CHAPTER III

METHOD AND PROCEDURE
(FINAL STUDY)

3.0.0. DESIGN

In the light of the guidelines drawn from the pilot study (First Phase), the final study (Second Phase) was planned and conducted to fulfil the objectives mentioned under caption (1.0.0.) The final study having pretest and posttest paralleled group design was conducted at the D.A.V. College of Education, Abohar (Punjab). The purposes of this final study were:

(i) To study the differential effects of three techniques of providing feedback, namely, discussion, oral and written on the attainment of three skills related to stimulus variation with special reference to nonverbal communication in the classroom.

(ii) To study the transfer of training from micro-teaching under simulated condition to real classroom teaching.

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The final study constituted four groups : three experimental groups and one control group. The treatment variable selected in the design were three different techniques of providing feedback in microteaching. The dependent variables were three technical skills of teaching, namely, body movement, gestures and shifting sensory channels. The controlling variables were the age, sex, percentage of marks, methods of teaching offered in the B.Ed. course and teaching experience. Table 3.1 gives a schematic picture of the design.

Following sequence of captions has been adopted in this chapter : sample, tools, treatment, data collection, and statistical techniques used.

3.1.0. Sample

The sample in this study involved three categories of people : student teachers (microteachers and peer supervisors) and college supervisors (investigator). The details of each category, under three samples : student teachers, peer supervisors and other personnel involved, are discussed below.

3.1.1. Sample of Student Teachers

Thirty two female student teachers were selected for the study. Out of 200 student teacher population,

TABLE 3.1:

A Schemetic Picture of the Design

(Pretest and Posttest Paralleled Group Design)

Pretest on General Teaching Competence Observation Schedule (School Situation)			
Microteaching Simulation (Laboratory Stage)			Microteaching Real (School Stage)
E_1	E_2	E_3	Control (C)
Sample	Sample	Sample	Sample
ST - 8	ST - 8	ST - 8	ST - 8
PS - 2	PS - 2	PS - 2	CT - 1
Tools	Tools	Tools	Tools
As mentioned in Table 3.3	As mentioned in Table 5.3	As mention in Table 3.3	Discussion with C.5 GTC 05
Treatment	Treatment	Treatment	Treatment
Skills-3	Skills-3	Skills-3	Skills-All mentioned in GTC 05
(i) B.M.	(i) B.M.	(i) B.M.	
(ii) G	(ii) G	(ii) G	
(iii) S.S.C.	(iii) S.S.C.	(iii) S.S.C.	
Techniques of FB	Techniques of FB	Techniques of FB	Techniques of FB
(i) Discussion	(i) Discussion	(i) Discussion	Global
(ii) Oral	(ii) Oral	(ii) Oral	Qualitative
(iii) Written	(iii) Written	(iii) Written	

Tools used after Laboratory Stage

(i) Attitude Scale of Teacher Trainee towards microteaching
(ii) Self Evaluation Proforma for Microteaching Programme
(iii) Free Response Evaluation Proforma for Microteaching Programme

Posttest on General Teaching Competence Observation Schedule (School Situation.)

E - Experimental
ST - Student Teacher
PS - Peer Supervisor
B.M. - Body Movement
G - Gestures
S.S.C.-Shifting sensory channels
F.B. -Feedback

Twenty four student teachers in three experimental groups (E_1, E_2 and E_3) having eight student teachers in each group, and eight in control group, were matched on age, qualification, percentage of marks, teaching subjects and teaching experience. Both art and science graduates were homogeneously divided into four groups. The age range in each group was in this order : E_1 - 19 to 23 years, E_2 - 19 to 23 years, E_3 - 20 to 22 years and control group - 19 to 22 years. Regarding percentage of marks, student teachers had the percentage of marks in this order: E_1 - 49 to 58 percent, E_2 - 49 to 60 percent, E_3 - 49 - 61 percent, control - 50 to 58 percent. With regard to teaching subjects, all the student teachers were equally divided into four groups. Each group comprised four art and four science graduates. The student teachers in all the four groups had no teaching experience.

