Chapter Five

DISCUSSION OF THE RESULTS

Significant F-Ratios for sample mean differences have been obtained in the following thirteen analyses of the present study.

Total use of Category   2

Total use of Category   3

Total use of Category   6

Total use of Category   9

i/d: Indirect - Direct Teacher Talk Ratio

2 - 2 Cell: Praise Extention

3 - 3 Cell: Extention of Teacher Responsiveness

Extended Direct: Negative Affective Teacher Talk

T R R 89:   Instantaneous Teacher Reponse Ratio

T Q R   :   Teacher Question Ratio

TQR 89   :   Instantaneous Teacher Question Ratio

9 - 9 Cell:Extension of Pupil - Initiated Pupil Talk

P I R   :   Pupil Initiative Ratio

It suggests that null hypothesis of no treatment differences can be rejected and that the population mean scores of all the treatments in the foregoing variables are not equal.

Thus it can be argued that there are possibilities for the participating student teachers to learn the technique of interaction analysis, and also how to perform particular behaviour patterns while teaching their classes during the period of student teaching or teaching intership.

When objective information is fedback to a participating teacher, it is likely to help a person change behaviour in ways that improve the quality of teacher-pupil interaction and develop preferred patterns of teaching behaviour.

An overall measure of performance for the six treatments suggests that interaction analysis can be an effective feedback mechanism and student teachers who received interaction analysis feedback have made significant gains in the predicted direction in their use of the specific teacher verbal behaviour. The results of the present study demonstrate that interaction analysis feedback information has implications for consideration of those who are engaged in supervision.

More specifically it may be stated that changes in certain patterns of teaching behaviour of the treatment groups have been demonstrated as follows:

(i)   They praised or encouraged pupil action or behaviour more.

(ii)   They accepted, clarified, developed, compared, or summarized ideas suggested by a pupil more.

(iii)   They gave less directions, commands, or orders to which a pupil is expected to comply.

(iv)   They illicited more student-initiated student talk.

(v)   They made more indirect talk as opposed to direct talk.

(vi)   They made more praise extention.

(vii)   They were more responsive to the ideas suggested by the pupil and pupil initiative as they made more extension of ideas suggested by the pupil.

(viii) They made less negative affective (extended direct) talk.

(ix)   They asked more questions while guiding the content

         oriented part of class discussion. Thus they colicited

         more pupil reaction to certain ideas which they thought

         important and checked on their understanding more.

(x)   They developed a skill to respond to pupil talk with

         questions compared to their tendency to lecture.

(xi)   They developed a skill to priase or integrate pupil

         ideas more into class discussions at the moment pupil

         stop talking.

(xii)   They encouraged more pupil-initiated pupil talk compared

         to their initiating the contact or soliciting student

         statements.

(xiii)   They made more extension of pupil-initiated pupil talk.

         A detailed discussion of these foregoing results and

their direct implication for supervision of practice in teaching

is as follows:

PRAISE STATEMENTS:

Praise statements are used to reassure a person of his worth. It

is also likely to motivate the pupils and increase their train of
                              study
thought. The present/suggests that it has been possible to increase

the use of this category by feeding back the observation information

or presenting a picture of their behaviour and discussing the

necessary steps for further self improvement and to pursue

individual self-improvement goals. Interaction analysis feedback

developed a skill on the part of the student teachers to communicate

to a pupil that he is on the right track and the teacher would like

him to produce more of the same.

ACCEPTS OR USES IDEAS OF PUPILS:

Student teachers receiving feedback have shown a significant increase in their responsiveness to the ideas pupils express by

(a)   acknowledging the pupil's idea by repeating it

(b)   modifying the idea, rephrasing it, or conceptualising it in the teacher's own words

(c)   applying the idea; i.e. using an idea to reach an inference

(d)   comparing the idea; i.e. relating an idea to what the teacher thinks, to written material, or to the ideas that another pupil has expressed

(e)   summarising the ideas that were expressed during a preceding period of time by a pupil or group of pupil.

