterns and stressing the behaviours that can give his teaching style some more variety. This varying of stimulus situation is termed stimulus variation and includes movements, gestures, focusing, pausing, change in

speech pattern, change in interaction style and oral-visual switching.

(C) <u>Silence and Non-verbal Cues</u> : Most classroom discussion is teacher-centred and the skill of silence and non-verbal cues aims at cutting down the amount of unnecessary teacher talk and increasing pupil participation. The teacher while using this skill, introduces a provocative question, sets the ball rolling by turning over the discussion to the pupils and keeps the discussion going on in the right direction by giving feed-back to pupils by non-verbal cues and well-timed silence. Non-verbal cues that a teacher uses for gudding the discussion are facial cues, head movement, hand movements and body movements.

(D) <u>Achieving Closure</u> : A summary of the discussion or outlining major points learned in a lesson is usually done at the end of a teaching unit; and closure is achieved when, through this process of reviewing, major part of the topic is judged to have been learnt, and new knowledge is appropriately linked with the past knowledge. It is a process of associating new facts with the old knowledge, applying the new knowledge in various situations and ensuring repetition of the facts learned. It is more than a quick summary of the teaching points covered in a lesson; it provides the pupils with the needed feeling of achievement.

3.3.2 <u>Teachers</u> : For the present study, the subjects in the experiment were the student-teachers of Shri Rang Shikshan

Mahavidyalaya, Bilimora. The term 'teachers' refers to these
student-teachers.

3.3.3 **Auto-instructional Material** : Auto-instructional
material or auto-instructional devices or self-instructional
devices, in general education terminology, refers to the idea of
programmed instruction popularly associated with the teaching
machine. However, the term auto-instructional material also
encompasses a wide variety of instructional devices like hand-
books, scrambled books, tutor texts, paper sheets, folders,
monographs etc. In the present study, the term refers to a type
of modelling procedure viz. symbolic modelling in the form of
written description of the teaching skill, teaching episode and
the behavioural components of the skill.

3.3.4 **Microteaching Approach** : Microteaching approach in
training of teachers is defined by Allen et al (1968) as a system
of controlled practice that makes it possible to concentrate on
specific teaching behaviour and to practise teaching under
controlled conditions. It is a system of training where complexities
of normal classroom are greatly reduced by practising one teaching
skill at a time before a small number of pupils or peers for a
short duration of time after which the student-teacher receives
a great deal of immediate feedback on his performance. Thus, in
microteaching approach, the scope of the lesson is narrowed down
to one skill only and the teacher instructs a small group of
five to eight pupils or peers for five to eight minutes only after

which feedback is provided and the topic is retaught and the skill practised again in the light of the feedback. According to McCollum et al (1970), microteaching is an opportunity to gain classroom capabilities and expertise before the student-teachers start entering into the macroteaching situation.

3.3.5 <u>Simulated Condition</u> : Drever (1952) defines simulation as feigning on the part of an animal or human being. Webster's New International Dictionary defines simulation as 'giving appearance of', 'to have characteristics of'. In microteaching context, the term is used to mean a situation where peers or student-teachers and not actual pupils form the group before which a skill is practised in microteaching setting. In some situations, it is difficult to arrange for real pupil group for microteaching class; and, for this reason, the pupils' role in microteaching class is played by student-teachers themselves.

3.3.6 <u>Real Situation</u> : Real situation, as against simulated situation, is a situation where real pupils form the group before which a teaching skill is practised in microteaching setting.

3.4 <u>Delimitations</u>

In order to make the study concise, its scope pertaining to some of the aspects was limited to some extent. These delimitations of the study are as under :

(1) <u>Locality</u> : This study was conducted at Shri Rang Shikshan Mahavidyalaya, Bilimore, in Bulsar District of Gujarat State. Hence,

the population from which the sample for the study came was entirely from Bulsar District.

(2) Sample : Sample for the study was taken up from one college only viz. Shri Rang Shikshan Mahavidyalaya, Bilimora. Student-teachers for two successive years were covered under the study.

(3) Teaching Subject : Of the many school subjects offered as a special method of teaching at the college, only those student-teachers who had offered Science as their optional subject for special method formed the sample for the present study. Thus, training given to the auto-instructional group and the micro-teaching group was in Science school subject only. Teaching of science and practising the skills was done in Gujarati medium throughout the study.

(4) Skills : For the purpose of training, only four skills of teaching were taken up viz. (a) introducing a lesson, (b) stimulus variation, (c) silence and non-verbal cues and (d) achieving closure.

Introducing a lesson or set induction and achieving closure are two important skills necessary for beginning and ending a lesson. The skill of introducing a lesson helps a teacher to prepare the pupils for the acquisition of new knowledge as well as tests the pre-knowledge required for the new material to be learnt.

Proper introduction of a lesson ensures the rapt attention of the pupils. Achieving closure is in a way complementary to introducing a lesson. It puts together major points learned in a lesson, links the present knowledge with the past one and also prepares the pupils for the acquisition of further knowledge. Thus these two skills are considered very important for a practice-teaching lesson.

