INTRODUCTION

1.1 Teacher Training - Importance

The teacher occupies a key position in any programme of educational reconstruction. He has to organize and skilfully manipulate conditions for learning so that the children under his care may make the maximum use of their potentialities. This is not an easy job. The teaching-learning process is considered to be one of the most delicate, complex, challenging and significant social processes. The major problem in the area of school education is to influence the classroom instructional process. It is only when the instructional process is improved, the benefits of new curricula, new textbooks and innovations may bear fruit. The communication process of the teacher in the classroom has been found to be mainly responsible for the proper educational growth of the child, although, teacher is also expected to direct the pupils in activities outside the classroom in order to enable them to make the changes necessary in their way of thinking and acting. Whatever may be the effort to change the school practices, ultimately it comes down to the teachers' classroom
behaviour, his teaching and the teacher-student interaction. The interaction between the teacher and the student creates the climate of freedom or restriction for the pupils in the classroom. Not much attention has been paid to studying and analysing the teachers' classroom behaviour. Classroom in a school, as a unit of interaction amongst pupils, and between the teacher and pupils, plays an important part in the development of the child. Since the teacher exerts a great deal of influence on the pupils, teacher behaviour as an important variable in the dynamics of the classroom, has attracted attention of psychologists and educationists.

The teacher has a great deal of influence on pupils. It has been shown by several studies that a teacher is a father surrogate, and through the process of internalization of the influence, pupils' behaviour is shaped to a great extent, by the kind of influence the teacher exerts (Amidon and Flanders, 1961; Anderson, et al., 1945, 1946; Filson, 1957; Smith, 1955; Wishpe, 1951). The problem which confronts those who are concerned with research on teacher education involves a quest for more dependable knowledge of teaching behaviour - its elements and their influence. This is the time for those who are interested in studying the dynamics of classroom instruction to apply the knowledge to the training of teachers for the improvement of instruction through modification of their classroom
This task of producing a better teacher has generated a great amount of research. For a long time this research centred on teacher characteristics and their relation to pupil learning outcomes. The results have been contradictory and inconclusive (Gage, 1963). Consequently, the relevance of many teacher training programmes has often been questioned. One of the main criticisms is that student-teachers rarely spend much time in actually studying teaching (Shore, 1972). It is now accepted that the training should emphasize teachers responding to the pupils at the feeling level, encouraging them to express themselves frankly and accepting their ideas. This kind of training is not easy and can certainly not be accomplished through the traditional methods of teacher-training (Pareek and Rao, 1970).

1.2 Traditional Practice Teaching - Short Comings

The main emphasis in the traditional practice teaching programme is on the skill of communicating subject-matter information to the pupils. This alone will not achieve the objective of bringing about a change in the modification of the teacher behaviour. His basic status needs control and the need of this control seems so great that new methods of training would be necessary to release the teacher from the shackles of these needs (Lynton and
Pareek, 1967; Pareek, 1968). Such training should make effective use of feedback to bring about change in the behaviour. Student-teachers do not get the maximum benefit from their teaching practice because after some theoretical information and a few demonstration lessons they are sent to face real classes. Palsane and Ghanchi (1967) surveyed the practice teaching programme of sixtytwo colleges. They observed that:

(i) the number of lessons to be given by a trainee is fixed arbitrarily without taking into consideration the individual needs and abilities;

(ii) there is a lack of adequate orientation programme for initiating practice teaching;

(iii) the trainees do not get practice in teaching continuous units and they have no scope for developing dynamism, initiative and resourcefulness as teachers;

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

(v) the training colleges and schools need to come closer and co-operate in planning programme for student-teachers;
(vi) there is absence of block teaching and want of an organized internship experience;

(vii) the assessment of student-teachers is not continuous and integrated which could carry further the seeds of progress; and

(viii) the practice teaching programme needs to be objectively studied and oriented in all the aspects. The Education Commission (1964-66) also expressed its dissatisfaction in the following words:

At present, student-teachers are commonly required to give a specified number of isolated lessons, many of which are often unsupervised or ill-supervised. The practice of continuous block-teaching, the duration of which varies from two to six weeks, is adopted only in a few institutions and its organization still leave much to be desired. (p. 74)

At another place the Commission observes:

The quality of training institutions remains with a few exceptions, either mediocre, or poor, competent staff are not attracted, vitality and realism are lacking in the curriculum and the programme of which continues to largely traditional, and set patterns and rigid techniques are followed in practice teaching with a disregard to for present day needs and objectives. (pp. 67-68)

Griffiths and Moore (1967) found that student-teachers improve during practice, but there was difficulty
in specifying the improvement. Skills and techniques are the basic pre-requisites for putting into practice any teaching method or approach (Bishop and Levy, 1968) to a subject. Moreover, many of these skills do not seem to be subject specifics. This implies that these basic skills could be practised by student-teachers before concentrating on the more complex matter of method and approach for the individual subjects. Many of student-teachers do not get the maximum benefit from their teaching practice because at the beginning they do not have the basic skills which could have been acquired outside.

