CHAPTER-I

INTRODUCTION

Practice-teaching, which is the pivot of teacher education programme, has always been a matter of concern not only to the educators, educational planners and administrators but also to the researchers of India and abroad. Thus, the first sentence of the report of Education Commission (1964-66) reads "The destiny of India is now being shaped in her classroom." The methods of teaching and evaluation used in the training institutions continue to be traditional. At present, student teachers are commonly required to give a specific number of isolated lessons, many of which are often unsupervised or ill-supervised. (Education Commission 1964-66 P 124-163)

Prof. S.K. Mitra (1978) the Ex-Director of NCERT, in the teacher education curriculum mentions that

"The success of any educational reform depends on the quality of teacher which, in turn, depends to a large extent on the quality of the teacher education programme. In our case educational reforms being urgent, it is essential to develop national consciousness regarding necessary improvements to be brought about in teacher education."

It is evident that whatever difficulty we encounter in our educational system is due to lack of right type of teachers or qualified teachers in our schools, for which the training colleges have been criticised by different commissions, educators, educational planners out of which a few are worth quoting here.
1.1. TEACHER EDUCATION AND TRAINING PROGRAMME IN INDIA.

In the early part of the present century, the Government of India Resolution (1913), drew attention to the inadequacy of the training staff and training facilities by pointing out "Few reforms are more urgently needed, than the extension and improvement of training of teachers, for both primary and secondary schools in all school subjects."

The Indian Education Commission 1882 (Hunter Commission) recommended various measures of improving educational system in general and teacher education programme in particular. The Calcutta University Commission (1919) recommended upon different aspects of education and criticised the practical training aspects of the teacher education programme. Mentioning the observation made by Calcutta University Commission in 1917, Mr. S.N.Mukherjee, in his book "Education of Teachers in India" (1968) Vol.I states the observation about the teacher training was really a comment on the whole of India and affected the future growth and development of all......

It went on to observe that three essential requirements were to be emphasised in teacher training - Knowledge of the subject matter, practical training and theoretical training which should not be hurried or superficial. "But under existing conditions, the first is often unfulfilled; second rarely possible and third too little regarded by the University in framing its regulations."

It also noted the special weakness of the existing training system. In this connection the oral evidence of Mr. W.E.Griffith, Principal of the David Hare Training college
is especially worth mentioning. He observed

"The majority of the teachers are keen on their profession, but do not understand the general principles which underlie their work. This lack of knowledge is particularly noticeable in connection with (1) Real purpose of education (2) Responsibility which school teaching entails (3) Supervision by Headmasters, (4) Arrangement of class room (5) Monthly routine and daily preparation, (6) Methods of teaching school subjects and (7) Difference between lecturing and teaching."

The Hortog Committee (1929) strongly pleaded that "The period of training is too short, curriculum too narrow and the teaching staff inadequately qualified." The remarks made above showed the picture of the teacher education programme before Independence as far back as the earliest part of this century.

After Independence, the University Education Commission (1948-49) submitted its report which exorted the training colleges that theory should not be divorced from practice but both have to go hand in hand. Education Commission (1964-66) remarks

"the quality of training institutions remains, with a few exceptions either mediocre or poor, vitality and realism are lacking in the curriculum and programme of work which continues to be largely traditional, and set patterns and rigid techniques are followed in practice-teaching, with a disregard for present-day needs and objectives. An ideal teacher preparation is a vitally important aspect of the national development and educational progress of any system of education depends much upon the types of teachers at all levels of development."

There are a few recommendations of some of the important reports and working groups. These have been pointed out in a nutshell in Teacher Education Curriculum (1978) as follows:
The major weakness of the existing system of professional education of teachers have been repeatedly pointed out by the University Education Commission (1949) the Secondary Education Commission (1953) the International Team on Teachers and Curricula in Secondary Schools (1954) and have also been highlighted by the Education Commission (1964-66). The detailed report submitted by the various visiting teams of the working groups set up by the National Council for Teacher Education (NCTE) after having screened through extensive data backed up by on-the-spot observations of sampled teacher training institutions, have re-affirmed those observations (1975). The recent UNESCO publication entitled Alternative Structures and Methods in Teacher Education (1975) and Exploring New Directions in Teacher Education (1976) have also identified similar weaknesses not only in the existing Indian Teacher Education programmes but also in those in Malaysia, the Philippines, Nepal, Thailand and some other developing countries. Besides curriculum, the methodology of teacher preparation in vogue in teacher training institutions leaves much to be desired. The student teaching programmes are, by and large, ritualistic. The programmes fail to convert Pedagogical prepositions in to professional dispositions. Whatever they learn in pedagogical courses is never used in actual teaching situations. The teaching behaviours of training and untrained teachers have not been found to differ significantly. A number of studies to this effect have been cited by Buch (1975) and Jangira (1979).
One of the serious shortcomings of the teacher education programme is the yawning gap between the theory and practice of teaching. Student teaching programme is considered to be the weakest component of teacher education programme. The programme is not only heavily weighted in favour of theory, whatever little practice is envisaged in the curriculum, is considered merely an appendage, the situation should be the otherway round. (Ministry of Education 1964, Education Commission 1966, NCERT 1978, Jangira 1979, Singh 1979) Trainees give lessons on Herbartian steps which are either not supervised or ill-supervised as Education Commission (1966) puts it. Considering the effectiveness of the teacher training programme in general, there is a near unanimity among the professional that our programmes are heavily weighted in favour of the theory courses (Education Commission 1966, NCERT.). As found by the Second National Survey of Secondary Teacher Education,(Pandey, 1969) the number of lessons taught by a trainee during practice teaching varied from 10 to 40. Further, the survey revealed that the number of supervisors of practice teaching lessons varied from 4 to 45.

The main emphasis in the traditional practice teaching programme is on the skill of communicating subject matter information to the pupils. It has been our experience that after some theoretical information and a few demonstration lessons, student teachers are sent to face real classes. Here they do not get the maximum benefit from their teaching practice. The research findings explain the drawbacks of traditional
practice teaching programme as follows:

Palsane and Ghanchi (1976) surveyed the practice teaching programme of 62 colleges. They observed that:

(i) The number of lessons to be given by a student-teacher is fixed arbitrarily without taking into consideration the individual needs and abilities.

(ii) There is lack of adequate orientation programme for initiating practice teaching.

(iii) The student teachers do not get practice in teaching continuous units and they have not scope for developing dynamism, initiative and resourcefulness as teachers.

(iv) the student teachers lack opportunities for planning through co-operation with pupils, teachers and supervisors.

(v) there is absence of block teaching and an organised internship experience.

(vi) the assessment of student teachers is not continuous and integrated which could carry further the seeds of progress, and

(vii) the practice-teaching programme needs to be objectively studied and oriented in all the aspects.

Joseph (1967) made a study as regards the secondary education programme in Kerala. His analysis reveals that there was no uniformity in the number of lessons to be given by the trainees and the type of practical work done in different training colleges. Regarding supervision of practice teaching,
majority of staff members did not want to share the responsibility with school teachers whereas this was not true with the trainees.

Walter E. Mophie (1967) has said

"year after year, in universities and colleges throughout the country, many students express extreme dissatisfaction with the courses they take from professors who have dedicated their lives to the study and improvement of education. One would normally expect such classes to be popular both because of exemplary teaching and because the subjects discussed should have natural interest for people preparing to become trainees: Yet they are all too often labelled 'dry', 'boring', 'lethal', 'insipid' and/or Mickey Mouse."

Malleya (1968) analysing the existing situations in primary and secondary teachers training colleges in Madhya Pradesh, has found that the evaluation techniques were mostly of routine type and allowed wide variation in internal and external assessments.

Sharma (1968) has observed that the practical work in most of the teacher training institutions consisted of forty to fifty lessons to be given on the Herbartian steps.

Marr et al (1969) have observed the following in the colleges of education in the Punjab.

(i) Teacher educators did not agree on certain specific skills and understanding to be the objectives of the programme.
(ii) Supervisors did not give adequate time to each student during supervision as they did not know the subject, and
(iii) Teacher educators generally followed lecture method and attributed the difficulties in adapting innovations to the inadequate educational background, poor study habits of students and lack of time.
Borg et al (1970) offer four answers to the question "why do conventional teacher education programs fail?". They suggest that (1) the emphasis of instruction is on telling rather than doing, that instruction is largely divorced from actual classroom behaviour; (2) instruction is general rather than specific; (3) effective models are not provided; and (4) effective feedback is not provided.

Khosla (1970) has observed a wide gap between training college methods and school teaching.

Evaluating the practice teaching in India Srivastava (1970) has observed that (1) there was no consensus regarding the total time spent on the practice teaching and the total number of lessons to be given by the student teachers (2) the evaluating practices of classroom teaching ranged from purely internal to purely external (3) majority of the student teachers had developed unfavourable attitudes towards the practice teaching.

Shaikia (1971) has found that in colleges of education in Assam, practice teaching was neglected as revealed by the inadequate supervision and guidance. One of the reasons pointed was nonavailability of schools.

Perlborg (1972), referring to the traditional teacher education program has expressed his view that the traditional teacher education program consists of two main elements: theoretical courses and practice teaching. Theoretical courses, covering the Philosophical, historical and psychological foundations of education and teaching methodology and mainly
verbal tend to be abstract and are sometimes vague, consequently, they affect cognitive and attitudinal rather than behavioural changes in teachers. With regards to supervised student teaching, it is generally assumed that during this period the student teacher will develop proficiency in basic teaching skills and classroom management, and with it, the confidence in his new role. In practice, however, in-service supervision of student teachers and teachers tend to be very limited and superficial. The supervision lacks the objective feedback on performance, essential both to motivating and directing behavioural modification. The regular classroom situation neither encourages nor allows the student an opportunity to test alternative methods and styles essential for developing effective teaching strategies.

Joshi (1972) undertook a systematic study of innovations in teacher education programmes at Udaipur. Earlier, the department of teacher education of the NCERT made a compilation of innovation practices in the in-service education of teachers. These studies have brought to light the efforts to improve teacher education in the country. They also indicate the concern of teacher educators to develop new practices to reshape teacher education.

Buch (1974) taking Indian conditions into consideration has suggested that serious concerted attempts will have to be made in research on teaching in general and teacher behaviour in particular if the desired objectives of teaching are to be realised. He has further emphasised the need to conduct studies in modification of classroom behaviour of teachers.
Mehrotra (1974) has found the existing practice teaching ineffective due to the defects in supervisory system, where there was an atmosphere of tension and artificiality during practice and lack of clarity about the supervisory role. He has further found that teacher training institutions had not adopted those practices and methods of instruction which they preached the trainees to adopt in schools.

Yadav and Buch (1974) pointed out that much dissatisfaction has been shown about the training provided to the teachers. The consumers are not satisfied and more than this even the trainees are not satisfied with the training programme.

Singh (1975) in his all India study regarding adoption and discontinuation of innovations in 209 secondary teacher training institutions belonging to various states has observed the following regarding practice teaching.

1. More than two thirds of the training institutions provided sufficient time for practice teaching and had provision for good practising schools.

2. Less than one third of the institutions practised activities like conducting seminars, tutorial classes, maintaining cumulative records, etc. and the reasons pointed out for this by a number of such institutions being shortage of time and examination oriented teacher education programme.

3. More than a half of the institutions involved teachers of practising schools for supervision work.
Passi (1976) has found that generally, the supervisory remarks are so global that the trainees find it difficult to incorporate them in subsequent lessons.

From the above research findings we can clearly summarise the drawbacks of the present day teacher education programme as follows. In the existing system of teacher training programme, the student teacher is required to deliver a fixed number of lessons, varying from 30 to 60, depending upon the requirement of the universities concerned. The number of lessons to be given by a student teacher is, therefore, not based on the individual needs and abilities. It is on the other hand, fulfilment of a curricular need. Further, supervision of lessons given by the student teacher is inadequate both quantitatively and qualitatively. The training practice programme when viewed from the trainees angle is further distressing. He is required to face a class of 30 to 40 lively, perhaps reluctant learners. The motivation of the pupils faced by a student teacher is, thus, miserably low and the intent of mischief is fairly high. The student teacher has not been provided any training to face such a class. He is not confident whether he will be able to control the pupils, communicate with them effectively and follow the sequence of activities, he has imprinted on the paper as lesson plan. The teacher-educators are not clear about the teacher behaviour that are to be developed, hence, they try to develop certain general teaching skills instead of specific skills. The supervisors have not been exposed to new techniques of training in develop-
developing the skills of teaching, improved and scientific methods of observation and effective models of providing feedback. Thus, the supervisions have neither confidence nor training to try innovations in the area of student teaching programme. The teachers and headmasters of experimental schools do not pay serious attention to the practice teaching programme. They consider it an undesirable taxation upon the school time. They have a genuine grievance against this programme because a novice pupil teacher wastes the teaching time and disturbs the usual functioning of the school.

There is no denying the fact that an traditional practice teaching has impact on teacher training. But this programme is very disappointing. Supervision in the practice teaching is either neglected or not done seriously. Remarks by supervisors are vague and ambiguous such as "the teacher is active", "the black board work is good", "teaching is hapahazard" etc, which do not help the student teachers to get proper feed back. Feed back lacks in objectivity and urgency.

The student teachers attend some demonstration lessons before taking classes in a practice school, where the master teacher demonstrates several skills simultaneously which are integrated in his own style. The student teachers who observe the lesson fail to get an idea of the specific teaching skills which they should learn.
From the observations made by a sample of studies both in India and abroad, Passi (1976) has drawn the following conclusion:

"There is no consensus regarding procedure followed in various aspects of student teaching. Although there is no adequate research support to show that the present day teacher education is completely ineffective, there are also no evidences to say that they are effective. The teacher-educators are not clear about the objectives of training i.e., what to train for in the trainees. Supervision of practice teaching is haphazard and undiscriminating. Feedback regarding teacher training performance is subjective and impressionistic."

Buch (1974) has suggested that serious concerted attempts will have to be made in research on teaching in general and teacher behaviour in particular if the desired objectives of teaching are to be realised. He has further emphasised the need to conduct studies in modification of classroom behaviour of teachers.

1.2. PERFORMANCE BASED TEACHER EDUCATION PROGRAMME:

The assumption that the student teacher who masters the theoretical principles of pedagogies will be successful classroom teacher, is no longer regarded valid. The analysis of curricula, papers and courses prescribed in Indian Universities for Bachelor of Education Courses can hardly help a teacher to discharge his duties effectively (Singh 1978).

To eradicate the ills of the stereo typed teacher education programme, performance based teacher education has emerged.

Rational behind these departures is to prepare competent and effective teacher. During the fifty years or so, researches
have spent a good deal of time and effort in an endeavour to identify the characteristics of effective teachers. But they have not been unanimous in their conclusions. Their attempts are fruitful and they could show relationship between several dimensions of teacher behaviour and the various criteria of teacher effectiveness.

The terms teacher behaviour, teacher competence, teacher effectiveness represent complementary and progressively more specific ways of describing teacher performance (Borich, 1977).

Various research studies have been undertaken throughout the country with the aim of developing teaching competence which is one of the major tasks of a teacher. The development of teaching competence among teachers necessitates a clean understanding of the term as well as method for its assessment. There is no consensus regarding the meaning of term 'teaching' 'competence' and hence teaching competence itself. Different views lead to variation of concept and assessment which is one of the major lecuna of teacher education programme. Some perceive teacher competence as teacher behaviours that produce intended effects (Medley and Mitzel, 1963; Biddle and Ellena, 1964). The term 'competency' refers to the criteria that determine teacher effectiveness (Ebel, 1969). It can now be stated with fairly high confidence that pupil outcomes like pupil achievement, student liking may be taken as the criteria of teacher effectiveness. (Flanders and Simon, 1969).
Deighton (1971) is of the opinion that "the teacher competencies associated with the nature of the subject matter transcend the basic knowledge of the subject itself. The second level of competencies is to know the ways a discipline or skill is best learned."

The term "teaching competency" as defined by various authors includes more than mere teacher effects or pupil outcome. According to some authors it includes knowledge, attitudes, skill and other teacher characteristics (Heakew, 1956); (Wilson, 1973).

O Neill (1975) stressed her view that a large number of individuals, professional organisations, state departments of education, seek a means to improve teacher education through the competency based-movement. The move from a course-centred teacher education programme to a competency-based programme is a major one.

Cooker (1976) defines 'A competency is seen as the ability to cope with a certain class of problems encountered on the job. A teacher who can deal with problems in a certain area is said to be competent in that area, a fully competent teacher is one who can cope successfully with any professional problem'.

Borich (1977) has pointed out, 'competencies identify a single level of proficiency or range of levels, determined through theoretical or empirical processes at which a teacher should perform.'
Shukla (1978) describes that now there is a demand not only for more teachers but for competent teachers at all levels. This call is related to the professional preparation of teachers. In the past, teacher training being professional course used to be imparted in a perfectly stereotyped manner. In the last decade, however, efforts are made to bring out teachers from the teacher education institutions with broadened outlook. Now-a-days some educationists expect that teachers should be well-educated to adjust themselves to the democratic way of life, may be that they are lacking a bit in the knowledge of the basic skills which are essential to be a successful teacher.

Tersher (1978) defined Competency Based Education as an approach to instruction that aims to teach each student the basic knowledge, skills, attitudes and values essential to competencies.

Jangira (1979) has spelled out the aim of teacher education. The ultimate aim of teacher education is to prepare effective teachers, teachers who would be able to bring about desired behavioural changes in pupils under their charge to an optimum level in relation to the input in terms of human energy and material resources expanded in the process.

Rama (1979) defines teacher competency as the ability of a teacher manifested through a set of overt teacher classroom behaviours which is a resultant of the interaction between presage and the product variables of teaching within a social setting.
According to Singh (1980) one tendency shown is to be friendly warm, supportive, non-threatening and emphatic teachers who exhibit this tendency are thought to be more effective because they produce inter-personal relations favourable to teaching in their class rooms. Very little is known about the relative effectiveness of available methods and techniques. Such knowledge is urgently needed to aid in designing the more effective teacher education programmes.

While arriving at a definition of the term it may be pointed out that teaching process is determined by knowledge, a set of abilities, attitudes and skills (Presage variables) which in turn determine pupil outcomes; thus the term teaching can be defined as a set of observable teacher behaviours that facilitate or bring about pupil learning and 'teaching competency' means an effective performance of all the observable teacher behaviours that bring about desired pupil outcomes.

In view of the educational research Gage (1966) criticised the present status of research in teaching by stating that although this is a very important area of research, it has yielded a very few significant results. He feels that one of the main unresolved problems of research on teaching had been to develop a criterion of teacher effectiveness.

It was while looking for a solution to the criterion problem to researches on teaching that Gage (1963) wrote:
One solution within the criterion of effectiveness approach may be the development of the notion of micro-effectiveness, rather than seek criteria for the overall effectiveness of teacher in many varied facets of their roles. We may have better success with criteria of effectiveness in small, specifically defined aspects of the role.

