CHAPTER VII
SUMMARY, OBSERVATIONS AND SUGGESTIONS

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A. SUMMARY

The keystone of democracy is education - not only education that is accessible to all but education whose aim and methods have been thought out afresh. That is why the I.E.C. (1964-66) has rightly said that "the destiny of India is now being shaped in her classrooms". Today, one of the burning problems of education in our country, is the low level of scholastic achievement of school children at the primary and secondary stage of education. Moreover, the teacher-pupil relationships are scanty and these eventually lead to a disheartening atmosphere in the classrooms, spoiling the classroom dynamics. Even so, improved text books, instructional methods, use of audio-visual aids and all such facilities do contribute to a programme of improved classroom teaching and
performance on the part of the students. These will not however be effective unless competent teachers, trained in needed skills and right type of behaviour are available so as to make the teaching-learning process effective. Teacher behaviour plays a major role in determining pupils' growth and performance. It is, therefore, necessary to focus attention on teacher behaviour in classroom situations.

Nowadays, leading educationists contend that the classroom must be taken as a nucleus of change. Accordingly, considerable attention has been directed during recent years over the techniques of revitalising classroom teaching in Indian schools. At the same time, in the average school today, instruction is imparted in a mechanical, routine and lethargic manner. It is dominated by the old besetting evil of verbalism, remaining dull and uninspiring. On analysis it has been found out that four factors are largely responsible for impediments to progress in classroom instruction. These are (1) Weakness of the average teacher, (2) Failure to develop proper education research on teaching methods, (3) Rigidity on the existing educational system and (4) Failure of the administrative machinery to bring about a diffusion of new and dynamic methods of teaching. In support of the second of the above four factors, the UNESCO report "Learning To Be - The World of Education Today and Tomorrow" (1972) - says that classroom teaching methods are open to criticism because they overlook the complexity of the educative process, that fail to learn
from research and are not sufficiently directed at training minds and attitudes. But, in general, this report feels that the teachers role is changing, in that authoritative delivery of knowledge is being supplemented by spending more time diagnosing the learners' needs, motivating and encouraging study and checking the knowledge acquired.

Of all the factors influencing classroom instruction, teacher behaviour is considered to be the most important factor. Instructional methods, textbooks and all such facilities do contribute to a programme of improvement of classroom teaching, but these will not be effective in the absence of a competent teacher endowed with the right type of skills to make the teaching-learning process lively and effective. Today, the educational world is facing a dilemma where it has to select the allocation of scarce resources either for the development of educational hardware, i.e., text-books, instructional materials, teaching aids etc., or the development of human resources, namely teachers in the classrooms. Whatever may be the efforts to change school practices, ultimately, it comes down to the teacher's classroom behaviour, his teaching and the teacher-pupil interaction. Examination reforms, free supply of books and other facilities may have their own merits, but ultimately, it is the teacher and his teaching that does influence the quality of learning. This underlines the need for quality teachers and a sound theory of instruction. However,
almost all the theories of instruction referred to, are revealing the fact that the instructional system includes not only a classroom with a teacher and a group of students, but also the whole educational paraphernalia. It reflects the unique quality of interaction in any given classroom. Moreover, teaching may be defined as behaviour of the teacher, and learning as the change in learner behaviour and the instruction as the teacher-pupil interaction situation.

Many researches have been undertaken in the field of teaching and other aspects of teaching and learning situations. But, over the last decade, research has centred on teacher and pupil behaviour and their interactions rather than on 'teacher effectiveness'. This is an important step in educational research. Relevant and reliable data can be obtained by observing classroom behaviour and by using various technically appropriate measures. According to Hughes (1963), teaching is an interactive setting. The present attempt seeks to develop more and more observational schedules in order to measure this interaction in the classroom.

To measure classroom interaction, a few good techniques are available for practical purposes. The technique of interaction analysis is made use of to observe and codify spontaneous verbal communication between a teacher and his pupils. The assumption underlying this is that teaching
behaviour and pupils' responses are expressed primarily through the spoken word, as a series of verbal acts which occur one after another. These events are identified, then coded so as to preserve the observed sequence, and tabulated in such a way that it represents a sample of the spontaneous teacher influence.

System of interaction analysis will usually include:
(a) a set of categories, each defined clearly, (b) a procedure for observation and a set of ground rules governing the coding process, (c) steps for tabulating the data in order to arrange a display which aids in describing the original sequence of events, and (d) suggestions which can be followed in some of the more common applications (Flanders, 1970). Interaction analysis is a chain of classroom events laid out in such a manner that each event is taken into consideration. However, classroom interaction analysis would provide reasonably objective information which helps the teacher to read fast his behaviour, and to develop strategies of teaching behaviour.

Many researches have been conducted in the area of teacher behaviour, and that they have brought to light several types of teacher behaviour existing the classroom. The following research studies bear testimony to the above statement. Studies by Ryans (1960), Hutchinsons (1963), Solomon (1963), Klienmen (1965), Perkins (1965), Spaulding (1965), Flanders (1965), Miller (1966), Wright and Nuthall (1970), Beseda (1972), Quraishi (1970)
Santhanam (1972), Sharma (1972), Jangira (1972) and Lulla (1973). These studies inspired the investigator and the present study is the outcome of leading ideas gathered by the investigator.

The overview of work done in this area throws light on important findings which are helpful to this study. However, researches in the area of educational psychology have gathered momentum since the thirties. The focus of these researches was on teacher effectiveness. The American Educational Research Association, (1952, 1953) stated that teacher effectiveness must ultimately be defined in terms of effects on pupils. Hence the shift from teacher effectiveness to teacher behaviour and classroom process in terms of interaction in the classroom.

Studies of Hopkin (1941), Lewin (1948), Bovard and Everett (1951) and Wright and his associates (1951) served to identify the 'classroom climate' and its impact on teaching learning process. The studies of Anderson (1939), Lewin, Lippitt and White (1939), Withall (1949), and Flanders (1965) threw light on contrasting climates in the classroom. Likewise, studies by Flanders (1951), Cantor (1951) and Perkins (1950) emphasised the need for a conducive climate for effective learning.