Again, although classroom observation has been there in our training programmes for a long time now, efforts to develop objective and reliable scales of observation are of recent origin. In the traditional method, observational procedures do not lead to any quantification and as such reliance has to be placed on the subjective estimates of observers. Information which is given to student-teacher is not rich and clear enough to guide him toward self-directed improvement. This is a question of feedback. Lack of adequate feedback has plagued teacher training for centuries (Flanders, 1967). Most observations are made as abstract generalizations that have little relation to teacher classroom behaviour. They are only opinions and stereotype value judgments. There is no provision to reteach the same unit incorporating the
modifications suggested. Practising schools are not convinced of the efficacy of practice teaching programme and are reluctant to allow the student-teachers to practise therein. Times are changing. Yesterday's firm educational beliefs are fast becoming popular fallacies of today. When we concede so much of importance to improvement of teaching through classroom observation, we can ill-afford any subjective observational estimate.

The question of how skills of teaching are to be developed has long confronted the teacher-educator. The commonsense way of approaching this problem has been to follow the apprentice pattern used in the teaching of various arts and crafts. Sometimes this approach to training has been reduced to short periods of apprentice teaching under the supervision of teachers whose skills are deemed to be a little better than those of the persons they are training. In other cases, the student-teacher in training has been assigned to a teacher of higher quality. It is supposed that by observing and studying the performance of the critic-teacher and by practising under his supervision, the student-teacher in training would acquire the skill appropriate for effective class work. But this way of developing teaching skills has been criticized from several stand points during the past quarter of the century. Practice-teaching is now in the process of modification. The reason is not that the evaluation of the system of
practice teaching or the studies of the effects of practice teaching have conclusively shown it to be ineffective but because more promising modes of teacher training have now become possible.

A major breakthrough in the training of teachers occurred when teaching behaviour was conceived to be a complex of skills that could be identified and practised systematically under specific conditions (MacDonald and Allen, 1967). With the help of the technological devices it could be reproduced also. The teacher in training can now observe and analyze his performance. Side by side there came a new emphasis in the analysis of teaching behaviour. Teaching behaviour no doubt incorporates elements that can be improved, and the improvement can doubtless be effected by studying them in the light of the psychological knowledge.

The question that is raised often is, "How does systematic training in classroom behaviour affect the teachers' effectiveness?" The answer is that there is a possibility that teachers could develop new expectation of themselves and their pupils and more deliberate control of their actions with respect to general parameters of a classroom as a social system. Four techniques - T-group, simulated skill training, interaction analysis and micro-teaching have singly or in some combination provided innovations for pre-service and inservice teacher training programmes. These
techniques emphasize teaching behaviour because it is conceptualized, performed, and information about the performance is made available to the teacher. These innovations are relatively new and not yet well accepted. But these are taking place with some evidences to justify the change but these evidences are tentative and not yet complete. Faced with incomplete knowledge about how best to help others change their teaching or how such behaviour might be most effectively developed, it seems worthwhile to evaluate the traditional method as well as some innovations, to find out whether they lead to any change in teaching performance.

1.3 Classroom Interaction Analysis and Practice Teaching

During the last decade some educational researchers have been trying to develop concepts in terms of which classroom interaction could be described. Only when it is possible to describe the teacher classroom behaviour reliably it is possible to manipulate variables to cause modifications in the classroom behaviour. If relevant aspect of a teacher behaviour cannot be modified it makes little sense to prescribe change in that behaviour (Neujahr, 1972). Attempts have been made to analyse interaction process in a classroom. Of seventynine such instruments reviewed in a study fortyseven were used in teacher training (Simon and Boyer (eds.),1970). Classes from elementary schools to colleges have been systematically observed. Researchers have
collected data through observers in classroom, photographs, movies, audio tapes and videotapes. They have used a wide variety of basic units for their analysis. Smith and Meux (1963) attempted to analyse verbal interaction in terms of logical character; Taba's (1964) study is unique in its dependence on developmental psychology, the study of Bellack, et al. (1966) analytical system is based on cognitive viewpoint; Adams (1967) analysed classroom activities in terms of their structural and functional aspects. The work of Paul Gump (1967) represents a different line of classroom research namely ecological research. Anderson (1969) based his system on evolutionary concepts. The observational system which is widely known and used is that of Flanders (1960(b)). The basic assumption of this system is that classroom interaction is a series of events and that teaching behaviour consists of acts or patterns of behaviours, embedded to the chain of classroom events. Flanders used ten category observational instrument to obtain a measure of teacher influence.

