DISCUSSION OF RESULTS

5.0 Introduction

The objectives of the present experiment were to study and assess the efficacy of micro-teaching and Flanders Interaction Analysis Category System as training tools in modifying the pre-service student-teachers' classroom verbal behaviour, to know whether two treatments namely, micro-teaching and Flanders Interaction Analysis Category System could be synchronised in the teacher training programme and to consider the usability of the techniques of micro-teaching and Flanders Interaction Analysis Category System in teacher training programme to modify student-teacher classroom verbal behaviour. In order to fulfil the objectives null hypotheses were framed which are being reproduced here below to focus the attention of the readers as well as to give direction to the discussion.

5.1 Hypotheses

1. Student-teachers trained through micro-teaching do not change their verbal teaching behaviour in the classroom significantly compared to the student-teachers

trained in traditional way only.

2. Student-teachers trained in Flanders Interaction Analysis Category System do not change their verbal teaching behaviour in the classroom significantly compared to the student-teachers trained in traditional way only.

3. Student-teachers trained through micro-teaching do not change their verbal behaviour in the classroom significantly compared to the student-teachers trained in Flanders Interaction Analysis Category System.

An attempt has been made in this chapter to present a discussion on the basis of the results given in chapter four. It includes possible interpretations of the results, relevant explanations in the context of the literature, theory and previous researches, the sequence of the discussion is based on the order of the results provided in chapter four, starting with the discussion of pilot study followed by the discussion of final study, discussion of pre-treatment and post-treatment results and the discussion of micro-teaching results. In this sequence of discussion more weightage has been given to the discussion of results of final study based on post-treatment data as they focussed more on the objectives and hypotheses of the study.

5.2 Discussion of Pilot Study

The pilot experiment aimed at seeing the efficacy

of the FIACS treatment compared to traditional method of training as well as visualizing the administrative difficulties in the process óf treatment being given to student-teachers. This section includes the discussion of Inter-observer Reliability and Comparisons of post-treatment matrices.

5.2.1 Inter-Observer Reliability

In order to see the reliability of the classroom interaction behaviour observation FIACS was explained to the observers. One of the observers was the investigator himself. After due practice and training a live lesson was observed along with a trained observer and the inter-observer reliability coefficient calculated by Scott's method was .872. Table 4.1 reports the data for observer reliability. The present reliability coefficient is higher than .85 recommended by Flanders (1960(b)). Reliability found in this way relates, only to the proportional distribution of tallies under the different categories. Perhaps no technique has been developed as yet which could verify the exact sequence of occurrences of events as recorded by different observers. But the frequent discussion by observers and resolution of the problems ☺ involving verbal events may help mitigate the consequence of this lacuna by helping all observers code correctly. However, the present reliability coefficient in the context of literature has been considered satisfactory and thus the pilot study was executed.

5.2.2 Post-Treatment Matrices

Since the pilot study required the comparison of the criteria measures of control and experimental groups, the matrices of all 10 student-teachers in the experimental group having FIACS treatment were combined to yield one master matrix. Similarly a master matrix for 10 student-teachers of the control group having only traditional method of training was prepared. The two-master matrices are produced in Tables 4.2 and 4.3 At this stage of enquiry i.e. the interpretation and discussion of the striking features of the matrices of the two different groups, a decision was required as to the type and the intensity of probe to be undertaken. As for the possibilities, any amount of discussion pertaining to the individual as well as the combined matrices could be entered into. As a desirable step, the two interaction master matrices could have been put to the 'Darwin Test of Significance', but such an analysis has been dropped here. Such an analysis has been done while comparing treatments and master matrices of the final experiment. Only 't' test was employed to see the significance of difference between means of eleven different variables.

Results in Table 4.4 indicate that the knowledge of interaction analysis seems to have helped in modification of the classroom verbal behaviour of student-teachers in the experimental group. Student-teachers tend to become more

indirect in their attempts to motivate and control their pupils. Indirect behaviour consists of those verbal statements of the teacher that expand pupils' freedom of action by encouraging his verbal participation and initiative. These include asking questions, accepting and clarifying the ideas or feelings of pupils, and praising or encouraging pupils' responses. There is rapid interchange between the teacher and the pupils indicating more flexibility in communication in classes handled by experimental group student-teachers. Spontaneous pupil talk as well as continuous spontaneous pupil talk has increased more among the pupils taught by experimental group student-teachers than

indicative of

the pupils taught by control group. These are/the efficacy of the treatment viz. Flanders Interaction Analysis Category System for the modification of behaviour of student-teachers.