4 3.1.2. Sample of Peer Supervisors

Six student teachers who were holding M.A. and M.Sc. degrees, were selected as peer supervisors. Two peer supervisors, one M.A. and one M.Sc., were attached to each experimental group. In view of arts and science graduates in experimental groups, this type of grouping of peer supervisors was made. Peer supervisors were matched on these variables. Sex, age, qualification, teaching subjects and teaching experience. Thus age range was 21 to 23 years. Teaching subjects offered in B.Ed. class were language, social studies, general science and chemistry. None had any teaching experience. Table 3.2 - A, B and C on the next page summarizes the composition of all the experimental groups, control group and peer supervisors.

3.1.3. Other Personnel Involved

Apart from the student teachers, college supervisors were also involved in this study. They were attached to control group in conventional teaching practice.

3.2.0. TOOLS

Some new tools were developed for collecting the data in the final study. Some tools which were already used in the pilot study, were modified due to change in the design

TABLE 3.2 :

Personal Information Sheet

(A) Distribution of Student Teachers in Experimental Groups

Sr. No.	Groups	Student Teachers	Sex	Age in years	Qualifications	Percentage of Marks	Teaching Subjects	Teaching Experience
1	E_1	8	Female	19-23	B.A./B.Sc.	49-58	L/SS/Sc/ch.	Nil
2	E_2	8	Female	19-23	B.A./B.Sc.	49-60	L/SS/Sc/Ch.	Nil
3	E_3	8	Female	20-22	B.A./B.Sc.	49-61	L/SS/Sc/Ch.	Nil
(B)	Distribution of Student Teachers in Control Group							
1	C	8	Female	19-22	B.A./B.Sc.	50-58	L/SS/Sc/Ch.	Nil
(C)	Distribution of Peer Supervisors in Experimental Groups							
1	E_1	2	Female	21-23	M.A./M.Sc.	50-60	L/SS/Sc/Ch.	Nil
2	E_2	2	Female	21-23	M.A./M.Sc.	50-60	L/SS/Sc/Ch.	Nil
3	E_3	2	Female	21-23	M.A./M.Sc.	50-60	L/SS/Sc/Ch.	Nil

L - Language
SS - Social Studies
Sc - Science
Ch. - Chemistry

in the final study. A brief description of all the tools used in the study is given in Table 3.3 for better understanding.

TABLE 3.3 :

A Brief Description of Tools

Sr. No.	Name of Tool	Variable	Purpose
1.	Personal Information Sheet (Table 3.2)	Demographic Variables	Description of sample
2.	... do ... (Table 3.2)	Achievement Scores	Co-variate
3.	General Teaching Competence observation Schedule (GTCOS)	General Teaching Competency Scores	Co-variate
4.	Skill Evaluation Proforma for the Skill of Body Movement	Skill Scores on Body Movement	Criterion Variable
5.	Skill Evaluation Proforma for the Skill of Gestures	Skill Scores on Gestures	Criterion Variable
6.	Skill Evaluation Proforma for the Skill of Shifting Sensory channels	Skill Scores on Sensory channels	Criterion Variable
7	General Teaching Competence Observation Schedule (GTCOS)	General Teaching Competence Scores	Criterion Variable
8.	Attitude Scale of Teacher Trainee towards Microteaching	Attitude Scores	Criterion Variable
9.	Self Evaluation Proforma for Microteaching Programme (Simulated conditions)	Self Evaluation Scores on different aspects of Microteaching	Criterion Variable
10.	Free Response Evaluation Proforma for Microteaching Programme (Simulated conditions)	Qualitative Responses related to Microteaching	Criterion Variable

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(a) The General Teaching Competence Observation Schedule :

For measuring general teaching competence of a student teacher,' The General Teaching Competence Observation Schedule' (GTCOS) was developed. There are twenty statements in the GTCOS. These statements give a brief description of a particular skill of classroom teaching. Each skill in terms of a statement is rated in seven point scale. Major themes under twenty statements are : Pre-interactive stage (planning of the lesson); Interaction stage (actual teaching); and Post-interactive (evaluation). The GTCOS was prepared for the use of college supervisor for juding the general teaching competence of a student teacher in terms of numerical scores.