The growing interest in classroom interaction analysis in recent years is indicative of the recognition that if there are to be significant improvements in our schools, it will be necessary to find means of modifying and improving teacher behaviour. In both pre-service and inservice education programmes, there is a need to provide teachers with objective information about their teaching,
involving teachers in very indirect way in the study and analysis of the effects of their own teaching behaviour and to provide teachers with opportunities to practise revisions they choose to make in their interaction with pupils. These are possible if classroom interaction analysis techniques are employed in our teacher training programme as tools in training as well as tools with which to measure teacher classroom behaviour patterns.

Interaction analysis (Flanders, 1967) facilitates the observation of teacher-pupil verbal interchange, by using a time sampling technique and coding. Observers are trained in the method before they observe a teacher. After this training, their observations in coded form are analyzed and placed in the form of suggestions, which will aid the observed individual in modifying his behaviour. If the teacher is using patterns of verbal communication that are not consistent with his intentions, he would profit from feedback that reveals their nature. If a training programme seeks to develop specified behaviour in teachers, interaction analysis might assist teachers and others in observing the progress made toward acquisition of desired skills. The observer records a code number one to ten.

No category is necessarily better than any other. It is the patterning and frequency of categories that is important. By sampling about every three seconds, the
observer will have made about four hundred entries in twenty minutes. From these data, matrix may be drawn up, which may provide a number of possible analysis of verbal communication. A second matrix after a teacher has evaluated his efforts may indicate the degree of progress he has made.

Classroom interaction analysis is also useful for training exercises. While certain behaviour patterns are practised, the system could be used by other trainees to observe the practice. It is thus, possible and desirable that all trainees learn interaction analysis and use the technique to pursue individual self improvement goals. The advantages of classroom interaction analysis as against the traditional teacher training method lie in the fact that its utility has been established as a training tool as well as a tool to measure teacher classroom behaviour patterns in the studies of Pareek and Rao (1971), Pangotra (1972), Jangira (1972) and Santhanam (1972). Patterns of teaching behaviour could be systematically drilled into by student-teachers through a series of learning experiences starting with the simple and moving on to more complex. Sharma (1972) studied the relationship between patterns of teacher classroom behaviour and pupils attainment in terms of instructional objectives. The potent role of classroom interaction analysis as a feedback instrument is more
recognised. Pangotra (1972) in his study of student-teachers found some changes in certain pattern of teaching behaviour. Training activities involved, increased sensitivity of teachers to their own behaviour and behaviour of others. Teachers could compare classroom behaviour descriptions provided by classroom interaction analysis matrices as a source of useful feedback for individuals desiring to change their teaching behaviour. Literature in the field gives some support to the assumptions. Hough (1965) reported that ten hours of instructions in classroom interaction analysis significantly increased pre-service teacher ability. Flanders (1965) found that teachers could become indirect in their teaching style by experiencing a workshop in which interaction analysis was taught as a technique for analysing their verbal teaching behaviour. Studies of Hough and Amidon (1964) and Hough and Duncan (1965) also support the view.

The application of classroom interaction analysis in research is valuable. Interaction analysis has much to commend it as an independent or control measure whenever two methods of teaching or two different curricula are being compared. Perhaps the most important research application of interaction analysis would be to study teaching behaviour and classroom interaction in an effort to develop theories of instruction (Flanders, 1970). In a certain classroom setting and with certain learning objectives some
lawful relationship between what the teacher does in classroom and its effects on the learning of pupils may be found out. It is quite likely that an effective teacher may adjust his own behaviour to the learning situation. Interaction analysis can be used to quantify the degree of flexible adoption which is characteristic of teachers' behaviour. From information of this sort pooled together, theories of instruction may some day be developed.

1.4 Micro-Teaching and Traditional Practice Teaching

Basically micro-teaching involves the practice of specific classroom procedures in situations, limited in size, scope and duration. It is usually closely combined with relevant theoretical considerations such as the psychology of learning, and with immediate feedback to reinforce positive learning by student-teachers. Perhaps the Education Commission (1964-66) did have in mind the elements of micro-teaching when they recommend: "...He may begin his teaching practice with teaching individual children, then proceed to small groups and eventually learn to manage full classes having normal strength..." (p. 74).