Different types of useful research studies have been reported, such as, researches on classroom climate, interpersonal relations, contrasting climate, classroom climate and learning.
Classroom climate refers to those qualities that consistently predominate in most of the teacher-pupils contacts. Anderson (1939), Lippitt (1943), Prescott (1938), Lewin (1948) and Rogers (1967) conducted some studies using this concept. But Lewin (1948) used the concept of 'classroom dynamics' which was an ornamental term of the concept 'classroom interaction'.

Studies on interpersonal relations have two important dimensions: (1) the degree of rapport between the teacher and pupil and (2) relations among the students themselves.

The "Climate" according to Anderson's (1939) classical study on integrative and dominative behaviour of teachers stimulated further studies in this area of research. The studies of Lewin, Lippitt and White (1939) coined the concepts 'autocratic-democratic'. Flanders (1965) claimed "direct and indirect" teacher behaviour.

Morsh and Willer (1954) in their research review from 1900 to 1952, stated that no observable teacher act was correlated with student achievement. Since 1950, studies conducted by Jenkins (1951), Perkins (1951), Glidewell (1951), McKeachy (1951), Jenson (1955), Cogen (1956), Cage and Suci (1951), Flanders (1969), correlated teaching acts with positive pupil attitude and content achievement.

Then the process-product researches in correlational and experimental studies related to teacher behaviour and pupil outcomes, used systematic classroom observation techniques. Some of the related studies are Flanders (1965), Laskier (1965),

Some other related studies contributed to the growth of researches in teacher behaviour area are as follows: Fattu (1962) and Hawsam (1960) found slight positive correlation between scholarship and teaching effectiveness. Muries Wright (1959) attempted to identify behaviours related to pupil achievement. Calvin, Haffman and Harden (1957) studied about problem solving. Peterson (1967) concluded that as the teachers age went on they dedicated their lives to the children of other people. McDonald (1959) wrote that the task of the teacher is to organise and arrange the learning environment.

A good number of studies in this area have been conducted in India as well. Buch and Santhanam (1970) studied the predominant patterns of classroom behaviour of teachers teaching English. Pareek and Rao (1971) attempted to find out the association between teachers' classroom interaction and a few dimensions of student mental health. Santhanam (1972) studied the patterns of teacher behaviour in relation to the presage variables. Sudesh Sharma (1972) studied relationship between patterns of teacher classroom behaviour and pupils' attainment in terms of instructional objectives. Jangira (1972) studied classroom behaviour training of teachers and its relationship
with some selected measures of pupils' criteria of teacher effectiveness. Lulía (1973) studied the effects of teachers classroom behaviour on pupils' achievements.

The above review of studies highlighted the following:

- Teacher Behaviour in the classroom is being studied on an increasing scale by research workers in education.

- Teacher Behaviour is instrumental in generating what is known as classroom climate.

- The nature of the classroom climate depends upon whether the teacher is autocratic or democratic, dominating or integrating, direct or indirect.

- Teacher Behaviour results in different patterns of teacher-pupil interactions.

- Teacher Behaviour can be analysed, measured and modified.

- Teacher Behaviour, classroom interaction and classroom climate influence pupils' growth, achievement and attitudes.

- Under certain conditions, teachers' indirect behaviour results in increased learning by pupils.

- Teacher Behaviour considerably influences pupils' attitudes.

- Not many studies have been undertaken where teachers classroom behaviour has been used as the predictor variable.

- There is need to undertake a series of studies in the area of teacher behaviour and its impact on pupils' growth and to replicate them.
This study employed Pre-test, Post-test and experimental and control group designs in two phases. The design envisaged two groups of elementary school teachers, one serving as the experimental group and the other as control group. Both the groups started with the same treatment. First, pre-training measures of the classroom interaction variables were taken. After the pre-training measurement, the experimental group were given intensive training in the FIAC System through a three day seminar programme specially arranged for them. This was followed by some practical training in their actual classroom setting for about eight weeks. During this period, the control group was practising the traditional method of teaching. The post-training measurement started after the feedback provided only for the experimental group. The post-training experiment was continued for eight weeks. This phase provided data to compare the two groups of teachers on classroom interaction patterns and to test the hypothesis regarding effectiveness of teacher behaviour vis-a-vis traditional method of teaching, in developing better classroom dynamics among students.

Pre-test and post-test measures of the performance of pupils under the two groups of teachers were compared so as to determine differences in the performances of pupils under the two groups, and to link differences due to changed teacher behaviour.
The design also provided for control of some of the variable affecting the internal validity of the experiment (Campbell and Stanley, 1963). Intersession history was controlled in so far as the general historical events that might have produced differences during the period between pre-test and post-test measurement in the control group would result in differences in the experimental group as well. However, intrasession history was not controlled in the design. Maturation and testing were controlled in so far as they would be manifested equally in the experimental and control groups. Instrumentation was controlled through reliability of the tools used in the experiment excepting achievement tests. Regression was controlled as far as mean differences were concerned, no matter how extreme the group had on pre-test scores, if both experimental and control groups had been randomly assigned from the same pool. In such a case, the chances were that the control group would regress to almost the same extent to which the experimental group did. Selection was controlled to the extent that randomisation assured equality of the groups. Six of the teachers and grades and subjects taught by them were held constant. Contamination between control and experimental group was controlled through administrative isolation of the two groups of teachers during the period of experimentation. Other teachers influencing the pupils during the experimental period was minimised, if not totally eliminated, by adopting 'one class
three teacher system*. Treatment fidelity was ensured through measuring classroom interaction of the teachers synchronising with pre-test and post-test of the pupils.

C. HYPOTHESIS

This study rested mainly on three hypotheses.

1. Properly planned Classroom Behaviour Training with definite inputs will change teacher verbal behaviour.

2. Sustained change in teacher verbal behaviour will lead to better changes in pupils' performance.

3. The indirect verbal behaviour will bring better classroom dynamics, leading to better achievement motivation, value orientation, classroom trust, dependency, initiative, adjustment and academic achievement in the pupils.