Thus the purpose of the pilot study was fulfilled. As was expected the theoretical treatment of Flanders Interaction Analysis Category System to pre-service student-teachers helped in modifying their classroom verbal behaviour. Similar to present findings of this investigator, the studies of Kirk (1963), Hough and Amidon (1964) and Hough and Ober (1967) have also indicated the effectiveness of interaction analysis in modifying teacher behaviour.

5.3 Discussion of Final Experiment

To find out the effects of the treatments, via.

traditional method of training, micro-teaching and Flanders Interaction Analysis Category System this discussion is presented in the context of the inter-observer reliability, comparison of pre-treatment interaction matrices and variables for significance, comparison of pre-treatment and post-treatment interaction matrices and inter-group post-treatment matrix comparison.

5.3.1 Inter-Observer Reliability

To check whether the observations by the investigator maintain the same level of reliability, the Scott's Reliability Coefficient calculated came to be .881. Table 4.5 reports the result for inter-observer reliability. Thus the inter-observer reliability coefficient was found to be above 0.85. This normally meets the requirements of reliability of the observation.

5.3.2 Comparison of Pre-Treatment Interaction Matrices

Although the different groups, namely control, experimental micro-teaching and experimental FIACS involved in the final experiment were equated on the variables of age, sex, marital status, area, socio-economic status, graduation year, subjects at graduate level, marks at graduate level, teaching experience and teaching subjects, it was also considered advisable to match the groups on criterion variable that is the performance in the classroom

before starting the training programme. Interaction matrices
prepared on the basis of the observations made on each
student-teacher combined groupwise to yield one matrix for
each of the control group, experimental micro-teaching group
and experimental FIACS group (Tables 4.6 to 4.9) and tested
by a likelihood ratio criterion suggested by Darwin show that
the classroom behaviour patterns of student-teachers,
especially in their sequential nature are more or less the
same. The further examination of the data in greater
detail (Tables 4.10 and 4.11) indicates that there is a
significant difference on the variable of extended direct
only between control group and experimental micro-teaching
group I as well as between control and experimental FIACS
group II. The result seems to be consistent which in both
the comparisons is significantly higher in the control
group. Extended direct or direct influence consists of
those verbal statements of the teacher that restrict freedom
of action, by focussing attention on a problem, interjecting
teacher authority, or both. These statements include giving
directions, criticizing, and justifying his own use of
authority. There appears no significant difference between
experimental micro-teaching group I and experimental FIACS
group II (Table 4.12) on any of the variables of teacher
behaviour. Therefore, in general there seemed to be no
significant difference among the three groups namely
control, experimental micro-teaching and experimental FIACS

on performance criteria before starting the application of the treatments.

5.3.3 Comparison of Pre-Treatment and Post-Treatment Interaction Matrices

To find out the effects of the different treatments, namely, traditional method of training, micro-teaching and Flanders Interaction Analysis, the pre-treatment and post-treatment matrices were compared for each of the three groups. The significance of difference in mean score on each variable was found to give the direction of differences between the pre-treatment and post-treatment data along with the levels of significance.

A. Traditional Method of Training

Interaction sequences in pre-treatment and post-treatment combined matrices of student-teachers of control group are significantly different from each other (Tables 4.13 to 4.15). This is enough evidence to infer that the teaching behaviour of student-teachers at post-treatment stage differs significantly from the teaching behaviour of student-teachers at pre-treatment stage. This can be attribut -ed to the effect of training given to them. Further probe into the differences on variables vide Table 4.16 indicates that the student-teachers at the post-treatment stage appear to be talking less than at the pre-treatment stage. The student-talk goes up by 10.045 per cent. This means that sensitivity to pupil participation and attention to the

ideas expressed by pupils are greater at the post-treatment stage. Increase in this ratio may be due to genuine concern on the part of the teacher to encourage pupil participation. Significant changes in teacher talk and student talk may be due to the effect of training through traditional method in which eliciting pupil participation is emphasized. The extent to which the teacher and the pupils are shifting from one category to another is indicated by the mean ratios of 82.294 and 82.478 at pre-treatment and post-treatment stages respectively. It indicates less flexibility in communication in classes handled by student-teachers at both the pre-treatment and post-treatment stages. Therefore, no perceptible change under this variable was observed. This may be due to less emphasis on this aspect of training in traditional method of teaching.