The Commission was right in suggesting this procedure to be followed. At present after a few lectures on theory of teaching and a model lesson by the method
master, the student-teacher is thrown into live classroom situation. While he gradually picks up some idea of how to teach, that happens at the expense of forty to fifty pupils in a class during the period, his prescribed lessons are over. From the start we expect student-teacher to exhibit or practise all the skills of teaching, classroom interaction and management. Obviously we expect too much. The results are vague and diffused understanding on the part of student-teachers and a low extent of improvement in their teaching effectiveness. The felt need of raising the effectiveness of practice teaching is realized by all. An intelligent use of classroom interaction analysis provides one method to those concerned with improving teacher preparation. Another method is 'micro-teaching'.

Micro-teaching is a relatively new departure in teacher training. It was first developed at Stanford, California, by Allen and his associates (Allen, 1966). It may be described as a "Scaled down teaching encounter". Scaled down in teaching time, the number of pupils taught and in teaching complexity. One to five pupils are taught lessons for 10 minutes or less. The micro-lesson is videotaped. The student-teacher immediately views his lesson, evaluates it, amends his approach, reteaches the lesson to another group of pupils, views and evaluates it. The micro-teaching cycle is:

Teach - View - Critique - Reteach - Review - Critique.
Each cycle is devoted to one skill only, such as 'teacher liveliness', 'teacher explanation', 'promoting group discussion' etc. The content of the lesson is selected in order to maximise the use of the skill under review. The videotape gives the student-teacher direct feedback on his performance and the cycle gives him the opportunity of correcting his errors immediately after reviewing them and then to see his corrected performances.

The rationale underlying micro-teaching is still a mixture of research and conjecture. But it is possible to point out two related areas where there are clear advantages. These are: (i) training in teaching skill, and (ii) its use as a research tool in teacher-training.

Most of research on micro-teaching is concerned primarily with its use as a technique. In his experiments (Allen, 1966,1967) confirmed the hypothesis that perceptual modelling and videotape demonstration of a skill were more effective than symbolic modelling or verbal description. An experiment by McDonald and others (1965) has indicated reinforcement and discrimination training, during the viewing of a videotape, to be more effective than either self-feedback only or reinforcement only. The evidence of Kallenbach and Gale (1969) and Allen and Ryan's (1969) demonstrates that micro-teaching with videotape is at least as effective as block teaching practice. The experimental group achieved a level of competence using small groups of
children. Kalienbach reported that one hour micro-teaching with five pupils is equivalent to five hours teaching with forty children. Given the equipment, forty children divided into groups of five can easily give one hour's micro-teaching to each of 24 students in morning session. This reduces the pressure on school for teaching practice places and upon supervisors who frequently spend more time in travelling to school than watching students to teach. Experiments at Ulster (Brown, 1971) suggest that micro-teaching is worth considering by a college or department experiencing difficulties in finding teaching practice places and looking for ways of improving their training programmes and measuring their effectiveness. Chudasama (1971) and Marker (1972) by using micro-teaching in practice teaching programme as a measure of experiment found the technique useful in Indian conditions.

Micro-teaching is a safe practice ground for student-teachers. Classroom management problems can be minimised and focussed upon separately as a component skill. The use of videotape enables one to build teaching models into programme, so that student-teachers could analyse highly skilled teacher performances, practise their own approaches and match them with that of the models (Young, 1969). Micro-teaching can also be applied to teaching in special and higher education, to training in counselling techniques and to inservice education (Borg, et al. 1968). Its potential
for improving teacher effectiveness is considerable.

Obviously, the general idea is subject to many variations. The size of the class is manipulated, the number of trainees teaching a given group of children can be increased, the duration of the lesson can be lengthened, and the nature of the teaching task can be made more complex, so as to embrace a group of technical skills in an approximation of their life combinations. But the idea of analyzing teaching into technical skills remains the heart of the method and provides its power as a paradigm of research (Gage, 1972).

Research in classroom behaviour over the past fifty years has brought us marginally closer to an understanding of teacher-learning process (Gage, 1963(a)). Many of learning principles are derived from studies of human and infra humans in closely controlled conditions. One has to rely upon the precision of the stripped down experimental approach (Bannister, 1966) or to accept that in classroom conditions, there is little chance of isolating, controlling and measuring process variables. In the micro-teaching situation the experimental variables are under the control, details observation may be recorded and analyzed and the level of stimulation of normal classroom teaching may be manipulated. Hypotheses can be tested experimentally at various levels of classroom complexities.
Other methods of training, such as verbal interaction analysis (Leonard, 1969; Wragg, 1970) and the use of perceptual and symbolic models (Young, 1969) may be investigated in conjunction with different kinds of micro-teaching programmes. It is likely that evaluation techniques may be developed from micro-teaching programmes based upon an analysis of component teaching skills and patterns of classroom interaction.