D. TOOLS USED

A number of tools were used for the collection of data which would throw light on the findings of the study. Classroom teacher behaviour was measured by Flanders Interaction Analysis Category System. This is a widely used observational tool to study verbal classroom behaviour of teachers. It has ten category numbers representing different classroom verbal behaviour patterns of teachers and pupils. A trained observer can make use of the numbers while observing classroom teacher behaviour. Every three seconds, the event that happened in the
The classroom had to be recorded by using category numbers, top to bottom, so that the chain of events would be arranged properly for further analysis. A 20-minute observation of teacher behaviour was considered sufficient to prepare a 10 x 10 matrix. From a series of such observations, master matrices had to be prepared, making a better analysis of teacher behaviour possible. The I/D and i/d ratios will mainly bring out the fact how far the teacher is direct or indirect. Further many relevant calculation from the matrices will throw more light on the behaviour patterns of teachers.

The classroom dynamics is measured by different tools. They are:

1) The Pre-Adolescent Adjustment Scale, developed by Pareek and Rao (1970), is used to measure the adjustment of the pre-adolescents towards home, school, peers, teacher and their general adjustment. It consists of 40 items covering the five areas of adjustment. Scoring weightage of the items ranges from -10 to +10. The pupils are required to read the items carefully and tick mark the ones applicable to them. If the items are not applicable to a pupil, he is not to write anything against that item.

2) The Pre-Adolescent Classroom Trust schedule is used to measure the classroom trust of pupils. It consists of common classroom situations calling for pupils' reactions of the action proposed in the situation. The responses are scored as 4, 3, 2, or 1 according to the degree of trust represented by the response. The sum of all the scores on the various situations checked by the pupil given his total score on PACTS.
(3) The Pre-Adolescent Dependency Scale is used to measure how far the pupils' are independent or dependent in their behaviour. This scale PADS - Form A consists of 10 items—the first half are dependency items while the other half denotes independency (or lack of dependency). The pupils are required to read the item and tick mark the item in one of the three columns: 'Mostly', 'Sometimes', and 'Rarely' as he thinks represents his position. The items are respectively scored 2, 1, 0 for 'mostly' 'sometimes', and 'rarely' for independence items; 0, 1, 2 for 'mostly', 'sometimes', and 'rarely' for dependence items. The total of all scores will be dependency score for the individual.

(4) The Scale PADS - Form B consists of ten items which the respondent checks if they are true in his case. Each item has a scale value. The dependency score is the total of the scale values of the items checked; positive scores show dependency, while negative scores indicate independency.

(5) The Pre-Adolescent Initiative Questionnaire is used to measure initiative among pupils. This Questionnaire consists of six situations, and each situation has an open ended question at the end. The respondent is asked to guess what the pupil involved in the situation did. In this test a pupil can get 18 as the highest score and 0 as the lowest score.

(6) The Achievement Motivation Inventory is used to measure the achievement motivation among the pupils. This inventory is developed to provide a simple and objective measure of achievement motivation. It consists of 22 items descriptive statements of pictorial stimuli which
were tried out in connection with the development of the thematic apperceptive measure of n Ach. Each item is followed by six alternatives of which the respondents are required to check one. Two each of the six alternative responses were achievement-related, task-related, and unrelated to achievement, and are designated respectively as AR, TR, and UR for the sake of reporting.

The subjects are asked to check only one alternative. The obtained response to an item, therefore, could be either achievement-related, or task-related, or unrelated to achievement. Each subject is assigned four scores. The number of AR, TR, and UR responses checked, formed AR, TR, and UR scores. Each AR was scored as +1 and UR as -1. The latter was subtracted from the AR scores to obtain the total AMI scores.

(7) The value Orientation inventory is used to measure the pupils' scheme of his surrounding world with particular reference to the following:

(a) The Pupil's perception of his peers' expectation from him for success at examination, for success in some co-curricular competition, and for vocational success.

(b) The pupil's perception of his teachers' expectations of success from him in the area indicated.

(c) Similarly, the pupils' perception of his father's expectation.

The value orientation inventory has three parts: one each for qualities in one's best friends, most liked teacher and father. Each part contains five pairs of qualities. The subjects are required to select and check one quality in each pair. Each quality is numbered.
In this study, authorised Tamil translation of all the above interaction variable tests made by Sri Ramakrishna Mission Vidyalaya Teachers College, is used.

G.B. Shah's non-verbal group intelligence test is used to measure the mental abilities of the pupils. This test is evolved specially in order to measure the mental ability of pre-adolescent pupils up to the age group 14 years.

As the study needs the pattern of income for the parents of the pupils selected for this study, the investigator has developed a socio-economic scale to get the particulars of income from the pupils.

To measure the academic achievement of pupils in English, Science, and Social Studies four achievement tests are to be administered on the pupils. These four tests were constructed by a group of expert teachers in the respective subjects and they did not participate in the experiment in any form. The tests were constructed on the principles of objective type tests.

B. PROCEDURE

Eighteen secondary grade training teachers who were teaching Standard VII were selected on the basis of (1) length of teaching experience, (2) Sex, (3) teaching English, Science and Social Studies in VII Standard, (4) Similar patterns of classroom verbal interaction and (5) willingness to participate in the investigation. The eighteen teachers thus selected were then randomly
assigned to two groups - twelve for experimental group $B_1$ to $B_{12}$ and six for control group $C_1$ to $C_6$. The VII Standard both boys and girls who were taught in their respective schools by the above selected teachers were chosen.

The Flanders Interaction Analysis Category System (FIACS) was used as the foundation to collect data on verbal teaching behaviour patterns. The interaction variable tests were administered to find out the initial scores of the pupils in tests like Pre-Adolescent Adjustment Scale, Initiative Questionnaire, Classroom Trust Schedule, Dependency Scale - Forms A and B, Achievement Motivation Inventory and value Orientation in addition to Non-Verbal Intelligence test and achievement test ($T_1$) in English, Science and Social Studies. The scores obtained by the pupils were related to the initial teacher verbal behaviour.