Selection of the skill of stimulus variation and silence and nonverbal cues was done considering their relation to teaching of Science. Teaching of Science gives full play to the teaching activities like demonstration, use of models, use of charts and use of other host of audio-visual aids. Thus, use of the skill of stimulus variation has a great scope in teaching of Science and it is necessary that a Science teacher is well-versed in the use of this skill. As regards the skill of silence and nonverbal cues, the scope for its use in Science teaching is not so wide as that of the skill of stimulus variation; however, where are certain topics in Science like food-chain, balanced diet, importance of water, structure of plant cell, photosynthesis etc. where a discussion can be initiated by a teacher and can be turned over to the pupils while the teacher guides the discussion through the use of this skill. Thus, it was decided to take up these two skills for the present study.

(5) <u>Feedback</u> : Association of videotape feedback with micro-teaching has been a novelty of the approach since the beginning of

the studies in this area. However, as Allen et al (1969) puts it, videotaping is not an essential part of the microteaching process. According to Shah (1975), a developing country like India needs a strategy which is less expensive and considerably effective. For the present study, use of CCTV was out of question and it was decided to adopt the simplest feedback technique viz. feedback from the supervisor as well as peers.

3.5 Objectives of the Study

The present investigation attempted to study the effects of three different approaches on the acquisition of general teaching competence and the effects of some demographic variables on this acquisition of general teaching competence. Thus, the followings were the objectives of the study :

1. To study the practicability of introducing microteaching as a regular programme along with traditional training programme of the college.

2. To study and to compare the effects of traditional training coupled with auto-instructional material and microteaching training in real situation as well as simulated condition on the acquisition of general teaching competence.

3. To study and to compare the effects of microteaching alone and microteaching followed by macroteaching on acquisition of general teaching competence.

4. To study the effect of intelligence on the acquisition of general teaching competence through traditional training and microteaching.

5. To study the effect of sex on the acquisition of general teaching competence through traditional training and microteaching.

6. To study the effect of anxiety on the acquisition of general teaching competence through traditional training and microteaching.

7. To study the effect of teacher attitude on the acquisition of general teaching competence through traditional training and microteaching.

8. To study the effect of socio-economic status on the acquisition of general teaching competence through traditional training and microteaching.

9. To study the effect of need for achievement (nAch) on the acquisition of general teaching competence through traditional training and microteaching.

10. To study the effects of personality factors on the acquisition of general teaching competence through traditional training and microteaching.

3.6 Hypotheses of the Study

Considering the three training approaches and the other variables under study, the following hypotheses were formed :

1. There is no significant difference in the acquisition of general teaching competence by the group trained through traditional training coupled with auto-instructional material and the group trained through microteaching in real situation.

2. There is no significant difference in the acquisition of general teaching competence by the group trained through traditional training coupled with auto-instructional material and the group trained through microteaching in simulated condition.

3. There is no significant difference in the acquisition of general teaching competence by the group trained through microteaching in real situation and the group trained through microteaching in simulated condition.

4. Macroteaching that follows microteaching has no effect on the acquisition of general teaching competence in groups trained through microteaching in real situation and microteaching is simulated condition.

5. Intelligence has no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

6. Sex has no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

7. Anxiety has no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

8. Teacher attitude has no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

9. Socio-economic status has no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

10. Need for achievement has no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

11. Personality factors have no significant effect on the acquisition of general teaching competence through traditional training coupled with auto-instructional material, microteaching in real situation and microteaching in simulated condition.

3.7 The Procedure

The present investigation was undertaken to study the effects of three training approaches on the acquisition of general teaching competence by student-teachers and also to study the effects of their personal variables on this acquisition of general teaching competence. The sample selected for the study, the tools used for data collection and the experiment viz. the training of three groups through three different training approaches and data collection are as follows :

3.7.1 The Sample : As mentioned earlier, the present study was carried out at Shri Rang Shikshan Mahavidyalaya, Bilimora, and the sample for the study was drawn from the student-teachers of the college. The study was conducted for two successive years during 1976-77 and 1977-78 and all the students who had offered Science as one of their optional teaching methods formed the sample for the study. Of the total thirtyone student-teachers of the year 1976-77, one left the college in the middle of the term and so the number of student-teachers in the sample for the year was thirty. During the year 1977-78, there was a total of twentysix student-teachers from which one offering the method of teaching Science in English medium and one who could not complete

the training due to illness were eliminated. Thus the number
of student-teachers for year 1977-79 was twentyfour. The
following table gives year-wise and sex-wise distribution of the
sample.

Table :1: Sample of the Study

Year	Male	Female	Total
1976-77	21	9	30
1977-78	12	12	24
Total	33	21	54

As shown in the table, the total number of student-teachers
in the sample were 54 out of which 33 were male and 21 female.

3.7.2 The Tools : Tools have their own importance in
research studies. Especially in empirical studies, tools are
basically important as they provide raw scores which are
processed for statistical analysis leading to the conclusions of
the study. After proper study of the variables under study, the
following tools were selected for the present study.

3.7.2. (A) General Teaching Competence Scale : General
teaching competence is conceived as composed of various teaching
skills. From the traditional teaching training approach to micro-
teaching approach, the trend of the change is from 'modelling the
master teacher' to 'mastering the teaching model'. To adopt the
change, itmwas indispensable to analyse teaching into its various

components and the complexity of the task was so great that a
systematic analysis presents with anormous problems. In spite
of the difficulties, however, such analysis and construction
of a tool based on such analysis were imperative because it
only could replace the covert subjective criteria of a supervisor
sitting at the back of the class by overt quasi-objective criteria
which are pre-specified and about whose validity there is some
consensus of agreement. Application of this quasi-objective
supervision depends upon the use of different modes of classroom
observations by supervisors using instruments that have been
developed and validated through continuous use.