Again, the changes in indirect and direct teacher influence are consistent and show significant difference. This indicates increase in the indirect influence of the teacher which may be due to the training. This is concerned with the positive aspects of a teacher-pupil relationship. Change in extended indirect is in the positive direction of improvement as a result of the treatment. This is the shift from the praise to the clarification and development of pupils' idea. Clarification and development of pupil's ideas usually indicate the teacher's concern for positive motivation. High ratio in direct influence is quite

understandable due to the typical sequence pattern in which
the teacher gives some direction, the student resists, the
teacher criticizes and then gives more direction at pre-
treatment stage as against the corresponding reduction in
such situations at post-treatment stage. Results indicate
more clarification, acceptance and building up the ideas of
pupils. Increase in this tendency of student-teachers at
post-treatment stage to make extended developments of pupil
ideas may be due to training. Although pupils participation
has increased perhaps due to the indirect behaviour of the
teachers, the result indicates no significant difference in
pupil self-initiated talk between pre-treatment and post-
treatment stage. This result is not in line with the result
of increase in pupils participation. It may be perhaps due
to more emphasis on teacher initiated talk of pupils in the
classroom and less on student initiated talk.

Thus the results reveal that traditional method of
training helped the student-teachers to change their inter-
action behaviour. The notable changes are when the student-
teachers talked less and elicited more pupil participation.
Student-teachers showed tendency towards more indirect
behaviour. The significantly greater use of acceptance and
clarification of pupils ideas by student-teachers presents
an interesting finding in the wake of less flexibility in
the communication and less pupil initiated talk. This may
be due to less emphasis on these aspects in traditional

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method of training.

B. **Effect of Micro-Teaching Treatment**

The two combined interaction matrices prepared for pre-treatment and post-treatment stages for the student-teachers of experimental micro-teaching group I differ significantly in classroom behaviour patterns, especially in their sequential nature. This may be the effect of treatment given to the student-teachers. The combined matrices are given in Tables 4.17, 4.18 and 4.19 with the result on the following pages. Results in Table 4.20 reveal that there is a significant change in the student talk and occurrence of silence or confusion. This means that pupil participation has significantly increased and occurrence of silence or confusion has decreased to a considerable extent even below the normative expectation of twelve per cent by Flanders (1970). This decrease in silence or confusion might have provided more opportunity to pupils to develop their ideas. Eliciting more participation from the pupils may be the training effect of micro-teaching. The student talk was also near the normative expectation of twenty per cent by Flanders. There seems to be no significant change on the variable of 'Teacher Talk'. This means the teacher participation remained more or less the same. This may be due to the very nature of micro-teaching procedure which emphasizes skill training treatment as a component part of teaching

behaviour. In the present experiment the indirect behaviour for more pupil participation was emphasized. The result is indicative of the fact that pupil participation increased.

If an analysis of the quality of teacher and pupil participation and interaction is made the result appears to be quite provocative. As regards the opportunity to exchange communication between the teacher and the pupils the results indicate the rapid shift of interaction between teacher and pupil from one category to another. This means that the student-teachers trained through micro-teaching have taken due care to make communication more flexible. Another feature of the qualitative aspect of the interaction between the teacher and pupils is that the pupils had opportunity to develop their own ideas. It also indicates pupil to pupil communication. This is in conformity with the result of significant participation of pupils with the emphasis on student initiated talk.

The effect of micro-teaching treatment seems to be in the direction of promotion of indirect influence. Indirect influence increases pupil freedom of action, allowing the pupil the opportunity to participate. When the teacher accepts, clarifies, or uses constructively the ideas and opinions of pupils, they are encouraged to participate further. To praise or encourage pupil participation directly is to solicit even more participation by giving a reward.