Then the Classroom Behaviour Training for the experimental group teachers was arranged. The aim was to bring about systematic differences in the verbal teaching behaviour patterns of experimental group teachers. Therefore, the following arrangements were made.

(a) The twelve experimental group teachers were given three days classroom Behaviour Training through an orientation Training Programme. This training consisted of the orientation of the experimental group teachers in the theory of interaction analysis process and in the development of skills in observation, coding, matrix preparation and Analysis.
(b) The six control group teachers were kept away from this knowledge. They were asked to follow their traditional and usual way of teaching.

Soon after the Classroom Behaviour Training of teachers was over all the experimental group teachers were asked to observe classes within themselves in their respective schools for about two months till the experiment commenced. This practical training given to the experimental group teachers reinforced their knowledge about interaction analysis process and developed their indirect verbal behaviour.

The selected teachers in this investigation taught three English Lessons, six History lessons and six Science lessons as planned before, with uniform speed, similar teaching aids and lesson plans, throughout the experimental period of eight weeks. Thus, in general, in a given day all the teachers belonging to control and experimental groups taught the same portion of a lesson in a class period of 40 minutes duration.

During the experimental period the investigator went to the classroom, observed and coded the classroom interaction. Thus, for every teacher four observations were made and corresponding matrices were prepared. Again, every week end, the experimental group teachers were given feedback and reinforcement. This phase provided data on verbal teaching behaviour patterns of experimental and control group teachers.
Every alternate week ends, achievement tests in English, Science and Social Studies were administered to all the students. Thus three consecutive test administration ($T_2$, $T_3$ and $T_4$) was made and these provided data for pupils' academic achievements.

Immediately after the experimental period was over all the interaction variable tests were administered on all the pupils once again. These tests provided data for post-test.

F. FINDINGS AND OBSERVATIONS

In this study the pre-test scores and the post-test scores are subject to different types of statistical analysis, and the results are also enumerated. To measure the change in teacher behaviour, individual matrix, master matrix and master-master matrices were prepared for experimental and control group teachers, and the I/D and i/d ratios were also found out.

(1) The mean I/D ratio of the Experimental group teachers before the experiment was 0.11 and after the experiment was 0.44 with a 't' value of 2.3 which is significant at 5 percent level. Flanders (§970) wrote that I/D ratio above 0.40 was reasonably good.

In the case of control group teachers the mean value of I/D ratio was 0.07 before and 0.08 after the experiment, with a 't' value of 0.91 which was not significant.
(2) The mean value of i/d ratio of the experimental group teachers before the experiment was 0.60 and 3.17 after the experiment, with a 't' value of 15.3 which is highly significant at 1 percent level. In the case of control group teachers the mean value of i/d ratio before the experiment was 0.50 and 0.32 after the experiment, with a 't' value of 2.0 which was not significant.

(3) The average percentages of categories 1 to 10 of Pre and Post observations of Experimental and Control group teachers were as follows:

(a) In category 1, in the experimental group there was no occurrence of events, (0.0%) at the initial stage. After the experiment the percentage was 0.5. In the control group the percentages were 0.0 before and 0.02 after the experiment.

(b) In category 2, in the experimental group there was 0.6% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 7.9. In the case of control group the percentages were 0.4 before and 0.50 after the experiment.

(c) In category 3, in the experimental group there was 2.3% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 10.2. In the case of the control group the percentages were 2.0 before and 2.3 after the experiment.
(d) In category 4, in the experimental group there was 4.7% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 5.4. In the case of control group the percentages were 3.2 before and 3.6 after the experiment.

(e) In category 5, in the experimental group there was 67.3% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was only 45.4. In the case of control group the percentages were 72.9 before and 66.9 after the experiment.

(f) In category 6, in the experimental group there was 3.4% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 5.6. In the case of control group the percentages were 3.5 before and 6.9 after the experiment.

(g) In category 7, in the experimental group there was 2.1% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was only 0.3. In the case of control group the percentages were 1.2 and 1.9 before and after the experiment.

(h) In category 8, in the experimental group there was 6.7% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 13.3. In the case of control group, the percentages were 5.1 before and 10.9 after the experiment.
(i) In category 9, in the experimental group there was 1.3% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 6.4. In the case of control group the percentages were 1.2 before and 1.3 after the experiment.

(j) In category 10, in the experimental group there was 11.5% of occurrence of events at the initial stage. After the experiment the percentage of occurrence was 5.0. In the case of control group the percentages were 10.5 before and 5.7 after the experiment.

From the above analysis of data the finding is that the events of occurrence in categories 1, 2, 3 and 4 have shown improvement in the case of experimental group after the experiment. In the case of control group no such difference could be observed. These categories represent indirect behaviour and positive reinforcement of teachers. Therefore, the conclusion from these differences is that verbal behaviour of the experimental group teachers has been changed from direct to indirect, but the control group does not reveal a significant measure of differences.

In category 5, a phenomenal decrease of the percentages level signifies that teachers in the experimental group engaged in less talk, and this made greater participation by the pupils possible. In the case of control group no significant difference was evident. Therefore, the conclusion from these facts is that the direct verbal behaviour of experimental group teachers
was reduced to a level which allowed greater opportunity for pupil participation.

In category 7, a considerable decrease of the percentage level showed the decreasing trend of negative social influence on the part of the experimental group teachers. But, in the case of control group no such finding was evident. The conclusion from these data is that the experimental group teachers have developed positive social skills.

In categories 8 and 9, an appreciable increase of the percentage levels in the experimental group signified that owing to greater student participation there would be a better classroom interaction. In the case of control group no such finding was noticed.

The conclusion from the above data is that without Classroom Behaviour Training, change in teacher behaviour is not possible through ordinary classroom practices. This conclusion confirms one of the hypotheses in this study that 'properly planned Classroom Behaviour Training with definite inputs will change teacher verbal behaviour'.