The Education Commission is of the opinion that:

In the absence of other influences, a teacher tries to teach in the way in which he himself was taught by his favourite teachers and thus tends to perpetuate the traditional methods of teaching. In a situation like the present where new and dynamic methods of instruction are needed, such an attitude becomes an obstacle to progress. It can be modified only by effective professional education which will initiate the teachers to the needed revolution in teaching and lay the foundations for their future professional growth.

In the light of the above discussion, it is evident that it is essential to reshape teacher education programme to make it more effective and meaningful. Improvements are required both in theoretical and practical aspect of the programme to turn out effective teachers in order to improve the quality of teaching in schools.

Several innovations have been designed to improve the quality of present day teaching practice programme. Of these micro-teaching approach has been found to be significantly more effective in our country than the existing teacher education programme in developing general teaching competence in secondary teachers (Das et al 1976).

Teaching, nowadays, is looked upon as a set of behaviours in the classroom, which can also be modified like other behaviours. According to Allen (1970) teaching consist of acts of behaviour. It is conceded that attitude,
personality, intelligence and many other factors affect the success of a teacher. However, all of these factors contribute to produce certain acts or behaviour of teachers. The complex act of teaching can be broken down into simpler components making the learning task more manageable for the beginners.

A hypothesis central to micro-teaching is that teaching is considered as a complex skill which can be analysed into simpler component skills aiming at the attainment of specific objectives. (Turney et al 1973). These skills of teaching are not necessarily discrete but they are considered to be identifiable and therefore capable of independent practice. Morrison and Mc Intyre (1973) have suggested that greatest problem in the design of micro-teaching programme is in the selection of the skills. Brown (1975) has stated that teaching has its repertoire of skills.

Singh (1979) defined "A teaching skill is defined as a set of teacher behaviours which are especially effective in bringing about desired changes in pupils".

The success of teaching practice under micro-teaching lies in the selection of skills. The student teacher is oriented with the characteristics of the particular skill. He is then ready to practice it. By conscious practice of one skill at a time rather than the general practice of teaching, he has a greater chance of learning to perform the skill. The component skills approach emphasizes the acquisition of one skill at a
time. This is particularly helpful to the beginners. It makes the task much less complex. The student teacher starts understanding the teaching skill to be learnt. He begins to recognize the behaviours that make up the skill. The student teacher's performance on the skill is also evaluated and immediate feedback is provided for the modification of his behaviour.

1.3. MICRO-TEACHING DEFINED:

As a scientific approach, micro-teaching emerged effectively in the field of teacher education as a valid and useful method. The term micro-teaching was first coined at Stanford University in 1963, and was developed by the college of education as an experimental teacher education programme supported by Ford Foundation. The purpose of micro-teaching was to give prospective interns as much practice in teaching as possible under controlled conditions before they began their year of internship. Micro-teaching is one of the training techniques under laboratory conditions.

In teacher education a laboratory is a place for systematic study of teaching under controlled conditions. It is a place where a prospective teacher may test his knowledge of teaching and verify or modify his understanding of that knowledge.

The first micro-teaching clinic was held during Stanford Summer Session 1963. The trainees were divided into two groups. One group was given the Stanford pre-internship
programme including observation of teaching. The other worked in the micro-teaching clinic. The total act of teaching was broken down into several specific skills: (1) establishing set, (2) establishing appropriate frame of references, (3) achieving closure, (4) using questions effectively, (5) recognising and obtaining attending behaviour, (6) control of participation, (7) providing feedback, (8) employing reward and punishment (reinforcement) and (9) setting a model.

According to Bush and Allen (1964), "The importance of analysing and initiating model behaviour is a basic assumption supporting the use of observation in training programmes." Before the training phase of the micro-teaching clinic each intern taught a short diagnostic lesson to a group of five secondary school pupils. These diagnostic lessons were observed by a supervisor and recorded on a videotape. During the clinic the interns received formal training in each of six skills selected for the training purpose. Although the supervisor evaluated each session, self-evaluation by the intern was stressed. After replanning, the same lesson was taught to different micro-classes. Pupils also evaluated the lessons.

It was found that trainees in the experimental group achieved a higher level of competence compared to the control group. Finally, the trainees felt the micro-teaching clinic had been a very valuable experience. Summer micro-teaching clinics became a regular feature of teacher training programme at Stanford. Two important changes were made in 1966 clinic.
The first was to construct instrument to evaluate student-teacher progress in each of the teaching skills and second was to introduce change in the time schedule for teach reteach lessons.

In an attempt to find out enough teaching situations for 500 student teachers each semester, Brigham Young University adopted a modified form of micro-teaching in 1966. The length of time between the teach and reteach lessons varied from one day to a week. The aim of each presentation was to teach specific techniques (Belt and Hugh 1964). It can be concluded that micro-teaching offers an unique opportunity for the individualised instruction of teacher trainees, provision for different types of class room situation or problem. Performance of student-teacher is usually improved.

At the University of Massachusetts the regular pre-service micro-teaching clinic is supplemented by an intensive summer workshop to train school personnel. A teaching technique laboratory was organised at the University of Illinois to function as a service unit for instructors in the teacher education programme.

Allen and Ryan (1968) have described micro-teaching "as a scaled down teaching encounter, scaled down in terms of class size, lesson length and teaching complexity. It has been described as a system of controlled practice that makes
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Allen and Eve (1968) defined micro-teaching as "...........................

a system of controlled practice that makes it possible to concentrate on specific teaching skills and to practise teaching under controlled conditions". This 'system of controlled practice' may also be described as a scaled down teaching encounter: scaled down in class size (4-7 pupils), lesson length (5-20 minutes) and teaching complexity, in that it concentrates on one or small group of related teaching skills at a time. In other words, the classroom in miniature is brought into an experimental situation, set up in a university, college, teacher's centre or school where the effectiveness of variables in facilitating the acquisition of teaching skills can be assessed.

In the words of Borg et al (1968) micro-teaching can also be applied to teaching in special and higher education to training in counselling techniques and to in-service education.

Such (1968) defined "Micro-teaching is a teacher education technique (which) allows teachers to apply clearly defined teaching skills to carefully prepared lessons in a planned series of five to ten minutes encounters with a small group of real students often with an opportunity to observe the results of videotape".
Allen and Ryan (1969) again defined micro-teaching as a training concept that can be applied to various preservice and inservice stages in the professional development of the teachers. Micro-teaching provides teachers with a practice setting for instruction in which the normal complexities of the classroom are reduced and in which the teachers receive a great deal of feedback on their performance.

Dwight Allen and Kevin Ryan (1969) are of the view that fundamentally, micro-teaching is an idea, at the core of which lie five essential propositions.

First, micro-teaching is real teaching. Although the teaching situation is a constructed one in the sense that teacher and students work together in a practice situation, nevertheless, bona fide teaching does take place.

Second, micro-teaching lessens the complexities of normal classroom teaching. Class size, scope of content, and time are all reduced.

Third, micro-teaching focusses on training for the accomplishment of specific tasks. These tasks may be the practice of instructional skills, the practice of techniques of teaching, the mastery of certain curricular materials, or the demonstration of teaching methods.

Fourth, micro-teaching allows for the increased control of practice. In the practice setting of micro-teaching, the
rituals of time, students, methods of feedback and supervision, and many other factors can be manipulated. As a result, a high degree of control can be built into the training programme.

Fifth, micro-teaching greatly expands the normal knowledge-of-results or feedback dimension in teaching. Immediately after teaching a brief micro-lesson the trainee engages in a critique of his performance. To give him a maximum insight into his performance, several sources of feedback are at his disposal. With the guidance of a supervisor or colleague, he analyses aspects of his own performance in light of his goals ........ All this feedback can be immediately translated into practice when the trainee reteaches shortly after the critique conference.

Young (1969) described "Micro-teaching is a safe practice ground for student teachers, classroom management problem can be minimised and focussed upon separately as a component skill".

McAleese and Unwin (1971) suggested that the term micro-teaching is 'most often applied to the use of closed circuit television to give immediate feedback of a trainee teachers performance in a simplified environment.

Griffiths (1973) remarked that not only there is no widely accepted single definition of 'micro-teaching' but also that it may be wise to avoid restrictive and specific definition
of such a flexible and adaptable procedure. The flexible and adaptable nature of micro-teaching is reflected in the various interpretations that have been made and its role in relation to other components of teacher education programmes.

Passi and Lalita (1976) are of the opinion that micro-teaching is not completely a real teaching situation. It is real to the extent there is teaching and learning going on. The teaching process is governed by the principle of maximising the use of a particular teaching skill. Although learning on the part of the pupils is no less important, the main purpose in micro-teaching is to train teacher trainees in specific teaching skills. The content being taught by the trainee is of secondary importance where as maximising the use of the skill is of primary focus. Maximisation of the use of the skill depends mostly on the content chosen and the nature of the pupils.

Clift et al (1976) have recently defined, micro-teaching as a teacher training procedure which reduces the teaching situation to a simpler and more controlled encounter achieved by limiting the practice teaching to a specific skill and reducing teaching time and class size.

Perrott (1977) is of opinion that the rationale for this approach to teacher training is that teaching is a complex and demanding activity, involving techniques of organisation, control and management of teaching skills.
well beyond the intending teacher at the beginning of his course. Micro-teaching attempts to reduce the situation to manageable proportions.

Shukla (1978) "in micro-teaching the student teacher" tries to accomplish the 5 R's (1) Recording (2) Reviewing (3) Responding (4) Refinding and (5) Redoing.

Jangira (1978) says "Micro-teaching is based on the premise that teaching is a complex skill which can be analysed into simpler component skills and the sets of teaching behaviours comprising the skill components; that the component skills can be acquired one by one through practice in simplified teaching situations such as micro-teaching, and that once the component skills are mastered, they can be synthesised into meaningful patterns to realise the specified instructional objectives in a given teaching situation.

From the discussion above, it is evident that micro-teaching is based on the assumption that there are certain patterns of behaviour, to be more accurate, strategies which are crucial to effective classroom instruction. By concentrating on these strategies in teacher training programme it is possible to improve teaching by practising certain phases of teaching one phase at a time. The trainee teaches a lesson to a small group of four to six pupils in front of a video camera, a supervisor and often some peer trainees. The pupils are dismissed after filling out
a short rating from audio and video recordings are played and criticised by those present. Then the trainee is given time to think about this criticism by those present and to make modifications which involve only one or two changes. He then reteaches the lesson with a different group of pupils, under the same conditions and with the same opportunities for feedback. A simple teach-reteach cycle can be accomplished in less than 30 minutes, but it is the reteach cycle to which micro-teaching owes its success. A typical micro-teaching training sequence designed to improve a teacher's competence in the use of a particular skill may be diagrammatically described as below:

Training sequence

<table>
<thead>
<tr>
<th>T-1</th>
<th>C-1</th>
<th>Rp</th>
<th>T-2</th>
<th>C-2</th>
</tr>
</thead>
</table>

The teacher teaches a brief lesson to a small number of pupils and tries to highlight a relevant teaching skills (T-1). The teacher through a supervision and the replay of videotape of his performance if used received feedback on how successfully he performed the teaching skill (C-1). He has a time to plan his next lesson, incorporates the feedback from his previous teaching lesson (Rp). He then teaches the lesson over again to a different group of pupils highlighting the same skill in an attempt to improve on his previous use of the skill (T-2). Again he receives feedback by watching the videotape of his second teaching performance,
again with some kind of supervision (C-2). The sequence of teaching, critique and training can be repeated as many times as necessary to bring the teacher up to pre-set standard of performance of the skill being trained.

One micro-teaching cycle can be represented as:

Plan - Teach - Feedback - Replan - Reteach - Refeedback

This single teach-reteach cycle can be accomplished in about forty minutes but it is the reteach cycle to which micro-teaching owes to success. Attention to teaching behaviour practice in analysing it and performing it with feedback, tends to incorporate such behaviour in the teacher's repertoire (Flanders 1970).

Micro-teaching as a technique of teacher training provides opportunities for undertaking research studies under controlled conditions. One finds of the need to explore by experiment with this technique, its applicability, effectiveness and further need and modification required in the teacher training.

1.4. REVIEW OF RESEARCH ON MICRO-TEACHING:

1.4.1. RELATED STUDIES DONE IN INDIA:

Most of the previous research conducted on micro-teaching in India, in early seventies, were restricted in finding out the comparative effect of micro-teaching against traditional method of teaching. Not much work has been done
due to lack of trained staff available in the institutes of education and absence of sophisticated materials like closed circuit television, videotape recorders etc. In later seventies research was done on the effect of different types of variations in micro-teaching.

D.D.Tiwari (1967) initiated a project in micro-teaching in the Government Central Pedagogical Institute of Allahabad. He found that micro-teaching could be used profitably in training institutes and secondary schools. This would develop the student teacher's insight and make them better qualified as teachers.

The technique of micro-teaching was tried out in the Centre of Advance Study in Education, Baroda (CASE) in 1970. Small scale studies conducted in CASE found the technique more effective compared to the traditional student teaching programme as well as programme based on interaction analysis in developing General Teaching Competence in student teachers.

R.R.Chudasama (1971) tried out micro-teaching with six students at the faculty of Education and Psychology, Baroda. His objectives were (1) to know the extent to which micro-teaching could help a student-teacher in developing more indirect teaching behaviour (2) to see if interaction analysis can be integrated into micro-teaching procedure. His findings were that the student teachers trained through
micro-teaching technique were more effective in the development of indirect teacher behaviour than the student teachers trained through conventional teacher training programme. He found that micro-teaching developed the skills of questioning in the teacher and increased pupil participation in the class.

The Centre of Advanced Study in Education (1972) Baroda, had undertaken an institutional project which was published as a monograph (Passi and Shah; 1974). They came to the conclusion that micro-teaching was effective in developing the skills of questioning, reinforcement, silence and non-verbal cues and illustrating and use of examples. Further teaching showed favourable attitude towards this technique micro-teaching.

N.S. Marker (1972) carried out a study to compare the performance of student-teachers trained through micro-teaching with those trained through conventional approaches. Micro-lessons were given in the normal Geography classes in the five skills (1) set induction (2) stimulus variation (3) questioning (4) response of pupils and reinforcement (5) closure. The lessons were recorded on a videotape and feedback was given on the following day. Though the experiment was conducted in simulation condition she found that micro-teaching was a more effective technique compared to the conventional approach of teaching.
Marker (1973) supported the earlier findings regarding effectiveness of micro-teaching.

Abraham (1974) found that micro-teaching was effective in developing the skill of fluency in questioning and probing questioning.

Dosajh (1974) carried out a preliminary try-out of micro-teaching as a modifier of teacher behaviour. A teacher of a local higher secondary school gave a lesson to five students for about 15 minutes. His performance was televised in an adjoining room where a group of 20 observers judged his performance on a specially designed proforma.

The performance of the teacher was played back to him in the presence of a teacher educator who focussed his attention on points which needed improvement. The teacher was asked to prepare his lesson again in about 15 minutes and to deliver it to another group of five students. The same observers evaluated his second lesson on a second copy of the same performance. The teacher showed an all round improvement in all areas.

L.P. Singh (1974) conducted a comparative study with the help of micro-teaching technique and Flander's Interaction Analysis of verbal teaching behaviour. He divided the sample of student-teachers into three groups. One group received the treatment through micro-teaching, the other through Flander's Interaction Analysis technique and the
third was a controlled group which received the treatment through traditional method of teaching. His results showed that (1) the student-teachers trained through micro-teaching and through Flander's Interaction Analysis technique change their verbal teaching behaviour in the class room more significantly compared to the student teachers trained in the traditional way. Only (2) the student teachers trained through micro-teaching change their verbal behaviour in the class room significantly more than those trained through Flander's Interaction Analysis technique.

Joshi (1974) found that micro-teaching was effective in developing the skills of reinforcement and silence and non-verbal cues.

N.L. Dosajh (1975) tried to study the change of teaching self-concept through micro-teaching. He took 10 teacher trainees of Electrical group of Technical Teachers Training Institute, Chandigarh. They were asked to evaluate their teaching performance before and after at least two micro-teaching sessions with closed circuit television. Their self-evaluation have been compared with their supervisors. A trend towards direct relationship between intellectual ability and change in teaching self-concept is found but has not been established for want of enough data.

Recently, Clift et al (1976) have defined micro-teaching as a teacher-training procedure which reduces the
teaching situation to a smaller and more controlled encounter achieved by limiting the practice teaching to a specific skill and reducing teaching time and class size. According to them micro-teaching procedure involves three phases as shown in table No. 1

**TABLE NO. 1**

**SHOWING PHASES OF MICRO-TEACHING**

<table>
<thead>
<tr>
<th>Knowledge acquisition phase</th>
<th>Skill acquisition phase</th>
<th>Transfer phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe</td>
<td>Analyse</td>
<td>Prepare</td>
</tr>
<tr>
<td>demonstration</td>
<td>discuss</td>
<td>micro-lesson</td>
</tr>
<tr>
<td>and demonstration</td>
<td></td>
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</tbody>
</table>

The Department of Teacher Education, NCERT, undertook a field experiment in July, 1975 in collaboration with the Centre of Advanced Study in Education (CASE), M.S.University, Baroda at the national level. Nine colleges/Department of Education collaborated. The general objectives of this study were (1) To compare the effectiveness of micro-teaching with the traditional method in the development of general teaching competence (2) To carry out micro-teaching technique with different variations so as to determine the differential effectiveness of various treatments in the development of general teaching competence. In order to meet the objectives stated above similar experimental studies were undertaken, following the same design, simultaneously by teacher-education
institutions from different parts of the country. The conclusions of the study showed that the student teachers trained through micro-teaching technique acquired higher general teaching competence as compared to the student teachers trained through the traditional student teaching programme. (Das et al 1976). This work was followed by two more studies conducted in collaboration with the Department of Education, Indore University to improve efficiency of the technique. These studies provided data on the effectiveness of variations in micro-teaching components in developing General Teaching Competence (GTC) in student teachers (Das et al 1977, 1979).

Paintal (1976) made a comparative study of the effects of micro-teaching upon general teaching competence with varying sources of feedback under simulated conditions. The results showed clearly that the student teacher trained through micro-teaching technique acquired higher general teaching competence as compared to the student teachers trained through traditional teaching practice methods, that on the whole the student teachers showed greater improvement when the feedback was given by a supervisor than when given by a member of their own peer group. Also it was found that the maximum benefit derived from micro-teaching was by average student teachers rather than by the good or poor teachers. All the student teachers who participated in the micro-teaching experiments responded positively to micro-teaching and said that the technique was very helpful.
Vaze (1976) found that the micro-teaching was a more effective technique than the traditional approach to teaching.

Sharma (1976) also found that the teaching competence of student teachers trained through micro-teaching was higher than that of the group receiving training through conventional approach.

The doctoral studies of Passi (1976) Lalitha (1976) and Joshi (1976) at the Centre of Advanced Study in Education, Baroda have produced useful instructional materials for the development of teaching skills. These materials have been tried and are available in "Becoming Better Teachers - Micro-teaching Approach" (Passi 1976).