For developing the GTCOS, a critical study was done of some lesson evaluation tools already in use at the University of Ulster, College of Education, Chandigarh, Centre of Advanced Study in Education, Baroda, tool developed by Dr.R.H.Dave and Srivastava and tool developed at Jabalpur Workshop. Possible teaching behaviours from these evaluation tools, were pooled under ('dimensional components', of teaching such as aims and objectives, planning, beginning of the lesson, matter presentation, class management, ending the lesson, teacher characteristics,

evaluation, etc. Keeping in view the logical and psychological sequence of different aspects of teaching, teaching behaviours were put in terms of component activities. Further, these 'component activities, were put into 'statement forms' so as to be rated on seven point scale, by the observers. All statements based upon 'component activities' of the classroom teaching under each dimensional component of teaching frame, were clubbed into three broad stages of a lesson namely, pre-interactive (pre-instructional or planning), interactive (instructional or execution), and post-interactive (post-instructional or evaluation).

As a result of critical analysis of classroom activities, study of different lesson evaluation tools available and conceptual frame work of teaching process, twenty statements reflecting all aspects of normal classroom teaching were finalised.

Major dimensional components of teaching mentioned under each stage are as follows :

(i) Pre-interactive stage - aims and objectives and content organisation.

(ii) Interactive stage - beginning of the lesson, matter presentation, students participation,

teaching materials, methods and techniques, blackboard writing, class management, classroom climate, closing the lesson, nonverbal communication and teacher characteristics.

(iii) Post-interactive stage - tools of evaluation and variety in the procedures of evaluation.

The content validity of the GTCOS was found through discussion on different statements with teacher educators. For reliability of the tool, ten lessons were observed by the investigator and one of his colleagues on the GTCOS. With rank order difference method coefficient of correlation was calculated. It was found .91. Thus the reliability of tool was established for observations to be made.

For evaluating the lesson, each statement was to be rated on seven point scale. Total score on twenty statements would lead to show the level of general teaching competence of a teacher at any stage of his teaching (See Appendix H).

(b) Skill Evaluation Profomas :

On the basis of the experience gained with regard to construction of skill evaluation proformas in the pilot study, three new tools related to each skill were

developed. In the pilot study, only one skill, silence and nonverbal cues, belonging to nonverbal communication was studied in microteaching whereas in the final study two skills related to nonverbal communication in the classroom were selected for investigation. Accordingly, two skill evaluation proformas on two skills, namely, body movement and gestures were developed.

(i) The Skill Evaluation Proforma for the Skill of Body Movement :

The 'Skill Evaluation Proforma for the Skill of Body Movement' was developed to evaluate the skill of body movement in the classroom. There are five statements covering different components of the skill, namely, movements towards blackboard, towards pupils, sideways, between the rows and around the class, in the context of teaching. Each component in terms of a statement is rated on seven point scale. The tool was developed for the use of peer supervisor and microteacher for self-rating.

For developing this tool, various aspects of body movement were discussed in operational terms with student teachers and college supervisors. Selected components of the skill were put in the form of five statements to be rated on seven point scale. Total score of all the statements

would lead to show the level of the skill in relation to teacher's skill reportiore.(For more details See Appendix I).

(ii) The Skill Evaluation Proforma for the Skill of Gestures :

The 'Skill Evaluation Proforma for the Skill of Gestures' was developed to evaluate the skill of gestures in the classroom. There are seven statements covering different components of this skill, namely, gestures of head, hand, arms, shoulders, whole body and dramatic representation in the classroom. From seven statements six are rated on seven point scale one needs qualitative comment only. This tool was developed for the use of peer supervisor and microteacher for self rating.