On further analysis of the master-master matrices of both experimental and control groups, certain aspects of pupils performance in the entire classroom interactions was found out. First, in the experimental group the Percent Pupil Talk (PPT) was only 8.0 at the initial stage and after Classroom Behaviour
Training and feedback the percentage rose to 19.7. This result is in complete agreement with the norm of the Indian Classrooms (19%) and is very close to American norm of 20%. But, in the control group no such finding was noticed excepting a relatively lesser increase in the percentage from 6.3 before and 12.2 after the experiment.

Secondly, Pupil Initiation Ratio (PIR) in the experimental group increased from 16.2 during Pre to 32.5 during post observation. This increase is rather, nearer to the norm 34 of American classrooms and much higher than the norm of 11 of Indian classrooms. In the case of control group a declining trend from 19.0 to 10.6 was noticed.

Thirdly, the Teacher Question Ratio (TQR) and Teacher Response Ratio (TRR) also increased in the experimental group from Pre to Post observations. The TQR rose from 6.5 to 12.6 and the TRR from 34.5 to 76.0. This noticeable change in teacher behaviour was definitely due to better pupil performance in the classroom. In the case of control group the TQR changed from 4.2 to 5.1 and the TRR changed from 33.8 to 24.1.

The effect of the Classroom Behaviour Training and feedback in the case of experimental group teachers was studied by taking into consideration the improvement in various cells in the master matrices of each teacher. The relationship between the categories, 1, 2, 3 and 8, 9 was separately studied by analysing
the respective cells. The inter-relationship of cells 4-4, 5-5, 8-8 and 9-9 was studied clockwise, anticlockwise and diagonally. Above all, the master matrix of each teacher, both in the Pretest and Post test was thoroughly analysed by taking into account every cell in the matrices. However, these analyses revealed that the experimental group had a better classroom interaction between the teachers and pupils.

Therefore, the conclusion derived from the above findings is that the change in teacher verbal behaviour will ultimately influence changes for the better in pupils' performance. This conclusion confirms another hypothesis of this study, that 'sustained change in teacher verbal behaviour will lead to better changes in pupils' performance'.

When the interaction variable tests were statistically analysed, encouraging results were found out. In the Pre-Adolescent Classroom Trust Schedule, the experimental group pupils showed a significant improvement which could be seen from the change of their mean values from 24.0 to 26.1 with a 't' value of 6.7049. In the control group the change in their mean values was from 24.7 to 24.8 and the difference between mean values was not significant. From these data it was evident that among the experimental group pupils the level of classroom trust rose higher as a result of changes in teacher behaviour.
In the test of value orientation the pupils of the experimental group showed a significant improvement which could be seen from the change of their mean values from 8.5 to 10.8 with a 't' value of 9.2332. In the case of control group the change in their mean values was from 2.8 to 3.2 and the difference between mean values was not significant. Moreover, the value orientation related to teacher rose to relatively higher level as compared with what was evident in the control group. This would suggest that the impact of the teacher behaviour on the pupils' value judgement regarding the teacher was distinctively positive.

In the Pre-Adolescent Adjustment Scale the experimental group pupils showed a significant improvement which could be seen from the change of their mean values from 18.1 to 21.93 with a 't' value of 8.8986. In the case of control group the change in their mean values was from 18.6 to 18.09 and the difference between mean values was not significant. This finding would suggest that changed teacher behaviour effects a better adjustment among the pupils.

In the Pre-Adolescent Dependency Scale (Form A) the experimental group pupils showed a trend towards dependency over teachers. This could be seen from the change of their mean values from 4.7 to 6.8 with a 't' value of 12.54. But in the control group the change in their mean values was from 7.1
dependency is a part of socialization Flanders (1960) has written, that the dependent child is influenced by the teachers attitudes. This finding would suggest that due to indirect teacher behaviour, dependency on the part of pupils is increasing. This result has been acknowledged by the Pre-Adolescent Dependency Scale (Form B). In this scale, the experimental group pupils obtained a mean score of 5.1 after the experiment from the mean score of 3.2 during before experiment, with a 't' value of 3.8422. But, in the control group the change in their mean values was from 2.5 to 2.6. This result adds strength to the finding that the level of dependency rises higher as a result of changes in teacher behaviour.

In the Pre-Adolescent Initiative Questionnaire, the experimental group pupils showed a significant improvement which could be seen from the change of their mean values from 4.5 to 7.3 with a 't' value of 8.9772. But, in the control group the change in their mean values was from 5.1 to 6.5. Since the value of the mean score recorded by the experimental group is highest of all values, and is nearly three counts - above the mean value before experiment it would be reasonable to conclude that evidence of greater initiative in the experimental group is attributable in large measure to changed teacher behaviour.

In the Achievement Motivation Inventory test the experimental group pupils showed a significant improvement which could be seen from the change of their mean values from 5.42
to 6.46 with a 't' value of 4.0372. But in the control group the change in their mean values was from 5.4 to 5.9 and the difference between their mean scores is not significant. This would suggest that the better achievement motivation in the experimental group is due to a greater extent to changed teacher behaviour.

In the achievement tests in English, Science and Social Studies the experimental group showed a phenomenal improvement. This could be seen from the difference of mean scores between pre-test and post-test scores. In English, the pre-test mean score was 85.1 and the post-test mean score was 56.3 for the experimental group. Whereas for the control group the pre-test mean score was 49.8 and the post-test mean score was 48.9. In Science, the pre-test mean score was 51.8 and the post-test mean score was 63.1 for the experimental group. Whereas for the control group the pre-test mean score was 50.4 and the post-test mean score was 49.6. In social studies, the pre-test mean score was 48.9 and the post-test mean score was 67.5 for the experimental group. Whereas for the control group the pre-test mean score was 51.4 and the post-test mean score was 50.0. On all these tests, the differences between mean scores are highly significant only in the experimental group. This indicates that there has been a distinct improvement in the achievement of the experimental group, which may be attributed to changed teacher behaviour.
Therefore, the conclusion derived from the above factual details is that the change in teacher behaviour, from direct to indirect, will influence positively the interaction and achievement of the pupils. This conclusion confirmed the last hypothesis of this study that 'the indirect verbal behaviour will bring better classroom dynamics, leading to better achievement motivation, value orientation, classroom trust, dependency, initiative, adjustment and academic achievement in the pupils'.