At Stanford, work on this line started in 1959 and the
Stanford Teacher Appraisal Guide was prepared, its main aim being
to serve as a structuring device to aid supervisors to focus
upon important elements in the teaching act. The basie sources
of evidence were direct observations of teachers, conferences
followed by teaching, discussions about the observations and
communication with other personnels who were in a position to
observe and know the teacher's work. At the initial stage, the
Guide contained fortythree items but later the rigid formula
was avoided by defining thirteen general practitioner competences
around which specific standards may be built later. The guide
contains a total of seventeen items of which thirteen are
related to classroom-based teacher characteristics and four are
related to community and professional characteristics. The
thirteen classroom-based teacher characteristics are divided

into two items for aims, three items for planning, six items
for performance and two items for evaluation. The tool is an
eight-point scale from zero to seven representing the categories
unable to observe, weak, below average, average, superior, out-
standing and truly exceptional.

Work on the line of that at Stanford has also been done
at the Centre of Advanced Study in Education, Faculty of Education
and Psychology, Baroda, and the Baroda General Teaching Competence
Scale has been developed and measuring criteria for each of the
skills included in it have been provided. It is based mostly on
the lists of teaching skills developed at the Stanford University
and the Far West Laboratory. The scale is a seven-point scale and
contains a total of twentyone items for student-teaching evaluation.
Of the total twentyone items, four are pertaining to pre-
instructional or planning stage, fifteen are pertaining to
instructional or presentation stage and the remaining two items
give managerial skills. The evaluation of student-teacher is done
on a seven-point scale from zero to six where zero indicates
that the particular teacher behaviour was not found at all and
six indicates that the particular teacher behaviour was very
much found in the student-teacher. This scale has been used
extensively in the experimental studies conducted at Baroda for
measuring general teaching competence.

For the present study, Baroda General Teaching Competence
Scale provided a basic tool which was modified and changed to

some extent in order to make certain items more specific and
to make the tool more suitable for the evaluation of student-
teaching. Some items of B G T C Scale were made more specific
by dividing them into two items while some new items pertaining
to evaluation of lesson plan, unnecessary repetition of questions
and responses, attaining the objectives of the lesson and
confidence of the teacher were added. The initial draft of the
scale was circulated among a group of experts (Appendix I)
who were quite conversant with the practice-teaching lesson
evaluation; and the light of their suggestions, the form of the
General Teaching Competence Scale for the present study was
finalised. The Scale is given in Appendix II).

Keeping in view the structure of a traditional teaching
lesson and with a view to incorporating the various skills of
teaching as given in BGTC Scale, the GTC Scale of the present
study was divided into five stages viz. planning, introduction,
presentation, evaluation and general managerial skills. It
contained a total of thirty items and on each item the student-
teacher was to be rated on a five-point scale ranging from zero
to four. Scale value zero indicated that the particular teacher
behaviour was not found at all in the student-teacher and scale
value four indicated that the particular teacher behaviour was
very much found in the student-teacher. The evaluation of a
trainee was done by putting a circle on the appropriate scale
against the item. For the purpose of calculating the evaluation
score of a trainee, all the circled scale values were added up

giving GTC score and these scores of the trainees of the sample were used in the statistical analysis of the data. As is evident, the range of the score on the scale is from zero to one hundred twenty whereas, the actual range obtained in the study was from thirty to eightytwo.

So far as the validity of the tool is concerned, this GTC Scale for the present investigation was designed after studying the two previously mentioned tools. viz. the Stanford Teacher Competence Appraisal Guide and the Baroda General Teaching Competence Scale as also the opinions of the experts. The instrument like the present one derives its meaning from the theory behind it and the best criteria of the validity is agreement with the predictions of theory. The investigator feels that the theoretical basis upon which the Scale is constructed guarantees its validity.

In order to determine the reliability of the Scale, two methods were used viz., (i) test-retest reliability, and (ii) correlating the scores on GTC Scale with an independent evaluation of the practice-teaching lesson by traditional method of judging the lesson as a whole.

For finding the test-retest reliability of the tool, the scores of pre-training, eleventh lesson and sixteenth lesson were intercorrelated, the results of which are given in the table on the next page.

Table :2A: Reliability of GTC Scale

Stage	Pre-training	11th lesson	16th lesson
Pre-training	-	0.456	0.430
11th lesson	0.456	-	0.988
16th lesson	0.430	0.988	-

The correlations at pre-training scores with the scores of the eleventh and the sixteenth lesson are low as expected because the development of teaching competence takes place after pre-training evaluation during the training. As this development would be different in different trainees, a high correlation cannot be expected. On the other hand, a very high correlation between the scores of eleventh and sixteenth lessons shows a marked reliability of the Scale.

In the other method of determining the reliability of the Scale, a supervisor other than the researcher evaluated the performance of the student-teachers at the pre-training stage, the eleventh lesson and the sixteenth lesson. The evaluation was done by judging the lesson as a whole as is the practice in traditional evaluation and each lesson was assigned marks out of twenty. The marks thus assigned to each lesson were correlated with the scores on GTC Scale at the corresponding stage and the results obtained are given in the Table 2 B on the next page.