As a follow up of this national project the Department of Teacher Education, NCERT, planned another research project in 1976-77 in collaboration with the Department of Education, Indore University and 22 Colleges/University departments from all over the country. The project was designed with the following objectives in view (i) To compare the effectiveness of different modelling procedures (Perceptual, Symbolic and Audio) with respect to general teaching competence of student teachers (ii) To study the varying sources of feedback (supervisor, peer, audiotape) in improving the general teaching competence. (iii) To study the effectiveness of micro-teaching under simulation and real class room situations with respect to general teaching competence due to change in set of
skills or teaching units. (iv) To compare the retention level of general teaching competence after the student teachers have taught traditional lessons following micro-teaching sessions. (v) To study the change in attitude towards teaching due to training through micro-teaching technique.

This was a national study in which 6 institutions were from Northern region, 10 from the Western, 5 from the Southern and 1 from the Eastern regions of the country. As many as 29 teacher educators from 22 institutions collaborated researches in this field experiment, using a total of 444 student teachers as subjects of study. A common procedure was followed by participating institutions while conducting the experimental studies. After the sample for each such study was selected it was randomly distributed into two groups. One of the groups was trained through standard micro-teaching technique (SMT) and other through modified micro-teaching using planned variation in one of the component aspects of the micro-teaching technique. The treatment variations are indicated below:

(1) Modelling - Symbolic / Perceptual / Audio
(2) Feedback - Supervision / Peer / Audiotape
(3) Condition - Simulated / Real class room / Mixed
(4) Set of skills - Same / Different
(5) Teaching unit - Same / Different in reteach session

Conclusions -

The following general conclusions were drawn from
the findings of this study —
(1) General teaching competence of student teachers trained through micro-teaching with perceptual modelling does not significantly differ from those trained with symbolic or audio modelling.
(2) General teaching competence scores of student teachers do not differ significantly when trained through micro-teaching with varying sources of feedback. In other words, the feedback given by peers or college supervisor or self feedback by audiotape have similar effects on development of general teaching competence.
(3) Micro-teaching under simulating conditions and under real class room conditions do not produce significantly different effects on development of general teaching competence.
(4) The change in the nature of competent skills in a set does not have differential effects on the teaching competence of student teachers when trained through micro-teaching.
(5) Development of general teaching competence is not affected significantly if the same or different teaching unit is taught in the 'reteach' session of micro-teaching.
(6) Planned variation in the micro-teaching components such as modelling, feedback conditions etc. do not produce significant change in either the retention level or the cumulative effect of general teaching competence when micro-teaching is followed for some period by usual practice teaching.
(7) Any of the five variations - modelling, feedback, conditions change in set of skills or teaching unit do not contribute significantly differently towards development of
favourable attitude of student teachers towards teaching.

The doctoral study conducted by Ray (1978) on the effect of various treatments on the acquisition of teaching skills through micro-teaching concluded that (i) the inservice school teachers trained through micro-teaching exhibited significantly higher gain scores of general teaching competence than the 'filler' group of inservice teachers under integrated skill-based traditional practice teaching at the post-test/retention test over pretest (ii) the performance of teachers trained through micro-teaching either under supervisory feedback or supervisor cum audiotape feedback was significantly higher on the gain score of general competence than that of filler group (iii) the performance of teachers trained through micro-teaching for skill acquisition under self-analysis through audiotapes were equally effective as that of the teachers in the 'filler' group, (iv) the teachers trained through micro-teaching for the acquisition of teaching skills under varying sources of feedback did not differ significantly on the gain scores of attitudes from that of 'filler' group, and the inservice teachers reacted favourably towards micro-teaching, the technique of skill acquisition, the modelling and feedback through supervisory with or without audio-tape.

The Department of Teacher Education, NCERT, in collaboration with the State Institute of Education, Delhi (1978) conducted a study which revealed that the teachers improved their skill competence as well as general
teaching competence after being trained through micro-teaching in the teaching skills of reinforcement, probing questioning, stimulus variation, Illustration with example and increasing pupil participation through micro-teaching technique (Jangira and Associates 1980).

The British Council Division was involved in micro-teaching programmes in India from 1975 when the NCERT organised the first workshop in micro-teaching in collaboration with the British Council. While the NCERT followed this up with a series of such workshops over the following years in collaboration with Centre of Advanced Study in Education, Baroda and successively with the Department of Education, Indore University, the British Council embarked on a major project in Maharashtra spread over several years and covering all teacher education colleges. This programme in Maharashtra continued with visits from experts from United Kingdom under the auspices of British Council. Although, the micro-teaching movement in India has gained momentum, experiments on the inservice teachers were limited. In January 1978, the British Council Delhi Division, held a workshop for implementation of micro-teaching in various disciplines such as Social Sciences, Language, Humanities and Natural Sciences. Initially micro-lessons were given to peer groups but once the participants had developed confidence, pupils from the local English medium schools were brought to the centre and teacher practised with them. The success of this workshop resulted in other workshops being organised in Rajasthan in 1979 by the British Council.
Another doctoral study conducted by Gita Singh (1982) on comparative study of different strategy of integration of teaching skills. The major aims of the study were (1) to compare the effects of integration training through summative pattern with those of traditional practice teaching programme on three criterion variables viz (a) attitude towards teaching (b) integration of teaching skills and (c) general teaching competence and (2) to find out whether different sources of feedback produce varied effect on the above variables.

The study demonstrated (1) significant positive impact of integration through summative model on general teaching competence (implying that integration training is helpful to the student teachers in achieving better teaching competence and better teaching effectiveness) (2) positive influence on teacher performance of immediate feedback (from peers or supervisors or through replaying of the audiotape) given more objectively and definitely in terms of the components of integrated skills, and (3) effectiveness of micro-teaching technique both in the controlled laboratory environment as well as in real classroom teaching.

Das et al (1982), Department of Teacher Education, NCERT, conducted field experiment on "Effectiveness of Different Strategies of Integration of Teaching Skills in Developing General Teaching Competence of student teachers". The specific objectives underlined were:
(i) To determine the effectiveness of no integration strategy and summative model of integration of teaching skills in developing general teaching competence in student teachers.

(ii) To study the relative efficacy of 'no integration strategy' and 'additive model' of integration of teaching skills in developing general teaching competence in student teachers.

(iii) To determine the comparative effectiveness of 'no integration strategy' and 'diode strategy' of integration of teaching skills in developing general teaching competence in student teachers.

(iv) To study the relative effectiveness of no integration strategy and summative model of integration of teaching skills upon integrating the selected teaching skills.

(v) To determine the relative efficacy of 'no integration strategy' and 'additive model of integration' of teaching skills upon integrating the selected teaching skills.

(vi) To study the relative efficacy of no integration strategy and diode strategy of integration of teaching skills upon integrating the selected teaching skills.

The major findings emerging from the results outlined were -

(i) There is an evidence, that the summative integration strategy tends to improve general teaching competence as well as the quality of integration of teaching skills.

(ii) The additive strategy of integration of teaching skills has not been found to improve general teaching competence.
of the student teachers but it tends to improve the quality of integration of teaching skills.

(iii) The diode strategy of integration tends to improve the general teaching competence of student teachers as well as quality of integration of teaching skills although the results are not significant in the case of the latter.

Another recent study in the area of integration of instructional skills was undertaken by Bawa (1984) on "Effectiveness of Micro-teaching with Planned Integration Training following Summative Model and Micro-teaching without Planned Integration Training on the General Teaching Competence of Teacher Trainees". The sample constituted of 40 B.Ed. student teachers.

The major findings of the study were:

(1) Exposure to micro-teaching results in improvement of teaching competence and this improvement is uneven for various component skills of teaching.

(2) Exposure to integration based instruction subsequent to micro-teaching based training improves teaching competence.

(3) Exposure to integration based instruction subsequent to micro-teaching based training programme helps the teachers increase their ability to integrate various teaching skills effectively.

(4) Teaching on one's own under real conditions after termination of micro-teaching based training helps teachers improve their teaching competence.

(5) Teaching on one's own under real conditions after
(6) Systematic integration based instruction after the termination of micro-teaching based training leads to greater consolidation as well as greater improvement of already acquired teaching competence in comparison to that achieved through teaching on one's own under real conditions after micro-teaching based training.

(7) Systematic integration based instruction after termination of micro-teaching based training leads to a greater improvement in one's ability to integrate skills of teaching in comparison to that achieved through teaching on one's own after termination of micro-teaching.

(8) Attitude towards teaching is only partially modifiable through short term teacher training programme.

1.4.2. STUDIES DONE ABROAD:

One of the earliest evaluations of micro-teaching was carried out at Stanford University in 1963 (Allen and Clark 1967). The student teachers were randomly divided into two groups of approximately thirty each. One group received all its practical teaching experiences in a micro-teaching setting, the other group programme was of in-school observation and teaching experience. The results were clear and encouraging. Students trained in the micro-teaching clinic made discernible improvement in the skill practised and were judged to display greater teaching competence than their colleagues.
They were observed by both supervisors and pupils. Students praised the use of micro-teaching and concluded that those in the non-micro-teaching groups had missed a very valuable experience (Allen and Clark 1967).

Other evidence suggests that micro-teaching can effectively improve significant aspect of teaching. In a pilot study by Emmer and Millett (1966), the experimental group of twenty seven student teachers took part in ten micro-teaching lessons with supervisor and pupil feedback. The control group, however, pursued the traditional instruction course. The experimental group was superior in determining readiness, motivating pupils and evaluating pupil responses. They also made greater use of pupil ideas, used more questioning and elicited more pupil responses and pupil initiation than the control group.

In an earlier study, Orme (1966) found that inclusion of films in micro-teaching format for demonstration of desirable teaching techniques led to increased effectiveness in terms of class room performance. An incidental finding of this study was that rating of teaching performance based on brief videotape lessons were generally good predictors of latter rating of teaching effectiveness. Further, it indicated that while micro-teaching scaled down the class room situation it did not distort it. In other words, micro-teaching behaviour was not unique to that situation. It was representative of teacher class room behaviour. The fact lends support to
the claim of the propounders of micro-teaching that skills learnt in a micro-teaching situation will be applicable to classroom situation also.

In subsequent studies at Stanford, conventional teacher education programmes were not compared with micro-teaching ones; instead, the case of micro-teaching was evaluated in terms of change in teacher competence made from first to last micro-teaching sessions (Fortune, Copper and Allen, 1967, Copper and Stround, 1966). Experience in other teacher education programme has by and large confirmed the Stanford findings.

In 1969 Kallenback and Gall undertook a comparative study to determine the effectiveness of micro-teaching. Nineteen elementary school interns trained through micro-teaching were compared with eighteen others trained through the conventional approach. The finding of the study were (i) The two groups did not differ significantly on any of the post training measures of teacher effectiveness. (ii) Micro-teaching was not found to be superior to the conventional training method in its effect of teacher's classroom performance. (iii) Micro-teaching was a superior training strategy since it achieved similar results in one fifth of the time required for traditional programme.

Bloom (1969) has described the practice of using
the micro-teaching clinic in the Interns Teaching Programme (ITP) at the University of Wisconsin. The programme was meant for college graduates, getting trained as teachers through they had little prior background in education. The author concluded:

(i) The supervisors who observed the interns were more critical in identifying strengths as well as weaknesses in interns teaching performances, possibly because of micro-teaching clinic.

(ii) the supervisors felt that the total effect of micro-teaching clinic appeared to be of added relevance in the training procedure.

There is evidence that micro-teaching can also change student attitudes. Goldman (1969) conducted a study in which one group of students prior to entering a professional elementary education course, received micro-teaching experience and other group did not. Results indicated that students in the micro-teaching group developed a significantly better regard for themselves and became more critical of teaching cliches and other educational concepts. (As measured by a Q-Sort modification of the Minnesota Teaching Attitude Inventory). It seeds that micro-teaching can substantially improve students skills in evaluating aspects of teaching.

Borg (1969) undertook a study in which he specified that the sort of lesson which he would like the teacher to teach before and after they attended a micro-teaching course
and again after four months, he found that on 11 out of 13 behaviours related to questioning significant changes were found in the hypothesized directions i.e. the changes were sustained four months latter. Thus, it demonstrated that the course had enabled the teachers to 'turn out' the desired behaviours when they wanted to do so. This does not, of course imply that their normal teaching behaviour changed to the same degree.

Bell (1970) started experimenting with micro-teaching in home economics education at Texas technical to determine the effect of training upon specific teaching skills of student teachers. The conclusions of the study were (1) the programme was relatively more effective in teacher preparation than the usual experience,(2) there was a possibility of relation between positive interaction of the group members participating in micro-teaching and a positive interaction of the group members not participating in micro-teaching,(3) there was no significant relationship between the improvement made in teaching by the experimental group and control group and certain demographic variables which indicate that there was a possibility of micro-teaching to be used successfully in the teacher preparation programme to serve as a screening device for the selection in home economics education,(4) self-evaluation of student teacher was more effective in case of micro-teaching than in case of traditional student teachers.
In an attempt to study the comparative effects of micro-teaching and traditional teacher-training on student teacher's verbal teaching behaviours, Davis and Smoot (1970), involved eighty five secondary teacher trainees in a series of micro-teaching experiences, and fifty five in traditional training method. The measuring instrument they used contained thirteen category scores (e.g. teacher talk/ total talk). The results indicated that the groups differed significantly on seventeen of twenty two scores. The micro-teaching group asked more divergent and probing questions and provided more clarification than the traditionally trained group. Also, their pupils initiated more, responded more and were more supportive than those in the non-microteaching group. The researches state that the micro-teaching group had not only changed their behaviours but had increased the variety of their verbal teaching exchanges. All this they achieved with minimal feedback and in a relatively short time.

Another study by Harris et al (1970) indicated the value of micro-teaching in bringing about significant changes in prospective science teachers. The experimental group, who micro-taught six times to a small group of their peers, did significantly better in the classroom skills - providing background information, responding well to peers, and letting students develop their own conclusions - than a control group who taught a large group only once.

There has been another trend to investigate
incorporating the micro-teaching programme into method courses. As part of the initial training in teaching skills for preservice teachers, Nagel (1970) concluded that micro-teaching was superior to group participation or observation methods and took less time.

There are a number of studies which indicate the general effectiveness and wider applicability of micro-teaching without comparing it with conventional teaching methods. Reed et al. (1970) carried out an experiment using micro-teaching separately or in combination with directive and non-directive lectures. The investigation indicated that combination of one micro-teaching experience plus lectures on general technical skills related to teaching (directive lectures) resulted in improving students teaching skills and attitude towards teaching. The combination was more effective (as measured by two separate evaluation forms) than either method alone.

In 1970 Ward conducted a survey of micro-teaching courses being used in secondary teacher education programmes in the United States. The general opinion was that where micro-teaching has been used the teaching competence of both the student and staff and their attitude towards education has improved.

Acheson and Zigler (1971) compared the effectiveness of minicourse and thought questions in intermediate grades with questions strategies; (a package consisting of a manual
and provision for a group of meet and work through series of exercises). They found that minicourse achieved its specific aim training teachers to ask significantly greater percentage of higher cognitive questions and it also appeared to be getting teachers to ask a striking greater percentage of analysis questions in comparison with "Questioning Strategies" group.

In Britain, Britton and Leith (1971) sought to answer a similar question in an experiment designed to evaluate the effects of micro-teaching on aspects of teaching performance. Fifty six students in first year of college of education course were randomly divided into an experimental and a control group. All of the experimental group acted as 'pupils' in the micro-teaching classes, and fifteen of them were also able to practice micro-teaching with videotape feedback, and reteach the lesson. The control group students received the normal preparation for teaching practice.

Evaluation of teaching performance was made of the fifty six students during the next term. This was the first time these students had engaged themselves in realistic teaching. The evaluation was a product of the supervisor's impressions and those of the school staff, as well. Tutors of the students completed further evaluation by means of a rating instrument describing categories of teachings. Both sets of rating showed that students who practised in micro-teaching situation achieved higher mean scores than those
without such experience. They also showed that students who had practical training obtained a mean score intermediate between the other two groups on both supervisor's rating and the teacher self-evaluation instrument; there were significant differences between the group (P.0.1). The results indicate that micro-teaching had a significant effect on the teaching performance of first year student in their first continuous school practised period, both in the initial standard of their teaching and in the maintenance of this standard over practice. As, the data suggest that practical experiment together with knowledge of principle of micro-teaching is helpful.

Limbacher (1971) hypothesized that the group of students who received micro-teaching would receive more favourable pupil evaluation and would be judged by cooperating teachers as ready to assume full classroom responsibility. Earlier results supported the first hypothesis.

Schuck (1971) has also reviewed pre-service micro-teaching programmes in a number of American institutions, while some programme reported that the students receiving micro-teaching showed a significant improvement in teaching competence when compared with students undergoing more conventional training methods, other programmes reported the micro-teaching students to be at least equal to those in the conventional programmes.

A pilot study of Shea (1971) demonstrated the
effectiveness of selected minicourses used in combination with practice teaching in developing skills of students in a pre-service teacher-education programme.

Anderson and Antes (1972) found micro-teaching to be as effective as other methods for preparing teachers of culturally diverse children, and that those trained in micro-teaching technique had more positive reactions to the experience than those in the former treatment.

Another study conducted by Thea (1972) revealed the possibility in micro-teaching for developing more complex learner centred and learner supportive skills of teaching than those most commonly the subject of micro-teaching sessions. The study indicated the marked success of micro-teaching (which included preliminary workshop and modelling experience and specific feedback on a specially devised classroom social organisation system) in developing the student teachers' essential "dimensional skill of interaction" between teacher and pupils in different learning settings. The "dimensional" skills developed included (i) flexibility of teaching roles (ii) organisational skills for the structuring and varying of learning settings, and (iii) interpersonal social interaction skills which assist class members to become a functional social group.

There are several pieces of research, some experimental under controlled conditions, some in schools in a more
naturalistic setting, which use techniques analogous to micro-teaching to develop or investigate specific teaching skills. The important matter of what may influence trainees to change their teaching behaviour during training was investigated by Smith (1972) who hypothesised that concrete points of reference were necessary. He established three treatment groups amongst a sample of trainees, since specialists at Ohio State University each of whom received seven seminars. Group 1 watched and discussed videotapes and then formulated written objectives for their own teaching, group 2 watched the videotapes but did not write objectives, and group 3 discussed their own teaching experiences and wrote objectives for themselves in the light of the discussion. The findings cannot be regarded as conclusive in a difficult investigation such as this, but it is of interest to note that those who wrote objectives were found to have a less restrictive view of science than those who did not, and group 1, the video plus objective teachers, solicited more written work from pupils than group 3.

