

CHAPTER-III

PROBLEM, PLAN AND PROCEDURE

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## CHAPTER III

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### PROBLEM, PLAN AND PROCEDURE

#### III.1 THE PROBLEM

In the previous chapter previous studies conducted in India and abroad were discussed. Now in this chapter design, plan and procedure of the experiment will be discussed.

The task of improving class-room teaching is also an urgent need of the present times. It is assumed that the purpose of teaching is to promote learning and learning is significantly influenced by teachers and their class-room behaviours.

Hence the relationship between the behaviour of teachers and that of his pupils is the central concern. If the effectiveness of a teacher is to be evaluated, it can be measured by measuring the impact of teachers behaviour on the development of pupils. Interaction analysis is the recently deve-

loped approach to study the teaching process. This technique helps to identify certain teaching activities. These activities, for example, are the teachers' use of ideas and opinions of pupils in his own statements avoiding criticism and use of positive reinforcers.

Investigations in the area of teacher effectiveness led the investigator to limit this study only to an analysis of some outcomes of specific teacher class-room behaviour. Some variables which provide valid relationship between teacher behaviour and outcome of his behaviour, have been studied.

It is a necessity in the field of education to study the effects of class-room interaction. Class-room activities not only affect the achievement of the pupils, but also affect the all-round development of a child. In spite of that, today, it seems that very few attempts have been made to study class-room activities. Hence it is essential to have more efforts in the direction of modifying instruction in the class-room and to make teaching more effective. It is a challenging task not only for research workers and teacher educators, but

also for all the persons connected with education.

In this investigation the investigator has tried to study some of such effects like adjustment towards home, school, peers, teacher, general adjustment, class-room trust, initiative and academic achievements.

The problem for the present study is as follows:

"CHANGING TEACHER BEHAVIOUR IN THE TEACHING OF SCIENCE AND STUDYING ITS EFFECTS ON PUPILS"

### III.2 DEFINITION OF TERMS

Certain terms are used in this study, hence it is necessary to define them. The present study is based on Flanders Interaction Analysis Category System. Flanders (1970) defines them as follows:

#### Interaction Analysis

Interaction analysis is nothing more than an observational technique which can be used to obtain a fairly reliable record of spontaneous verbal responses. Much of teachers' influence is exerted

by verbal statements. Interaction analysis does not refer to one system but to many systems for codifying spontaneous verbal communications. The analysis of interaction helps to study patterns of teaching and learning. (Flanders, 1970)

### Teacher Classroom Behaviour

The phrase 'Teacher Classroom Behaviour' in the present study means 'teacher's influence patterns which he exerts in the classroom while teaching'. The basic premise of interaction analysis is the belief that the teachers' classroom verbal behaviour creates a particular type of social emotional climate in the class-room which has a direct effect on the attitude and behaviour of pupils. (Flanders, 1970)

### Direct Influence

'Direct influence' consists of stating the teachers' own opinions or ideas directing the pupils' action, <sup>ci</sup>criticising his behaviour, or justifying the teachers' authority or use of that authority.

This concept refers to actions taken by the teacher which restrict student-participation. Expressing one's own views through lecture giving directions, and criticizing with the expectations of compliance tend to restrain pupil participation (Flanders, 1970). Traditional teachers behaving in a restrictive way, were included in the direct or controlled group of the present study.

#### Indirect Influence

Indirect influence consists of soliciting the opinions or ideas, applying or enlarging the opinions or ideas, praising or encouraging the participation, or clarifying and accepting feeling of pupils. In other words, it is defined as action taken by the teacher which encourages and supports students' participation (Flanders, 1970). The indirect or experimental group for the present study, consisted of teachers trained in indirect behaviour.

#### Class-room Behaviour Training

The training designed to change the class-room interaction patterns of the teacher through syste-

matic feedback based on Flanders Interaction Analysis Category System (Flanders, 1970).

### Feedback

The information, a teacher, obtains about his class-room interaction patterns on the basis of observation of his teaching (Flanders, 1970).

### Class-room Climate

The phrase 'class-room climate' refers to the generalized attitudes towards the teacher and the class that the pupils share in common inspite of individual differences. These attitudes emerge out of and thus owe their origin to, the class-room social interaction. Through participation in class-room activities, pupils soon develop some common expectations regarding the teacher behaviour and their collective attitude towards their own class. These expectations influence the social atmosphere or climate that appears to be distinctly existent and fairly stable, once established. In this way the phrase 'class-room climate' is merely a short hand

reference to those qualities that consistently predominate in most teacher-pupil contacts. Thus study of teacher behaviour through class-room interaction analysis becomes a study of class-room climate as well. (Flanders, 1970).