For developing this tool, same procedure was adopted as mentioned in the Skill Evaluation Proforma for the Body Movement. More details of the tool are given in the Appendix (J).

(iii) The Skill Evaluation Proforma for the Skill of Shifting Sensory Channels :

The Skill Evaluation Proforma for the Skill of Shifting Sensory channels was developed to evaluate the skill sensory channels in classroom teaching. This proforma

2 records variations among eight types of teaching activities which generally happen in the classrooms, namely, lecturing, questioning, writing, reading, listening, checking, instructing and demonstrating. First letter of the name of activity was decided to be recorded on a sheet of paper with three seconds interval on the lines of the Flanders Interaction Analysis Category System to represent the occurence of events. For providing feedback with this tool total record of events occured and total shifts among these events were taken. This tool was developed for the use of peer supervisor only.

The Skill Evaluation Pfoforma for the Skill of Shifting Sensory Channels was developed on the same lines as were followed in two previous proformas. To mention in brief, eight component teaching activities were finalised through discussion with the student teachers and college supervisors. With three seconds interval, occurence of these activities, were decided to be recorded on a sheet of paper. Total shifts out of total occurence of events may be the focus of attention on the part of supervisor and microteacher (See Appendix K).

(c) The other three tools administered at the end of the experiment : (i) The Attitude Scale of Teacher Trainee Towards Microteaching, (ii) The Self Evaluation

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Proforma for Microteaching Programme (Simulated conditions) and (iii) The Free Response Evaluation Proforma for Microteaching Programme (Simulated conditions). First tool which was already developed in the pilot study, was modified in the light of the treatment in the final study. Other two tools were developed afresh by the investigator.

The 'Attitude Scale of Teacher Trainee towards Microteaching' has forty one statements covering various aspects of microteaching. These statements were to be responded to on a five point scale. Five point means strongly agree and one point means strongly disagree on the statement with regard to trainee's attitude towards microteaching programme. This tool was used by micro-teachers only (See Appendix L).

The Self Evaluation Proforma for Microteaching Programme (Simulated conditions) has thirty three statements which cover different aspects of microteaching namely, planning session, reteach session, feedback session, skills, administration, etc. These statements were to be responded to on a five point scale. Five point means very much and one point means not at all. The total score showed the assessment of a trainee regarding the programme. This tool was designed for microteachers who participated in the

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programme. As they had been through the process, they could evaluate better the programme from their stand point (See Appendix M).

The Free Response Evaluation Proforma for Microteaching was designed to have microteachers' first reactions towards microteaching programme which could not be possible through other tools. This tool has twenty five stimulus words or statements related to various aspects of micro-teaching, namely, training technique, simulation or real, feedback process, skills - body movement, gestures and shifting sensory channels, playing the role of a micro-teacher, peer supervisor and pupil, models college supervisor, etc. Microteachers were asked to gife their qualitative, free and frank comments against each stimulus word or statement. From the qualitative comments of three experimental groups, a conceptual frame work regarding microteaching programme could have been derived. This tool was developed only for the use of microteachers who participated in the programme (See Appendix N).

3.3.0. TREATMENT

The treatment consisted of four types of orientation-cum-training to four types of personnel, namely, (i) peer supervisors, student teachers of experimental groups and control group, (ii) peer supervisors only, (iii) experimental

groups only, and (iv) Control group only. The four phases of the treatment are discussed below.

3.3.1. Orientation of Student Teachers Before the Pretest

Before starting the actual experiment, all the four groups of students and the peer supervisors were given orientation in lesson planning. Investigator discussed maxims of teaching, components of teaching, types of lessons, format of lesson plan and various steps involved in preparing a lesson, with all personnel involved in the experiment. After having discussion on the above issues of teaching, they were asked to finally prepare one full lesson of 40 minutes. All the student teachers gave the lesson in actual classroom. These lessons were observed by trained observers. The tool used for observation was GTCOS. The scores on GTCOS were used as the pretest data.