Table :2B: Reliability of GTC Scale

Stage	r
Pre-training	0.83
11th lesson	0.62
16th lesson	0.64

The obtained coefficients of correlation are high enough to imply the reliability of the scale. An overall reliability coefficient for the Scale was calculated by converting the r's into Z - functions and averaging them. This average coefficient of correlation was found to be 0.71 indicating that the Scale was quite reliable.

3.7.2(B) Observation Schedules for the Skills : Microteaching is an analytical approach to teaching and training where class-room teaching skills are developed one at a time. If teachers are to be trained in various skills through microteaching, it is essential that a skill under practice is clearly analysed into its behavioural components which can be specifically described, can be practised, can be supervised and upon which feedback can be given in specific terms. This is very much imperative for the microteaching approach of training. Handbooks on various teaching skills have been developed at the CASE, Faculty of Education and Psychology, Baroda, and these handbooks give the description of each skill, its components and observation schedules that can be

used for supervision and feedback during training. These observation schedules for the four skills under the present study are given in Appendix III.

The skill of introducing a lesson includes desirable as well as undesirable behaviours on the part of a teacher. The desired behaviours are use of previous knowledge of the pupils and use of appropriate devices for the introduction. The undesirable behaviours are use of irrelevant statements and lack in continuity.

The skill of stimulus variation is important in drawing and sustaining the attention of pupils. It is a deliberate change in the attention drawing behaviour of a teacher in order to secure the attention of pupils at the highest level. Attention drawing behavioural components of this skill are movements, gestures, change in speech pattern, focusing, change in interaction style, pausing and oral-visual switching.

The aim of the skill of silence and nonverbal cues is decreasing teacher talk and increasing pupil participation. A well-timed silence after a question or a statement stimulates the pupils to think about what the teacher has said. A longer thoughtful pause on the part of a teacher makes pupils aware that the teacher is expecting more from them. In order to encourage the discussion of the pupils, a teacher can guide their talk by providing nonverbal cues like facial expression, bodily movements, head movement etc. Thus, the behavioural components of the skill are silence, facial cues, head movements, body movements and hand movements.

Achieving closure is in a way similar to the recapitulation stage of Herbartian steps. It is a process where the points learnt during a lesson are revised, new facts are associated with the old knowledge, new knowledge is applied in various situations and the pupils are prepared for future learning. Thus, the behavioural components of the skill are consolidation of the major points of a lesson, providing opportunities to pupils for applying new knowledge to various situations, linking new knowledge with their previous knowledge and linking their new knowledge with their future learning.

The observation schedules are of two types viz. (1) category type in which frequency of occurrance of each behavioural component is noted and (2) the rating type in which the behavioural components are rated on a seven-point scale. For the present study, the category type of observation schedules were used as they are more useful in giving pin-pointed feedback and a quantitative measurement during the training stage was not deemed necessary for the study.

3.7.2 (c) <u>Madhooker Patel's Intelligence Test (MPIT)</u> : Intelligence is the relating activity of the mind and is explained as the capacity to meet novel situations, to learn to meet novel situation by new adaptive responses, the ability to perform tests or tasks involving the grasping of relationship, ability to carry on abstract thinking etc. Observations of such activities of mind have led the psychologists to conclude that intelligence is not a single power which operates equally well in all situations. Accordingly, the structure of intelligence has been explained in different ways by

the two-factor theory of Spearman, the multifactor theory of Thorndike and the group factor theory of Thurstone.

Intelligence tests can be individual tests or group tests as well as verbal or nonverbal tests. Madhooker Patel's Intelligence Test (MPIT) used in the present study is a nonverbal group test of intelligence which does not require reading, arithmetic or any other form of school achievement. It is also a culture free test and presents geometric drawings designed to test powers of abstract reasoning and space perception.

The test (Appendix IV) was developed at Sardar Patel University, Vallabh Vidyanagar, for age group 14+ and above. The test contains a total of eighty items that are divided into four parts. Part one contains fifteen items of figure series in which one of several figures is to be selected for completing a series. Part two contains fifteen items of figure super-imposition in which a figure obtained by superimposition of two squares is to be selected from several given figures. Part three contains fifteen items of figure analogy where two related figures are given and a similar relationship for a third figure is to be found from a given set of figures. Part four contains thirtyfive items of figure classification in which each item gives a group of five figures out of which one irrelevant figure is to be marked out.

A separate answer-sheet is provided for the test and answers are to be given by putting a cross over the letter

representing correct answer against the number of the test
item. A stencil is available for hand scoring and the total
number of correct answers gives the test score. The manual for
MPIT gives a table of norms from which grade expectancy,
mental age and I.Q. can be read directly. for any given score
ranging from twentyone to eighty.

3.7.2 (D) <u>Sinha's Anxiety Scale</u> : Anxiety is a complex
emotional state with apprehension or dreadt as its most prominent
component. Synonymous terms of anxiety are worry, apprehension,
dread of uneasiness and all such uses of the term anxiety
have somereference to fear. What an individual is anxious about
is something that has happened and which he fears, may happen
again. But many a time, people also worry about things that have
never happendd to them but they anticipate what could happen.

Projective tests have been used at adult level as
indicators of anxiety but worry inventories or anxiety scales
are more widely used tools as they can be self-administered, are
easy to administer, can be used upon a group of subjects and
can be used readily to select groups of subjects with high or
low anxiety (Munn, 1967). Items in an anxiety scale are in form
of statements pertaining to things about which adults are
commonly anxious and the responses to the statements are to be
given as a three-point scale of true, false or cannot say, or
simply a two-point scale of true or false.