#### Class-room Interaction Analysis

Class-room Interaction Analysis can be described as a technique for capturing quantitative and sequential (and hence qualitative) dimensions of teacher-student verbal behaviour in the class-room. As an instrument, however, it does not measure everything that occurs in the class-room. Interaction analysis has a perspective in its design of capturing the dynamics of class-rooms. Interaction analysis is concerned with the verbal communication between the teacher and the students, that is directly related to the social emotional climate of the class-room. (Flanders, 1970)

#### Pupils Achievement

It means the extent of knowledge or skills, which have been acquired and retained by the pupils.

The student achievement is tested by administering test based on units taught.

#### Teaching

The definition offered by Smith (1960) is "Teaching is a system of actions intended to induce learning". This definition makes it possible to examine the teachers actions without reference to the learner, since the 'intent to induce learning' is significant. Learning is included in the teaching process. Teaching has been confined as interaction, where interaction is used in its dictionary sense of mutual or reciprocal action or influence.

#### Adjustment

Definition of adjustment given by Pareek and Rao was accepted for the purpose of the present study. The authors defined adjustment as "the individuals' orientation towards his parents, teachers, peers, school and himself in terms of satisfaction he derives from his interactional relationship with the significant others and himself". (Pareek and Rao, 1970, p.2)

### Class-room Trust

Pareek and Rao define class-room trust as "the pupils feeling free to interact with the teacher, to discuss with him day to day class-room problems, e.g. the teachers' action not convenient to or liked by pupils, the feelings aroused in the pupil by some actions of the teacher, the pupils' voluntary help to the teacher for some class-room problems". (Pareek and Rao, 1970, p.9)

### Initiative

Initiative is defined by English and English (1958) as "The tendency to start actions independently, such independence may or may not involve originality".

## III.3 THE SCOPE OF THE STUDY

The present study intends to study the effects of change in the behaviour patterns of teacher on the development of the pupils. In the development

of pupils many areas are taken into considerations - pupils academic achievements, his adjustments towards the home, school, peers, teachers and general adjustment. Over and above pupils initiative and class-room trust are also included as variables.

The behaviour patterns of the teachers are measured by observing and recording sequential acts quantifying and analysing teaching-learning process of interaction in the class-room. The kind of learning is based on the type of teacher behaviour existing in the class-room.

Generally there are two types of teacher behaviour patterns in the class-room. One pattern of teacher behaviour is termed as 'indirect' or 'integrative' or 'democratic' which provides more opportunities to the students for better learning by providing them more freedom of expression and initiation. While the other pattern of teacher behaviour is termed as 'direct' or 'dominative' or 'authoritarian' which provides less opportunities to the students for learning because it restricts the freedom of opportunities to participate in the classroom.

The present study is conducted on a random sample of classes drawn from Municipal Corporation Schools of Surat city. The experiment was limited to grade VII only. The teachers who were teaching in the experimental group classes were trained in Flanders Interaction Analysis Category System (FIACS).

The teaching units are the units which are prescribed by the Nagar Prathamik Shikshan Samiti of the Municipal Corporation for the month of July, August and September from the syllabus of Gujarat Government. The text-books are also published by Gujarat Government.

The behaviour pattern of the teachers is limited to verbal interaction between the teacher and the pupils and also among the pupils themselves. Non-verbal communication was not accounted for.

For measuring the teacher behaviour pattern Flanders Interaction Analysis Category System (FIACS) was used. The system refers to the affective domain of teaching-learning process only.

An error of 0.01 percent was adjusted in categories to make the total hundred percent.

#### III.4 THE SAMPLE

The nature of the present investigation was experimental. The present study is concerned with the relationship between the teacher influence and pupils' academic achievement as well as pupils' adjustment, class-room trust and initiative. The theme under study here, was the teachers' class-room influence.

The experimental group consists of five VII grade classes and the control group consists of two VII grade classes from Municipal Corporation Schools of Surat city. (Appendix-I)

The following tables will reveal the details about classes, pupils and teachers of the sample.

TABLE 3.1Distribution of Pupils - Schoolwise -  
Sexwise

Type of School	Experimental group		Control group	
	Number of classes	Number of pupils	Number of classes	Number of pupils
Boys	3	115	1	40
Girls	2	85	1	45
Total	5	200	2	85

The table 3.1 revealed that both the groups consisted of pupils of both the sexes. It means that the sample includes classes from boys' schools as well as girls' schools.

