CHAPTER-III

Methodology
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METHODOLOGY:

With a view to find systematic answers to the problem by testing the hypotheses formulated in the previous chapter the present study was carried out on scientific lines involving the adequate samples. The methodology of the present study may be described in the following heads:

3.1 Research Method:

Keeping in view the objectives of the study the experimental method was employed to conduct the research. For the final experiment an experimental Pre-test Post-Test design with experimental group and control group was executed. The experimental group and control group included 16 student-teachers each. The groups were matched on variables of age, sex, socio-economic status subjects at graduate level, teaching subjects etc.

3.2 Sample and Sampling technique:

A random sampling technique was used for drawing out the representative sample of the student-teachers. A sample of 32 student-teachers was randomly drawn out of 90 student-teachers admitted to B.Ed training course in Tilak Dhari Training college Jaunpur, U.P. in the session 1991-1992.
The pupils (students) of class VIII were taken from Tilak Dhari Singh Inter college Jaunpur, U.P. for coaching (teaching) purposes.

3.3 Design of the study:

The design of the research study may be presented in the tabular form as follows:

TABLE - 1

<table>
<thead>
<tr>
<th>Research Design</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>N=16</td>
</tr>
</tbody>
</table>

Pre-observation and Administration Phase:
1. Observation of classroom behaviour of both the groups through T.A.B. (2 lessons).
2. Administration of Teacher Attitude Inventory on Student-Teachers (TAI by S.P. Ahuluwalia).

Orientation Phase:
1. Orientation of control group in theory of traditional method of teaching.
2. Orientation of experimental group in theory of quadro method of teaching (FIACS technique).

Post-observation and Administration Phase:
1. Observation of classroom behaviour of student-teachers belonging to both the groups through T.A.B. (two lessons).
3.3.1 Procedural Steps:

The procedural steps of the design were planned as follows:

3.4 College Based Experiment:

Step 1: Pre-Observation and Administration Phase:

Pre-observation of classroom behaviour of Student-Teachers of control and experimental groups were done through TAB. The Teacher Attitude Inventory (Prepared by S.P. Ahuluwalia) was administered at primary level.

Step 2: Orientation Phase:

Orientation was given to control group (N = 16) in theory of traditional method of teaching for five
days. The Experimental group (N = 16) was oriented for five days in theory of FIACS teachique at this stage.

**Step 3: Training Session:**

The Student - Teachers of control group were trained in Quadro through traditional method, of teaching in simulated condition with supervision technique and proper feedback. Each student - teacher of control group was given opportunity to practise 15 lessons in Quadro. In the meantime, the experimental group was trained through F.I.A.C.S teachnique in quadro in simulated condition followed by peer feedback. Each student-teacher of experimental group was also given chance to practise 15 lessons.

**Step 4: Post - Observation and Administration Phase:**

The observation of classroom behaviour of student-teachers belonging to control and experimental groups were done through Teaching Assessment Battery (T.A.B). The student - teachers of both the groups were rated on Teacher Attitude Inventory (S.P.Ahuluwalia) after the treatment (Post - Test).

**3.5 School Based Experiment:**

**Step 5: Pre-test of Pupil's Achievement and Attitude towards Teaching:**

The Achievement Test and Reaction Scale for
teaching (self-prepared) were administered on the pupils taught by both the groups separately at Pre-test level.

**Step 6: Coaching Stage:**

Student-Teachers of control group will be sent to teach five assigned lessons to class VIII A of T.D.S.I.C Jaunpur, through traditional method. Student-Teachers of experimental group will be sent to teach the same five assigned lessons to class VIII B of T.D.S.I.C Jaunpur, through FIACS approach.

**Step 7: Post-Test of Pupil’s Achievement and Attitude towards Teaching:**

Administration of Achievement Test and a Reaction Scale for teaching (self made) was done on the pupils to be taught by both the groups separately.

**3.6 Tools Used:**

The following measurement tools were used to carry out the present investigation:


2. Teaching Assessment Battery (Hindi versions) as an observation tool of classroom behaviour of Student-Teachers to assess the teaching competence of student-teachers.

3. Teacher Attitude Inventory (TAI) prepared by S.P. Ahuluvalia, to measure the attitude of student-teachers.
4. An Achievement-Test (self constructed): to evaluate the achievement of students (pupils).

5. Reaction Scale for teaching (Hindi version) self prepared: to measure the reaction of pupils for teaching.

3.6.1 Flanders Interaction Analysis category System:

Flanders Interaction Analysis Category System was used as a training strategy in the present investigation. FIACS treatment aimed at giving practice in Indirect Behaviour patterns. This tool was also used as a feedback device while the experimental group was practising through F.I.A.C.S technique in quadro.