Sinha's Anxiety Scale, the tool used in the study is a
self-analysis form which can be administered to a group of
subjects (Appendix V). The scale contains one hundred items
to be checked Yes or No and the total number of items checked
'Yes' gives the score of an individual. It provides a measure
of anxiety, gives quick estimate of manifest anxiety and is
also helpful in locating forms and dimensions in which anxiety
may express its self.

The scale can be used on adults, college students as well
as school students. Reliability coefficient of the scale is
0.92 (N = 98) while the validity coefficient against Taylor's
Manifest Anxiety Scale is 0.69 (Pareek et al, 1974). The
Scale is available in English and Hindi, and a Gujarati version
was prepared for use in the present study.

3.7.2 (E) <u>Minnesota Teacher Attitude Inventory (MTAI)</u> :
Attitudes are learned predispositions to react in certain ways
to aspects of our environment. It is due to attitudes that a
person, instead of responding indiscriminately to every
stimulus, reacts selectively and exhibits personal autonomy or
self-regulation. Attitudes may be positive or negative directed
i.e. if one has an attitude towards something, it can be
fafourable or unfavourable. When one is called upon to make
decisions, to act or to express opinions, one's attitude determines
the outcome. Thus attitudes are sometimes defined as determining
tendencies.

The Minnesota Teacher Attitude Inventory was used in the present study to measure teacher attitude of the student-teachers of the sample (Appendix VI). Investigations carried out by the authors of MTAI have indicated that the attitudes of teachers towards children and school work can be measured with high reliability and that they are significantly correlated with the teacher-pupil relations found in classrooms (Cook et al, 1951). MTAI is designed to measure those attitudes of a teacher which predict how well he would get along with pupils in interpersonal relationships and indicate how well satisfied he would be with teaching as a vocation.

MTAI is a self-administering tool and can also be given to a group of subjects. The subjects read the directions on the top of the test and then proceed to answer the items on a separate answer-sheet. The Inventory contains one hundred and fifty items for which responses are to be recorded on a five-point scale of strongly agree, agree, undecided, disagree and strongly disagree. For the purpose of scoring, responses are scored right or wrong. Each response scored 'right' has a value of +1 and each response scored 'wrong' has a value of -1. Total 'wrong' score substracted from total 'right' score gives the attitude score. Thus the possible range of scores on MTAI is from -150 to +150. Split-half reliability of the inventory was found to be 0.93.

In the present study, a Gujarati version of the MTAI prepared at the Department of Education, South Gujarat University, Surat,

was administered to the subjects.

3.7.2 (F) <u>Socio-economic Status Scale (Rural)</u> : The
tool used in the present study was the socio-economic Status
Scale (Rural) by Udai Pareek and G.Trivedi (Appendix VII).

The growing importance of the quantification of social
sciences has led to the formation of scales for measurement of
social phenomena. Among social variables, socio-economic status
is an important variable both in planning development programmes
as well as in researches in the fields of education, sociology,
psychology, community development etc. Several studies have
shown that SES influences values, norms of behaviour, social
participation, pattern of leadership and motivation for improve-
ment. The scale was originally standardized in the villages
near Delhi, but afterwards it was modified to make it suitable
for use in most parts of the country.

The scale calls for information about a rural family on
important aspects of socio-economic status like caste, occupation,
education, social participation, land, house, farm power, material
possessions and general nature of the family. Out of these nine
aspects of the scale, first relates to the caste and has been
kept in the beginning of the scale to start with a familiar
question. Aspects at numbers two, three and four relate to the
head of the family while the remaining five relate to the family.

The nine categories of the scale give various sub-categories
against each of which is given the corresponding score. A subject

is asked to encircle the appropriate item in each category.

All the scores encircled are added to give a total SES score.

The scale is a highly valid instrument demonstrating its sensitivity to discriminate between the upper and the lower classes. Test-retest reliability of the scale has been found to be 0.87 (Pareek et al, 1964).

3.7.2 (G) Socio-economic Status Scale (Urban) : The scale used in the present study was socio-economic status scale by Kuppuswami (Appendix VIII). It has been standardized for Indian samples and has been extensively used in many researches.

The scale measures the socio-economic status through three items viz. education, occupation and income. With respect to education, categorization depends upon the length and type of education. In case of occupation, the problem of categorization is rather complex and includes seven categories of various levels. Under the income head, five different categories according to income are given.

The respondent is required to mark the appropriate category and addition of all weightage scores given against each category thus marked gives a final SES score, which determines the status category.

Validity of the scale was tested by matching it against outside criterion and the scale was found to work satisfactorily for different social classes. A comparison of dichotomous groups

on the scale has shown a satisfactory discriminating power

of the categories of the scale (Kuppuswami, 1962).

3.7.2 (H) Thematic Apperception Test (TAT) : Thematic

Apperception Test was used in the present study to measure Need

for Achievement (nAch) of the subjects under study.

The behaviour of people highly motivated for achievement

is persistant striving behaviour aimed at achieving success in a

vocation, in school or in social hiararchy. The motive is

aroused in situations involving the attainment of standards of

excellence such as grade in school, money, social prestige or

professional success. In relation to these standards, an ambitious

person directs his efforts towards attaining the satisfaction of

success and avoiding dissatisfaction of failure. The ability to

conceptualize the standards of excellence and to apply them is

considered to be the defining characteristic of the achievement

motive.