Ginsburg (1973) concluded that elementary science student teachers trained in questioning skills and self-evaluation of their own teaching asked fewer basis and more probing type questions when compared to a control group. Hocadlo (1973) also worked with science student teachers and concluded that micro-teaching group did better than traditional group and that this technique is a valuable part of the preservice teacher education programme.
Finally, a progress report on a scale investigation being carried out by Levies et al (1973) reveals a preliminary finding that in the acquisition of questioning skills, students undertaking micro-teaching performed at significantly higher levels than students who had normal school experience, in the use of probing questions and in the use of higher order questions. In case of fluency there was no significant difference between the two groups.

A more in-depth analysis was undertaken by Smith (1973) with 62 trainees who considered four different kinds of instruction in questions involving comparison, explanation, inference and evaluation. The study followed through students into their teaching practice, but was inconclusive as all treatment groups increased their frequency of the questions they had studied through different methods.

Ryan (1974) reported studies in Stanford and Chicago Universities in which feedback from pupils is given during micro-teaching. Children in the classes of 80 students filled in forms after lessons which were communicated to trainees either (1) by allowing them to read the originals (2) by hearing the comments summarised by a supervisor, or (3) by giving them the forms with supervisor's comments written in. There was no significant difference in the behaviour of the three groups after feedback.
Parrott et al (1975) investigated the extent to which prior knowledge of the micro-teaching skills might influence pre-course teaching. A group of 30 British teachers tried out a modified form of an American minicourse on questioning developed at the Far West Laboratory in two different courses. The study is typical of many which find a change in the frequency of certain kinds of behaviour after the course. Half the teachers had been sent written definitions of each of the skills in advance but this had almost no effect on performance.

Clift et al (1976) in an Australian study in which 72 students were randomly assigned to groups receiving supervisor feedback with or without audio and/or videotape feedback, found a generally higher rating for all groups after micro teaching audio feedback and a positive effect on students rated low on the first teaching session, but a negative effect on those given an initial high rating.

Mc Aulese (1976) took a sample of 20 student teachers, half of whom were supervised and half unsupervised during a seven week micro-teaching cycle. There was no significant difference between the two groups in terms of supervisors' ratings of their lessons, though non-supervised students estimated that their progress was improving more than their supervisors did.

Questions directed to a particular goal, in this case the clarification of eight grade pupils' values during
social studies lessons, were studied by Stahl (1976). An experimental sub-group from 26 trainees who had received training in strategies thought, from previous studies, to be associated with effective values clarification teaching, used more probing questions of the kind advocated than the untrained group.

Copeland (1977) is one of the few investigators to follow up micro-teaching to see if any long-term effects are obtained. The subjects were 72 trainees at Santa Barbara and the skill was "asking probing questions". Two or three months later audio recordings were made in the student teachers' class rooms. Only the group of students whose supervising teachers had been trained to work on their teaching behaviour during teaching practice showed any long-term behaviour change.

An attempt to broaden the narrow concentration of many investigators on higher order questioning was made by Kelsey (1977) working with 27 secondary trainees, each of whom made and analysed audiotapes of their own lessons on several occasions. An experimental group of 14 was trained to identify and classify cognitive and verbal reinforcing behaviour. The incidence of total cognitive verbal behaviour, including cognitive questions and positive reinforcements, went up markedly for the experimental group.

Rice (1977) in a very small study of 10 primary science trainees at Ohio State University, divided them
into two groups, one of whom had models, teaching materials and analysis of audiotapes of their own lessons. The experimental group used more higher order questions after the course than the others. The investigators clearly thought that an increase in waiting time and asking fewer questions were a good thing, and, to no-one's surprise, these also "improved".

Esquinel, Lashier and Smith (1978) made a study of 92 science teachers who were randomly assigned to pairs and then to classes where they taught and assisted each other for three weeks. Each lesson was audio recorded, and four groups established: one receiving feedback from a supervisor, one from peers, one from analysing their own profiles and one with no feedback. No significant difference was found between the groups, but the authors point out the difficulty in this kind of field experience of containing pairs of students to strict experimental conditions, especially where something as conversationally natural as feedback is concerned.

Riley (1978) assigned 40 randomly chosen primary teachers at the University of Delaware to two groups. The experimental group received 3½ hours of instruction on classifying questions in science according to the scheme devised by Slosser (1973), the control group had no such training. Audiotapes of each student's lessons were then transcribed and analysed by a team of three. Those in the trained group asked significantly more questions on a higher cognitive level, but there was no difference between the two
groups in the overall number of questions asked. As with other similar studies the labour-intensive nature of this kind of research meant that only one lesson was analysed, thereby reducing the confidence one can have in the results.

The notion of self-concept was the subject of an Australian study by Stanton (1978) who investigated the extent to which this changed during a 12 week micro-teaching course followed by 32 volunteer post graduate trainees when compared with 84 students not having micro-teaching. Small positive increases in self-concept were noted for the experimental group.

In a Nigerian study of 36 trainee teachers Msdike (1980) similarly demonstrated an increase in the observed frequency of the skill being practised after a micro-teaching course, but in this case also noted a significant gain in pupils mathematical achievement compared with the classes of a group which had not had micro-teaching.

1.4.3. SOME PROGRAMMES USING MICRO-TEACHINGS IN OTHER COUNTRIES

In the United States of America studies conducted in Temple University McCollum and la Du introduced micro-teaching as part of their preparation of elementary school teachers - They also hoped to bring about a change in teacher's role in the social studies class room. They found that the student teachers reacted more positively and enthusiastically to their micro-teaching method courses. The "Traditional Texts"
did not realistically present life in the classroom. Micro-teaching provided the university student with some expertise needed to enter student teaching. In fact micro-teaching made the method courses more relevant in terms of needed skills and behaviors demanded by student teachers.

An example of the use of micro-teaching, in which the Rocky Mountain Educational Laboratory (RMEL) was involved was the extended summer program sponsored by the Jefferson Country Public Schools in Colorado. The program was designed to upgrade the entire instructional program in the school district by providing inservice training experience in team teaching and numerous offer promising procedures. The planning component of each term used micro-teaching to validate curriculum empirically before trying it with large groups of children; the observation component of each term used videotape recording for evaluating these teaching components. Thus, one hundred experienced teachers had gone through and several hundred children had participated. It was described as a highly enriched learning experience.

In Britain, the University of Stirling, which opened in 1967, had planned its education course from the outset to include periods of micro-teaching and the use and development of this technique was concurrently researched (Perrott and Duthi 1969 and 1970) (Perrott 1972). In the Stirling courses an attempt was made to integrate micro-teaching with other components of the educational course. Therefore, instead of
a course in educational psychology almost divorced from learning to teach, psychology was seen to be providing a relevant conceptual frame work and rationale for the skills to be practised in micro-teaching.

The first half of the course is focussed upon classroom teaching. In the first semester, the course is concerned with communication and conceptual learning. It is planned around the students micro-teaching practice of five skills (i) varying the stimulus (ii) questioning for feedback (iii) clarity of explanation (iv) use of examples (v) higher order questioning. A balance is sought in the associated lectures and seminars between providing a theoretical rationale for these skills and maintaining continuity in the discussion of the psychological theory itself. The main themes are perception and attention; social perception, feedback in social integration; linguistic problem in communicating especially with children; conceptual development; conceptual attainment and problem solving. Additional classes give explicit introduction to the skills, showing model videotapes. At tutorials students meet curriculum specialists to discuss the particular relevance of each skill to the training of their specialist subject, to obtain guidance on the choice and treatment of topics for micro-teaching sessions and for practising the use of observation schedules provided to give a diagnostic assessment of the use of each skill.
The micro-teaching at New University of Ulster in 1971 was used as a method of teaching, as a research tool and as a means of integrating theoretical and practical studies. The sample taken for this study included all the students of education. The time taken was weekly sessions for a semester. The study was done in a micro-teaching laboratory. The education students received lectures and demonstrations on the major component skills and attended curriculum programmes. For the selection of appropriate materials for micro-teaching task seminars were conducted.

This was part of a general research enquiry conducted on the effectiveness of micro-teaching with and without videotape playback and verbal interaction training (Flanders 1970). In addition to this there were two control groups; one studied education but did not undergo teacher training; and the other neither studied education nor received training in teaching.

The controlled groups enabled to test the hypothesis that the study of education does have effect upon the classroom practice, and that training in teaching skills through micro-teaching produced effective change in students attitude towards micro-teaching. More than eighty percent of the students in 1969-70 expressed satisfaction with the course. Some students complained of the difficulties of planning brief lessons and over ninety percent of them asked for longer time between teach and reteach in the cycle.
They rated the opportunity to see self-teach and practice in planning lessons "as the most important feature of the course".

At the Exeter University, Wragg (1971) has been studying the influence of feedback on teachers, using micro-teaching. Four groups of student teachers taught short lessons to small classes of children. They then retaught a similar lesson approximately one hour later to comparable but different groups of children. In the interval of one hour period they received various kinds of feedback about the first lesson they had given. Group 1 received Flander's Interaction Analysis feedback, Group 2 received television feedback, Group 3 received Flander's Interaction Analysis feedback and Group 4 received no feedback. Analysis of the second lesson showed that students who had both seen videotape of their first lesson and had been given information about their interaction with the class were likely to lecture less, elicit more spontaneous talk by the children and were rated higher by them. The other groups showed rating on the reteach almost identical with those given on the first teaching.

Since 1972 a unit, under Professor Elizabeth Perrott's direction, at University of Lancaster, has been commissioned by the Department of Education and Science to carry out research and development programme on self-instructional micro-teaching courses (Perrott 1974, Perrott et al 1975 a, and b, and 1976) for the use of teaching training. This
unit is also engaged in two international projects, initiated by the centre for Educational Research and Innovation of OECD.

A survey was undertaken in Australia by Turney, Cliff, Dunkin Trust in 1972 to establish how many, and in particular, which Australian teacher education programmes were using micro-teaching. They found that at least 27 of the Australian teacher education programmes were endeavouring with varying degree of adherence to its full conception to implement micro-teaching. This represents some 60 percent of programmes initially contacted when it considered that nine other programmes (13%) were planning to introduce micro-teaching and two other (3%) in the process of introducing it, this situation is favourably comparable with the progress of innovation in the United States at a similar period of development.

In the school of Education at Macquarie University, Lewis et al were engaged in a project entitled 'A' study to investigate the effects of Alternative Technique to Practice Teaching on Department of Teaching Skill by Student Teachers.' At the Higher Education Research unit of Monash University, Cliff et al were carrying out a 'A cost Effectiveness Evaluation of Micro-teaching Technique.' In the schools of Teacher Education at the Canberra College of Advanced Education, Hughes and Trell were investigating procedures to Assist Student Teachers in Department and Self-Analysis of Teacher Behaviour'. In Faculty of Education at Queensland University
Tisher and Power were working on 'A study of Effects of Teaching Strategies in Mini and Micro-teaching Situations.' At Sydney Teachers College, Foster et al undertook a study of micro-teaching in an attempt to identify problems associated with it and to assess its value in the development of teacher effectiveness. In the Department of Education at University of Sydney, Turney et al were engaged in the Teaching Skills Development Project.

Researches on the effectiveness of micro-teaching over traditional methods of teaching are evident from the above discussion. Studies are available corresponding to the effects of different variables relating to micro-teaching such as attitude towards micro-teaching, micro-teaching in simulation condition, using different sources of feedback, modelling, sources of feedback, role of supervisors, role of pupil versus peers, transfer of micro-teaching skills to the normal classroom teaching. These are some of the studies which are highlighted in relation to the present study.

1.4.4. MICRO-TEACHING AND TEACHING EFFECTIVENESS:

Researches in the field of teaching effectiveness are extensive and numerous (Domas and Tiedman, 1950; Barr et al, 1953; Barr, 1961; Gage, 1963; Evans, 1961; Midley and Mitzel, 1958) and difficulties involved in this type of investigation are numerous because of the lack of unanimity about the criteria of teacher success or effectiveness.
There have been repeated attempts to relate teacher effectiveness to teacher behaviour, teacher personality and teacher effects (Ryan, 1960; Turner, 1964; Meux and Smith, 1964; Flander, 1960).

Biddle (1964) has discussed the role of formative experience, teacher properties, teacher behaviours, immediate effects, long-term consequences, classroom situations, and school and community contexts in his 'seven-variable model for teacher effectiveness'.

Singhu's study (1964) on personality variables in relation to teaching effectiveness at Agra University is also worth mentioning. The main finding of this study is that the correlations between teaching efficiency and personality variables like adjustment, temperamental qualities, intelligence, interest and attitude were found to be .02, .06, .35, .27 and .19 respectively. This shows that the effect of adjustment and temperamental qualities of the efficiency of student teachers is negligible as compared to that of intelligence, interest and attitudes.

Roy's study (1965) on "Relationship between the Measures of Success of Teachers as Students under Training and Teachers in Schools" revealed that in determining teacher's effectiveness pooled judgements were likely to yield better results than individuals assessment. None of the devices used was adequate to measure teacher's effectiveness. The
tools used in her study were (i) Pre-service Measures of success the Central Institute of Education Schools Record Part 'B' (Practical work) (ii) In-service measures of success—principal's rating and pupil's ranking of teacher and (iii) case studies of selected teachers.

Another study by Sharma (1967) is also related to the efficiency of science teachers. The findings of the study revealed that there was no significant difference in the teaching efficiency of a trained group and an untained group. However, the trained group showed superiority over the untrained group at 5% confidence level in planning for teaching. Another feature of his study was that a criterion for teaching efficiency was developed through a rating scale. Some of the items in the efficiency criterion were related to the use of modern techniques of teaching, healthy attitude towards the profession, personal qualities etc. A similar study was also conducted by Srivastava (1972) where she discovered some general characteristics of effective class room teachers and came to the conclusion that characteristics of effective teachers and ineffective teachers are different.

Three studies — one conducted by Khanauja (1973) at Indore University, second by Tajkiran (1967) and the third by Gupta (1964) conducted at Agra University also showed that the teaching competency or teaching efficiency is positively related to personality adjustment of the teachers.
Some temperamental qualities of the subject were measured by Thurstone Temperamental Schedule and interest in teaching was measured through an interest inventory prepared by the investigators. According to Khanauja's study there is significant correlation between teaching competency and home adjustment, teaching competence and hostility, teaching competence and personality adjustment and age of teacher and teaching experience. On the other hand, significant relationship was found between teaching competency and emotional stability, health adjustment, teaching competency and emotionality, teaching competence and age of the teachers. Tejkiran's study also showed that the value of \( R^2 \) between teaching efficiency and sociability, teaching efficiency and enthusiasm, teaching efficiency and reflective and impulsive nature (0.78, 0.39, 0.23, 0.19, 0.14) are indicative of importance of these qualities for success in teaching.

Another study is by Prasad (1970) in which professional efficiency of primary school teachers had been studied from three angles, namely, (i) efficiency in classroom teaching (ii) efficiency in organising curricular activities and (iii) efficiency in organising activities related to school community. An observation schedule was developed and standardised by the investigator for measuring teachers' efficiency.

Debnath (1971) tried to fix some determinants for measurement of teaching efficiency. He studied age, experience, academic achievement and training as independent variables.
in relation to teaching efficiency. 226 head-masters selected by stratified random sampling and staff members of 22 training colleges of West Bengal served as the sample of the study. Co-efficients of co-relation between the teaching efficiency and age, experience, academic achievement and training in the study were found to be .21, .24 and .31 respectively. The conclusion drawn in the study was that the age, experience, academic achievement and professional training were the significant determinants of teaching efficiency.

A study conducted by Sharma (1971) predicted that the combination of five predictors i.e. teaching aptitude, academic grades, socio-economic status, teaching experience and age in order of their arrangement appeared to be sound predictor of teacher effectiveness.

In the study conducted by Mehta (1972) 'Teaching ability' was broken into various components by adopting the factor analysis approach and she concluded that there was a 'general ability' called teaching ability as a factory highly loaded with achievement variables of training. The highest loading of this factor was from the total practice teaching marks which showed that maximum expression was given to this ability in class room teaching.

Kaur (1972) explained the relationship between teaching attitudes and intelligence of effective and ineffective teachers. She found that intelligence is not the sole determinant of effective teaching. Favourable attitude towards
teaching according to her is also a characteristic of effective
class room teacher.

The study of Venkatesubbaiah (1972) showed that 35% of teachers felt that they could teach effectively in the class room if the inspecting authorities and headmasters help them whenever they need, (ii) 75% of teachers felt that at present ineffective teaching is due to the large number of pupils in a class room and (iii) 72% of teachers felt that their work load was more and therefore they felt exhausted which was a cause for ineffective teaching.

Mehta (1979) conducted a study on "A Factorial Analysis of Teaching Ability of Graduate Pupil-teachers of Secondary Training Colleges." Where she grouped the studies under different heads such as (i) Teaching ability constituents (ii) Teacher effectiveness (ii) Paradigms designed for research on teacher effectiveness and (iv) Use of psychological tests in the studies of teacher behaviour.

While concluding she said "a glance of the earlier sections on constituents of teaching ability and its comparison with these viewpoints on teaching effectiveness indicate that all viewpoints are inconclusive and a definite line of difference between teaching ability and teaching effectiveness cannot be drawn in the context of the concepts of teaching ability and effectiveness because the results are bound by the criteria used and particular population studied". Both teaching ability studied and teaching effectiveness studied
however, contribute to the design of the present study, understanding the results and their interpretations.

Gupta and Shamahery (1982) conducted a study on "Prediction of Teaching Efficiency Through Teacher's Attitude Towards Professional Training."

The major findings of the study were -

(1) There is a positive relationship between teacher's attitude and teaching efficiency, and that prediction of teaching efficiency through teacher's attitude towards professional training is possible.

(2) Sex difference is significant in teacher's attitude and that the male teachers are better than the female teachers in their attitude towards professional training.

(3) Arts and science teachers do not differ significantly in their attitude towards professional training.

(4) There is a negative relationship between teaching experience and teacher's efficiency. In other words, the efficiency of a teacher decreases after a certain period of experience.

(5) Arts and science students do not differ significantly in their achievement.

1.4.5. ATTITUDE TO MICRO-TEACHING:

In general, student reaction to micro-teaching has been favourable. To assess attitudes to the Stanford Summer Micro-teaching Clinic of 1965, a questionnaire was designed to evaluate student teachers' acceptance of the
technique. Of the participating students 60 percent felt that their micro-teaching experience had been either very or extremely valuable. Only 15 percent reported that they thought it had been of little or no value (Fortune, Cooper and Allen, 1967).

Experienced teachers also react positively to micro-teaching. The study of Dugas (1967) strongly suggests that micro-teaching of language teachers of the 39 participants who completed an evaluation questionnaire, 38 said that videotaped questionnaire was definitely helpful. The training staff also displayed a favourable attitude towards the technique.