The most widely used category system is that of Flanders which comprises ten categories divided into Teacher-Talk, Student-Talk and Silence or confusion. Categories of Teacher-Talk are again divided into Direct and Indirect teacher influence. Student-Talk is divided into student response and student initiation. Unlike many other observation systems this system is mainly concerned with verbal interaction process between the teacher and the students and provides information about the extent the teacher allows and encourages student-participation by becoming integrative (indirect) and restricts response
(thereby not allowing participation) by becoming dominative (direct) in his approach.

The Flanders system is thus concerned with verbal behaviour only, primarily, because it can be observed with higher reliability than non-verbal behaviour. The assumption is made that the verbal behaviour of an individual is an adequate sample of his total behaviour.

### TABLE-2

**Flanders' Interaction Analysis Category System**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Accept &amp; Feeling</strong></td>
<td>Accept and clarifies an attitude or The feeling tone of a pupil in a non-threatening manner. Feeling may be positive or negative. Predicting and recalling feeling are included.</td>
</tr>
<tr>
<td>2. <strong>Praises or Encourages</strong></td>
<td>Praises or encourages pupil's action or behaviour. Jokes that release tension, but not at the expense of another individual. Nodding head or saying 'um hm' or 'go on' are included.</td>
</tr>
<tr>
<td>3. <strong>Accepts or uses ideas of pupils</strong></td>
<td>Clearifying, building, developing ideas suggested by a pupil. Extensions of pupil's ideas are also included but as the teacher brings more of his own ideas into play, shift to category five.</td>
</tr>
<tr>
<td>4. <strong>Asks Questions</strong></td>
<td>Asking a question about content or procedure, based on teacher's ideas, with the intent that a pupil will answer.</td>
</tr>
</tbody>
</table>
5. Lecturing: Giving facts or opinions about content or procedures; expressing his own ideas; giving his own explanation, or citing an authority other than a pupil.

6. Giving Directions: Directions commands or orders to which a pupil is expected to comply.

7. Criticising or Justifying Authority: Statement intended to change pupil's behaviour from non-acceptable to acceptable patterns, bawling someone out, stating why the teacher is doing what he is doing, extreme self-reference.

8. Pupil-Talk: Response: Talk by pupils in response to teacher. Teacher initiates the contact or solicits pupil's statement or structures the situation. Freedom to express one's own ideas is limited.

9. Pupil-Talk Initiation: Talk by pupils which they initiate, expressing own ideas, initiating a new topic, freedom to develop opinions and a line of thought, like asking thoughtful question going beyond the existing structure.

10. Silence or Confusion: Pauses short periods of silence and periods of confusion in which communication can not be understood by the observer. (Flanders, 1970)

1. Flanders, N.A. (1970) op.cit. pp 14
With this ten category system, an estimate of the balance between initiative and response can be inferred from the present time of teacher-talk, pupil-talk and silence or confusion. Since the teacher has more authority than any pupil, it is not surprising to discover that the teacher's communication, which is a sample of his total behaviour, will be the most potent single factor in establishing a balance between initiation and response.

(Flanders 1970)*

A more accurate estimate of the initiative-response balance of class-room interaction can be reached by comprsing the teacher tallies in categories 1,2 and 3 with those in 5,6 and 7. The teacher is responding to the pupil in a supportive manner when he uses ideas expressed by pupils, praises and encourages their behaviour and makes constructive reactions to their attitude or feelings. He is initiating his own will and making use of his authority whenever he expresses his own ideas, gives directions with the expectation of compliance, or becomes critical of pupil-behaviour. An above average use of categories 5,6 and 7 is more likely to be associated with a higher incidence of category 8. The above average use of 1,2 & 3 is more likely to be associated with the category 9.

*Flanders N.A. (1970) op.cit. pp 14
The balance of initiation and response for the teacher, as well as the pupil, will vary from one learning activity to the next, even with the same class. It will vary according to the teacher's preferred style of instruction, the subject matter being taught, the age and maturity of the pupils, the various other characteristics of the class-room learning situation.

This category system can be used to study the balance between initiation and response. With seven categories of teacher-talk and only two for pupil-talk, more information is provided about the teacher and therefore, how statements influence this balance can be studied with this particular set of categories.

(Flanders 1970)

3.6.2. INTERACTION VARIABLES:

In Flanders tool there are seven categories (1 to 7) of teacher talk of which categories 1, 2, 3 and 4 are indicative of indirect teacher influence and categories 5, 6 and 7 indicate direct teacher's influence.

3.6.3 INDIRECT-TEACHER INFLUENCE:

Indirect influence consists in soliciting the opinions or ideas of the pupils, applying or enlarging
on those opinions or ideas, praising or encouraging the participation of pupil or clarifying and accepting their feelings. In other words this concept refers to actions taken by the teacher, which encourages and supports student participation.