The ability to use the feeling tone of a pupil constructive-
ly, to react to feeling and clarify it is a rare skill.
Teachers with this ability can often mobilize positive feel-
ings in motivation and successfully control negative feel-
ings that might otherwise go out of hand. These situations
are indicative of the teacher's concern for positive motiva-
tion and reward. It seems the treatment of the micro-teach-
ing has provided an ample opportunity for the promotion of
indirect influence.

Thus the results of experimental micro-teaching
group I reveal that the training helps the student-teachers
change their classroom interaction behaviour. The signifi-
cant changes noted are: (i) pupil participation increased,
(ii) occurrence of silence or confusion decreased, (iii)
communication pattern in the class remained flexible, (iv)
pupil freedom of action increased, and (v) indirect influ-
ence of student-teachers led to acceptance of pupils' ideas,
their clarification and use in the interaction process. No
perceptible change is revealed in teacher talk. Quantity of
his participation remained more or less the same. There seems
no significant change on 'extended direct' where the teacher
restricts the freedom of pupil, uses his authority and
criticizes them.

C. Effect of Flanders Interaction
   Analysis Category System Treatment

Here also, the combined matrices pertaining to

pre-treatment and post-treatment stages for the student-teachers of experimental FIACS group are found to be significantly different in behaviour patterns of sequential nature. This might be due to the treatment given to the student-teachers. Combined matrices are given in Tables 4.21, 4.22 and 4.23. Further probe through Table 4.24 reveals that there is significant increase in pupil participation. It has increased to 20.368 per cent which is more than the normative expectation of Flanders (1970). This may be due to the treatment of Flanders Interaction Analysis Category System which emphasizes on indirect teacher behaviour. However, no significant change is indicated in teacher verbalization. The occurrence of silence or confusion (6.531 per cent) is although below the normative expectation of twelve per cent by Flanders, the difference between the pre-treatment (7.471 per cent) and post-treatment (6.531 per cent) is not significant. Results reveal no significant change in teacher-student talk ratio and there is less rapid interchange of communication between the teacher and the pupils.

The effect of training seems to be prominent in the direction of increasing the indirect influence, creating a social atmosphere or climate that appears conducive to teaching-learning process. Table 4.24 reveals consistent results of change in the direction of increasing the indirect

influence. The situations are indicative of the teachers'
more concern for positive motivation and reinforcement
perhaps due to FIACS treatment. It seems the acceptance,
clarification and building up the ideas of pupils started
only after FIACS treatment. Student-teachers have shown no
initiative in accepting the ideas of pupils at pre-treatment
stage. There is significant increases in the pupil initiated
talk. The result seems to be in line with the result of
increase in pupil participation.

Thus the results presented reveal that the treat-
ment of FIACS did help student-teachers change their inter-
action behaviour. They changed significantly in the direct-
ion of using more and more acts of praising and encouraging
the pupils and accepting and clarifying the ideas. Partici-
pation of students increased. The results seem to be consi-
stent with the results of previous researches. There is
ample evidence to show that pre-service teachers who have
been taught and trained in interaction did change their
teaching behaviour in the studies of Hough and Amidon (1964
(a)(b)), Kirk (1964), Furst (1965) and Pareek and Rao
(1971). Studies of Flanders (1960(a)), Amidon and Flanders
(1961), and La Shier (1965) are associated with higher pupil
achievement and more positive pupil attitude towards their
teachers and school.

5.3.4 Overview

A study of the results of the effects of treatments, namely traditional training method; micro-teaching treatment and FIACS treatment reveals the fact that the training did help the student-teachers to change their classroom verbal behaviour in all the treatments. As a result of the training student-teachers' classroom behaviour changed significantly. Pupil participation increased significantly in all the groups. It may appear at the outset that it is unreasonable to expect much change in pupil participation as it is the teachers who were trained and not the pupils. On the other hand it may also be reasonable to expect the change as interaction is always between the teacher and the pupil and any change in teacher verbal behaviour may mean a corresponding change in pupil interaction behaviour. As a result of training the significant increase in indirect influence is consistently notable in all the groups. All the groups also show consistent and significant change in the direction of using more and more acts of praising and encouraging the pupils, accepting their ideas and building them up. The results indicate that there are significant changes in pupil self-initiated talk as a result of changed interaction of student-teachers in experimental micro-teaching group I and experimental FIACS group II only. This could be attributed to treatments given to the student-teachers through micro-teaching and FIACS. Another interesting noticeable phenomena is the