TABLE 3.2

Distribution of Sample by Means  
(Age, SES, IQ and Pre-test  
achievement)

Variables	Group	Mean	SD	t-value	DF=283
Age	Experimental group N=200	12.575	0.596	0.309	at 0.01 level 2.59  Not signi- ficant
	Control group N=85	12.552	0.567		
SES	Experimental group N=200	10.550	3.105	2.180	Not signi- ficant
	Control group N=85	11.258	2.210		
IQ	Experimental group N=200	99.280	13.235	1.860	Not signi- ficant
	Control group N=85	96.211	12.569		
Pre-test Achieve- ment (Science)	Experimental group N=200	18.585	8.937	0.425	Not signi- ficant
	Control group N=85	19.129	10.251		

The table 3.2 revealed the following conclusions:

Mean scores of age of the experimental group was 12.575 and that of the control group was 12.552. The mean difference between the groups was not significant at 0.01 level.

It means that the groups are similar i.e. they do not differ with respect to age of the pupils.

Mean score of SES of the experimental group was 10.550 and that of the control group was 11.258. The mean difference between the groups was not significant at 0.01 level.

It means that the groups are similar i.e. they do not differ with respect to SES of the pupils.

Mean score of IQ of the experimental group was 99.280 and that of the control group was 96.211. The mean difference between the groups was not significant at 0.01 level.

It means that the groups are similar i.e. they do not differ with respect to IQ of the pupils.

Mean score of Pre-Test (achievement in Science) in the experimental group was 18.585 and that of the control group was 19.129. The mean difference between the groups was not significant at 0.01 level.

It means that the groups are similar i.e. they do not differ with respect to achievement of the pupils.

It is concluded from the above discussion that both the groups were similar with respect to age, SES, IQ and Pre-test (achievement), because in all the variables the difference between the mean scores of the groups was not significant at 0.01 level.

The selection of the teachers was essential for the present study, hence the investigator observed

twenty one teachers by using Flanders Interaction Analysis Category System. Their I/D and i/d ratios are given below:

TABLE 3.3  
I/D and i/d ratios for the selection  
of Teachers

Teacher Number	Sex	I/D	i/d
1	Male	0.25*	0.0
2	Male	0.28	0.0
3	Male	0.26	0.0
4	Male	0.29*	0.0
5	Male	0.22	0.0
6	Male	0.28*	0.0
7	Male	0.24	0.0
8	Male	0.24	0.0
9	Male	0.25	0.0
10	Male	0.22	0.0
11	Male	0.29	0.0
12	Male	0.26*	0.0
13	Female	0.21	0.0
14	Female	0.25*	0.0
15	Female	0.21	0.0
16	Female	0.28	0.0
17	Female	0.27*	0.0
18	Female	0.23	0.0
19	Female	0.25	0.0
20	Female	0.27	0.0
21	Female	0.28*	0.0

\* Teachers were selected for the experiment.

Table 3.3 reveals the following observations:

Teachers whose I/D ratio was below 0.25 were rejected. Teachers whose I/D ratio were between 0.25 and 0.29 were selected for the sample.

i/d ratio of all the teachers was 0.0. It means that all the teachers were direct in their behaviour.

The I/D ratios of the selected teachers were more or less similar. It means that their behaviour was direct in nature in the initial stage.

Male teachers number 1,4,6 were entrusted the experimental classes while teacher number 12 was entrusted the control group class.

Female teachers, number 14, 17 were entrusted the experimental group classes while teacher number 21 was entrusted ~~group~~ the control group class.

From the above twenty one teachers, teachers number 5,11,12,15,20 and 21 were not given training in FIACS. The remaining fifteen teachers were provided training in FIACS.

Thus the selected fifteen teachers have also the

following similarities:

- (i) All the selected teachers were serving in the schools under the direct control of 'Nagar Prathamik Shikshan Samiti' of Municipal Corporation, Surat.
- (ii) Their service conditions and educational qualification were same.
- (iii) These teachers were serving in morning shift schools.

### III.5 TEACHERS' TRAINING

Every experimental group class was engaged by three teachers ( 5 (classes) x 3 teachers = 15 teachers) who were given training. Out of these three teachers, one teacher was teaching Science during the period of the experiment. No other teacher who was not trained (in FIACS) was allowed to teach in the experimental group classes. This precaution was taken to avoid the influence of untrained (not trained in FIACS) teachers.

Hence, this means that through-out the period of the experiment pupils were under the influence of teachers who were given training in FIACS.

The other six teachers were not included in the training programme nor did they know anything about the experiment with a view to avoiding contamination of research treatment. These six teachers were entrusted with the classes of the control group.