Achievement motivation or need for achievement, is a learned

motive to compete and to strive for success. It is a desire or

tendency to do things rapidly and as well as possible, to

accomplish something difficult, to master, to manage or to manipulate

physical objects or human beings or ideas and to excel one's self.

In actions, it takes the form of intense persistent efforts to

do everything well or to accomplish something very difficult.

TAT or thought sampling method continues to be the best

method to assess human motives. In spite of the inherent

difficulties and weakness of the tool as reliability and subjectivity of the scoring, other instruments draw their validity against TAT type tests. The first major work on measuring human motives, particularly nAch , was done by McClelland (1958). McClelland and Friedman (1952) established that the TAT was the most reliable single tool for the measurement of nAch levels. This test was constructed by McClelland for samples of various countries. Mehta (1969) adopted twelve TAT pictures out of those constructed by McClelland, tried it on an Indian sample and proved that nAch could be measured through TAT. Out of the twelve pictures for Indian studies, a series of six pictures was used for studies at Vidyanagar, Baroda and Meghalaya. This series of six pictures was used to measure nAch in the present study. Appendix IX gives this series of six pictures.

The tool contains six pictures that provide cues for developing stories. The pictures are (i) a doctor and a patient, (ii) a boy learning tabla from his music teacher, (iii) a boy sitting on a cot reading a book, (iv) a boy with a note-book, an ink pot and a pen, (v) a group of boys playing cricket and (vi) a boy painting.

This picture test is a group test standardized for Delhi and Gujarat projects. The subjects are required to observe a picture in twenty seconds and then are asked to write a story about it. Time given for story-writing is four minutes. During the whole test, the subjects are thus required to write six

stories in all. For making up the stories, the following
questions are given :

1. What is happening in the picture ? Who are the persons ?
2. What might have happened before ? Why this ?
3. Who thinks ? About what ? What does he wish for ?
4. What would happen next ?

Scoring of the stories follows a complex process which
demands good practice at such an evaluation. The stories are
first examined for Achievement Imagery (AI), Task-related
Imagery (TI) and Unrelated Imagery (UI). AI stories are
scored +1, TI stories are scored zero and UI stories are scored
-1. All AI stories are further scored for ten subcategories
viz. Need (N), Instrumental Activity (I), Anticipatory
Goal States (Ga+ , Ga-), Blocks (Bp , Bw), Nurturant
Press (H). Affective states (G+ , G-) and Achievement
Thema (Ach.Th.). All subcategories are scored +1 and a story
gives a maximum score eleven and a minimum score -1 for UI.
The total score range on the tool is -6 to 66.

As the scoring of the stories requires an expert adapt
at the procedure of scoring, the stories in the present
investigation were not scored by the researcher but were got
scored by an expert in the field.

3.7.2 (I) <u>The 16 PF Test</u> : The Sixteen Personality
Factor Test is a factor-analytically developed personality

questionnaire designed by Dr.R.B.Cattell and Dr.H.W.Eber to
measure the major dimensions of human personality comprehensively
in young adults, and adults from 16 to 17 years to late
maturity. The test along with the answer sheet is agiven
in Appendix X).

Personality, as explained by Drever (1974), is the
integrated and dynamic organization of the physical,mental,
moral and social qualities of an individual that manifest its
self to other people in the give and take of social life. It
comprises of natural and acquired impulses, habits, interests,
complexes, sentiments, ideals, opinions and beliefs as
exhibited in relation with an individual's social milieu.
Measurable aspects of personality are refered to as personality
traits which are common, relatively enduring ways in which one
person can differ from another (Guilford, 1964). Every
personality trait implies a direction e.g. towards impulsiveness
or towards caution, towards accuracy or towards inaccuracy.
Thus every trait has two opposites that can be thought of as
two ends of a straight line with intermediate positions along
the line.

The 16 PF Test is a questionnaire type of test which can
be administered to groups as well as individuals and its
several forms are available for a wide range of educational
level. Form A and B assume a high school reading level, Form C

and D are suitable for lower levels and Form E for culturally disadvantaged and intellectually limited persons. In the present study Form B was used which is for young adults and adults. The test contains one hundred sixty statements, each with three alternative responses and the subjects are asked to give their responses by selecting any one alternative from the three. The sixteen personality factors that are measured by this test are as under :

1. Factor A : Reserved Vs Outgoing

2. Factor B : Less intelligent Vs More intelligent

3. Factor C : Affected by feelings Vs Emotionally stable

4. Factor E : Humble Vs Assertive

5. Factor F : Sober Vs Happy-go-lucky

6. Factor G : Expidient Vs Conscientious

7. Factor H : Shy Vs Venturesome

8. Factor I : Tough minded Vs Tender minded

9. Factor L : Trusting Vs Suspicious

10. Factor M : Practical Vs Imaginative

11. Factor N : Forthright Vs Shrewd

12. Factor O : Placid Vs Apprehensive

13. Factor Q_1 : Conservative Vs Experimenting

14. Factor Q_2 : Group-dependant Vs Self-sufficient

15. Factor Q_3 : Casual Vs Controlled

16. Factor Q_4 : Relaxed Vs Tense

The Test has proved unusually flexible and powerful in the prediction of various life criterion. Split-half reliabilities for each of the sixteen factors scales range from 0.71 to 0.93. Internal construct validity ranges from 0.73 to 0.96.