3.3.2. Orientation of Peer Supervisor

Before starting the actual experiment in Laboratory Stage and School Stage with experimental groups and control group respectively, peer supervisors were given orientation to characteristics of good teacher and poor teacher, roles of a teacher, skills of teaching, skills related to stimulus variation, microteaching, skill evaluation proformas on each skill and process of providing feedback. The

investigator discussed various techniques of providing feedback with peer supervisors with special reference to 'peers' with the help of model lessons on each of the skills - body movement, gestures and shifting sensory channels. At the end, group arrived at certain common points which were to be noted while providing feedback to their friends on different skills. Later on, the peer supervisors were asked to deliver a model lesson of five minutes. When one peer supervisor was delivering the lesson, two other peer supervisors were observing and other three peer supervisors were acting as pupils. In rotation, each peer supervisor had the chance to deliver the lesson, to supervise and provide feedback and to act as a pupil. The experience and perception of these three roles gave more clarity regarding the skill besides other aspects of teaching. In this manner, peer supervisors were given enough grounding to act as effective peer supervisors.

At the end, peer supervisors were briefed out for providing feedback to other student teachers in an atmosphere of learning and avoiding all conflicts and inhibitions like this, two peer supervisors were attached to each experimental group :

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(i) Group E_1 - One M.A. and one M.Sc. - technique of feedback 'discussion' on the basis of rating of skill.

(ii) Group E_2 - One M.A. and one M.Sc. - technique of feedback 'oral' on the basis of rating of skill.

(iii) Group E_3 - One M.A. and one M.Sc. - technique of feedback 'written' on the basis of rating of skill.

3.3.3. Orientation and Training of Experimental Groups

With regard to the orientation and training of microteachers in three experimental groups, exactly same procedure as mentioned above in the case of peer supervisors was adopted. Briefly stating, the treatment was administered in the following manner :

(i) Characteristics of a teacher
(ii) Roles of a teacher
(iii) Skills of teaching
(iv) Skills related to stimulus variation with special reference to nonverbal communication
(v) Orientation to microteaching, simulation and role playing.
(vi) Planning of microlessons.
(vii) Training in three skills.

Under the step 'Training in Three Skills' the treatment consisted of exposing the three groups of the

respective treatment. Group E_1, consisting of eight student teachers, was exposed to 'discussion' as a technique of providing feedback by peer supervisors. Peer supervisors discussed with microteachers regarding different aspects of the skill for its improvement. Group E_2 consisting of eight student teachers, was exposed to 'oral' as a technique of providing feedback by the peer supervisors. The Peer supervisors conveyed orally the recorded observations on skill proformas for the improvement of the skill. Group E_3, consisting of eight student teachers, was exposed to 'written' as a technique of providing feedback. The recorded information regarding different aspects of the skill on skill proformas, was given to the microteacher for its analysis and improvement. The peer supervisors, in this case did not speak anything regarding points for improvement except recorded information on paper.

The other arrangements of the experiment were kept uniform throughout. Each experimental group was divided into two subgroups, each consisting of four microteachers teaching the peers as pupils. The peers of second set of microteachers after four microlessons, acted as microteachers and microteachers of first set, acted as pupils.

After teach of all the eight microteachers, groups E_2 and E_3 interchanged their one set of microteachers to have a reteach of the same lesson on different set of peers as pupils. This could not be done on group E_1 because there was no subgroup available for this group, secondly, in order to keep purity in the experiment, it was not appropriate to expose microteachers of other groups to discussion technique. Had other subgroups been exposed to discussion, results would have been changed because in other groups E_2 and E_3, microteachers were having feedback through oral and written only as techniques of feedback individually. Therefore, in group E_1 during reteach session only student teachers, not included in the experiment were taken as pupils. This practice is illustrated with schematic representation in Table 3.4 on the next page. Thus, simultaneously, three microteachers could finish their lessons of six minutes duration. Five minutes were devoted for providing feedback. One of the peer supervisors provided feedback according to the teaching method - peer supervisor who was M.Sc., provided feedback to science graduates and peer supervisor who was M.A., provided feedback to arts graduates. In this way, one peer supervisor was busy in observing the lesson and second was busy in providing the feedback. After completing teach of