Student teachers in the treatment groups have learnt those skills of communication which convey to the pupils that their ideas were heard and reacted to.

An increase in the frequency of occurance of this category suggests that the student teachers in the different treatment groups attended to pupil ideas and integrated them into class discussion through their (student teachers) active response statements.

Thus the pupils are encouraged to take the initiative and motivated to increase their train of thought.

GIVING DIRECTIONS:

The analyses of the study suggest that treatment groups differ in their use of directions, commands or orders to which a student is expected to comply.

There was a significant decrease in the treatment groups in using statements which are intended to produce compliance.

A lesser use of this category tends to diminish the authority of the teacher and use of corrective feedback. It demonstrated that there were significant efforts on the part of the student teachers not to establish teacher initiation pupil response pattern. It suggests that pupils could do their school work independently without direct supervision of the teacher. The student teachers as a result of feed back could appreciate that there is a considerable need to diminish the use of this category as such statements tend to enhance the authority of the teacher, interrupt the train of thought of pupil instead of encouraging it and pupils become unable to work independently and establish a teacher initiation-pupil response pattern.

PUPIL-INITIATED PUPIL TALK:

An increase in the use of category 9 has been demonstrated by the analyses of the present enquiry. It suggests that interaction analysis feed back developed in the student teachers a tendency to

(i)   offer more voluntary declarative statements not even
        called for by the teacher and to go beyond the existing
        structures;

(ii)   feel free to express their ideas;
        The pupil first answer the teacher's question and then
        embellish the answer with additional information

(iii)   develop own opinion or ideas on the topic and expression
        of will through independent judgement.

An increase in the proportion of 9's suggests something about the freedom of pupils to express their own ideas, to suggest their own approach to a problem, and to develop their own explanations.

i/d: ·

Treatment groups suggest significant increas in the proportion of student teachers' indirect-to-direct talk. F I A C system of interaction analysis refers to categories 1, 2, 3 as indicative of ' indirect teacher influence ' and categories 6, 7 as ' direct teacher influence.' As increase in this ratio depends on an increased use of categories 1, 2, 3 and/or decrease in the use of category 6, 7; suggesting thereby that student teachers were more responsive to the pupils feelings and ideas. They made attempts to invite more active pupil participation and soften the use of teacher authority by making its use more reasonable, understandable and less arbitrary.

The student teachers controlled the learning activities of the pupils by attempting to develop more positive attitudes. An increase in it is also likely to be associated with an increase in the use of category 9, i.e. pupil-initiated pupil talk as teachers with an increased use of this specific ratio tend to be more responsive than taking the initiative. Such an improvement might involve a setting in which a teacher can practise clarifying and making use of ideas expressed by pupils, and learning how to extend praise, criticism and directions during spontaneous interactions with pupils.

PRAISE EXTENSION:

The treatment groups indicate an increase of praise extention as
a significant F-Ratio has been obtained in the use of this
variable.

An increase in praise statements has already been
discussed. Short praise expressions ignore the reasons for
praising. Whenever praise is given by clarifying the criteria
which makes something praise worthy, there is an extension in a
series of 2's.

This kind of re-inforcement may provide clues for future
decisions about behaving and may motivate the pupils to produce
more of the same. There is much food for thought in the analysis
of teacher praise, especially when reinforcement to pupils may be
more effectively given in terms of Categories 1 and 3. In such a
programme of self development, student teachers have learnt how
to extend praise.

EXTENSION OF TEACHER RESPONSIVENESS:

Treatments groups differ significantly in their extension of
Category 3.

It suggests that treatment groups differ in their learning
of those skills of communication which convey to the pupil that
this ideas were heard and reacted to.

When successfully used, these statements help a pupil
to know that his ideas do make a difference because the teacher
is not merely acknowledging or hearing his ideas but is also

reacting to the ideas expressed by him (a pupil). A description regarding an increase in the frequency of occurance of category 3 has been made earlier.