Moreover, in the statistical analysis described in this investigation a series of factual details have been evident. These may be described under the four main heads of intelligence measurement, measures of pupil interaction, high and low achievers in relation to interaction variables, and correlation co-efficients.

(1) Between the experimental and control groups, no significant difference in the mean values of their intelligence quotients were evident. The mean value of the experimental group pupils was 107.01 and that of the control group pupils was 109.0. Therefore for practical purposes the two groups are considered to be comparable with regard to levels of intelligence.

(2) Then, the three achievement tests and seven interaction variable tests were administered and the mean scores of the control and experimental groups analysed. In all the three achievement tests, pupil achievement was found to be higher in the experimental as compared with the control group. Further, in the experimental
group, during the three stages intervening between a steady and gradual improvement in score level was evident. This was a common feature to the results of the three achievement tests. An important fact is that improvement recorded by the experimental group over the three stages was more accelerated than it was in the case of the control group. A special feature here is the very high mean score level in social studies making it possible to suggest that the influence of the teacher in social studies is stronger and more pronounced. These differences between the two groups are attributable to changed teacher behaviour.

Again, in all the seven interaction variable tests, such as, PAAS, PACTS, PADS (Form A and B), PAIQ, AMI and VO, the level of pupil interaction was noticed to be higher in the experimental as compared with the control group. The result of the dependency scale is quite opposite to the findings of American classroom setting. In this investigation it has been found out that due to indirect teacher behaviour, dependency of pupils on teachers is greater. This does not, however, vitiate the general finding that changed teacher behaviour makes possible better classroom dynamics.

(3) In order to find out the answer for the question what sort of pupils - high achievers or low achievers - gained more as the result of change in teacher behaviour, in the experimental group from the post test scores in achievement tests 30 high achievers (top rank) and 30 low achievers (bottom) have been
chosen and their attainment in seven interaction variable tests have been analysed. In this connection it has been found that (a) the low achievers gain more than the high achievers in classroom trust, (b) the low achievers gain more than the high achievers in the case of value orientation, (c) the high achievers gain more than the low achievers in adjustment, (d) the high achievers gain more than the low achievers in dependency (Form A), (e) both the high and low achievers do not gain much in dependency (Form B), (f) the low achievers gain more than the high achievers in initiative and (g) both the high and low achievers do not gain much in achievement motivation.

(4) A further analysis of data has been carried out in order to determine whether the gains attained by the experimental group pupils and which have been attributed to changed teacher behaviour could be attributed also to some other factors such as intelligence levels, sex differences, or socio-economic status of parents.

It has been noticed that there is hardly any significant positive correlation between pupils of high, medium and low intelligence and the mean scores of the experimental group in the achievement and classroom interaction tests. Hence the possible influence of differences in intelligence has been ruled out.

Intelligence test scores of boys and girls, correlated with achievement test scores in English, Science and Social Studies, likewise showed poor correlation, not significant. This would
rule out the influence of differences in the abilities of boys and girls over their respective levels of achievement.

Correlation between the scores of a select sample of pupils belonging to high and low income families (midpoint Rs. 6,000/-) with the scores in the achievement and classroom interaction tests were found to be either negative or low for the vast majority. It was thus evident that socio-economic status is not related to classroom dynamics.

On all four counts, therefore, the possible influence of other factors was ruled out, adding strength to the conclusion that changed teacher behaviour is the most significant single factor associated with improved classroom dynamics.

G. RESULTS AND DISCUSSION

Several points emerge from the findings recorded in connection with changing teacher behaviour. In the first place, it appears feasible to develop the desired classroom interaction patterns even in experienced teachers. Classroom Behaviour Training, based on interaction analysis, used in the present study may be considered as one of the strategies which have been found to be more effective in accomplishing certain objectives as compared with the conventional teaching programme. The experimental group teachers talked less, were more responsive to pupils encouraged more pupil participation and had more pupil initiative than the control group. The results are in agreement with findings
reported by Amidon and Powell (1966), Pareek and Rao (1971a), Pangotra (1971) and Jangira (1972). This implies that 'Classroom Behaviour Training' based on interaction analysis, can be used as one of the training strategies effectively, once the conceptual basis of the interaction patterns is prepared, it is operationalised into the behaviour patterns, an objective, reliable and valid system of observation of classroom teaching is developed.

Secondly, interaction patterns acquired during training were sustained for more than twenty weeks after the training was completed. The study of Jangira (1972) also bears testimony to this effect. This means that 'the effects of intensive Classroom Behaviour Training are sustained and carried over, to the actual teaching in the field'.

Thirdly, it may be said, out of the findings in this study, that there is evidence to conclude that PIACS training did help the teachers to change their verbal behaviour in the classroom. Similarly, a variety of systems designed to analyse pupil-teacher interaction in classroom have been developed by Withall (1949), Anderson (1939), Smith (1960), Aschner (1959), Hughes et al (1950a), Medley and Mitzel (1958) and Amidon and Flanders (1963) among others. As a result of training, they changed significantly in the direction of using more and more acts of praising and encouraging the students for more participation, and accepting and building up the ideas of the students. There was also a tendency on the part of teachers who underwent training to use less lecturing, directing
and criticizing. As a result, the indirect/direct influence ratios of experimental group increased showing more indirect influence.