An example of students' general attitude to micro-teaching comes from the University of Minibota, Canada. A representative student's comment on the micro-teaching programme or Training Instructional Practice Session (TIPS) was, 'I think I have improved through TIPS and have, in any case gained a great deal of confidence. Without guidance it would probably have taken me months to realise about teaching and my own presentation in six weeks without hurting my pupils' chances of learning (Wood and Hedley, 1968). Similarly, Bloom (1969) represents students' reactions to micro-teaching at the completion of first clinic at Michigan State University. Students believed that they gained in self-confidence in working with children, that they developed skill in teaching and self evaluation, and they acquired insight into techniques of teaching and importance of pupil-teacher interaction.
Perrott and Duthie (1970) reported that students at Stirling University responded very positively to micro-teaching and perceived the technique as helpful. Similar results had been obtained at the University of Sydney where micro-teaching was first used in 1969 – both students and staff judged it favourably. The same students felt that more was learned in the first two or three sessions than in a full four-week period of practice teaching (Turney et al. 1970).

Ward (1970) reported a survey of American institutions using micro-teaching, found positive attitude towards micro-teaching. Similar results had been reported by Brigham Young University.

Gibbs (1973) surveyed the reactions of education students to the New University of Ulsters micro-teaching programmes and found that majority of student for first, second and third year classes were favourably disposed towards micro-teaching. These questionnaires highlighted some weakness in the course, however, in particular, the inadequate establishment of relation between the skills and psychological theory. The same weakness is reported in the Stirling University programme (Perrott, 1972).

Again, at the University of Macquari in a micro-teaching investigation attitudes of 131 students were studied. That studies revealed strong agreement among the participants that micro-teaching is an effective training technique.
Majority of students indicated sustained interest throughout the programme and found the one-skill-at-a-time approach 'helpful' (Levis et al 1973).

Passi (1977) found micro-teaching helpful in changing the attitude of student teachers towards teaching.

The Department of Teacher Education, NCERT, conducted a field experiment in collaboration with 22 teacher education institutions from all over the country during 1976-77. One of the objectives was to study the change of attitude towards teaching due to training through micro-teaching technique with variations in its components such as modelling, feedback, condition etc. Results of the studies of 21 institutions showed no change in the teacher's attitude towards teaching where as only one institution with change in modelling technique found change in attitude of the student teachers towards teaching. The attitude change was in the positive direction (Das et al) (1977).

Sharma (1977) found the attitude of trainees towards micro-teaching favourable.

1.4.6 SIMULATION IN MICRO-TEACHING:

In the area of teacher education, instructional activities would be conducted through games while behavioural problems in the classroom could be more easily handled through simulation. For bringing the situations of classroom into college, Jacobs (1960) has tried out the technique of
socio-drama in the training of teachers. Apart from these approaches like socio-drama, simulation in teacher education has followed two main lines, the first method is that of the role play situation, the other technique that can be used in simulation is the in basket technique. This method presents a series of situations which might typically occur in the classroom.

Cruickshank (1969) devised a simulation training programme for the student teachers. The unit is called "Teaching Problems Laboratory" and is intended to give the student teachers a chance to make decisions in a life-like classroom situation.

Tansay and Unwin (1969) point out that simulation is an analogue, "a representation of the reality" but the model upon which it is based need not be a mathematical one essentially.

Several studies have been made which establish that simulated technique of teacher training is effective. This has been shown by the studies made by Lehman (1970) Lesser (1965) and Binnie (1972). The result is relevant to the present study as this has also been carried out in simulated condition. These studies suggest the efficacy of simulation as a teacher training technique. The whole premise of training through simulation is contained through the interaction of three sets of activities (i) Lectures provide factual base for considering a given issue (ii) guided student readings
and discussions provide opportunities for exploration of facets of lessons and (ii) these activities are built around simulated experiences which provide a personal base for knowledge.

Cruickshank (1971) identified five most common justifications in favour of this (i) simulation permits student teachers to engage in frequent and severe problems that might not occur during their field work experiences. (ii) It can often provide experiences in a low cost model of a high cost environment. (iii) It can compress time by presenting the student with more decision making points or problem situations, (iv) Space can also be compressed since simulation can present variety of school environment to a student teacher who is normally limited to one field experience and (v) Simulation has the potential for immediate feedback making it possible to identify cause-effect relationship for student teacher.

Fink (1973) says "Simulation is the controlled representation of reality". The two critical attributes of simulation are: (i) involvement or role playing on the one hand and (ii) a simplified but minimally distorted reflection of some given reality, on the other.

Simulation seems to offer an alternative as a way of compensating student teacher under training for lack of actual time spent in practice. This is a relatively recent
training technique which can make the transition from course work to field experience more continuous (Pollack, 1973) and thus, bridge the gap between theory and practice.

1.4.7. FEEDBACK AND MICRO-TEACHING:

In micro-teaching research, feedback has received much attention. It is that variable which is more easily manipulated and it can be linked with modelling, reteach and with supervisory aspects. Different studies have been undertaken to view different types of feedback on teaching competence or teaching effectiveness.

Orme (1966) studied the effect of modelling and feedback variables on the acquisition of a complex teaching strategy. One of the studies investigated the effects of self-feedback and reinforcement on the acquisition of a teacher's skill involving "Self-viewing".

In another study by Tuckman and Oliver (1968) comparison was made between pupil feedback and supervisor feedback. They found that the pupil feedback did produce a significantly greater change in teacher behaviours than supervisory feedback and that supervisory feedback alone also produced changes in teacher behaviour that were away from the direction suggested by the supervisor.

Young and Young (1968) are of the view that while micro-teaching does not necessarily require the use of video
recording, video feedback does add a powerful dimension.

Young (1970) compares the effect of provision of a single supervisor with college supervisors teams. It was found that students working in teams performed significantly greater number of specific teaching behaviours in orienting students to the learning task. Student in teams also performed significantly better on three of the eight verbal and three of the ten non-verbal behaviours aimed at reinforcing students responses while numerous authors including Doty (1970) and Mc Intyre (1971) have drawn attention to the desirability of the feedback being provided by a supervisor.

Mc Intyre (1971) in a study carried out at Stirling found it impossible to isolate the contributory effects of the three kinds of supervisory treatments, but did conclude for his sample of Scottish students, the provision of supervisors seem necessary, in that, most of the students consider it beneficial to have access to authoritative guidance.

In another study Mc Intyre compared the relative effectiveness of three approaches to micro-teaching supervision. Students undergoing the same micro-teaching programme were allocated to one of the three treatments of (a) individual conference with a tutor supervisor (b) groups of three students working with the tutor and (c) groups of three students working alone. Comparison of group A with group B and C indicated that group A showed a significantly greater
mastery of the skill studied. Comparison in terms of their opinion and reactions revealed that most students considered it beneficial to have a tutor supervisor to work.

Young, Lea and Rechards (1971) worked with a group of thirty pre-service teachers practising teaching a concept lesson in micro-teaching setting. Two of the experimental groups were (a) oral group where oral evaluation by a supervisor was not available and (b) video groups - where video tape relay was not available, using verbal interaction category system and the video teaching evaluation form respectively, to provide dependent variable measures. They found no significant differences between the video and oral group.

Weeks (1973) reported that feedback videotape self confrontation and systematic pupil feedback produced no significant difference in the student teacher attitudes.

Fulmer and Manning (1975) in their review on self confrontation stated that unless some other focus, perhaps some powerful focus is provided, self viewers seen to focus on themselves, their appearance-body and voice.

Stronck (1975) studied the evaluation of the lessons taught by pre-service biology teachers by their peers and by their students. It was found that students rated performance poorer than did the peers.
Sharma (1976) compared the effectiveness of two types of feedback on the acquisition of questioning skill through micro-teaching. Two groups of B.Ed trainees were taken for the experiment. One group was given audiotape as well as supervisory feedback and second group was given supervisory feedback alone. It was found that audio as well as supervisory feedback was more effective in developing skill of questioning.

In a field project on micro-teaching carried out by the Department of Teacher Education, NCERT in collaboration with 22 institutions during (1976-77). One of the objectives of the project was to compare the effectiveness of various techniques of feedback. Six institutions compared peer feedback with supervisor feedback, criterion being scores on general teaching competence scale. It was found that there was no significant difference between the scores of groups getting supervisory feedback and peer feedback.

One institution compared audio feedback with peer feedback and found insignificant difference in general teaching competence scores.

Bhagia and Bhouraskar (1977) Dixit (1977) Prajapati (1977) Rama (1977) Vishesharan (1977) and Pillay (1977) conducted parallel studies to determine the relative effectiveness of peer feedback and supervising feedback, the criterion being scores on general teaching competence scale. They all
found that the feedback given by peers and by supervisors had similar effects on development of general teaching competence.

Passi (1977) studied the effect of instructional material and feedback upon the development of teaching skills of set induction and closure. She found significant difference between the acquisition of general teaching competence by student teachers having the treatment of instructional material and skill based feedback and student teachers of the control group.

Sagdeo (1977) compared peer feedback with audio-feedback and found them equally effective in developing teaching competence through micro-teaching.

Sharma (1977) studied the effects of different techniques of feedback upon the attainment of teaching skills related to stimulus variation among teachers. The three treatments were discussion, oral and written techniques of feedback. It was found:

(i) Out of three techniques of feedback, discussion is the most effective technique of providing feedback by the peer supervisors for the skill of body movements.

(ii) Written feedback is the most effective technique for providing feedback by peer supervision for the skill of shifting sensory channels.

(iii) For the skill of shifting sensory channels total shifts in events, oral feedback is better than discussion feedback, discussion is least effective in this case.
(iv) There is no differential effect of three techniques of feedback upon the attainment of the skill of gestures.

1.4.8. ROLE OF THE SUPERVISOR AND MICRO-TEACHING:

In the area of micro-teaching, supervisors' role is more appropriate for helping teachers adapt newly learned strategies to their particular subject and situation. The role of the supervisor should therefore be studied to try to identify the unique advantages of supervisory assistance so that this resource may be utilised more effectively (Allen).

Dugas (1967) had his supervisors encouraged the teachers in retraining programme to evaluate their own performance as he felt that only when teacher was proficient at self-evaluation could his growth as a teacher continue.

'Self-supervision' is being used in a number of micro-teaching programmes, sometimes supplemented by supervisor commentary (Allen, Fortune and Cooper 1968). On the other hand, there are a number of studies which seem to indicate that in the feedback phase the presence of a supervisor is not always necessary. In fact, in one study by Tuckman and Oliver (1968) it was shown that supervisor's feedback produced negative results. In their oft quoted study on the contribution of supervision, Tuckman and Oliver compared 4 feedback conditions (a) pupil's feedback alone (b) supervisor's feedback alone (c) both pupils and supervisor's feedback and (d) no feedback. All of these
types of feedback were given through the sudden opinion questionnaire (SOQ). The results indicated that both treatments involving pupils feedback produced significantly greater change than the other two conditions. Moreover, a comparison of (A) condition and (C) condition indicated a failure for supervisor's feedback to produce any additional effect other than accounted for by pupil's feedback alone. Compared to the no feedback condition, results also showed that supervisor's feedback produced a greater negative shift in teacher behaviour i.e., away from the direction suggested by the supervisor.

Berliner (1969) describes two studies at Stanford which indicate the important role of supervisor in increasing in the skill of reinforcement and asking probing questions for the study of reinforcement skill, different types of supervision during the feedback phase were compared:

(i) Self-analysis (ii) Supervisor reinforcement of the student each time he used the skill and (iii) Supervisor reinforcement of the student in discrimination training (e.g. pointing out instances where the student could reinforce pupils, suggesting ways of providing reinforcement and explaining the effects of reinforcement on pupil behaviour). Results indicated the significant superiority of supervision with reinforcement and discrimination training in producing student behavioural change. Self-supervision was the least effective of the three modes. Similar results were obtained
in investigating the development of the skill of probing questioning.

The micro courses of Farwest laboratory have demonstrated that with the use of highly structured materials, significant behavioural changes can be assisted by teacher self-evaluation (Borg et al 1970). Indeed, Borg points out that if perceptual modelling and video-tape feedback are present, supervisory feedback seems to be necessary. Other investigations underline the importance of self-evaluation as a desirable practice to be experienced by all teachers.

Another indirect advantage of using a supervisor are discussed by Borg et al (1970). They suggest that the skilful supervisor can diagnose the reasons for feedback in individual classes and prescribe alternative training. This is a function that other feedback modes probably cannot fulfil. Secondly, the studies that have not found a difference between supervisor feedback would have a demonstrable superiority evaluated against this second criterion.

Other functions of supervisor can be effective provided by a less expensive and more reliable technique. In the discussion of Wragg's study it has already been noted that videotape feedback and Flander's Interaction Analysis feedback were helped to make sufficient gains in aspects of their research.

In another project O.A. Young (1970) uses a group
of peers to act as supervisors in a series of micro-teaching experiments. The result seems to indicate that the peer supervisors are at least as effective as regular supervisors in encouraging the students to use certain teacher behaviours.

Davis (1970), believes that because most teaching occurs isolated from other adults, training in self-analysis is an important objective of teacher education programmes.

Guralcher et al (1970) in their micro-teaching programme, have a step entitled "peer group micro-teaching" in which the students have an opportunity to test one of several lessons against peers and under peer supervision. This is followed by three more steps before the 'actual' micro-teaching experience. One step, seminar in supervision of micro-teaching is designed to train the students to supervise the colleagues.

The apparent in effectiveness of supervision in many feedback situations is an important finding which needs further explanation. May be, some of the ineffectiveness can be explained interms of poor supervision. For example, Waismen and Ramsayer (1970) found that student teacher who received audio-visual feedback but no supervisory feedback did not differ in their ability in self evaluation as measured by the Stanford Teacher Competence Appraisal Guide (STCG). For those student who received supervisory feedback but no audio-visual feedback. The investigator pointed out, however, that
in part, these results reflected rather inept, diffuse supervision. They found that supervisors discussed "diverse and often unimportant matters" during supervisory conferences. They suggest that "one of the major lessons to be learnt by supervisors from micro-teaching research is the need to concentrate supervision on one component task of teaching at a time and to see to it that this component is fully achieved before moving on to the next."

Despite the relatively weak influence of some 'expert' supervision in the feedback phase, student teachers do seem to prefer the assistance of supervisors. Mc Intyre (1977) compared the relative effectiveness of those approaches to micro-teaching supervision. Students undergoing the same micro-teaching programmes were allocated to one of the three treatments: (a) individual conference with tutor supervisor (b) group of three students working with tutor and (c) group of three students working alone. The results showed that (i) there is no evidence of differences in performance between students who had worked individually with tutors and those who practised each of the skills themselves. (ii) Students who worked individually with tutors showed a greater mastery of those skills than did the students who worked in groups and took turns in teaching lessons (iii) there is some evidence that the student who taught lessons to practise one of the skills - higher order questioning and probing - had acquired that skill to a higher degree than those who worked with them in planning and assessing those lessons.
No comparable differences were found, however, for the other two skills. Nevertheless, most students considered it advantages to have a tutor.

Johnson and Knapp (1970) indicated that student teachers expect their supervisor to give them expert help in planning, conducting and evaluation of micro-teaching but they also want him to give him opportunities to find their own teaching styles.

There are often studies which question the effectiveness of the supervisor's feedback. For example, Sadkar and Capper (1972) cite a study by Harrington (1970) in which critiques by self, another student, fellow instructor and supervisor were judged to be equally effective in terms of improving teacher competence.

Gibbs (1973) uncovered a similar attitude in students in the Education Department at the New University of Ulster. The majority of students in his study disagreed with the statement that "supervisors would be unnecessary if students were taught to make an objective analysis of their own micro-teaching lesson."

Griffiths is of the opinion that, there is need for systematic analysis of the behavioural components of micro-teaching supervision skills. There is considerable scope for the development of a variety of supervisory strategies, and systematic manipulation of this variable in future
research should help us to come to firm conclusions about conditions under which supervision is effective in promoting skill acquisition.

Lewis et al (1973) conducted a study at Macquaire University, Australia. Students expressed a strong preference for having self-analysis supplemented by feedback from fellow students and supervisors.

Results of unpublished studies at the University of Stirling (U.K) suggest an additional factor which needs to be considered further. The results of these studies on acquisition of various skills support the idea that improvement in performance is not significantly increased by the presence of supervisory assistance. Research is needed to find out if these opinions had been generalised from training on certain skills or whether trainees saw the need for supervision on all skills (Farrison and Mc Intyre, 1974).

Although the research evidence on micro-teaching supervision is limited and rather in consistent, a number of things seem clear. Micro-teaching demands supervision, but the essential feature of supervision will be that it is positive, constructive and sharply focussed. Much of the success of micro-teaching will depend particularly on the supervisor's competence in preparing students in the modelling phase and in facilitating feedback through various media. While the supervisor himself will be an important source of
feedback, he will be also required to encourage self-analysis by the student teacher and to involve, if possible, peers and even pupils of micro-class in analysis.

1.4.9. PUPIL VERSUS PEERS IN THE MICRO-TEACHING:

Among the major aspects involved in the process of micro-teaching approaches it is one of the important aspects to find out whether pupils' or peers' role is effective in bringing about some change in the teaching competence of the student teachers.

Wood and Hedley (1968) undertook a study concerning the acquisition of questioning skills. Where they wrote - "questioning the peer group began to show a diminishing return due to the background knowledge of the students and to their development of sense of anticipation. Later 8 pupils of sixth grade were used instead of peers and this class produced a greater degree of realism and helped to maintain student's interest". As slight contrast to the findings of the above study, Collotello et al; carried out research to determine whether peers could be used in micro-teaching without reducing the value of experiences. Student teachers in group 1 taught 4 lessons to high school seniors; group 2 taught the first and fourth lessons to pupils and the second and third to peers. Using a pre-tested evaluation instrument all teachings were rated by members of the micro-classes.
Although the use of class of high school seniors was no more effective in improving the quality of the student's presentation than were classes of peers, students indicated a definite preference for teaching pupils.

The results of a study of Hoenner (1969) are inconsistent with those reported above. The study was designed to determine the effects on both teaching ability and self-confidence, of the use of peers on pupils in micro-teaching situations. He hypothesized the students who thought that pupils would gain more in teaching skill and self-confidence than the students who taught peers. The result did not support his hypothesis, yet 70 percent of the students indicated a preference for teaching pupils.

Ward's (1970) survey revealed that in secondary teacher education programme in the United States fellow students (peers) were used as 'pupils' in the micro-teaching situation much more frequently than were 'real' school pupils.

Peck and Tucker (1971) report a study of Sleinbach and Butts (1968) in which peers and pupils were used in teaching practice sessions (it is not stated if they were using micro-teaching or not). The finding indicated that at the elementary level, at least, some skills can only be learnt by teaching children. This investigation has the support of a micro-teaching investigation involving intending secondary teachers.
Again Levis et al (1973) mention, where there is some evidence that the peer teaching had special advantages for both student teacher and the 'peer pupils'. Which revealed that while student teachers generally preferred to teach school pupils, they agreed that (i) teaching peers did not inhibit their performance and that it was not difficult to play the role of a peer pupil (ii) peer group classes provided more effective feedback than school pupil, acting as a peer pupil sensitized them to skills being practiced. It is interesting to note that students were 'equally divided on the question whether it is difficult to teach school pupils after having training sessions with peers.'