significant change in communication pattern and the occurrence of silence or confusion in the experimental micro-teaching group I only. This may be due to the treatment of skill training in reinforcing the pupil participation in the group which led to flexibility in communication pattern and leaving less time for the occurrence of silence or confusion. It is indicative of the fact that interaction between student-teachers and pupils was reasonably high with more opportunity of flexibility in communication and less possibility of occurrence of silence or confusion. The significant decrease in teacher verbalization and use of the authority by directing, criticizing or restricting the freedom of the pupil in control group is also note-worthy. Usually the teacher is at a vantage point in respect of monopolising talking due to his power and authority in the classroom as the initiative lies in him. But that power and authority do not seem to be utilized in this case. Teacher talk is less even the normative expectation of sixtyeight per cent of Flanders (1970). Teacher-student talk ratio is the only variable which showed no significant change in any group, although the changes are noticeable with the increase or decrease in teacher or pupil participation. The differences in the change are not found significant.

Thus the results indicate that the treatments, viz: traditional method of training, micro-teaching and FIACS have resulted into modification of student-teacher classroom

verbal behaviour. There seems a need to be distinctive as which of the treatments compared to the other two treatments helped more to modify the classroom verbal behaviour of student-teachers. With this end in view it is considered proper to have a discussion on inter-group post-treatment interaction matrix comparison.

5.4 Inter-Group Post-Treatment Interaction Matrix Comparison

In order to test the hypotheses and finding out as to which of the treatments compared to the other two treatm-ments helped more to modify the classroom verbal behaviour of student-teachers discussion on the results of inter-group comparison i.e. control versus experimental micro-teaching group I, control versus experimental FIACS group II and experimental micro-teaching group I versus experimental FIACS group II is presented below:-

5.4.1 Control Versus Experimental Micro-Teaching Group I

To test the first null hypothesis concerning no change in the verbal teaching behaviour of student-teachers trained through micro-teaching compared to the student-teachers trained in traditional way only, the interaction matrices of both control and experimental micro-teaching group I were tested by a likelihood ratio criterion developed by Darwin. The combined matrices are given in Table 4.25,

4.26 and 4.27 and the results on the following page. The
first null hypothesis is rejected at .01 level of confidence.
This is enough evidence to infer that student-teachers train-
ed through micro-teaching differ significantly in their
verbal classroom behaviour from the student-teachers trained
in traditional way only.

Further examination of the results given in Table
4.28 reveal that the student-teachers of experimental micro-
teaching group I do not show a tendency to monopolize/their
verbalization and remaining in the same category for longer
periods. This rapid interchange of verbal behaviour between
student-teachers and pupils results in the flexibility of
the communication pattern, more freedom for pupil participa-
tion and initiation. More indirect teacher influence patterns
seem to have occurred in the classrooms taught by student-
teachers trained through micro-teaching than the classes
taught by student-teachers of control group. This means that
sensitivity to pupil participation and attention to the
ideas expressed by pupils are greater for the student-
teachers of experimental micro-teaching group. They seem to
exhibit a tendency of more acceptance, clarification and
constructive use of the ideas and opinions of pupils, with
the result pupils are encouraged to participate further.
Often teachers act as if they do not hear what a pupil says;
to acknowledge and make use of an idea is a powerful form of
recognition. To praise or encourage pupil participation is

to solicit more participation. These give pupils the opportunity to take initiative. The net effect is greater freedom of action for the pupils. It seems the treatment of micro-teaching has taken more care of the promotion of indirect influence in the teacher than the traditional training method. A pattern óf indirect influence is ordinarily associated with more student talk, which is often initiated by the pupils. This indicates the pupil's spontaneous expression of his own ideas.

A noteworthy phenomenon on teacher talk variable is that decrease in teacher verbalization is more marked in control group student-teachers than the student-teachers in experimental micro-teaching group. It is understandable in the context of the comparison of post-treatment results in respective groups where the decrease in teacher talk is significant ins control group and it is not significant in experimental micro-teaching group. It may be noted that the pupil participation has increased in both the groups. But there seems no significant difference between the control group and experimental micro-teaching group on this variable of 'student talk'.