In the present study, a Gujarati version of the test was prepared for use and the responses were recorded on separate answersheets. For the purpose of scoring, the responses, randomly arranged, are assigned scores of zero, one and two except in case of Factor B where wrong response is scored zero and right is scored two. As there are ten statements for each factor, the score range for each factor is zero to twenty.

3.7.3 Training and Data Collection : The present investigation was undertaken to study the effect of the three different training approaches on the acquisition of general teaching competence and to study the effect of other covariates on this acquisition. The study was also aimed at examining the practicability of adopting the microteaching approach for training side by side the traditional training approach. Thus, planning of the training procedure in the study was done with a view to blend it smoothly with the other traditional routine training programme of the College.

As mentioned earlier, the study was carried out for two successive years i.e. 1976-77 and 1977-78. The repetition of the study made it possible to observe whether persistent results could be obtained from year to year. The repetition of the study also made it possible to increase the size of the sample in order to get more reliable results about the effects of training approaches as well as the effects of demographic variables.

During the first year of the study, the training procedure as well as recording the evaluation at various stages was carried out through the undermentioned stages. During the training procedure, it was always seen that the training of the student-teachers in other teaching methods was disturbed the least. The training arrangement for Science group was made easier as the student teachers who had offered Science and Mathematics as their teaching methods formed a disjoint set and intervening of other teaching methods and arrangement of other subject lessons could be avoided. The successive training procedure stages were as under :

(1) The trainees were familiarised with the lesson plan and objective based lesson planning. Various stages of planning and the importance of objectives were discussed. The trainees practised forming objectives for a lesson, giving specific objectives in terms of behavioural changes and planning a lesson.

(2) The trainees were acquainted with the General Teaching Competence Scale (Appendix II) on which their teaching performance was to be evaluated. Each item of the scale was explained to them and each one was provided with the proforma of the scale for study and future reference.

(3) A programme of demonstration lessonsw was arranged wherein the trainees observed three traditional demonstration lessons by three different supervisors including the researcher. This programme formed a part of the total demonstration lessons' programme of the College.

(4) All the trainees gave two Science practice-teaching lessons. These lessons were supervised by the researcher who evaluated the performance of the trainees on GTC Scale, and by one another supervisor who evaluated the performance in traditional manner by judging the lesson as a whole. The GTC Scale scores obtained by each trainee on these two lessons were averaged to give a pre-treatment score (GTCS - 1) and these pre-treatment scores provided a basis on which the thirty trainees were divided into three groups, viz. (1) the group which was to receive traditional training coupled with auto-instructional material i.e. the TRT group, (2) the group which was to receive training through micro-teaching in real situation i.e. the MTR group and (3) the group which was to receive training through microteaching under simulated condition i.e. the MTS group. The groups were formed in such a manner that their mean scores and standard deviations of the scores were approximately equal. This was achieved by assigning equal scoring trainees randomly to the three groups.

(5) The training stage that followed the formation of the three groups was introduction of the skills that were to be taken up for training, and familiarising the trainees with the skills in detail. As three groups were already formed the procedure followed for them differed as was decided before. The TRT group i.e the group that was to get traditional training coupled with auto-instructional material was given handbooks containing written description of the four teaching skills, teaching episodes based on the skills and the behavioural components of the skills

(Appendix XI). The group was asked to study the handbooks and
to see that they try to implement the skills in the practice-
teaching lessons that were to follow. In a way, the handbooks
served as a form of symbolic modelling.

So far as the other two microteaching groups were concerned,
they were oriented in the microteaching approach of practising
the skills. The microteaching training approach was explained to
them and the selected four skills were discussed and were analysed
into their respective components. Demonstration of microlessons
were arranged and the trainees were familiarised with the micro-
teaching cycle of teach, critique, replanning, reteach and
recritique.preparing microlesson plans was discussed and micro-
lesson plan blanks were distributed ᴄ for use in their practice-
teaching microlessons (Appendix XII), Microlessons time
schedule was explained and out of a total period time of 35 minutes,
appropriate time was allotted to each stage in microteaching cycle
viz., 8 minutes for teach, 6 minutes for critique, 7 minutes for
replanning, 8 minutes for reteach and 6 minutes for recritique
stages.

(6) The next stage of the programme was of practice teaching
lessons of traditional type for the TRT group and microteaching
practice for the MTR and MTS groups. During this part of the
programme, the trainees passed through a total teaching of eight
lessons i.e. practice-teaching lessons numbering from three to ten.

The programme was carried out at Javer Jivan Mehta High School,
Bilimora, and special permission of the Principal was obtained for

conducting the experiment. The school allotted two rooms for microteaching practice.

Three supervisors worked in a team at this stage. One supervisor was allotted the supervision of traditional practice-teaching lessons given by the TRT group. The researcher himself along with one another supervisor jointly took up the training and supervision of the microlessons given by the MTR and MTS groups. In a school period of thirtyfive minutes each, three practice-teaching lessons were arranged simultaneously: one of traditional teaching and two of microteaching. Thus during the time in which the trainees of the TRT group completed their 8 lessons of this stage, the trainees of the MTR group as well as those of the MTS group also completed their 8 microteaching lessons. Of the eight microteaching lessons, two lessons each were allotted to the development and training of each of the four skills. Thus for the microteaching groups, the trainees practised the skill of introducing a lesson in the third and fourth lessons, the skill of silence and nonverbal cues in the fifth and sixth lessons, the skill of stimulus variation in seventh and eighth lessons and the skill of achieving closure in the ninth and the tenth lessons.