TABLE 3.4:

A Schematic Representation of the Treatment to Experimental Groups (Microteaching-Simulation)

Level	E_1	E_2	E_3
Teach	Microteachers (E_1-A) : : : Peers (E_1-B)	Microteachers (E_2-C) : : : Peers (E_2-D)	Microteachers (E_3-F) : : : Peers (E_3-G)
	Microteachers (E_1-B) : : : Peers (E_1-A)	Microteachers (E_2-D) : : : Peers (E_2-C)	Microteachers (E_3-G) : : : Peers (E_3-F)
Reteach	Micro-teachers (E_1-A) : : : Peers (Studentteachers)	Micro-teachers (E_2-C) ⋱ Peers (E_2-D)	Micro-teachers (E_3-F) ⋱ Peers (E_3-G)
	Micro-teachers (E_3-G) ⋱ Peers (E_3-F)	Micro-teachers (E_2-D) ⋱ Peers (E_2-C)	
	Microteacher (E_1-B) : : : Peers (Student Teachers)		

Student Teachers are those who were not in the Experiment

eight lessons in all the three groups simultaneously, investigator devoted ten minutes for general discussion with three groups peer supervisors for clarifications. Certain points raised by peer supervisors were answered for reteach session. Thus, in one hour and fifteen minutes all the twenty four microteachers would have given teach of first cycle for six minutes each and had a feedback of five minutes and ten minutes discussion of peer supervisors with the investigator. The outlines of the schedule has been shown in Table 3.5. below.

TABLE 3.5 :
A Description of the Schedule of Microteaching

Time	Teach	Critique	Replan	Other Groups
8.00-8.06	$TE_1 - P_1$			
8.06-8.12	$TE_2 - P_2$	$TE_1 - P_1$		
8.12-8.18	$TE_3 - P_1$	$TE_2 - P_2$	TE_1	Same procedure was followed in other two rooms simultaneously
8.18-8.24	$TE_4 - P_2$	$TE_3 - P_1$	TE_2	
8.24-8.30	$TE_5 - P_1$	$TE_4 - P_2$	TE_3	
8.30-8.36	$TE_6 - P_2$	$TE_5 - P_1$	TE_4	
8.36-8.42	$TE_7 - P_1$	$TE_6 - P_2$	TE_5	
8.42-8.48	$TE_8 - P_2$	$TE_7 - P_1$	TE_6	
8.48-8.54		$TE_8 - P_2$	TE_7	
8.54-9.00			TE_8	
9.05-9.15	General discussion with three Experimental Groups peer supervisors by the Investigator on certain points for clarification.			

E_1, E_2 .... E_8 Microteachers of Group E_1
P_1, P_2 Peer Supervisors attached with Group E_1

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The reteach was arranged next day on different set of peers as pupils. All the three experimental groups delivered two lessons (two complete microteaching cycles) per skill thus completing six lessons (six complete microteaching cycles) on three skills, namely, body movement, gestures and shifting sensory channels.

After giving training on three skills, the Attitude Scale Towards Microteaching, The Self-evaluation for Microteaching Programme (Simulated Conditions) and the Free Response Evaluation Proforma for Microteaching Programme were administered to the three experimental groups.

3.3.4. Conventional Teaching Practice to Control Group

During the period microteaching programme was conducted, control group was exposed to conventional treatment of student teaching as prevalent in the college for all the trainees. Student teachers in control group were exposed to the general model lessons by college supervisors, one discussion lesson by student teachers in either of teaching methods and one week regular teaching practice in schools. General feedback (global) was given by college supervisors in terms of remarks on lesson plan related to different components of the lesson.

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After completing the microteaching experiment and also the other student teachers' one week teaching practice, in a way devoting equal time to both experimental and control groups, all the four groups (E_1. E_2, E_3 and control) were asked to deliver one lesson of 40 minutes in real classroom. These lessons were observed with the help of GTCOS and the scores of this lesson were treated as posttest measures.