Not every person can see himself as others see him, can and some of those who are unable or unwilling to modify their behaviour. Micro-teaching requires the participants to plan, to teach, to evaluate, and then to repeat the experiences over again, after they have viewed themselves in the mirror held up by students and the others directing their training. The micro-technique proceeds on the assumption that it is a poor practice to try to correct many faults at a time. Various methods of evaluation may be used, but one of the most effective methods used is coding technique called interaction analysis. Micro-teaching is thus useful in training, in supervision, in recording trainees' progress, in research and in prediction and selection. Some advantages are:

(i) simplification of the complexities of teaching,

(ii) greater control over practice,
(iii) increased economy of operation, and
(iv) the opening of new avenues for evaluating training.

1.5 Interaction Analysis and Micro-Teaching

Both interaction analysis and micro-teaching present alternatives to the ritual socialization of the teacher to the classroom that is the usual outcome of practice teaching and internship (Fuchs, 1969; Joyce, 1967). They are in fact frequently being combined in teacher education programmes, sometimes with still other approaches, such as teacher counselling (Fuller, 1969; Clothier and Lawson, 1969) and sensitivity training (Joyce, Dirr and Hunt, 1969), which have not been considered here. All of these approaches have one thing in common. They aim at developing a more varied and flexible repertoire of performance capabilities in teachers, and classroom roles that will mutually support and be productive.

Classroom behaviour descriptions provided by interaction analysis are a source of useful feedback for individuals desiring to change their behaviour (Flanders, 1964; Furst, 1965; Hough, 1966; Amidon, 1967). Interaction analysis is also being used as a prescriptive tool in micro-teaching (Campbell and Minnis, 1970). Programmes which combine systems of coding verbal communication with
micro-teaching have been implemented at a number of places. According to Amidon and Rosenshine (1968) a training programme of this type was carried out at Temple University in 1961. In 1967 and 1968 programmes were further developed at Temple by Rosenshine and Furst and at the University of California at Davis by Minnis. The major advantage reported by those who conducted the programmes was the greater specification of the skill to be practised and more objective information about the performance itself. In moving into the classroom and to longer periods of teaching, video playback becomes time consuming and therefore inefficient. Interaction analysis is faster and can focus on specific skills providing the behaviour patterns.

Combining micro-teaching and the category system to instruct teachers in the use of enquiry has been tried in several projects (Experienced Teacher Fellowship Programme, Carnegie-Mellon University, 1968-69; Experienced Teacher Fellowship Program, Mexican-American Project, Sacramento State College, 1969-70). In these projects, it has been possible to implement this combination in a teacher education programme with encouraging results in improved instruction in enquiry. Flanders Interaction Analysis Category System was used by Chudasama (1971) in his study for M.Ed. dissertation in M.S. University, Baroda.

Campbell and Minnis (1970) reported that one
unpublished study found that student-teachers with no classroom experience can be taught a simple enquiry, teaching pattern with only one hour of instruction and practice. Subsequent teaching situations demonstrated the subjects' ability to use the pattern. Those in the control group who received no instruction and practice did not change their teaching patterns even though they had knowledge of the goals of inquiry. These early experiences with the technique indicate that the combination is feasible and the results are promising. Continuing study of this approach is necessary to determine the potential contribution it can make to teacher education.

It is not denying the fact that our traditional practice teaching has impact on teacher training. It has its own way of feedback although it lacks objectivity and urgency. It is also true that no thorough review of studies of the effects of practice teaching on attitudes or on the skills of teaching has been done which could conclusively show it to be ineffective. But it needs serious consideration to make an attempt to modify it because more promising modes of teacher training such as classroom interaction analysis and micro-teaching have now become possible.

The problem which confronts those who are concerned with the modification of student-teacher behaviour are, the need of a dependable knowledge of teaching behaviour,
its elements and their influence with the result to have an opportunity to use them in teacher training, practise them and induce institutional changes that incorporate these promising training procedures. It is not an attempt to replace the traditional practice teaching, but a serious endeavour to modify it to bring more objectivity and specificity in shaping the teacher behaviour of student-teachers. Faced with incomplete knowledge about how best to help others change their teaching behaviour which might be most effectively developed with the help of classroom interaction analysis process and micro-teaching under our Indian conditions it would seem prudent to evaluate traditional teaching programme as well as the innovations and try to find out if they lead to any change in teaching performance,