Of the two microteaching groups, the MTR group was trained first and during the time in which the trainees of the TRT group completed their first four lessons of this stage, the trainees in the MTR group completed their eight lessons of teaching in micro-teaching setting in real situation. Similarly, the training of the

MTS group and completing their eight microteaching lessons in simulated condition was simultaneously with the later four lessons of the TRT group.

For microteaching in real situation, ten pupils from the division in which traditional lesson was arranged were selected at random and divided into two groups of five pupils each for the two microteaching lessons running simultaneoubly. The two groups of pupils were exchanged after the teach session was over. For microteaching in simulated condition, the peer themselves acted as the pupils and their groups were exchanged after teach session in each lesson.

The practice teaching lessons of the trainees in TRT group were supervised in the traditional manner by sitting at the back of the class and noting the observations and remarks in the lesson journals. In the microteaching sessions the lessons of the trainees of the HTR group as well as the MTS group were supervised by recording the observations in the observation schedules of each skill. Two peers also recorded their observations in the observation schedules and feedback was given by the supervisor and the peers at critique as well as recritique stage.

The trainees completed a total of ten practice-teaching lessons at this stage. The traditional practice-teaching lessons were arranged in standards VIII and IX and the topics for micro-lessons were also selected from the science contents of standards VIII and IX. Appendix XIII gives a list of different topics of

Science that were taken up for practising the four skills.
Appendix XIV gives the proforma of the time-table for micro-
teaching sessions.

(7) After the completion of the above discussed treatment
stage of the programme, all the trainees gave one practice-
teaching lesson of traditional type. This was their 11th
practice-teaching lesson and their performance was evaluated
by the researcher on GTC Scale. Their scores on GTC Scale
(GTCS-11) gave post-treatment scores which were used for
analysis of the data. Their performance was also evaluated in
traditional manner by one another supervisor.

(8) After their eleventh practice-teaching lesson, all the
trainees went through a programme of four macrolessons i.e.
four traditional type practice-teaching lessons. This completed
their fifteen practice-teaching lessons. Subsequent to this, at
the time of the College routine programme of final test lessons,
the trainees gave their sixteenth practice-teaching lesson
which was evaluated by the researcher on GTC Scale to give scores
corresponding to GTCS-16. These scores represented a joint effect
of treatment plus a practice of traditional teaching. The scores
GTCS-16 were also used for the analysis of the data. The 16th
lesson was also evaluated in traditional way by one another
supervisor.

This complete programme given above was repeated for the
next year for validation of the results as well as to increase

the number of subjects to make the findings of the study more reliable.

As mentioned earlier, the training programme of the present study was arranged so as to comply with the routine practice-teaching programme of the College. Thus the time-schedules for the various stages of the programme and the total time allotted was spread from the middle of June to the middle of February. Time schedule for the various successive stages of the study were as follows :

(1) Middle of June to late July : Discussion of objectives based lesson planning, preparing model lesson plans, traditional demonstration lessons.

(2) Late July to late August : Practice-teaching lessons one and two evaluated on GTC Scale to yield pre-treatment scores.

(3) Beginning of September to late September : Treatment stage, traditional teaching lessons from number three to ten for TTR group, microteaching lessons for the two microteaching groups viz. the MTR and the MTS groups.

(4) End of September : Eleventh practice-teaching macro-lesson evaluated on GTC Scale to give post-treatment scores.

(5) Third and fourth weeks of November : Four traditional type practice-teaching lessons during the off-campus programme of the College.

(6) Middle of February : Final test lessons, 16th practice-teaching lesson evaluated on GTC Scale.

A similar pattern of time schedule was repeated next year.

So far as the administration of other tests were concerned, Anxiety Scale, Teacher Attitude Inventory, TAT and the 16 PF Questionnaire were administered in the beginning of the year. Data on the other three viz. the HPIT, SES Rural and SES Urban was collected at convenient times during the year.

3.8   System of Data Analysis

In the present investigation, the independent variables under study were the treatments given in the form of three training approaches, viz. traditional training coupled with auto-instructional material, microteaching training in real situation and microteaching training in simulated condition. The dependent variable was the acquisition of general teaching competence and three measures of this variable were taken into consideration which were (i) the GTC score at the pre-treatment stage i.e. GTCS-1, (ii) the GTC score for post-treatment stage i.e. GTCS-11 and (iii) the second GTC score for post-treatment stage i.e. GTCS-16.

Along with the independent variables of the three training approaches, sex, SES, I.Q., anxiety scores, teacher attitude score, nAch score and the scores of personality factors were taken as covariates.

In order to study and to compare the effects of independent variables and the covariates on the dependent variable, statistical

methods of analysis like analysis of covariance, t-test and Duncan's New Multiple Range Test were used.

3.9 The Scheme of Chapters

The following is the scheme of chapters in the present study :

    I   Significance of the Study

   II Microteaching Development and Researches

 III The Problem and Procedure

  IV Analysis of Data and Interpretation

   V Review of Findings and Suggestions.