From the research evidence and student opinion it would seem advisable for teacher educators to use school pupils in their micro-lessons. If this is not possible they can take consolation from the fact that for some skills there is little advantage to be gained by the use of pupils rather than peers, and, indeed, that there may be some benefits from the use of peers.

1.4.10, MODELLING AND MICRO-TEACHING:

It is essential that the student has a clear understanding of the particular teaching skill to be practiced before the attempts to learn it in a micro-teaching situation. He needs prior instruction on the skill's essential features and basic principles of its use. In other words,
he must know definitely what he should do and say. This can be accomplished in three main ways, which may be used separately or combinely (i) by the use of oral explanations and instructions (ii) by the use of writing expositions and directions, or (iii) by providing demonstration of the special teaching behaviour. In current micro-teaching programmes most of these approaches have been embodied in 'modelling' which has been regarded as an extremely important element in micro-teaching.

Drawing rationale from the theories of imitative learning, such as those propounded by Bandura and Walters (1963) research on modelling in connection with teacher education has multiplied over the last five years. There is now ample evidence that a careful use of models of teaching does produce significant student learning (see for example McDonald and Allen; 1967; Korna 1968; Ebat 1970; Higgins et al, 1970; Eder, 1971; Lange, 1971 and Alper et al, 1972). However, it has not yet been clearly established which alternative type of modelling approach might be most successful in certain circumstances. A number of studies have been completed which examined the relative efficacy of perceptual models (filmed or videotaped teaching segments) symbolic models (written transcripts of a teaching episode or written description of a skill's application) and audio models (audiotaped teaching sequences).

Similarly Orme (1966) found that perceptual modelling
led to significantly greater gains in the skills than symbolic modelling.

Although a good deal of the research on the relative effectiveness of different types of models is inconclusive, the weight of evidence indicates that the teacher educators would be well-advised to use and develop perceptual models. If possible, a combination of both perceptual and symbolic models might be employed to ensure optimum learning.

But not all the studies have consistently indicated the superiority of perceptual models. Evidence suggests that some skills, probably those most easily described, may perhaps be just as effectively developed through other less expensive models. For example, Allen et al (1967) reported that for questioning skills symbolic models could be as effective as perceptual models.

White (168) tested the effectiveness of an audio-tape model in teaching preservice teachers to use indirect verbal behaviour. The experimental group listened to the tape three times, reading a transcript during the third session. When compared to a control group not given any instruction, White found the indirect verbal behaviour of the experimental group to be significantly better.

The result of the studies seem to indicate that:
(1) Students trained with a model perform those skills better than students not trained with a model (2) Symbolic modelling
is an effective for teaching certain skills as perceptual modelling, (3) Symbolic-written modelling is effective in training for certain questioning skills and (4) Symbolic-audio modelling is effective in training certain non-verbal skills.

Clue (1969) while studying higher order questioning behavior of teachers reported that modelling accompanied by supervisor's pointing the essential characteristics of the skill proved to be more effective than modelling without any supervisors' comments.

Goodwin (1971) evaluated the effectiveness of symbolic and symbolic-literate models against not receiving a model. The dependent variable was probing questions. The results of analysis supported symbolic modelling over symbolic-literate modelling or no modelling.

J.J. Koren (1971) found that in developing questioning skills for observation and classification the symbolic mode of training was particularly effective with students who were weak in this area.

Vase (1975) found audio modelling was a better technique when compared to symbolic models for the development of the skills in questioning.

In a project sponsored by Department of Teacher Education, NCERT (1976) six teacher training institutions
compared various types of modelling. Five of these institutions compared perceptual with symbolic modelling and one institution compared perceptual with audio-modelling. The results have shown that perceptual and symbolic modelling have equal effect on skill learning in micro-teaching. It was also found that perceptual and audio-modelling were equally effective in developing skills through micro-teaching (Das et al, 1977).

Sharma (1977), Kamal (1977), D.Lima (1977), Sehgal (1977) and Asiya (1977) compared perceptual with symbolic modelling. The results of all these studies show that both the types of modelling techniques are equally effective in developing teaching skill through micro-teaching.

Sharma (1977) studied relative effectiveness of perceptual modelling with audio-modelling. Perceptual model was presented by the supervisor himself and audio model was presented with the help of a cassette tape recorder. Gains between pre and post test scores on general teaching competence scale of experimental and control groups were compared. He found no significant difference between the gain scores of two groups.

Although a good deal of the research on the relative effectiveness of different types of models is inconclusive, the weight of evidence indicates that teacher educators would be well advised to use and develop perceptual models. If possible, a combination of both perceptual and symbolic models
might be employed to ensure optimum learning.

1.4.11. MICRO TO-MINI TEACHING APPROACH (A MODEL LEADING TO THE INTEGRATION OF SKILLS):

Micro-teaching technique has become very popular in the field of teacher training, yet it is not without its limitations. The concept of Mini-teaching was introduced at Ulster College in 1976 to overcome some of the disadvantages of Micro-teaching. The concept of Mini-teaching in some respects is akin to Micro-teaching, but it incorporates a number of features which differ from the initial Stanford design. The rationale of Mini-teaching is based on the social model given by Argyle (1972), where by social skills are analysed in a manner similar to the analysis of motor skills.

The full Mini-teaching programme is as follows -

Outline of the practical elements of a Mini-teaching programme.

<table>
<thead>
<tr>
<th>Session</th>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Introduction and Familiarisation</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Retape recording and Reviewing (R+R)</td>
<td>5 mts</td>
</tr>
<tr>
<td>3.</td>
<td>The skill of questioning (R+R)</td>
<td>5 mts</td>
</tr>
<tr>
<td>4.</td>
<td>The skill of reinforcement (R+R)</td>
<td>5 mts</td>
</tr>
<tr>
<td>5.</td>
<td>Operation of questioning and reinforcement</td>
<td>10 mts</td>
</tr>
<tr>
<td>6.</td>
<td>The skill of stimulus variation (R+R)</td>
<td>10 mts</td>
</tr>
<tr>
<td>7.</td>
<td>Integration of questioning, reinforcement and stimulus variation (R+R)</td>
<td>10 mts</td>
</tr>
<tr>
<td>8.</td>
<td>The skill of verbal explanation (R+R)</td>
<td>10 mts</td>
</tr>
</tbody>
</table>
9. Skill of illustration  
10. Integration of verbal explanation and illustration  
11. The skill of set induction  
12. The skill of closure  
13. Integration of all the skills  
14. Integration of all the skills  
15. Post-tape comparison of pre and post tapes  
16. Full lesson in college  

Though miniteaching is a good technique and an attempt is made to integrate the teaching skills, still it is a much time-consuming and not practicable technique and in a country like India, where Teacher Training Programme is of one year, it is very difficult to use this method. So there is a need to introduce a model of training which is time saving and through which competent teachers can be made. The present model namely "Mega teaching" is an attempt towards this direction.

14.12. MINI-TO-MEGA TEACHING APPROACH:

Mega teaching approach is a refined form of micro-teaching which comprises in it micro-teaching skills in a balanced proportion.

In Mega-teaching all the teaching skills are distributed in four sets of skills. The distribution of the skills is as follows.
Set A
(i) Skill of introducing a lesson.
(ii) Skill of questioning.
(iii) Skill of probing questioning and
(iv) Skill of reinforcement.

Set B
(i) Skill of explaining.
(ii) Skill of stimulus variation.
(iii) Skill of illustration with example.
(iv) Recording attending behaviour.

Set C
(i) Skill of black board.
(ii) Skill of demonstration.

The contribution of these skills in sets is based on Gestalt's principles. All these skills are related to teacher pupil interaction. In set A there are four skills. The rationale behind this set A is that - A teacher introduces a lesson by putting questions, then in questioning he may use probing skill to get correct answers of his questions in between this process he also uses reinforcement skill. Thus, the training of these four skills should be given together and not of individual skills. In second set, all skills are related to teacher's activities when the teacher explains his ideas, he has to clear his ideas by giving examples and here skills of stimulus variation and Recognising Attending behaviour of student plays equal role.
Thus these four skills are put in set B. Thirdly, set C consists the skills of Black Board and Skill of Demonstration. Both skills are related to A.V. aids. At last, to evaluate teaching process the teacher uses evaluation skill, here he can get or cannot get correct answers from the students. Hence it becomes important to diagnose the difficulty of the students and give them Remedial Programmes.

Second step of Mega teaching approach is to give the theoretical knowledge of each set of skills to trainees and a discussion with them. In this process only five trainees will be taken for training.

Third step is the demonstration of one set of skills by the teacher and in fourth step each trainee will practice a set of skills for 10 minutes. When one trainee will practice the set, the supervisor and the remaining four trainee will observe him and whenever in his lesson he will act in an undesirable manner the supervisor will check him at that time and tell him in a desirable way. Thus all the five trainees will be given feedback. All five trainees will prepare their own lesson plans and as in the previous case, all the five trainees will teach these plans respectively. This will be a complete cycle of 360 minutes. Thus, five trainees would be trained in one set of skills (4 skill) in 360 minutes. This cycle will be repeated for the second and third sets of skills.
The next step will be the integration of set A and B and time limit will be 20 minutes and the number of students will be ten, then integration of set A, B and C with a time limit of 25 mts. In integration of these sets the strength of students will be 15. Finally, trainees will practice all four sets of skills and time limit will be 35 minutes, the strength of the students will be 25 to 30. One of the five trainees will teach a lesson in 20 mts. and then he will evaluate his lesson and according to difficulty of students he will diagnose the difficulties and give them remedial programme in remaining 15 minutes, rest four trainees will also practice the same lesson in a similar manner.

The schedule of Mega-teaching programme is as follows:

<table>
<thead>
<tr>
<th>Set</th>
<th>Skills</th>
<th>Time</th>
<th>No. of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1. Introducing a lesson</td>
<td>10 mts</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2. Questioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Probing questioning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Reinforcement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>1. Explaining</td>
<td>10 mts</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>2. Stimulus variation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Illustration with examples</td>
<td>10 mts</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>4. Recognising attending behaviour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Black Board Demonstration</td>
<td>10 mts</td>
<td>5</td>
</tr>
</tbody>
</table>
1.4.13. TRANSFER OF MICRO-TEACHING SKILL TO NORMAL CLASS ROOM:

Kallenback and Gall (1969), Borg et al (1970), Brendange and Tingsel (1974), Veenman (1974), Klinhzing-Eurich (1975) and Perrott et al (1975 b) have shown that skills acquired in micro-teaching can be effectively transferred to the normal class room.

Borg et al (1970), Veenman (1974) and Perrott et al (1975 b) have also shown that skills developed in self-instructional courses including micro-teaching can be effectively transferred to the normal class room by both pre-service and inservice teachers. But greater difference in the hypothesized direction are shown for inservice teachers, when compared with those for pre-service teachers, in pretests and post tests carried out on the normal class room (OECD Report, 1975). The result highlights the importance in course of time for pre-service trainees, of planning bridging experiences between micro-teaching and school situations.

More studies, however, are required on the ways of linking micro-teaching with teaching practice, on the post micro-teaching feedback schedules to sustain the performance
of recently acquired skills, on the way of sequencing micro-teaching skills into the micro-teaching situation using larger class groups and larger teaching episodes; on the problems encountered by teachers of different subjects and with different personal characteristics in transforming micro-teaching skills to the classroom.

1.5. NEED FOR INTEGRATION:

One of the criticisms generally levelled at the existing micro-teaching practice is that student teachers, after being taught principles of teaching, are sent to schools for teaching practice. Here our proposition is that if the student teachers undergo training in the use of various skills involved in the classroom teaching, in micro-teaching session, they do better in the macro-teaching situation as well. This procedure is comparable to an individual who after having been taught principles of swimming, is dropped into the deep end of a swimming pool to learn swimming. The individual struggles for life, if he succeeds, he learns swimming. It may also happen that he may get drowned. Likewise practicing at micro-teaching session just takes the pupil teacher from the shallow water of a laboratory situation to jumping into the sea of real classroom situation.

Individual practice of instructional skills one by one in a simplified and controlled situation in micro-
teaching session does not cater to the need of the real classroom instruction. This is due to the pupil teachers, who learn skills in isolation, always grapple with this or that in the real classroom situation. Thus, practice for integrating the relevant instructional skills into a meaningful whole is required by the student teacher in a laboratory situation where he can get opportunity to integrate the various skills that they practised during micro-teaching practice. The process of synthesising not only helps the student teacher to synthesise the units into a meaningful whole but also maximises the achievement of instructional objectives and fulfils the objectives of the teaching learning situations. Although there is absence of empirical base for this practice yet it is a step forward the improvement of instructional strategy. Therefore, this is desirable for the identification of the various strategies of integration of the teaching skills.

According to Jangira (1978) micro-teaching is based on the premise that teaching is a complex skill which can be analysed into simpler component skills and the sets of teaching behaviours comprising the skill components; and the component skills can be acquired one by one through practice in simplified teaching situations such as micro-teaching, and once the component skills are mastered, they can be synthesised into meaningful patterns to realise the specified instructional objectives in a given teaching situation.
Micro-teaching can be described as an analytic-synthetic approach to learning to teach. The two dimensions of the analytic-synthetic approach can also be conceptualised as training and teaching dimensions for the convenience of understanding the phenomena.

( In the next page Model No. 1 - illustrates the process schematically )

It will be seen that the analytic dimension in the diagram indicates the training dimension, since it helps in understanding teaching into its constituent microelements - the component skills, skill component and the specific teacher behaviours comprising a particular skill component. Besides its role in understanding the teaching phenomena, it helps in selecting the convenient units for the training of student teachers (Skill components in the case of micro-teaching). The training culminates into this type of a synthetic process what is called the process of integration of the component skills.

1.5.1. MICRO-TEACHING IS ANALYTIC IN APPROACH:

The act of teaching is broken up into different skills which become the units of training under analytic approach, where each skill is learnt separately in scaled down teaching encounters.

The analytic approach to teacher education programme is important and useful for the following reasons.
MODEL 1

SHOWING ANALYTIC-SYNTHETIC DIMENSION OF TEACHING AND TRAINING

\[ T \]

\[ S_1 \]
\[ S_2 \]
\[ S_n \]

\[ C_1 \]
\[ C_2 \]
\[ C_3 \]

\[ T_b \]
\[ T_b \]
\[ T_b \]
\[ T_b \]

\[ T_b \]
\[ T_b \]
\[ T_b \]
\[ T_b \]

TB - TEACHER BEHAVIOUR
C - COMPONENT BEHAVIOUR OF THE SKILL
S - COMPONENT TEACHING SKILL
T - TEACHING
(1) A student teacher can feel easy to incorporate behaviourally defined teaching skills into teaching behaviours compared to the vague non-verbal statements like draw pupils' attention, etc.

(2) Objectives may be defined easily and more reliable measures of change in teacher behaviour can be realised using behaviourally defined skills.

(3) Using such skills, researchers can conduct more meaningful studies which involve determination of relationship between teacher performance and pupil outcomes.

(4) Development of the skills among trainees gives teacher educators a sense of satisfaction and confidence.

Gage (1963) has suggested 'micro-criteria approach' to teacher effectiveness for reducing the complexities of the problem.

According to Gage (1963) "Teaching skills are specific instructional techniques and procedures that a teacher may use in the classroom. They represent, an analysis of the teaching process into different combination in the continuous flow of the teacher performance."

Komiara (1966) has pointed out that many specific objectives taken together in teaching are introducing, demonstrating, citing, hypothesising, reporting, conjecturing, confirming, contrasting, explaining, questioning, elaborating etc. which can be considered as constituent skills of teaching.
Stones and Morris (1972), Brown (1973) have considered teaching as a many-sided activity which includes a host of activities like questioning, giving information, and such others.

Thus, the complex task of teaching is analysed into limited, but well-defined components practised, evaluated, predicted, controlled and understood. In this way, micro-teaching becomes analytical.

Travers (1969) remarked that a complex behaviour of teaching cannot be a chain of component skills although he does not deny the existence of certain unitary skills related to teaching that would be developed in teacher education programmes. He does not accept that teaching is just a summation of teaching skills. It may involve certain personality and attitudinal factors. It involves certain teaching skills plus certain decision making skills. Such an approach to view teaching and hence the training, subsequently may not remove the defects in student teaching, but at least it may help to overcome them to some extent.

This analytical approach of teaching was criticised by Spelman and Brooke (1973). They have pointed out that the task analysis of teaching in behavioural term is not an adequate procedure for analysing the effective teaching act. The teaching 'task' is not to produce skills as an end in themselves, but as a means to an end. The effectiveness of
teaching which is a transactional process depends on the interaction among a variety of contingency factors like pupil expectation and receptivity and the cognitive complexity of the subject matter.

Saxena (1979) divided the difficulties of analytical approach into two categories.

(1) Conceptual difficulties
(2) Methodical difficulties

(1) Conceptual difficulties:

Though the difficulties are at conceptual level still they do require consideration and clarification, some of the conceptual difficulties are:

(a) Teacher behaviour consists of many skills with a range of 30-50 skills or even more. Selection of three or four skills in teacher education programme hardly does justice to the purpose for which micro-teaching is launched.

(b) There is no criteria for the selection of the skills.

(c) Training of a few skills is likely to result in lopsided teaching behaviours. It is but natural that the practised skills will be more frequently used than the unlearnt ones. This will lead to imbalance of the skills in the teaching process.

(d) The 'Shallow water' psychology during preparation may fail to equip the teacher for real class room situation. Teaching five students, one skill in 5 minutes may condition
a teacher to the extent that real class, full period and sufficient teachable content may become a problem.

(2) Methodical difficulties:

The experimentation has brought to light one very significant problem connected with the method of micro-teaching. A particular skill is explained and illustrated. This is followed by a demonstration lesson. The prospective teacher imitates the teacher model and given feedback, and the teach-reteach cycle is completed. Then there is switching over to the next skill. All the selected skills are treated in the same manner. The trainee does not learn how to combine the skills into teaching behaviour.

According to Saxena (1979) "The process of integration completes an imperfect thing by the addition of the relevant part which makes the combination of the parts into a meaningful whole. Integration may also be considered to be a process of synthesising the relevant units."

The aim of the school of Gestalt theorists who view the 'field' as a meaningful whole to be presented before the learner. They try to help the student-teacher with a natural and practical style of teaching suited to their personality. The evaluation of the teaching act should not be skill-based but should be seen as a whole, which enables the learner to draw meaningful conclusions out of the field before him. The concept of micro-teaching is based on
behaviourists approach. The absolute teaching acts are analysed, broken up into divisible units designated as skills. The experimentation in micro-teaching of training and learning of individual skills is left at that. The learners are at a loss to make this learning as part and parcel of the total act in the class room.

It is evident from the discussion above that analytical approach helps the student teacher in analysing and understanding the 'Gestalt' or total teaching behaviour. In order to train the art, to make the teacher training programme more effective and functional it is necessary to synthesize all the acquired skills which have already been practised analytically through micro-teaching before facing the normal classroom situation.