In addition, the present study has revealed that the students who were taught by the teachers trained in using indirect behaviour scored high in all tests as compared with their counterparts working under teachers not given any training in this technique (using indirect behaviour). Filson (1957), Ishier (1965), Johns (1966), Morrison (1966), Shiden (1966), Soar (1966), Emmer (1967), Furst (1967), Pankratz (1967), Samph (1967), Weber (1968) have also consistently reported on their basis of their studies, that the indirect behaviour on the part of teachers results in students achieving better. Apart from academic achievement, Weber (1968) found that verbal activity is significantly associated with indirectness of the behaviour on the part of pupils. Whereas Emmer (1967) has categorically stated that his experiment showed that the teacher could be trained to use more category 3 statements and this resulted in more use of category 9. These findings support Rosenshines's (1970) general conclusion after reviewing nine different studies on 'criticism' (category 7). Sniden's (1966) study reveals that though adjusted achievements in high school physics was not found highly related to indirect teacher behaviour, there was significant positive correlation between indirect teacher behaviour and pupil attitude. The studies by Flanders (1970, a,b,c,d,e), Penny (1969), Medly and Mitchel (1959), Thompson and Bower (1968) and Tisher (1968) have
shown positive correlation. Out of those nine studies, two yielded significant results (Flanders, 1970, Sixth grade and Fenny, 1969).

In the present study the experimental group teachers reduced the use of category 7 (criticism) after the Classroom Behaviour Training. This reduction of Category 7 by the experimental group teachers was responsible to a greater extent for establishing a better classroom dynamics. Similar to this finding, studies related to criticism and pupil achievement were investigated by many scholars. Of the seventeen studies reviewed by Rosenshine, one showed significant negative, linear correlations (Flanders, 7th grade, 1970), seven yielded significant negative relationships on at least one criterion measure (Anthony, 1967; Harris et al, 1968; Hunter, 1968; Perkin, 1965; Soar, 1966), one showed significant positive relationship on at least one criterion measure (Harris and Seper, 1966), and eight studies showed non-significant relationship (Cook, 1967; Flanders, 2nd grade, 1970; Flanders, 4th grade, 1970; Flanders, 6th grade, 1970; Flanders, 8th grade, 1970, Morsh, 1956; Wallen, 3rd grade, 1966; Wright and Nuthall, 1970). Studies of Hunter (1966), Perkins (1965), Wallen (1966) did not find significant correlations between mild criticism and academic control and student achievement.

However, some other studies showed contradictory findings in this area. Three studies that did not find any significant relationship between teachers' making use of student ideas and student achievement and attitude are by Sniden (1966), Guggenheim
In the studies, Perkin's (1965) and Spaulding's (1966), mild criticism was positively related to achievement. With the exception of the findings of the above studies, it can safely be concluded that the results of the present study are in line with the other studies conducted by the researchers in different countries.

H. EDUCATIONAL IMPLICATIONS

(1) Implications for classroom teachers:

The significant differences in achievement support the generalisation that the teaching method leading to 'indirect' teaching behaviours is likely to lead to better pupil achievement and dynamics. Indirect influence stimulates verbal participation by pupils and discloses to the teacher, pupils' perception of the situation. Such an approach not only provides the teacher with more information about pupils' understanding of a particular problem, but also often encourage students to develop more responsibility to diagnose their difficulties and for suggesting a plan of action.

Direct teacher influence increases pupil compliance to his opinion and direction. It conditions students to seek the teacher's help and to check with the teacher more often to be sure that they are on the right track.

The other implication for classroom teachers is that the major differences in the use of influence between the teachers whose students learnt the most and those whose pupils learnt the
least is illustrated by the use of actions classified under the categories 1, 2, and 3. The direct teachers lack those skill of communication that are involved in accepting ideas, clarifying and making use of the ideas and feelings of the pupils. The indirect teachers have those skills even though they are not in use most of the time. Although those skills are used sparingly, they are employed when needed.

With these increased social skills there is less need for direction and criticism. The most direct teachers given twice as many directions as the most indirect teachers, and use of criticism is also far more. In other words, such teachers have to work hard to keep his pupils working successfully.

The difference between the direct and indirect teachers may be interpreted in terms of the different roles the teacher is able to play in the classroom. The shift in the interaction or flexibility were much less in the case of direct teachers as compared to indirect teachers.

(2) The Implication of Interaction Analysis:

The FIAC system of interaction analysis is not yet a finished research tool because it is primarily concerned with the social skills of classroom management through verbal communication and is content free. This means that the conclusions are restricted by the limitation which are inherent in the system. These limitations are: (1) the coding of classroom verbal communication provides a relatively gross description of a small
portion of classroom interaction. Most of the events which go on in the classroom are counted in terms of relatively broad categories, (ii) terms such as 'teacher indirectness' and the contrast between direct and indirect teaching are even more abstract and more general than the coded events themselves. Such terms are relative, are useful only to compare carefully controlled teaching situations, and easily lead to an over simplification of complex, inter-related events, (iii) the analysis of sequential pairs of events which are tabulated in a 10 x 10 matrix does specify the probability with which pairs of coded events occurred during the observation periods. The utility of such information depends a great deal on the research design, particularly how time periods are to be combined into a single cumulative display and the relationship of these time periods to the purposes of classroom teaching. Though this is a time consuming process, it reveals the existing patterns of teacher influence in the classroom, (iv) without subscribing the categories, the PIAG system is probably most useful for describing the balance between teacher initiative and teacher response and for tracing this balance as it varies with time, instructional purposes and classroom settings.

Training the observers in the system of interaction analysis and maintaining their reliability are two main success points of this system.
Many factors of good and poor teachers are shown by researches done in this area. Some related implications for teacher education programmes are discussed below.

If it is true that good teachers are good because they view teaching as primarily a human process involving that human relationships and human meanings, then it implies that we should spend at least as much time exposing and sensitising teacher candidates to the complexities of personality structure as we do to introducing them to the structure of knowledge itself.

If it is true that teachers with a positive view of themselves and others are good teachers; it suggests that more opportunities be provided for teacher candidates to acquire more positive self-other perceptions. If one values the self-concept idea then there are numerous ways of encouraging a more positive self-other perception through teaching strategies aimed at personalising what goes on in a classroom. Indeed, Jersild (Strom, 1971) has demonstrated that when "teachers face themselves", they feel more adequate as individuals and function more effectively as teachers.