Fifteen teachers who were interested, innovative and enthusiastic in educational experimentation were given the class-room interaction analysis training. After, the training these teachers were entrusted with the experimental group classes.

The training was given with a view to increasing the indirect behaviour. The training programme included Flanders' Ten Category System. The detail<sup>ed</sup> discussion of all the categories was conducted and they were asked to memorize them. Role-playing technique of teaching was also organised during the training period to make the teachers more conversant with the use of these categories. The indirect pattern of teacher behaviour was demonstrated with the help of role-play. The participants realized the need for more participation and initiation on the part of pupils. During the train-

ing, the emphasis was placed on developing in them the skills by which their influence in the classroom become more indirect, more motivating and more stimulating.

The training given to the experimental group of teachers was also based on sequential steps suggested by Alschuler (1970) in n-Ach courses are as under:

- (i) Attend
- (ii) Experience
- (iii) Conceptualize
- (iv) Relate
- (v) Apply
- (vi) Internalize

Initially the investigator received training from Prof. Desai about the training programme on a separate group of teachers when Prof. Desai (Professor of Education, Faculty of Education and Psychology, M.S.University, Baroda) was invited.

Then ~~xx~~ Mr. Jagdish Patel and Mr. Arvind Patel (who have worked as research assistants in the Achievement motivation project sponsored by NCERT and was conducted by Prof. Desai) were invited as consultants for the training programme conducted by the investigator.

The details about the training programme were as follows:

Class-room Behaviour Training Programme

Date	Items of training covered	Methods
6-6-73	Concept of teaching - teaching as an interactive process - class-room behaviour patterns - class-room climate class-room interaction	Lecture - group discussion
7-6-73	Brief review of previous day's work - Teacher influence and teaching styles - Flanders Interaction Analysis Category System - detail discussion of categories with illustrations	Lecture - discussion - Role-play - self study
8-6-73	Brief review of the previous day's work - ground rules for recording - discussion about ground rules - practice in the use of categories	Lecture - discussion - Role-play - self study
9-6-73	Brief review of the previous day's work - discussion about the difficulties in recording - further discussion of the ground rules - paring of categories matrix preparation	Lecture - discussion and group practice
10-6-73	Brief review of 9-6-73 - further practice in the preparation of matrix, interpretation of matrix	Lecture - discussion group work
10-6-73	Brief review of 10-6-73 - Discussion about researches in interaction analysis, changing one's own class-room behaviour - ways of motivating the pupils.	Lecture - discussion - practice
12-6-73	Brief review of previous day's work - discussion about the different patterns of behaviour and ways to change the patterns - discussion and review of the training - future programme of feedback.	Lecture - discussion

After the intensive training programme the experiment was in action for twelve weeks. After completion of six weeks again a two-days' feedback training programme was organised for the same teachers of the experimental group. The programme was conducted with the help of Mr. Jagdish Patel. The investigator also gave feedback to the teachers every week.

### III.6 TOOLS

The details about the tools used in the experiment were as follows:

(1) Non-verbal group test of Intelligence by Dr. G.B.Shah

It is a non-verbal group test of intelligence for the age group 7+ to 14+. The test consists of 80 items with a total time limit of 17 minutes. The reliability established by test-retest method is 0.94 and by split-half method is 0.92.

The test was selected for the study because of the following reasons:

- (i) The age group of the sample for the study was 11+ to 13+ and the test was designed to measure the intelligence of the age group of 7+ to 14+.

- (ii) A non-verbal test was more suitable because the pupils under the sample were from the primary schools.
  - (iii) The test was a group test of 17 minutes' duration and the administration was easy.
- (Appendix-A)

(2) Socio-economic status scale (Urban) by Dr. Kuppuswami

The scale is divided into three areas, i.e. education, occupation and income of the parents. Each area consists of seven items. Each item is given different weightage which ranges from 1 to 12 scores. The total score of the test ranges from +3 to +29. It was a standardised test. When all the three areas (variables) are used the multiple bi-serial R was 0.885.

This test is designed for <sup>an</sup> urban area and the sample under the study was from Surat city (urban area) hence this tool was used.

(Appendix-B)

(3) Pre-Adolescent Adjustment Scale (PAAS) by Dr. Pareek and Rao

This is a scale developed by Pareek and Rao (1970) to measure adjustment of the Pre-adolescents towards

home, peers, teacher and it also measures general adjustments. It consists of 40 items covering the above mentioned five areas of adjustment. Scoring weightage of the items ranges from -10 to +10. The total score of the scale ranges from +34 to -46.