1.5.2, INTEGRATION DEFINED:

Integration of instructional skills does not mean a cumulation of instructional skills. In a particular instructional situation, it refers to the use of a set of instructional skills with a specific proportion of each skill in a particular sequence. If such an integration has to be appropriate with respect to maximisation of achievement of instructional objectives set by the teacher, then decisions have to be made regarding the set of skills, their proportion and sequence, keeping in mind the description of a teaching learning situation. The integration of instructional skills brought about can be described as below. The teacher trainee
before entering the class has a repertoire of instructional
skills, objectives of the teaching lesson and other elements
like his perceptions about the class room situation. Based
on his conceptual analysis of teaching learning situation,
he makes a selection of skills from his repertoire that
could be used in the situation. Further, he takes a decision
regarding the sequence, the proportion and the achievement
of instructional objectives in the light of which a decision
regarding the selection of a set of skills was make by him.
During teaching learning process, he matches his performance
with his earlier preconceived notions, perceptions and decision
based on the feedback received from pupils reactions. He
interprets and diagnoses the reasons for the type of matching
that has occurred and modifies his decisions regarding the
use of instructional skills as also the objectives of the
lesson. This matching and modification will be going on in
quick succession as teaching learning situations would be
occurring rapidly. This would mean that the set of integrated
instructional skills occurred in a particular situation gets
fused into the forthcoming sets.

According to Passi and Sharma "Integration is a
sequential step in between micro-teaching and real teaching.
The rationale behind this step is the synthetic-analytic-
synthetic scheme of teaching in the context of learning to
teach. First, teaching is conceived as one organismic whole,
then it is analysed into different skills. Again skills are
integrated and synthesised to be viewed as orchestral unity."
Jangira (1979) regards "Synthetic process as integration of skills." Before presenting an operational definition, he analyses the teacher behaviours which are considered to be the constituent elements of the integration of component teaching skills as follows:

The integration of the component teaching skills requires the student teacher to perceive the teaching situation in its entirety - the specific teaching task, the instructional objectives, the instructional materials, the target group and the related contextual variables. Thus, he has to view it beyond the limited objective of training due to progressively increased shift in teaching. The quality of perception of the teaching task will determine the quality of integration he is likely to demonstrate.

The perception of the teaching task is followed by the selection of the component teaching skills from the acquired repertoire and sequence them in meaningfully structured patterns to realise the specific instructional objectives in a given teaching situation. This implies that the component skills are to be used in definite patterns for a variety of instructional objectives. In other words, sequencing of the component skills into objective-based pattern is a dynamic phenomena.

The dynamic sequencing of the component teaching skills for realising specific instructional objectives involves shifts, to and fro, in the use of the component
skills with a view to forming the desired patterns. The shifts, in their turn demand a certain level of flexibility in the use of the component skills. The concept of flexibility assumes special significance in the context of the alleged idiosyncratic rigidity that creeps in during the skill training using micro-teaching. This type of flexibility appears to be an indispensable ingredient of the integration of component skills for smoothing the edges of the rigid and idiosyncratic teaching behaviour.

The absence of the desired level of flexibility to shift from one component skill to another according to the demands of a teaching situation is likely to adversely affect the two other important ingredients, namely, the component teaching skills that can be used and the desired sequences to form effective patterns. These two elements constitute the essential ingredients of the integration concept under reference.

Synthesis of the elements of the integration of component skills point to certain operations linked with the process. These operations will be helpful in formulating operational definition of the concept.

Integration is a noun representing the process of doing something represented by the verb 'to integrate'. To integrate refers to the ability of the student teacher to:
(a) perceive the given teaching situation,
(b) examine his repertoire of the component teaching skills,
(c) Select and organise them into a sequenced pattern of the component skills to realise the instructional objectives; and

(d) use the component skills in the desired sequenced pattern with ease and fluency.

Integration of the component skills in this context refers to the process through which the ability is acquired by the student teacher. By way of summarisation, integration can be defined as the process through which a student teacher acquires the ability to perceive with precision the teaching situation in its entirety, selects and organises the component teaching skills in the desired sequence to form effective patterns for realising the specified instructional objectives, and uses them with ease and fluency.

But for integration, the teacher trainee may have the following lacunas which can persist throughout his instructional career:

(i) He may develop dual teaching patterns exclusive to each other - one for micro-situation for practice of component skills and second for macro situation for teaching only.
(ii) He may lack transfer of training in allied or related or similar situations.
(iii) Training strategy and teaching strategy will not have any relevance with each other.
(iv) He will fail to appreciate the synthetico meaning given to instruction as an analytico-synthetic activity.
(v) He may fail to develop certain instructional behaviours which otherwise could have been contributive for developing behaviour for real teaching in his professional career afterwards as well.

1.5.3. PLANNED VERSUS SPONTANEOUS INTEGRATION:

As the student teacher proceeds from training to the teaching situation the process of integration of the component teaching skills exist. It is also evident from the operational definition that the process finally culminates into real teaching situation. In a way, our concept of integration of the component teaching skills coincides with the actual teaching. Without this reference point, the concept cannot be visualised. However, this situation gives rise to a pertinent question. Does integration of the component teaching skills occur automatically without deliberate effort after the acquisition of the component teaching skills individually through micro-teaching or does it require deliberate planning and training? (Jangira, 1978).

The reactions to the question posed above are mixed. A group of experts in the area maintains that what is important is the mastery of the component skills. Once the component skills are mastered adequately, the student teacher can pick and choose from his repertoire as per needs of particular teaching situations. The decision to be taken in various teaching situations are so local-specific that they are almost subjective. These decisions cannot be
anticipated. So, specific training in integration of the component skills is a myth. There is no need for deliberate planning. It happens automatically through experience in real teaching situations.

There is another group of experts which considers that uniskill training through micro-teaching idiosyncranises the teaching behaviour of the student teachers. Unless specific attempts are made for smoothen these idiosyncratic behaviour through integration exercises, the student teacher will fail to achieve the optimal gains from training. In that case, idiosyncratic teaching behaviours will permanently establish themselves in the student teachers. Integration training exercises, according to this group are essential to smoothen and harmonise the edges of the teaching behaviour.

According to Passi and Sharma (1979) if one agrees to the contention that teaching is a goal directed activity where the teacher needs to be conscious and aware of his behaviour then integration of skills cannot become spontaneous. It becomes a planned effort on the part of the teacher trainee to integrate instructional skills. This would mean that once the teacher trainee is equipped with a set of teaching skills, he needs to be trained in decision making skills, regarding which skill to use, when to use, where to use and how to use.

In concluding the answer Jangira (1979) is of the view that the truth is difficult to assess in the absence of
empirical evidence. The situation can, however, be examined from the pragmatic point of view. Abrupt shift from the uniskill training through micro-teaching to real teaching situation is like climbing a steep rock for the student teacher. In order to smoothen this abrupt shift, bridges have to be built. The bridges will have to be built through training in graded integration exercises based on the successively increased number of the component skills till the student teacher reaches the final integration of the component skills culminating as the actual teaching. Practice of the individual component skills using micro-teaching technique prepares the student teacher for teaching, while integration exercises smoothens his transition from the simple laboratory training situation to the complex teaching situation. This implies that the integration process is located between micro-teaching and the actual teaching situation. The organisation of training in integration of the component skills appear to be a difficult task indeed due to the highly local specific teaching decision, a student teacher is required to take in various teaching situations. The situation is further aggravated due to the absence of conclusive evidence from research on teacher effectiveness. But despite this serious limitation, the integration exercises appear indispensable to help the student teachers by way of (a) smoothening his transition from the laboratory training situation to actual teaching situation and providing practice in making decisions regarding the synthesis and use of the
component skills in selected teaching situations. The training exercises in the integration of component skills directed to these ends will, therefore, have to be carefully designed.

1.5.4. THE PROCESS OF INTEGRATION:

How to develop an ability to integrate the instructional skills in the teacher trainee is a question to be answered. There seems to be a difference in the training institutions where a teacher has to be trained in a specific skill and where he has to be trained for integration of instructional skills. For training in a particular skill, the teacher trainee learns to practise it mostly following a particular model. He learns by imitation after reviewing either a perceptual model or reading from a written model. His attention will be focussed more on the behaviour to be modelled rather than the effect of its performance.

In order to practice the integration of instructional skills the approach seems to be rather different on account of certain other variables involved and different ends to be achieved. Some of the determining factors are as given below:

(i) The appropriateness of the use of the skills
(ii) Adaptability to the varied situations and correspondingly demanding upon new skills.
(iii) Sequencing of the skills while keeping proportion to the optimum level.
(iv) Comfortability and ease on the part of the teacher trainee with regard to practice.
(v) Discriminating closely to take effective decisions and
(vi) Giving value judgement to different aspects involved in the process.

Such factors demand that a teacher trainee should be made sensitive to the situation where he is performing his activity. He has to make a situational analysis determining the situations and judges what skill(s) at what stage, in what sequence and in what proportion has/have to be used. Thus, the training procedure should be based on the principles of learning by discrimination and cognitive structuring and re-structuring.

According to Passi and Sharma (1979) some of the laws of Gestalt or cognitive learning which need attention in this context are:

(i) Law of similarity
(ii) Law of continuity
(iii) Law of contiguity
(iv) Law of proximity
(v) Law of set
(vi) Law of familiarity
(vii) Law of closure.

1.5.5. CONCEPTUAL MODEL FOR INTEGRATION:

The conceptual model for integrating instructional skills have been laid down by Passi and Sharma (1979) which
involved two broad dimensions such as - analysis and synthesis or part and whole.

Further the two dimensions are visualised as complex or a system. That system is represented as below in Model No.2.

**MODEL NO-2**

**SHOWING ANALYSIS AND SYNTHESIS DIMENSION**

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synthesis</td>
<td>Analysis</td>
<td>Synthesis</td>
</tr>
<tr>
<td>Perceiving the whole</td>
<td>Perceiving the parts</td>
<td>Perceiving the relationship of parts in a whole.</td>
</tr>
</tbody>
</table>

In this model, three stages of teaching have been shown. In the first stage, teaching is seen as one organic whole. It looks as one activity achieving some end of instruction. The second stage refers to a state of analysis of instructional process in terms of behaviour or component skills. It helps to understand the important elements or ingredients of instruction which come in the way of achieving instructional objectives. The third stage refers to view again all the elements of instruction into one whole leading to the achievement of instructional objectives. In this model the first and third stage look to be the same but close observation will determine that synthesis before
and after analysis of instruction undergoes a perceptual and cognitive change. This cognitive and perceptual change is the crux of the point, which is vital at the time of application with regard to integration of instructional skills.

On the basis of the above staged model of analysis and synthesis, conceptual model for integration of instructional skill is explained as below:

**MODEL NO. 3**

**SHOWING INSTRUCTIONAL STRATEGY**

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception</td>
<td>Analysis</td>
<td>Micro-teaching</td>
<td>Integration</td>
<td>Teaching</td>
</tr>
<tr>
<td>Component of skills</td>
<td>Cluster of skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory stages</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Instructional strategy is viewed as five staged process in the context of training. The first stage deals with perception of instructional process in the class room by the teacher trainees. Here he simply observes the process of instruction. Sometimes he matches his prenotions and preconceptions about about instruction with the instruction presented before him. This matching helps to discriminate,
initiate, identify and assimilate at the conceptual level certain instructional behaviours.

The second stage deals with analysis of instructional process into small bits or elements termed as behaviours. Instruction is seen in terms of instructional activities, component skills and behaviours having instructional functions to be performed. The teacher trainee undergoes the practice of instructional skills in micro-teaching in simulation or with real pupils.

The third stage deals with the practice of individual instructional skills in micro-teaching, in simulation or in real situation. The analysed instructional skills at the second stage, are practised here one by one. Instructional behaviours are processed, practised and developed in a laboratory setting. This stage paves the way for integrating these instructional skills to be taken at the fourth stage of the model.

The fourth stage deals with the integration of the component of instructional skills into some significant, meaningful and functional whole. The teacher trainee now tries to learn how to integrate the instructional skills so that they may be instrumental in achieving certain behaviour. Secondly he starts looking at the achievement of instructional goals through integration. At this stage, content starts receiving more attention on the part of the
teacher trainee. He is now concerned not only with behavioural transformation in a new prospective but also with content in the context of the skills being integrated.

The fifth stage, in this model refers to the practice of instructional skills in real situation. The teacher trainee learns to teach all the skills in real teaching with preconceived instructional ends. Now he is under a state where he is (i) to practise the skills in an integrated form (ii) to achieve the instructional goals and (iii) to develop motivational climate of learning better for himself and for the pupils.

These five stages of the instructional strategy provide a logical and sequential frame work for a teacher trainee to learn the instructional skills while exposing him to a variety of situations. Thus it helps him to move very smoothly for developing the instructional behaviours at his own capacity and maintaining the excellence of professional variation.

According to Jangira (1978) "At least two major dimensions of the integration of teaching skills become conspicuous subsumption, and additive dimension.

The subsumption dimension represents vertical integration of the teaching skills and is based on Gangne's hierarchical analysis of the learning task. Under this dimension, teaching skills in a particular functional area
of teaching, are ordered on a scale from simple to complex. Each skill subsumes the preceding skills and gets subsumed in the following more complex skill. The process of integration along this dimension in respect of the functional teaching area of questioning has been schematically illustrated in Model No. 4.

The additive dimension represents horizontal integration of the component skills. This dimension is based on the premise that the component teaching skills can be grouped on the basis of the different functional areas of teaching. These functional areas can be management, motivational, questioning, explaining and so on. The shift in the use of component skill from one functional area to another represents the additive dimension of integration.

There are some pertinent questions which come to our mind with regard to evaluation of tools, such as: What kind of evaluation tools are needed? Does evaluation of integration and micro-teaching lesson differ? Should the skill components also receive weight in evaluation or should it be restricted to component skills only? Should evaluation cover only the component skills in the use at a particular stage or should it also cover something more than that? If so, what other aspects should be covered and how do these factors act and interact at the time of integration of instructional skills. The answer to these questions can be looked under different strategies of integration and it will
MODEL 4
SHOWING SUBSUMPTION DIMENTION OF INTEGRATION

QS - Question structuring
FQ - Fluency in questioning
PQ - Probing questioning
GC - Grammatical correctness
V - Voice
Sp - Speed
Gc - Conciseness
Pr - Prompting
Sp - Seeking further informa
ICA - Increasing critical awareness
Rel - Relevance
Ref - Refocussing
also depend upon the operational concept of integration accepted for the purpose.

1.5.6. STRATEGIES OF INTEGRATION:

Passi and Sharma (1979) classified the strategies for integrating the instructional skills into two states -
(i) Discrimination - Integration Training in Simulation (under laboratory situation)
(ii) Discrimination - Integration in Real Situation.

DISCRIMINATION - INTEGRATION TRAINING IN SIMULATION (LABORATORY SITUATION)

This involves giving training through simulation exercises, in situation analysis, selecting discriminately a set and sequencing of teaching skills to be used in a situation and evaluate the result of using them. A few of the strategies under this stage are suggested below:
(i) Case-study approach can be adopted by presenting the trainee any lesson (not necessarily good) either videotaped or transcribed. Let him alone or with other teacher trainees and/or supervisor analyse and say how to maximise the achievement of the objectives set, while using various instructional skills. Let him note down his observations and suggestions which can be discussed in a group if necessary.
(ii) Let the teacher trainee study his own video-taped lesson in terms of the appropriateness of the set of instructional skills being used. He can modify and reteach the
same lesson till he gets satisfied.

(iii) In-tray technique can be adopted present the teacher trainee with a box containing either slips or slides having sufficient details about various teaching situations. Let the teacher trainee take decisions as to what instructional skills he would use in those situations and why. Decisions can be noted on a specially prepared proform. This can be followed by a group discussion with other teacher trainees and the supervisor who would have also analysed the same situations separately. This would given an insight into the appropriateness of the use of the instructional skills in the various teaching situations.

(iv) Lastly the teacher trainee teaches the same lesson in a variety of widely distinct situations having variation in one/or more of the following aspects and the rest remaining the same type of the school, grade, class size, subject to be taught, students of differential abilities, socio-economic background and so on. Then he learns to discriminate the situation and the type of integration of instructional skills to be brought out.

The strategies mentioned above are only suggestive of developing the discrimination ability for integration of instructional skills. Other simulation technique can also be adopted on similar lines, Passi and Sharma (1979), for example, Tensey and Unwin (1969), have suggested sociogram technique for teacher training. Cruickshank (1968) has
developed a teacher training system which can present the
teacher trainee with thirty-one different simulated problems
related to teaching. The purpose of his "Teaching Problem
Laboratory" is for the participant to identify the problem,
identify factors influencing the problem, locate the relevant
information, suggest appropriate alternative courses of action,
communicate and implement a decision.

This stage helps the teacher trainee to develop
decision making skills for bringing about appropriate integra­
tion of teaching skills in simulated situation. This should
be followed by the next stage that is in real situation as
ultimately the teacher trainee is going to teach in real
situations.

DISCRIMINATION - INTEGRATION TRAINING IN REAL SITUATION

In this stage, the following strategy can be thought
of. Let the teacher trainee teach in varied real situations
whose main parameter he is aware of. Let the lesson be
recorded on audiotape or video-tape or on paper (evaluation
proforma) by the peer or college supervisor, so that the
teacher trainee can review for discrimination and integration
purposes. This situation can also be solved to some extent
by having multiple observations. It involves a number of peer
supervisors, each observing a particular instructional skill
for its appropriate use in the situation. Self-feedback got
both during and after the lesson and also the feedback got
from external observers would sharpen his discriminative and integration ability in the appropriate use of the instructional skills.

It is now pertinent to explore the possibilities regarding patterns of design of integrating the instructional skills. Various patterns are suggested in this connection by different authorities. These are discussed below:

Jangira (1979) discussed a few integration strategies which he proposed could be tried out as follows:

1. No strategy or vicarious integration.
2. Subsumption strategy.
3. Additive strategy.

1.5.7. OPERATIONAL PATTERN OF INTEGRATING INSTRUCTIONAL SKILLS

How integration should take place? What operational pattern will be suitable? These questions help to explore various methods of integrating the skills. Different methods or patterns of integration can be thought of. Keeping in view the factors like types of skills, grade, context, personality disposition, evaluation tools, sex etc, Passi and Sharma (1979), have suggested the following operational pattern as follows -

(1) DIODE PATTERN:

Diode means two. So if two skills are integrated at a time then it is named as diode pattern. In this pattern,
first, individual instructional skills are practised in micro-teaching and the same may be in simulation or in real classroom situation. After having practice in individual instructional skills, they are integrated in pairs. After integrating the desired number of pairs, all these skills are integrated. The pairs can be made on any set criteria. But it will be advisable to select two skills which are affiliative to each other. The reason being there is more scope for integration because of common element (components) of both the skills. This strategy falls between the summative and additive strategies. It, thus, possesses the advantages of both these strategies, while adopting this strategy of integration, it would be more useful if complementary skills are integrated in pairs. Time duration of the lesson is also increased when skills are integrated in pairs. The pattern can be represented as follows:

<table>
<thead>
<tr>
<th>Micro-teaching</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_1, S_2$</td>
<td>$S_1 + S_2$</td>
</tr>
<tr>
<td>$S_3, S_4$</td>
<td>$S_3 + S_4$</td>
</tr>
</tbody>
</table>

Bhattacharya (1979) has represented diode model which is given in Model No. 5.