3.4.0. DATA COLLECTION

Data collection in the final study had the following steps :

(i) Practising the skill of 'body movement', providing the feedback, and obtaining the assessment scores by one peer supervisor and self rating for every teach and reteach of the lesson. In this way, four observations were recorded by using the same tool (The Skill Evaluation Proforma for the skill of Body Movement) by peer supervisor and self (microteacher) per microteaching cycle. Thus eight observations were taken on this skill.

(ii) Practising the skill of 'gestures', providing the feedback, and obtaining the assessment scores by one peer supervisor and self rating for every teach and reteach of the lesson. In this way, four observations were recorded by using the same tool. (The Skill Evaluation Proforma for the Skill of

Gestures) by peer supervisor and self (micro-teacher) per microteaching cycle. Thus, eight observations were taken on this skill.

(iii) Practising the skill of shifting sensory channels, and providing the feedback, and obtaining the assessment scores by one peer supervisor only for every teach and reteach of the lesson. No self rating was recorded in this skill as it was not possible for the microteacher to analyse shifts with three seconds interval. Assessment by the peer supervisor was recorded in terms of total record of events and total shifts of events in the lesson. Total record of events and total shifts for five minutes were obtained. In this way, four observations were taken on this skill by using the Skill Evaluation Proforma for the Skill of Shifting Sensory Channels by the peer supervisor only.

At the end of data collection on three skills, the Attitude Scale of Teacher Trainee Towards Microteaching, the Self Evaluation Proforma for Microteaching Programme (Simulated Conditions) and the Free Response Evaluation Proforma for Microteaching (See Appendices - L, M and N), were administered to experimental groups only to know their attitude and their assessment regarding the programme.

In addition to the assessment scores for every lesson of all the three skills, pretest and posttest total assessment scores on the classroom teaching performance of

every student teacher in experimental groups (microteachers) and control group (student teachers), were obtained by using GTCOS (See Appendix H) for general teaching competence.

3.5.0. STATISTICAL TECHNIQUES USED

Statistical techniques were used in correspondence with the nature of objectives to be achieved in the study. In the following paragraphs, objectives and correspondingly statistical techniques used, are discussed.

To study the effect of different techniques of feedback-discussion, oral and written, upon the attainment of two teaching skills - body movement and gestures among three groups of teachers, analysis of variance (3 X 4 X 2) was used. It was followed by t - test.

In both the skills, further to see the effect of different techniques of feedback upon the attainment of the components of teaching skills mentioned above, analysis of variance (3 X 4 X 2) was applied and it was followed by t - test.

To study the level of mastery of the skill from lesson to lesson, analysis of variance (3 X 4 X 2) was applied, and it was followed by t - test.

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To study the perceptual difference in observation from peer observer to self rating in two skills - body movement and gestures, analysis of variance (3 X 4 X 2) was used and it was followed by t - test.

To study the effect of different techniques of feedback - discussion, oral, written, upon the attainment of teaching skill - shifting sensory channels among three groups of teachers, analysis of variance (3 X 4) was applied. It was followed by t - test.

To study the perceptual difference in observation from peer observer to self rating, in the skill of shifting sensory channels, analysis of variance (3 X 4) was applied and it was followed by t - test.

To study the differential effect of microteaching upon the attitude of teacher trainees in three groups - E_1, E_2 and E_3, analysis of co-variance was applied. It was followed by t-test.

To study the differential effect of microteaching on the self-evaluation of teacher trainees in three groups - E_1, E_2 and E_3, analysis of co-variance was applied. It was applied by t-test.

To study the reactions of teacher trainees in the three groups towards microteaching, a qualitative analysis was done of their free responses to stimulus words or statements.

To study the amount of transfer of different training strategies to actual classroom among four groups E_1, E_2, E_3 C, analysis of co-variance was applied. It was followed by t - test. More details of all the statistical techniques used are given in chapter IV.