NEGATIVE AFFECTIVE TEACHER TALK:

A significant decrease in negative affective teacher talk has been observed in the treatments groups. It indicates a significant decrease in issuing directions, orders to the pupils to obey, criticism of their ideas, comments, action and behaviour etc. and demonstrating lesser use of their authority.

Enhanced use of authority makes it capricious, and sometimes interrupts the train of thought of pupil. It is likely to threaten more often a pupil of his worth, establish the superiority of the teacher who justifies or displays his authority by issuing orders to the pupils to obey and to criticise their action, behaviour, ideas, feelings and comments etc.

Further, a decrease in the use of this pattern suggests that there was less unnecessary talk discussing the rules of conduct or tasks at hand or arbitrary softening of the use of authority or extreme self references made by the teacher.

INSTANTANEOUS TEACHER RESPONSE RATIO:

An increase in the use of this pattern has been demonstrated by the analyses of the study. It suggests an increase in the tendency of the teacher to praise or integrate pupil ideas or feelings into class discussion, at the moment the pupils stop

talking. It suggests that teacher responds more frequently to pupil talk with Categories 1, 2 and 3 as opposed to Categories 6 and 7.

TEACHER QUESTION RATIO:

An increase in the use of this pattern suggests that a significant increase representing the tendency of a teacher to use questions when guiding the more content oriented part of the class discussion has been observed.

An increase in this verbal pattern of teaching behaviour would mean that the teacher solicited more frequently pupil, reactions to ideas which the teacher considered imprtant and her tendency to check the understanding of the pupils by asking questions. Some student teachers may have asked questions to establish and maintain control. Questions can be routine, boring, and even the basis of exciting inquiry.

Stimulating questions provide opportunities to the pupil to express opinion or line of thought. Whereas routine questions are boring and victious. Since the analyses of the study have demonstrated an increase in pupil initiative; it suggests that pupil teachers in the treatment groups developed skills to ask thoughtful and stimulating questions.

INSTANTANEOUS TEACHER QUESTION RATIO:

A significant increase in this specific ratio suggests an increase in the tendency of the teacher to respond to pupil talk with questions based on his own ideas compared to his tendency to lecture. It means that treatment groups reacted to pupil talk

more often with Category 4 as compared to Category 5. It indicates that the treatment groups made significantly more attempts to support pupil initiative and independence.

EXTENSION OF PUPIL-INITIATED PUPIL TALK:

The analyses of the present inquiry demonstrate a significant increase in the use of this specific pattern of verbal behaviour. It suggests that student teachers in the different treatment groups encouraged talk by pupils they initiate. Pupils often took more than three seconds to express own ideas, initiate a new topic, develop opinion or line of thought. They also made longer voluntary declarative statements not called for by the teacher and went beyond the existing structure.

PUPIL INITIATIVE RATIO:

A significant increase in the use of this specific ratio has been demonstrated by the analyses of the present study. It proposes to indicate what proportion of pupil talk was judged by the observer to be an act of initiation. An increase in the use of this ratio suggests that pupils availed of the opportunities provided to them to take initiative and express opinion. It corresponds to a significant increase in the frequency of occurence of Category 9 as compared to Category 8.

To stimulate pupil initiative, all teachers ask questions. Questions can be boring as well as basis of exciting inquiry. It is in fact, a highly developed skill which provides pupil with a genuine opportunity to express initiative.

It can thus be argued that student teachers who provided significantly more opportunities to the pupil to express initiative asked more questions, which were perceived as acts of initiation by pupils who answer.

In the foregoing variables the null hypothesis of no treatment differences is rejected. If the null hypothesis is rejected, the statement that " Not all population means can be considered equal " is often not very informative. The decision to reject null hypothesis (H_0) tells nothing which population means of underlying treatment population differ from which other population means. But the present inquiry is concerned to compare the effects of feedback from different sources on the classroom behaviour of student teachers so as to decide what type of feedback would most likely help student teachers improve their verbal classroom behaviour and instruction and to discover the relationship between the kind of feedback and the kind of change.