Range of scores, test-retest reliability, and validity against teacher reports about the adjustment of students in respect of the five scales have been given below:

Range of scores, test-retest  
reliability, co-efficient  
and U-values (PAAS)

Scales	Range of scores	Test-Retest Reliability*	Test-Retest Reliability control group**	U-values for validity
Home	+10 to -10	0.46	0.54	0.008 and 0.206
School	+ 6 to -10	0.60	0.63	0.001
Peers	+ 6 to -10	0.54	0.52	0.028
Teachers	+ 6 to -10	0.278	0.48	Not given
General	+ 6 to - 6	0.44	0.53	0.100 and 0.208
Total	+34 to -46			

\*Highest values taken.

\*\*Computed from the scores of the pre-test and post-test scores of the control group.

The same test was used by Dr. Pareek and Rao for measuring the adjustment of the children from primary schools of Delhi. The sample of the present study was also from the primary schools of Surat, hence the test was selected.

(Appendix-C)

(4) Pre-Adolescent Class-room Trust Schedule (PACT) by Dr. Pareek and Rao

PACTS is a semi-projective tool. It consists of common class-room situations calling for pupils reactions or the actions proposed in the situations. The responses are scored as 4, 3, 2, or 1 according to the degree of trust represented by the response. The split-half reliability of the scale has been reported to be 0.814 and test-retest reliability 0.77. The test-retest reliability worked out from the pre-test and post-test scores of the control group is 0.71.

The same test was used by Dr. Pareek and Rao for measuring the class-room trust of the pupils from the primary schools of Delhi. The sample of this study was also from the primary schools of

Surat, so the test was selected.

(Appendix-D)

(5) Pre-Adolescent Initiative Questionnaire  
(PAIQ) by Dr. Pareek and Rao

PAIQ consists of six situations which commonly occur in pre-adolescent's life in which there is a scope for initiative, each situation has an open-ended question at the end. The pupil is asked to guess what the pupil involved in the situation did. The responses are scored as 3, 2, 1 or 0 according to the degree of initiative.

Test-retest reliability, based on correlation of the original scores of pupils with retest scores taken after 14 weeks, was found to be 0.50, 0.55 and 0.66 in three schools. The co-efficients of correlation, showing agreement in six pairs range from 0.83 to 0.90. Both the stability and the inter-scorer coefficients are high.

The same test was used by Dr. Pareek and Rao for measuring the initiative of the pupils from the primary schools of Delhi. The sample of this study

was also from the primary schools of Surat, hence this tool was selected.

(Appendix-E)

(6) Flanders Interaction Analysis Category System (FIACS)

Firstly the teacher behaviour is classified as either direct or indirect in the Flanders observation system of Interaction Analysis. The classification of statements is based on the amount of freedom the teacher grants to the students. The teacher can become direct by minimizing the freedom of the students to respond or either indirect by maximizing the freedom of students to respond. Secondly, Flanders system also categorized student talk in order to make total behaviour in the classroom meaningful. A third major section of silence or confusion is meant for non-verbal behaviour on the part of the teacher or students.

Hence, all the statements are divided into three major sections i.e. (a) Teacher talk (b) Student talk, and (c) Silence or Confusion.

All possible events can<sup>be</sup> coded at constant rate  
throughout the observation.

The sections of teachers' and students' verbal  
behaviour are further sub-divided in order to  
make the total pattern of teacher-pupil interaction  
more meaningful. A summary of categories, with  
brief definitions is given below:

Categories for Interaction analysis\*

TEACHER TALK	INDIRECT INFLUENCE	1. * Accepts Feeling: Accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
		2. * Praises or Encourages: Praises or encourages student action or behaviour. Jokes that release tension, not at the expense of another individual, nodding head or saying. "un hm?" or "go on" are included.
		3. * Accepts or Uses Ideas of Student: Clarifying, building or developing ideas suggested by a student. As a teacher brings more of his own ideas into play, shift to category five.
		4. * Asks Questions: Asking a question about content or procedure with the intent that a student answer.
TEACHER TALK	DIRECT INFLUENCE	5. * Lecturing: Giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions.
		6. * Giving Directions: Directions, commands, or orders to which a student is expected to comply.
		7. * Criticizing or Justifying Authority: Statements intended to change student behaviour from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
STUDENT TALK		8. * Student Talk-Response: A student makes a predictable response to teacher. Teacher initiates the contact or solicits student statement and sets limits to what the student says.
		9. * Student Talk-Initiation: Talk by students which they initiate. Unpredictable statements in response to teacher. Shift from 8 to 9 as student introduces own ideas.
		10. * Silence or Confusion: Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

\*From Flanders (1966, p.7).

$$\begin{array}{l}
 \text{I/D ratio} = \frac{\text{Categories: } 1+2+3+4}{\text{Categories: } 5+6+7} \\
 \text{i/d ratio} = \frac{\text{Categories: } 1+2+3}{\text{Categories: } 6+7}
 \end{array}$$

(7) Achievement tests

(Pre-test, Intermediate test and Post-test)

Teacher made three achievement tests were prepared. All the three tests consists of 25 items. These items were of objective type.