If well-informed teachers are good teachers, then it is clear that we must neither negate nor relax our efforts to provide them with as rich as intellectual background as possible. Teachers are usually knowledgeable people, and knowledge inculcation is the aspect of preparation with which teacher education has been traditionally successful. Nonetheless, teachers with inadequate
grip on content rarely fail, it is more often, because they are unable to communicate what they know resulting poor understanding on the part of the students. This implication is very important for teacher education programmes.

If teacher who can communicate what they know in a manner that makes sense to their pupils are good teachers, then teacher candidates must, in the most effective way, be assisted in doing this Communication is not just the process of presenting information, it is also a function of discovery and development of personal meaning. This can be done, by developing some 'theories of presentation' or 'theories of teaching' rather than exposing the teacher candidates of theories of learning and personality. This can be done with the help of experts in this field.

There seems to be sufficient evidence to suggest that whether the criteria for good teaching are developed on the basis of pupils and/or peer evaluation or in terms of pupil achievement gains, there are characteristics between both which consistently overlap. That is, the good teacher is able to influence both pupil feeling and achievement in positive ways. Research has yet to be made to determine, with whatever research tools available, what in the first place marks them good teachers.

(4) Implications for Pre-service and Inservice Education:

Teachers who are qualified in a content area should be exposed to some type of human relations training that will help them to acquire skills as per objectives. Here (i) the teachers
are exposed to the use of social skills of accepting, clarifying and using the ideas of the pupils in planning work and diagnosing difficulties; (ii) knowledge of those acts of influence that restrict pupil reactions and those that expand pupil reactions, (iii) understanding of a theory of instruction that he can use to control his own behaviour as he guides classroom communication.

To fulfil these objectives, there should be supervised practice. The persons supervising this practice should be able to provide the practice-teacher with information about his own behaviour. This can be done by using the technique of interaction analysis. The supervisor here is cautioned to acquire an indirect approach.

Different patterns of influence can be tried out with practice teachers. He may be allowed to introduce material with a highly direct approach and on another occasion he may try with an indirect approach. A trained observer can collect the data, tabulate and discuss results. If all practice-teachers are trained to become reliable observers so that they can alternate between the roles of observers and the teachers, this work will be facilitated.

Significant differences in classroom dynamics including academic achievement support the generalisation that teaching methods leading to 'indirect' teacher behaviour is likely to lead to better pupil achievement. Besides, teachers exerting indirect influence get a 'better picture of pupils' perception as the latter's
verbal participation increases in such conditions. Moreover, indirect teacher influence leads to increased pupil compliance resulting in more and more pupil dependence. Close supervision of pupils is necessitated by such teachers if they desire continuous student progress.

The present study has revealed that the pupils who studied under the teachers trained in the indirect pattern of communication scored higher than those studied under teachers having direct pattern of communications. This reinforces the hypothesis that environment plays a key role in the teaching-learning process.

I. **SUGGESTIONS FOR FURTHER RESEARCH**

Research on teaching has, for a long time, been conducted, by standing outside the classroom and therefore, actual classroom behaviour of teachers has been side tracked. The results are naturally unhealthy. The concept of teaching remains vague with the result, classroom teaching remains ineffective in the majority of our classrooms. Serious concerted attempts will have to be made in research on teaching in general and teacher behaviour in particular, if the desired objectives of teaching are to be realised. For future research on teaching a few suggestions are outlined in this section, but are by no means exhaustive. The ingenuity of the research workers and actual needs of the practitioners in the field will give rise to more and more fruitful research in the area. It is in this light that the following suggestions regarding research on teaching are to be viewed.
This study throws light on further problems in teacher behaviour area which may be taken up by some research scholars. The following suggestions for further research may be considered.

1. A study of teacher behaviour of lady teachers and their impact on pupils in the elementary/high schools.
3. Teacher-pupil interaction in authoritarian and democratic classrooms.
4. Teacher behaviour of experienced teachers and new entrants in Elementary/High Schools.
5. Teacher behaviour and its effect on delinquent children.

The deeper implications of this study will naturally lead to a consideration of long term research over certain aspects of teacher behaviour and pupil response. Inevitably this would involve a series of longitudinal studies, the scope of which may be outlined as follows:

1. What are the likely influences of maturation over student reaction to teacher behaviour and vice-versa?
2. Is the principle of reinforcement necessary in order to stabilize the effects of change in teacher behaviour over a period of time?
3. What is the likely duration over which change in teacher behaviour may be expected to last?

4. Is there any impact of certain intervening variables such as Social change, educational reform and syllabus on teacher behaviour?

5. What are the different personality variables of pupils that are subject to be modified on account of change in teacher behaviour?

In the overview of work done in this area, it was noticed that studies conducted so far are scanty; more studies will have to be conducted. Research on teaching and teacher behaviour is to provide, in the first place, meaningful relationships between 'presage - process' and 'process - product' variables, the latter being badly needed to provide the teachers effective teaching behaviours. It is also imperative to conduct studies in the modification of classroom behaviour of teachers. Potentiality of different techniques like simulated teaching, micro-teaching, and interaction analysis will have to be studied and perhaps modified to suit Indian conditions to accomplish this task.

Studies should be carried out to find out the relationship between pupil characteristics and the classroom behaviour of teachers along with studies of the relationship between teacher characteristics and his classroom behaviour. Experimental studies should also be carried out to further examine the hypotheses generated by the above studies. Another important area of research on teaching is the relationship between the different patterns of classroom
behaviour of teachers and pupils' attainment in relation to different instructional objectives. Studies can also be taken up to find out the relationship between situational variables like organisational climate and attitude of the administration and community towards school and teachers. Studies should be replicated in different parts of the country. These studies should aim at gathering knowledge about the kind of teacher behaviour that will be helpful in realising different instructional objectives, in a variety of pupils.

If the changes take place in the teaching and learning process in view of the findings of these sample researches above mentioned, surely, the 'Destiny of India' can be shaped in her classrooms.

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