Having demonstrated the existence of significant differences between treatment groups, Tukey Method was adopted to identify the differences which have contibuted to the overall significant F-ratio and to reveal thereby which population means of underlying treatments differ from which other population means.

An attempt is being made to discuss and compare the performance of student teachers who received feedback using the technique of interaction analysis from each of the four different sources (i.e. the self, the peer, the college supervisor, and the external teacher observer) with the control groups in order to study their direct implications for the supervision of student teaching and effectiveness of interaction analysis as a vehicle of feedback.

(i)   First of all, we compare treatment Group A_1, i.e. the
        student teachers who made a self appraisal of their
        behaviour, and independently decided further steps for
        continual self improvement goals, with the control
        groups of the present study.

Significant differences were found in the frequency of
occurence of the following teacher verbal behaviour with one or
both the control groups.

(a)   They acknowledged, clarified, builded on and developed
        more the ideas expressed by the pupils.

(b)   They made more indirect talk as opposed to direct talk.

(c)   They had more extended use of the ideas suggested by
        the pupils.

(d)   They encouraged more pupil talk which was judged to be
        an act of initiation or they encouraged more pupil-
        initiated pupil talk as there was significant increase
        in the use of Category 9.

(e)   They encouraged more extended pupil talk. Pupils made
        voluntary declarative statements, responded to broad
        teacher questions which require independent judgement
        of opinion and more often a student prolonged his talk
        beyond the three-second interval.

(f)   There was a significant increase in the Pupil Initiative
        Ratio; suggesting that the student teachers who made a
        self appraisal of their behaviour allowed more freedom
        to the students to initiate the talk as compared to
        teachers soliciting student's statements.

Summarisingly, it may be argued that student teachers who learn interaction analysis can make a self appraisal of their teaching behaviour and use the technique of interaction analysis to pursue individual self improvement goals.

They made significant gains in their indirect teaching behaviour, were more responsive to student feelings, ideas, action or behaviour. They made more attempts to reinforce or support pupil participation. Further, they encouraged talk by pupils which pupils initiate. They gave more freedom to the pupils to make voluntary declarative statements, develop opinion and line of thought, express own ideas and initiate new topics. They also encouraged the pupils to ask more thoughtful questions and to go beyond the existing structure.

(ii)   Comparing the effects of feedback from the peer group with the control groups, it may be stated that student teachers who received feedback from their peer did not differ significantly from the control groups in their frequency of occurence of any of the dependent variables.

It suggests that feedback from the peer was little effective and did not succeed in its attempts to modify teaching behaviour of the student teachers.

But it is interesting to note that the population means of the peer group treatment differ significantly from the population means of the external observer treatment group in their use of the Teacher Question Ratio.

Teacher Question Ratio, has been defined as an index representing the tendency of a teacher to use questions when guiding the more content oriented part of the class discussion.

The peer group treatment made a significant increase in the use of this index, and the population mean of this variable differs significantly from the population mean of the treatment group that received feedback from an external observer

Another interesting part of this specific result is that the population means of the peer group treatment did not differ significantly from the population means of the control groups. Though it has demonstrated a significant difference with one of the treatment groups in the use of this specific ratio.

It could be that the external observer, being a class teacher was perhaps more concerned with direct lecturing and giving facts about content as opposed to developing a tendency among the student teachers to use questions to solicit pupil responses and reactions to ideas which they consider important or to check on their understanding by asking questions. It is perhaps an example of " Show and Tell " in a programme of pre-service education. There is a kind of ' Show and Tell ' going on continuously in which teaching behaviour is shown at the instant, the supervisor talks about it.