Thus these results lead to the rejection of the first null hypothesis. To summarise it may be stated that as result of training through micro-teaching student-teachers of experimental micro-teaching group I have modified their

teaching behaviour significantly in the direction of using more and more acts of praising and encouraging pupils, accepting, clarifying and building up the ideas of pupils, providing opportunity for flexible inter-communication and pupil initiation. As a result of micro-teaching treatment, it seems student-teachers increased showing more of indirect influence.

5.4.2 Control Versus Experimental FIACS Group II

To test the second null hypothesis concerning no change in the verbal teaching behaviour of student-teachers trained in Flanders Interaction Analysis Category System compared to the student-teachers trained in traditional way only the interaction matrices of both control and experimental FIACS group II were tested. The combined matrices are given in Table 4.29,-4.30 and 4.31 followed by the results. The second null hypothesis is rejected at .01 level of confidence and this seems to be enough evidence to infer that student-teachers trained in FIACS differ significantly in their verbal behaviour in classroom from the student-teachers trained in traditional way only. A further probe into the results given in Table 4.32 indicates that there is higher increase in pupil participation and significant decrease in the occurrence of silence or confusion. Data clearly show that the student-teachers of experimental FIACS group who

were trained in interaction analysis differed significantly
from the student-teachers of control group in the use of the
teacher verbal behaviours: they used less direct teacher talk;
they gave fewer directions; they made less use of authority;
they used more indirect teacher talk; they used more accept-
ance and clarification of pupil talk; they used more indirect
teacher verbal behaviour as opposed to direct teacher verbal
behaviour; and they were flexible in their communication
pattern allowing rapid inter change of communication between
the teacher and pupils. In addition, there was more pupil
initiated talk in classes taught by student-teachers who had
been trained in FIACS.

Although the results report a decrease in teacher
talk,teacher-student talk ratio and use of direction and
authority but this only is not enough evidence to warrant
inference that both the groups differ significantly on
these counts. But the results of matrix comparison and
significant differences on other aspects lead to the reject-
ion of second null hypothesis. Results report significant
differences in pupil participation, occurrence of silence or
confusion, flexibility in inter-communication between
student-teachers and pupils and more use of indirect influ-
ence. These distinctive modifications in the teaching
behaviour of student-teachers of experimental FIACS group may
be due to objective and systematic feedback which they could
get themselves out of the knowledge of Flanders Classroom

Interaction Analysis Category System, classroom observation procedure and matrix interpretation.

5.4.3 Experimental Micro-Teaching Group I Versus Experimental FIACS Group II

To test the third null hypothesis concerning no change in the verbal teaching behaviour of student-teachers trained in Flanders Interaction Analysis Category System compared to the student-teachers trained through micro-teaching treatment, the interaction matrices of both groups were put to test on likelihood ratio criterion developed by Darwin. The combined matrices are given in Tables 4.33, 4.34 and 4.35 followed by the results. The third null hypothesis is also rejected at .01 level of confudence. This is enough evidence to draw inference that student-teachers trained through micro-teaching differ significantly in their verbal behaviour pattern in the classroom from the student-teachers trained in FIACS.

As a result of further probe into the results in Table 4.36 it is evident that the student-teachers in experimental micro-teaching group have shown a tendency to increase flexibility in inter-communication between them and the pupils, use more indirect influence and use less of direction and authority than the student-teachers in experimental FIACS group.

The results reveal the extent to which the teacher

and the pupils are shifting from one category to another indicating more flexibility in communication in classes handled by experimental micro-teaching group student-teachers. This effect particularly may be due to training given through micro-teaching in the skill of reinforcement for eliciting participation of pupils. The significant increase in the use of indirect influence indicated that student-teachers of experimental micro-teaching group had more of a tendency to react to the ideas and feelings of the pupils. Invariably the class will be paying more attention to the teacher when
he
∠ begins his reactions to something a pupil has said. Each communication re-entry of the teacher is crucial in so far as it sets the stage for the ensuring succession of events. This modification in teacher behaviour might have been only due to micro-teaching training. Again, it may be noted that significant decrease in the use of direction, criticism and authority indicates increase of positive motivation and improvement in the direction of indirect behaviour of the student-teachers of experimental micro-teaching group. Besides these, increase in the acceptance of the feelings and ideas of the pupils leading to self-initiated talk among pupils are in the direction of increasing the indirect influence. Teacher talk, pupil participation, occurrence of silence or confusion and teacher-student talk ratio are more or less the same in both the groups. These are consistent in the light of the previous results already discussed.