The pre-test was prepared and administered to measure the initial achievement of the pupils before the commencement of the experiment.

The intermediate test was administered after 6 weeks, to measure the achievement of the pupils during the experiment. The test was prepared from the units which were taught during first 6 weeks.

The post-test was administered at the end of the experiment to measure the achievement of the pupils at the end of the experiment. The test was prepared from the units taught during the last six weeks of the experiment.

All these three tests were administered on a different sample of students to find out the difficulty index of each item.

The difficulty index of the item was calculated by using the formula: (Lindman, 1967)

$$\text{Difficulty index} = \frac{H + L}{n}$$

Where H = number of pupils passed the item  
in high group

L = number of pupils passed the item  
in low group

n = total number of pupils in the  
combined high and low groups

The smallest possible value of the index is zero and the largest possible value is 1.00; the larger the value, the easier the item.

The following table shows the difficulty index of the selected items, test-wise:

TABLE 3.4

Difficulty index of the selected  
items, test-wise

Item No.	Pre- test	Intermediate test	Post- test
1	0.76	0.70	0.74
2	0.70	0.74	0.76
3	0.60	0.76	0.66
4	0.74	0.62	0.70
5	0.66	0.60	0.64
6	0.62	0.64	0.68
7	0.68	0.66	0.60
8	0.64	0.68	0.62
9	0.50	0.58	0.56
10	0.58	0.56	0.58
11	0.52	0.50	0.48
12	0.56	0.48	0.54
13	0.48	0.52	0.50
14	0.46	0.54	0.52
15	0.58	0.58	0.46
16	0.54	0.46	0.44
17	0.42	0.42	0.58
18	0.44	0.44	0.42
19	0.40	0.36	0.40
20	0.34	0.40	0.36
21	0.36	0.32	0.38
22	0.38	0.34	0.34
23	0.32	0.38	0.30
24	0.26	0.30	0.32
25	0.30	0.26	0.26

The table 3.4 reveals that the difficulty index of all the items of all the three tests ranges from 0.26 to 0.76.

There were 25 items in each test, out of which the difficulty index of 7 items ranged between 0.26 to 0.40, the difficulty index of 10 items ranged between 0.42 to 0.58 and the difficulty index of 8 items ranged between 0.60 to 0.76.

It means that each test contained equal number of items having the similar difficulty index. In other words the three tests were similar from the view point of difficulty index of items.

(Appendix-F, G, H)

### III.7 HYPOTHESES OF THE STUDY

The following hypotheses were tested by the present study:

- (1) The training in modification of class-room behaviour given to the teachers concerned

will help them to modify their behaviour.

The findings of the following researches support the above mentioned hypothesis formulated by the investigator.

Amidon and Powell (1966) conducted an experiment on teachers training in the classroom interaction<sup>and</sup> found that the student-teachers who knew interaction analysis talked less, were more indirect in their views of motivating and controlling behaviour.

The above findings were also supported by Moskowitz (1967), Jahn (1967), Simon and others (1966) and Lohman, Hough and Ober (1967).

Hanny (1967) ~~successfully~~ successfully helped student-teachers in changing their verbal behaviour from teacher-centred to learner-centred through feedback and enabling them to modify their influence in the classroom.

The above findings about the use of feedback were supported by Davidson (1968), Wright

Nuthall and Lawrence (1969) and Holcomb (1970).

Pareek and Rao (1971) in their studies in Delhi, found that teachers modify their behaviour by providing a ten-days' training in interaction analysis. Post training observations also report that the teachers have modified their class-room behaviour patterns from direct to indirect and maintained the patterns constantly even after six months.

Nath (1971) conducted an experiment on female B.Ed. trainees to study the effect of feedback, revealed that the experimental group trainees talked less having higher i/d ratios than the control group.

The above findings about training and use of feedback were supported by Desai (1970), Jangira (1972), Pangotra (1972), Lulla (1973) and Singh (1974).

- (2) The modified behaviour of teachers will affect pupils' adjustment towards home, school, peers, teachers and general adjustment positively.