Further, student teachers while under training in a college of education are suggested various axioms about teaching and an important one is to involve the pupils in the development of the lesson. It may be achieved considerably by asking pupils questions about content or procedure and to check on their understanding and invite their reactions to the important ideas.

The peer group treatment has demonstrated a significant increase in the use of this verbal pattern of teaching behaviour. Whereas the class teacher, perhaps, being herself, more concerned

with imparting factual knowledge could not lay emphasis in the development of this specific pattern in the student teacher of the treatment group. This may have contributed to a significant difference between the mean scores of the two treatment groups.

Further the members of the control groups, who were not provided information about their teaching behaviour so as to decide steps for improvement, have demonstrated a consistency in the improvement of this specific pattern of verbal behaviour. They certainly asked more questions to the pupils to solicit pupil responses and to check on their understanding but could not develop other patterns of their verbal behaviour.

(iii)   Student teachers who received feedback from the college supervisor differ significantly from one or both the control groups in their frequency of occurence of the following patterns of teacher verbal behaviour:

(a)   They encouraged or praised pupil action or behaviour more.

(b)   They made more extended clarification, use or development of ideas suggested by a pupil.

(c)   They made more praise extension and encouragement of pupil action or behaviour.

(d)   They made less negative affective talk. They made significantly less orders, directions, or commands and statements intended to change pupil behaviour from non acceptable to acceptable pattern.

Summarizing, it may be stated that a group of student teachers receiving interaction analysis feedback from the college supervisor, made a significant gain in their indirect teaching behaviour as they encouraged pupil ideas, action or behaviour more.

They also made significantly less orders, commands, directions which a pupil is expected to carry out. There is an evidence of significantly less corrective feedback and of statements intended to change student behaviour from non-acceptable to acceptable pattern.

It indicates that they developed skills of communication which were more integrated and indirect in their approach.

Teachers with such characteristics are responsive to pupil ideas and help and pupil to know that his ideas are being heard and reacted to.

This factor is particularly interesting because it contains significant loadings which are both positive and negative. This suggests that student teachers who made a significant increase in praise extension and indirect pattern of teaching behaviour also made a significant decrease in their negative affective teacher talk.

(iv)   Student teachers who received feedback from an external observer, differ significantly from one or both the control groups in the frequency of occurence of the following patterns of behaviour.

(a)   They praised and encouraged student action, behaviour, ideas or comments more.

(b)   They made more positive affective teacher talk showing extnded acceptance of pupil feelings, praise of student ideas, action or behaviour and extended development of ideas suggested by the pupil.

(c)   They made more indirect-to-direct talk.

(d)   They gave significantly less directions, commands or

orders to which the student is expected to comply.

These findings are consistent with the view that student teacher who received feedback using the technique of interaction analysis from an external teacher, engaged themselves in more frequent indirect talk and were less critical of pupil action or behaviour and learnt those skills of communication which convey to the pupils that their ideas were heard. This type of teaching behaviour is most likely to help a pupil to know that his ideas do make a difference because they are being heard and reacted to.

(v)   There were no significant differences between the behaviour of the control group trained in the technique of interaction analysis and the control group trained in tradional learning theory.

This suggests that awareness of a particular teaching pattern does not necessarily ensure that the teacher is prepared to produce the pattern while teaching in the classroom. It seems likely that necessary condition include a presentation of a Matrix or objective information regarding their teaching behaviour so that they may evaluate it, lay down goals of teaching behaviour, practise in producing a particular pattern while teaching in the classroom and think of further steps for continual improvement. Progress in self development depends on feeding back of information to the teacher which reflects what actually happened, which shows certain behaviour did or did not occur, whether changes in behaviour could take place, whether such changes are or are not improvements, and whether certain predicted relationships are to be accepted or rejected.

Feedback machanism is likely to help a teacher practise a particular pattern, notice any improvement in his/her performance on teach-reteach cycles, develop more suitable plans of lessons and sharpen the differences between two settings or two patterns that are to be compared.