Thus these results lead to the rejection of the third null hypothesis. To summarise it may be stated that as a result of training through micro-teaching the student-teachers has shown more prominently the flexibility in communications and indirect behaviour than the student-teachers in experimental FIACS group.

5.5 Micro-Teaching Results

From the discussion in the foregoing pages in the inter-group post-treatment interaction matrix comparison, it seems evident that micro-teaching has shown distinctive results compared to traditional way of training as well as FIACS treatment. Keeping this fact in view it was considered advisable to make re-appraisal of the efficacy of micro-teaching on the basis of the interaction matrices prepared for the brief lessons presented by student-teachers concentrating on skill training in real classroom situation after simulated training in social studies method classes.

5.5.1 Comparison Between Teach and First Reteach

Table 4.37 reveals that as a result of feedback af after the teach in micro-situation and the conscious effort on the part of the student-teacher to improve there is significant increase in inter change of communication
between the teacher and pupils/ and increase in the use of indirect behaviour at the reteach stage. Student-teachers

used more acceptance of pupils' ideas, less rejecting of pupils behaviour. They used more extended indirect teacher talk. These significant differences are in the positive direction towards the modification of student-teacher behaviour. There seems no significant decrease in the teacher talk and occurrence of silence or confusion and no significant increase in pupil participation but a perusal at the increase or decrease of the values at first teach stage may give an indication of modification of teacher classroom verbal behaviour.

5.5.2 Comparison Between Teach and Second Reteach

A perusal of the results given in Table 4.38 in their increased or decreased phenomena at second reteach stage compared to teach stage definitely indicate the positive direction of modification in teacher classroom verbal behaviour on respective variables. It is possible perhaps due to reteach cycle to which micro-teaching owes its success. Reteaching means practising a feature of teacher training that is usually neglected in other treatments. As a result of this aspect of training perhaps the significant differences on all the variables of teacher classroom verbal behaviour are found except teacher-student talk ratio.

5.5.3 Comparison Between First
      Reteach and Second Reteach

Table 4.39 reveals that none of the variables show-
ed significant difference from first reteach to second
reteach. This may not be surprising. A perusal of the mean
values of different variables at first reteach stage and
second reteach stage with their respective nature of improve-
ment by showing increased or decreased mean values may
indicate at this stage the modification of teacher behaviour
in positive direction of improvement. Second reteach was an
opportunity to student-teacher to practise certain phase of
teaching behaviour and re-establish the improvement which he
had made at first reteach stage.

5.5.4 Modification of Verbal Behaviour
      at Different Stages

The extent of the modification of behaviour of
student-teachers at different stages are noticeable in the
Graphs 4.1, 4.2 and 4.3 drawn on the basis of Table 4.40.
Graph 4.1 reveals continuous increase on 'student talk'
variable and constant decrease in teacher talk, occurrence
of silence or confusion and teacher-student talk ratio. The
very direction and spurt of the lines show the extent of
modification of particular verbal behaviour. The measures
of indirect influence have shown steep rise on various
variables. Steady State Ratio values have shown fall. This

is an indicative of the fact that rapid change in the inter-communication process during classroom interaction is an improvement to reach those levels of cognitive functioning that require independent thinking and self-direction. Increase in pupil initiation is also in positive direction. Teacher initiation in accepting the ideas, clarifying them works as an reinforcement to pupils behaviour. Distinctive efficacy of the micro-teaching as against the traditional method of training and FIACS may be due to greater specification of the skill to be practised and more objective information and feedback about the performance with the opportunity to reteach for practising certain phase of teaching. These features of teacher training programmes seem to be neglected in traditional training method to a larger extent and in FIACS to a certain extent.