The findings of the following researches support the above mentioned hypothesis formulated by the investigator.

Morrison (1966) found significant relationship between teacher influence and adjustment of pupils.

Pareek and Rao (1971) attempted to find out associations between teachers verbal classroom behaviour (FIACS) and pupils' adjustment.

Jangira (1972) found that the pupils under the student-teachers with training in FIACS scored higher on adjustment to school, to teacher and general adjustment significantly at 0.05 level.

- (3) The modified behaviour of teachers will affect pupils' class-room trust positively.

The following researches support the hypothesis formulated by the investigator.

Pareek and Rao (1971) found the mean score 22.07. The total score of the Pre-Adolescent class-room trust scale ranges from 8 to 32.

Jangira (1972) in his study of the Assam Primary School pupils gained significantly in class-room trust, when the pupils were taught by student-teachers trained in FIACS.

- (4) The modified behaviour of the teachers will affect pupils' initiative positively.

The findings of the following research supports the above mentioned hypothesis formulated by the investigator.

Pareek and Rao (1971) in his study found the mean score on Pre-Adolescent Initiative Questionnaire-test of the pupils from primary schools of New Delhi was 10.437. Scores between 7 to 12 show moderate initiative.

- (5) The modified behaviour of teachers will affect pupils' academic achievements positively.

The findings of the following researches support the above mentioned hypothesis formulated by the investigator.

Nelson (1964) found significant relationship between teacher influence and learning linguistic skills.

Morrison (1966) found similar result for language usage, social studies skill and Arithmetic computation etc.

Flanders (1965, 1969, 1970) conducted a number of studies involving several grades and different subjects, <sup>and</sup> found positive and significant relationship between teacher influence and pupils' achievements.

The above findings were also supported by Morsh and Willer (1954), Combs (1962) and Morrison (1966).

In India Mehta (1969), Mehta and Kanade (1969), and Mehta and Dandia (1970) reported that indirect teachers lead to higher achievements.

The finding was also supported by Desai (1970) and Lulla (1973).

### III.8 OBJECTIVES OF THE STUDY

The present study intends to achieve the following objectives on the bases of the above mentioned hypotheses:

- (i) To help the teachers to perceive their own class-room behaviour;
- (ii) To help the teachers to modify their class-room interaction;
- (iii) To help the teachers to sustain the modified behaviour;
- (iv) To study the effects of behaviour of such teachers on the pupils' academic achievement;
- (v) To study the effects of the teachers' modified behaviour on pupils' adjustment, pupils' initiative and pupils' class-room trust.

### III.9 DESIGN, PLAN AND PROCEDURE

In the preceding pages the investigator has discussed in detail about the sample, teachers' training programme, research tools, hypotheses and objectives of the study.

Now an outline of the design of the experiment and the procedure adopted for the experiment will be

discussed.

The present study was experimental in nature. The variables under the study were teacher class-room behaviour on one hand and pupils' achievement, adjustment, class-room trust and initiative variables on the other hand.

The design of the experiment at a glance is given herewith.

(Chart-3.1)

CHART 3.1

DESIGN OF THE EXPERIMENT

EXPERIMENTAL GROUP (On the bases of Age, IQ, SES, Pre-Achievement)      CONTROL GROUP (On the bases of Age, IQ, SES, Pre-Achievement)

Changes to be observed		Changes to be observed	
Teachers	Pupils	Teachers	Pupils
<p>Five pre-observations per teacher were recorded to study the behaviour pattern of teachers before the commencement of the experiment</p> <p><b>A. Training in FIACS</b> (Before the commencement of the experiment) The training was given for a week to the teachers</p> <p><b>B. Feedback</b> (During the course of the experiment) 1. Through post-observations 2. Through group meetings of the teachers</p>	<p><b>A. Mental Health</b> To study pupils' adjustment, classroom trust, initiative.</p> <p><b>F. Academic Achievement</b> To study pupils' initial academic achievement</p>	<p>Five pre-observations per teacher were recorded to study the behaviour pattern of teachers before the commencement of the experiment.</p>	<p><b>A. Mental Health</b> To study pupils' adjustment, classroom trust, initiative.</p> <p><b>B. Academic Achievement</b> To study pupils' initial academic achievement</p>
<p>Twenty five observations per teacher were recorded, to study the effect of treatment on the behaviour pattern of the teachers.</p>	<p><b>A. Mental Health</b> To study the effect of changed behaviour of teachers on pupils' adjustment, classroom trust, initiative.</p> <p><b>B. Academic Achievement</b> To study the effect of changed behaviour of teachers on pupils' final academic achievement</p>	<p>Twenty five observations were recorded to study the behaviour pattern of teachers</p>	<p><b>A. Mental Health</b> To study pupils' adjustment, classroom trust, initiative.</p> <p><b>B. Academic Achievement</b> To study the pupils' final academic achievement</p>
<p>Pre-Test</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Pre-Achievement Test (T<sub>1</sub>)</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Pre-Achievement Test (T<sub>1</sub>)</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Pre-Achievement Test (T<sub>1</sub>)</p>
<p>Treatment</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Post-observation Matrix</p> <p>Tools Discussions</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Post-observation Matrix</p> <p>Tools Discussions</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Post-observation Matrix</p> <p>Tools Discussions</p>
<p>Post-Test</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Post-Achievement Test (T<sub>2</sub>)</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Post-Achievement Test (T<sub>2</sub>)</p>	<p>Tools FIACS</p> <p>Tools PAAS PACT PAIQ</p> <p>Tools Post-Achievement Test (T<sub>2</sub>)</p>