Shukla (1979) has also represented the diode model which is given in Model No. 6.
MODEL 5

SHOWING PATTERNS OF INTEGRATION DIODE COMBINATION

TEACHING

BEHAVIOUR

PPPP

S S S S

RRRR

ESEX ESEX ESEX

ESEX ESEX ESEX

PROBING QUESTIONING

STIMULUS VARIATION

REINFORCEMENT

ILLUSTRATION WITH EXAMPLE

EXPLAINING
SHOWING INTEGRATION OF SKILL THROUGH DIODE MODEL
(2) ADDITIVE PATTERN:

Additive pattern refers to the additive nature of the instructional skills. In this pattern, one instructional skill is added everytime and consequently the bulk of instructional skill goes on increasing in a linear form. Here any criteria can be set. But it is more appropriate if "simple to complex" principle is followed for integrating the subsequent instructional skills. Secondly affiliative aspect can also be maintained side by side.

Thus in this strategy, training is provided to a student teacher to integrate the first two mastered skills before he proceeds further to master another skill. For instance, when a student teacher has mastered two teachings skills - skill of reinforcement and the skill of probing questioning $(S_1$ and $S_2$), he is provided training to integrate these skills first before he undergoes practice to master the third skill - say the skill of stimulus variation. Training exercise continues till he acquires a reasonable level of mastery over the integration of these two skills $(S_1$ and $S_2$). Thereafter he practices to master another skill say the skill of stimulus variation. After mastering this skill, he undergoes practice for the integration of these skills i.e., skill of reinforcement, skill of probing questioning and the skill of stimulus variation likewise, this process continues till he is able to integrate the desired number of skills. In this strategy the time duration and the length of a lesson is
gradually increased as the student teacher increases the
number of skills to be integrated. This pattern is illustrated
as follows:

<table>
<thead>
<tr>
<th>Micro-teaching</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_1, S_2$</td>
<td>$S_1+S_2$</td>
</tr>
<tr>
<td>$S_3$</td>
<td>$S_1+S_2+S_3$</td>
</tr>
<tr>
<td>$S_4$</td>
<td>$S_1+S_2+S_3+S_4$</td>
</tr>
<tr>
<td>$S_5$</td>
<td>$S_1+S_2+S_3+S_4+S_5$</td>
</tr>
</tbody>
</table>

Bhattacharya (1979) has represented the additive
pattern in Model No. 7 shows it.

Shukla (1979) has represented additive pattern
which is given in Model No. 8.

(3) SUMMATIVE PATTERN:

Summative here means the adding up of all the
instructional skills at one time. Under this pattern, after
practising all the individual skills they are practised all
together. In this pattern any criteria can be fixed. But
affiliative character of instructional skills, if maintained,
can be of great help to the teacher trainees. There is
economy of time in summative pattern as compared to other
patterns mentioned above. But the time duration of this
training exercise is, however, increased depending on the
number of teaching skills to be integrated. For instance,
if the student teachers have mastered five teaching skills
MODEL 2
SHOWING PATTERN OF INTEGRATION ADDITIVE COMBINATION

P - PROBING QUESTIONING
R - REINFORCEMENT
IEX - ILLUSTRATIONS WITH EXAMPLES
S - STIMULUS VARIATION
E - EXPLAINING
MODEL B
SHOWING INTEGRATION OF SKILLS THROUGH ADDITIVE MODEL
individually i.e. $S_1$, $S_2$, $S_3$, $S_4$ and $S_5$ training is provided to them to integrate these skills in a controlled setting. In this training exercise, time duration of the lesson is increased from 5 minutes to 15 to 30 minutes. Training exercise continues till the student teacher acquires a reasonable level of mastery over the integration of the skills - $S_1$, $S_2$, $S_3$, $S_4$ and $S_5$. Then he attains mastery in the integration of these skills, he is asked to practise teaching in a real class room setting. This pattern is illustrated as follows:

<table>
<thead>
<tr>
<th>Micro-teaching</th>
<th>Integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S_1$, $S_2$, $S_3$, $S_4$, $S_5$</td>
<td>$S_1 + S_2 + S_3 + S_4 + S_5$</td>
</tr>
<tr>
<td>$S_6$, $S_7$, $S_8$, $S_9$, $S_{10}$</td>
<td>$S_6 + S_7 + S_8 + S_9 + S_{10}$</td>
</tr>
</tbody>
</table>

Bhattacharya (1979) has represented the summative pattern in a model which is given in Model No. 9.

Shukla (1979) has represented summative pattern in a model which is given in Model No. 10.

Since micro-teaching and integration of instructional skills learnt in simulation and are transferred to real class room situation, need extensive research support particularly in India to be an effective technique of teacher training. The complex nature of integration is yet to be explored to suit our needs. Moreover, it is essential for us to know the probable limitations of
SHOWING INTEGRATION OF SKILLS THROUGH SUMMATIVE MODEL

MODEL 10

MODEL 2

SHOWING PATTERNS OF INTEGRATION SUMMATIVE COMBINATION

P - PROBING QUESTION
R - REINFORCEMENT
IEX - ILLUSTRATIONS WITH EXAMPLES
S - STIMULUS VARIATION
E - EXPLAINING
integration exercises before we implement this practice.

A WORD OF CAUTION OR LIMITATIONS OF INTEGRATION EXERCISES

The integration of instructional skills is a subject which needs some caution because of the complexity of the task. The following points may be kept in mind by the teacher educators while helping the teacher trainees to develop an ability for integrating the instructional skills.

(i) Integration is not mere summation. It is something more. The teacher trainee may be encouraged to see the discrimination relationships under different situations. Integration may not be accepted and practised mechanically.

(ii) The continuity of experiences gained under micro-teaching may be maintained and edifice may be built upon those.

(iii) The evaluation and feedback are the key points in integration which may be properly handled by the teacher educators. Individual instructional skills may have different modes of evaluation and feedback whereas integration needs to be looked differently in this context.

(iv) During integration process, the dualism of objectives, behavioural and content may be properly maintained.

(v) The maximisation of instructional skills may be allowed to take in the background till personality is made up.

Integration in the hands of each teacher trainee may not be taken on uniform basis.
It may be said that the integration of instructional skills is a step in learning to teach. It needs proper understanding, analysis, synthesis, discrimination of teaching learning process. A major area under integration exercise is to probe the transferability of skills learnt in simulation to the real classroom situation. Since the problems of integration are multi-dimensional it is very difficult to conduct research on the totality of the area covered by integration exercises. The most crucial problem before us is that we grapple with different models of integration exercises and their effectiveness. The present study is, thus, designed to find out the relative effectiveness of different models of integration exercises i.e. Diode, Additive and Summative models in relation to teaching competence and attitude of the student teachers.

1.6. STATEMENT OF THE PROBLEM:

Based on the rationale given in the preceding pages the present study was undertaken which reads as follows:

A STUDY OF THE EFFECT OF DIFFERENT MODELS OF INTEGRATION EXERCISES OF TEACHING SKILLS LEARNED THROUGH MICRO-TEACHING UPON TEACHING EFFECTIVENESS AND TEACHER ATTITUDE.

1.7. KEY TERMS USED:

MODELS: The term model has been borrowed from behaviour modification psychology. The rationale for the use of model
in micro-teaching is derived from the theories of imitative learning as propounded by Bandura and Walters (1963). In the teaching-learning process also, there is ample evidence that different types of models do produce student's learning (Young, 1969; Mc Donald and Allen 1967; and Koran et al, 1969).

Model in a micro-teaching setting refers to the mode of presenting the desired behaviours relating to a skill for the imitation of the student teachers. It has been described by Allen and R Ryan (1967) as "an individual demonstrating particular behaviour patterns which the student learns through imitation".

In the present study models denote Diode, Additive and Summative models of integrating the instructional skills.

INTEGRATION:

According to Saxena (1979) "Integration is the process of completing an imperfect thing by the addition of the relevant part which combines the parts into a meaningful whole. Integration may also be deemed to be a process synthesising the relevant units.

In the present study integration is the process through which the five skills practised independently in micro-teaching setting are combined or synthesised meaningfully through Diode, Additive and Summative models.
TEACHING SKILL:

Passi (1976) defines that "teaching skill is a group of teaching acts/behaviours intended to facilitate pupil's learning directly or indirectly".

Sing (1979) defines the teaching skills as a set of teacher behaviours which are especially effective in bringing about desired changes in pupils.

In the present study five teaching skills have been taken these are - (i) Probing questioning, (ii) Reinforcement, (iii) Stimulus variation, (iv) Illustration with examples (v) Explaining.

MICRO-TEACHING:

Buch (1968) has given a comprehensive definition of 'Micro-teaching' as a teacher education technique which allows the teacher to apply clearly defined teaching skills to carefully prepared lessons in planned series of 5 to 10 minutes encounter with a small group of real students, often with an opportunity to observe the results or video-tape.

According to Passi (1976) 'Micro-teaching' is a training technique which requires student teachers to teach a simple concept using a specified teaching skill to a small number of pupils in a short duration of time. The most important point in micro-teaching is that teaching is practised in terms of a definable, measurable and controllable
TEACHING EFFECTIVENESS:

Teaching Effectiveness has been defined differently by different authorities taking different criterion variables under study.

Generally speaking, effect of an ability is observed in the act. An impressive performance indicates the effectiveness of the ability. If teaching ability is teaching potential, teaching effectiveness is the measure of the ability plus the efforts made. Thus, the teaching ability is the potential of a teacher.

Evans (1961) says that "Effectiveness cannot be a permanent label to be attached to a teacher because effectiveness is the result of the interaction between the teacher and the taught".

Ryan (1963) has summarised the pattern of studies by earlier workers that the effectiveness of the teacher is determined by three factors such as the situation, the pupil and the teacher.

Again Ryan (1975) has said the "Two very important reasons why effective and ineffective teacher cannot be described with any assurance are the wide variations in the value concepts underlying descriptions of desirable teaching objectives and the differences in teachers role
at different educational levels in different subjects and with different pupils.

Worecester (1961) says "Teaching Effectiveness is a matter of an almost infinite number of inter-relations among teachers, pupils, administrative personnel, colleagues and the community influenced by inherent talent and professional training."

Teaching ability and teaching effectiveness cannot be drawn in the contexts of the concepts of teaching ability and effectiveness because the results are bound by the criterion used and the particular population studied.

The present study aims at finding out the teaching effectiveness of the student teachers in the manipulation of the environmental elements in the class room. It rests on a number of different teaching behaviours on the premise that an increased number of teaching behaviours would make a wide variety of teaching strategies possible. The teaching effectiveness here means the teaching competence of the student teachers as assessed by Teaching Assessment Battery form 0 and 5 and by Indore Teaching Competence Scale.

ATTITUDE:

Attitude is often defined as a tendency to react favourably or unfavourably towards a designated class of stimuli. Attitude was first defined as a neuro-muscular set
of predisposition to respond to a certain type of stimulus.

According to Allport (1935) "Attitude is a mental or neural state of readiness, organised through experiences exerting a directive or dynamic influence upon the individual's response to all the objects and situations with which it is related.

Attitudes are termed as learned patterns of behaviour. Here in this study teachers' attitude means his positive or negative readiness towards teaching profession. Scott (1968) rightly points out that construct attitude is very complex and its measurement is difficult. Among the various techniques of measurement, self-reporting inventory is a convenient and popular method.

In the present study attitude is that which is measured by Ahluwalia's Teacher Attitude Inventory (ATAI).

1.8. Objectives of the Study:

The present study aims to achieve the following specific objectives.

(i) To compare the effectiveness of vicarious integration and additive model of integration of teaching skills on general teaching competence of the student teachers and its effect on their attitude towards teaching.

(ii) To compare the effectiveness of vicarious integration and summative model of integration of teaching skill on
general teaching competence and its effect on their attitude towards teaching.

(iii) To compare the effectiveness of vicarious integration and diode model of integration of skills on general teaching competence of the student teachers and its effect on their attitude towards teaching.

Along with the above stated objectives the present study aims to establish the conclusion drawn from earlier studies made in India i.e. to find out the effectiveness of micro-teaching against traditional method of teaching. The present study also aims to find out attitudinal differences in six areas of ATAI among the experimental groups and control group due to effect of micro-teaching and experimental variations.

1.9. HYPOTHESES:

The following null hypotheses have been formulated for testing to realize the stipulated specific objectives outlined above.

(i) There is no significant difference between each of the experimental groups and the control group in respect of gain in scores in post test I and pretest in Teaching Assessment Battery – 0 (TAB-0).

(ii) There is no significant difference between each of the experimental groups and the control group in respect of gain scores in post test I and pretest in Teaching Assessment Battery – S (TAB- S ).
(iii) There is no significant difference between each of the experimental groups and the control group in respect of gain in scores in post test I and pretest in Indore Teaching Competence Scale (ITCS).

(iv) There is no significant difference between each of the experimental groups and the control group in respect of gain in scores in post test I and pretest in the Ahluwalia's Teacher Attitude Inventory (ATAI).

(v) There is no significant difference between Diode model and Summative model on the gain in scores between post test I and pretest in respect of TAB-0.

(vi) There is no significant difference between Diode model and Additive model on the gain in scores between post test I and pretest in respect of TAB-0.

(vii) There is no significant difference between Summative model and Additive model on the gain in scores between post test I and pretest in respect of TAB-0.

(viii) There is no significant difference between Diode model and Summative model on the gain in scores between post test I and pretest in respect of TAB-S.

(ix) There is no significant difference between Diode model and Additive model on the gain in scores between post test I and pretest in respect of TAB-S.

(x) There is no significant difference between Summative model and Additive model on the gain in scores between post test I and pretest in respect of TAB-S.
(xi) There is no significant difference between Diode model and Summative model on the gain in scores between post test I and pretest in respect of ITCS.

(xii) There is no significant difference between Diode model and Additive model on the gain in scores between post test I and pretest in respect of ITCS.

(xiii) There is no significant difference between Summative model and Additive model on the gain in scores between post test I and pretest in respect of ITCS.

(xiv) There is no significant difference between Diode model and Summative model on the gain in scores between post test I and pretest in respect of ATAI.

(xv) There is no significant difference between Diode model and Additive model in the gain in scores between post test I and pretest in respect of ATAI.

(xvi) There is no significant difference between Summative model and Additive model in the gain in scores between post test I and pretest in respect of ATAI.

(xvii) There is no significant difference between each of the experimental groups and the control group on the gain in scores between post test II and post test I in respect of TAB-0.

(xviii) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and post test I in respect of TAB-5.
(xix) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and post test I in respect of ITCS.

(xx) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and post test I in respect of ATAI.

(xx) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and post test I in respect of ATAI.

(xxii) There is no significant difference between the Summative model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0.

(xxii) There is no significant difference between the Summative model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0.

(xxii) There is no significant difference between the Summative model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0.

(xxii) There is no significant difference between the Summative model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0.

(xxii) There is no significant difference between the Additive model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0.

(xxii) There is no significant difference between the Additive model and Diode model on the gain in scores between post test II and post test I in respect of TAB-0.
(xxvii) There is no significant difference between the Additive model and Diode model on the gain in scores between post test II and post test I in respect of ITCS.

(xxviii) There is no significant difference between the Additive model and Diode model on the gain in scores between post test II and post test I in respect of ATAI.

(xxix) There is no significant difference between the Additive model and Summative model on the gain in scores between post test II and post test I in respect of TAB-0.

(XXX) There is no significant difference between the Additive model and Summative model on the gain in scores between post test II and post test I in respect of TAB-S.

(XXxi) There is no significant difference between the Additive model and Summative model on the gain in scores between post test II and post test I in respect of ITCS.

(XXxii) There is no significant difference between the Additive model and Summative model on the gain in scores between post test II and post test I in respect of ATAI.

(XXxiii) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and pretest.
in respect of TAB-S.

(xxxiv) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and pretest in respect of TAB-S.

(xxxv) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and pretest in respect of ITCS.

(xxxvi) There is no significant difference between each of the experimental groups and control group on the gain in scores between post test II and pretest in respect of ATAI.

(xxxvii) There is no significant difference between the post test I and pretest mean gain scores of group I in the six areas of ATAI.

(xxxviii) There is no significant difference between the post test I and pretest mean gain scores of group II in the six areas of ATAI.

(xxxix) There is no significant difference between the post test I and pretest mean gain scores of group III in the six areas of ATAI.

(XXXX) There is no significant difference between the post test I and pretest mean gain scores of group IV in the six areas of ATAI.

(XXXXI) There is no significant difference between the post test II and post test I mean gain scores of group I
in the six areas of ATAI.

(xxxxii) There is no significant difference between the post test II and post test I mean gain scores of group II in the six areas of ATAI.

(xxxxiii) There is no significant difference between the post test II and post test I mean gain scores of group III in the six areas of ATAI.

(xxxxiv) There is no significant difference between the post test II and post test I mean gain scores of group IV in the six areas of ATAI.

(xxxxv) There is no significant difference between the post test II and pretest mean gain scores of group I in the six areas of ATAI.

(xxxxvi) There is no significant difference between the post test II and pretest mean gain scores of group II in the six areas of ATAI.

(xxxxvii) There is no significant difference between the post test II and pretest mean gain scores of group III in the six areas of ATAI.

(xxxxviii) There is no significant difference between the post test II and pretest mean gain scores of group IV in the six areas of ATAI.

1.10. DELIMITATION OF THE STUDY:

The following are the limitations of the present study:

(i) The study is limited to the student teachers who are undergoing B.Ed.course, as regular candidates.

(ii) It is confined to one B.Ed.College only.
(iii) Those students who voluntarily came forward for participation were included under this study.
(iv) As the duration of B.Ed. course is ten months, the experiments were finished within the prescribed period.
(v) The experiment is restricted to practice and integrate five skills only i.e. probing questioning, stimulus variation, reinforcement, illustration with examples and explaining.
(vi) The present study is limited to Additive, Summative and Diode models of integration of teaching skills only.
(vii) Although teaching experience was taken as a variable, which was to be treated as control variable yet all the student teachers who underwent micro-teaching and integration training exercises had no previous teaching experience.
(viii) The present experiments for learning skills and their integration have been conducted in simulation condition where peers have acted as pupils.
(ix) Keeping the aims, objectives and hypotheses of the present study, sample statistics and inferential statistics have been used. Co-related 't' test and 'z' test have been used to find out the significance of mean gain scores of the experimental and control group. The same tests have been used to find out the effect of micro-teaching and integration exercises of three models i.e. Diode, Summative and Additive. To find out the reliability in observation of the two raters inter-rater reliability was found out.