There is little difference between the results of college supervisor and external observer engaged in observation and feedback of information to the student teachers. Both the treatment groups indicate an increase of indirect teacher talk. Student teachers in these groups react to the ideas pupil express by acknowledging, clarifying and using them in the problem-solving process. The use of this pattern is mo$\overset{s}{\underset{\wedge}{}}$t effective when a teacher wants to support or reinforce pupil participation, when the ideas expressed by the pupil are to be selectively developed during problem-solving, and when a shift from teacher initiated structure to pupil initiation is about to take place.

Further, in both these treatment groups there is decrease in criticism of pupil action or behaviour and issuing of directions and orders with the intent that pupils obey as is evident from the analysis of the variable " Extended Direct."

Teachers with improvement in this pattern of behaviour expect to produce more positive pupil attitudes and make their authority more reasonable, understandable and less arbitrary. Student teachers who have been observed by a class teacher have shown a significant decrease in the use of category 6, i.e. use of directions, commands or orders to which the pupils should obey. It may be that the very presence of the class teacher

lessened the discipline problems for the student techers and there was comparatively a little need for corrective feedback to change the non-acceptable form of the behaviour of the pupils to more acceptable form.

Comparing the effects of the different sources of feedback, it can be argued that continual self appraisal of behaviour and self directed feedback in the form of interaction analysis seem to be more effective, as this group indicated significant increase in indirect teacher talk, in acknowledging, modifying, developing, and summarizing the ideas suggested by the students. This has been achieved in college supervisor and practising school teacher (external observer) feedback groups as well. But the self-directed feedback group has in addition made a higher score on the pupil-initiated pupil talk.

This suggests that the student teachers who made a self appraisal of their behaviour supported pupil initiative and independence.

They developed skills which provide pupils genuine opportunities to express initiative, judgement of opinion. Student Teachers in this treatment group asked broad, open questions about subject matter, or about procedure, or about feelings and attitudes; which became more consistent with some model of teaching behaviour and provided greater opportunities to the pupil to express their own point of view.

When opinions or feelings are expressed which may move the discussion toward desired objectives, a teacher can ask the pupil who spoke, or some other pupil to elaborate by asking a number of

broad questions. When this is done skillfully, the pupils progress in their analysis of a problem, actively express their own point of view, and experience a sense of independence.

In the present inquiry it has been demonstrated that independent self appraisal of behaviour contributed a significantly higher score over the other feedback groups in the use of Category 9.

Next in the sequence is the feedback provided by the external observer and the college supervisor. There is little difference between the results of these two types of feedback as explained earlier in the chapter.

Feedback from the peers is least effective. It does not differ in any way from the control groups.

It may be concluded that the status of the supervisor engaged in feedback of information to the student teacher plays a significant role to modify the teaching behaviour. But most important point lies in the individual self determination and self appraisal. There is more academic freedom to an individual to lay goals of behaviour for himself, analyse, plan and practise particular patterns and to pursue individual self improvement goals. There is need for considerable tact and thoughtful planning on the part of the supervisor engaged in feedback. Observation of the teaching behaviour of a student teacher by a supervisor and later its self analysis and self appraisal by the individual; using the technique of interaction analysis is likely to yield better results.

Student teachers who were getting objective information regarding their teaching behaviour on a schedule of interaction analysis but had accepted the responsbility for studying their own teaching behaviour in terms of its consequences and decide independently further steps for continual self improvement, certainly had more freedom to develop committments and convictions about their own teaching behaviour in terms of preferred patterns of classroom interaction and desired educational outcomes through personal experience and evaluation. Thus they excelled their colleagues in the other treatment groups in the development of skills that provide opportunities to the pupil to express initiative.

Summarisingly, it can be argued that student teachers should be helped to ' read behaviour themselves ' instead of just reading about their behaviour by others and providing them printed feedback. They, when trained in the skills of interaction analysis can become participants in the evaluation of their teaching performance and move towards a means of providing continual self improvement.