To carry out the present experiment successfully the procedure adopted by the investigator, was as follows:

For teachers

Step I: Many teachers were observed for classroom behaviour patterns using FIACS. Out of these teachers, twenty one teachers having similar type of classroom behaviour patterns were selected.

Step II: Out of these twenty one teachers nine male teachers and six female teachers were entrusted with five experimental group classes of grade VII, in which three were boys' classes and two were girls' classes. The male teachers were in charge of boys' classes and female teachers were in charge of girls' classes.

For the control group classes three male teachers were entrusted with one boys' class and three female teachers were entrusted with a girls' class of grade VII.

Step III: Before the commencement of the experiment the experimental group teachers were trained in FIACS for a week. (Details of the teachers training programme is mentioned in the previous pages).

The control group teachers were not given any such training.

Step IV: The time schedule of the experiment was of twelve weeks, i.e. from 1st July to 30th September 1973. With a view to avoiding the influence of other teachers on the pupils, out of these three teachers (trained in FIACS) one teacher was employed to teach Science and the remaining two teachers taught other subjects in the experimental classes.

The control group classes were entrusted to the teachers who were not trained in FIACS.

Step V: All the seven classes under the experiment were allotted four periods a week for teaching of Science having duration of 40 minutes per period. Alternate period was observed (for 20 minutes) every week by the investigator himself by using Flanders' system of observation. Teachers teaching in the experimental group classes were given feedback on the basis of the previous observation.

No such feedback was provided to the teachers of the control group classes.

For pupils

Step I: The two groups - experimental and control- were equated on the basis of age, SES, IQ and initial academic achievement. (Table 3.2)

There were 200 pupils in the experimental group and 85 pupils were in the control group.

(Table 3.1)

Step-II: Before the commencement of the experiment the following tests were administered for the collection of data:

- (i) Intelligence test
- (ii) Socio-economic scale
- (iii) Pre-test (achievement)
- (iv) Pre-Adolescent Adjustment Scale
- (v) Pre-Adolescent Class-room Trust Schedule
- (vi) Pre-Adolescent Initiative Questionnaire

An Intermediate test (achievement) was also administered after six weeks to measure the achievement of the pupils.

Over and above at the end of the experiment the following tests were also administered for the collection of data:

- (i) Post-test (achievement)
- (ii) Pre-Adolescent Adjustment Scale
- (iii) Pre-Adolescent Class-room Trust Schedule
- (iv) Pre-Adolescent Initiative Questionnaire

The data will be analysed by using t-technique in case of I/D and i/d ratios of teachers' behaviour and pupils'

achievement, adjustment, class-room trust and initiation. The discussion of the teachers' behaviour category-wise will be done with the help of percentages.

The following is the scheme of chapters:

In the first chapter, the importance of the problem is discussed. Teacher behaviour plays an important role in determining pupils' growth and performance.

The second chapter, deals with the relevant studies conducted in India and abroad. The experimental studies conducted in India are discussed in detail.

The third chapter includes scope, sample, tools, hypotheses, objectives, design and procedure adopted for the experiment.

In the fourth chapter the analysis of teachers' behaviour will be discussed in detail with reference to I/D, i/d, categorywise and teacherwise.

The fifth chapter deals with the analysis of the data with reference to pupils' performance. The effect of modified behaviour of teachers on pupils' achievement, adjustment, class-room trust and initiative will be discussed.

In the final chapter a resume of the previous chapters will be included alongwith the major finding of the study and suggestions based on the present work will be discussed.

In the next chapter analysis of the data of the teachers' behaviour will be discussed.