5.6 Conclusions

The results presented so far reveal that the traditional method, micro-teaching and Flanders Interaction Analysis treatments given to student-teachers did help them to modify their verbal classroom behaviour. As a result of the training through micro-teaching and Flanders Interaction Analysis Category System the modified verbal behaviour in the classroom is significantly different on various aspects of teacher behaviour compared to classroom verbal behaviour of student-teachers undergoing training through traditional

method. The experimental treatment groups showed differences in the occurrence of silence or confusion, flexibility of of communication between the teacher and pupils, use of indirect influence, more acceptance of ideas of the pupils and their use and self-initiative of the pupils compared to the student-teachers trained through traditional way only. These indicate that the: (i) quality of teacher participation is much more indirect in experimental groups, (ii) teacher is even more indirect when responding to pupil talk, (iii) flow of communication between the teacher and the pupils and the flexibility with which the teacher shifts from one category to another is higher, (iv) pupils are more encouraged and reinforced for further participation, (v) ideas suggested by pupils are usually accepted, clarified and used, (vi) there seems to be fewer pauses in the flow of communication, and (vii) student-teachers have started using more of indirect influence. Thus the effect of training through micro-teaching and in Flanders Interaction Analysis seems to be in the direction of increasing the indirect influence. This aspect of teacher behaviour is significantly related to pupil achievement (La Shier, 1967; Lulla, 1973). Rosenshine (1971) reported that positive correlations between indirect behaviour and pupil achievement were obtained in eleven of thirteen studies reviewed by him.

The less use of authority, criticism of the pupils

and self-reference by the student-teachers in experimental groups are other distinctive aspects of modified verbal class-room behaviour. This shows a tendency towards the use of more indirect influence. Use of indirect influence is most sensitive to positive aspects of social skill in the teacher-pupil relationship; This leads to the integration of the results of interaction between pupils and teachers. It is a shift from praise to the clarification and development of pupil ideas. This usually indicates teacher concern for positive motivation and reward. Since this is a part of the more general indirectness, the significance of modification of behaviour in this aspect seems due to the treatments. Flanders (1960(b)) states that the teacher accepting and developing pupils' idea is by far the most important in estimating the teacher support of pupil participation. This means the teacher develops the ideas of pupils with considerable care and this is an indirect pattern of influence. Rosenshine (1971) reported that eight studies have been found in which use of pupil ideas were correlated with measures of pupil achievement.

Besides these, the significant difference is revealed between experimental micro-teaching group and the students-teachers in traditional training group on teacher talk variable. Teacher talk is higher in micro-teaching group in this case. This may be due to very nature of micro-teaching procedures which emphasizes skill training

as component part of teaching behaviour. In the present experiment the skill of teacher talk was not emphasized. Extended indirect teacher talk may be the another reason. Even then the mean per cent is not much higher than sixty-eight per cent of teacher talk anticipated by Flanders (1970). It is also an improvement towards the positive modification as teacher talk has decreased from pre-treatment ratio.

As regards the effectiveness of micro-teaching as against the treatment of Flanders Interaction Analysis, the results reveal more flexibility in the communication process in classes handled by experimental micro-teaching group student-teachers. This effect seems particularly due to training given through micro-teaching in the skill of reinforcement for eliciting participation of pupils. Student-teachers have shown more of a tendency to react to the ideas and feelings of the pupils. Again, significant decreases in the use of direction, criticism and authority indicates increase of positive motivation and reward.

Thus the distinctive results of the FIACS treatment compared to traditional method of training may be due to the quantitative study of classroom behaviour making it possible to describe objectively the pattern of a lesson which could help to overcome some limitations of traditional practice. The knowledge itself could serve a reliable

feedback technique. But the limitations of non-verbal
behaviour going unrecorded, the assumption that student-
teacher is consistent, he could be chronicled as interact-
ing across the entire class, when he may be merely interact-
ing with one or two pupils on repeated occasions not
warranting its rejection but looking towards micro-teaching
which simplifies teaching and provides opportunities for the
control and manipulation of variables. Micro-teaching
eliminates much of discouragement and disappointment that
sometimes could accompany abrupt exposure to the complexiti-
es of class teaching. It removes the risk element from the
initial steps or the tyro, he may be phased gently into
'real teaching'. The immediate feedback, the opportunity
to practise in the light of the feedback and focussing upon
elemental k skills seem the promising features of the
procedure which showed distinctive behaviour modification
in the verbal classroom behaviour of student-teachers of
experimental micro-teaching group,