3.6.4 DIRECT-TEACHER INFLUENCE:

Direct influence consists in stating the teacher's own opinion or ideas, directing the pupil's actions, criticizing his behaviour or justifying the teacher's authority or use of that authority.

This concept refers to actions taken by the teacher which restrict student's participation, expressing one's own views through lecture, giving directions and criticizing with the expectation of compliance.

The term such as 'teacher-indirectness' and the contrast between direct and indirect teaching are even more general than the coded events themselves. Such terms are relative and useful only to compare carefully. The controlled teaching situations, easily lead to an over simplification of complex, interrelated events.

3.6.5. F.I.A.C.S. as a Training Strategy:

The Flanders System of Interaction Analysis
was taught to student-teachers of experimental group as a tool for self analysis of simulated teaching experiences. It was assumed that learning the skill of 'Interaction Analysis' would give these student-teachers a feedback mechanism that would enable them to interpret the effects of their teaching behaviour more accurately than they could without it. It was further assumed that by becoming more aware of their behaviour, these student-teachers would be able to analyze this discrepancies between their intentions and their actions while teaching.

The objective of this study was to determine what effect instruction and feedback with Flanders System of Interaction Analysis would have on the attitude and performance of student-teachers.

3.7 Teaching Assessment Battery T.A.B. Form o::

The teaching Assessment Battery (form 'o') is meant for observer and contains 20 items corresponding to 20 teaching skills. Each of the items is to be rated on 7 point scale. The T. A. B. (form 'o') was used to rate the performance of the sample of student-teachers in the present study. The Teaching Assessment Battery (T. A. B.) is being presented as follows:
**Instructions:**

The scale contains 20 items comparing different aspects of teaching specifications of each item have also been given. You are to rate the performance of the teacher on each item on seven point scale. Encircle the point which indicates your assessment. The total score of the teacher on all the 20 items indicates the level of his performance.

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</thead>
<tbody>
<tr>
<td>1. Appropriate-ness Instructional Objectives</td>
<td>Clarity relevance to the content adequacy with reference to the domains and level of objectives, attainability in terms of pupil outcomes.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Content properly organised Logical Organisation</td>
<td>according to content and psychological organisation as per need of the pupil.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Creating set for introducing the lesson</td>
<td>creating accepting greeting securing attention and giving instructions, establishing rapport, ensuring facilities like chalk, duster, aids apparatus, etc.</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Lesson introduced effectively</td>
<td>Linking with past experience; link between introductory ion with main parts use of</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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</tbody>
</table>

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5. Questions properly structured

6. Questions well delivered and distributed

7. Pupil responses properly handled

8. Explanation clear and coherent

9. Used appropriate examples for illustration

10. Used appropriate teaching aids for illustration

11. Varied stimuli for securing attention and pitch change in aligning pupil sensory focus change in attention, interaction pattern and pupil physical participation.

12. Used appropriate verbal and non-verbal reinforcers, pupil ideas used pleasant and approving gestures and expressions, writing pupil answers on blackboard.
13. Appropriate pacing of the lesson to the level of the pupils.
14. Promoting pupil participation by providing opportunities to pupil to increase participation through asking questions, creating climate of participation, use of silence and non-verbal cues, and calling upon pupils' physical participation.
15. Proper use of Blackboard by making it legible, neat, adequate reference to the content covered.
16. Appropriate closure of lesson by summarisation, establishing link between the present learning with earlier as well as future learning and creating a sense of achievement in pupils.
17. Appropriate assignment by making it relevant to the content covered and level of the pupils.
18. Evaluation of pupil progress by making it relevant to the instructional objectives, used appropriate questions and observation.
19. Diagnosis of identifying learning difficulties along with causes, remedial measures suited to the type of learning difficulties and the level of pupils to remove.
20. Appropriate management of the class by eliminating non attending behaviour, clarity of direction, appropriate handling of pupil's disruptive behaviour.

(Jangira and Singh - 1982)
3.8 Teacher Attitude Inventory (S.P. Ahluwalia):

This Teacher Attitude Inventory was used to rate the Attitude of student teachers before and after the treatment. This inventory consists of 90 statements aimed at identifying the professional attitudes of the teachers. There is considerable disagreement as to what these attitudes should be. Therefore there are no right or wrong answers.

There is a separate answer sheet on which the respondents are expected to record their responses. The method of recording the response is illustrated in the booklet of TAI itself. There is a special type of scoring key by which responses of respondents are scored out.

The T.A.I. in its original form has been given in the Appendix I.

3.9 Achievement Test (Self-Prepared):

An achievement test of Social Science has been constructed by the researcher himself to assess the achievement of pupils of standard VIIIth. The achievement test was constructed through the following steps:

1. Planning the Test
2. Try out the Test
3. Item Analysis: discriminating value and difficulty
4. Scoring key
5. Norms, etc.
Standardization of the Test

The final form of the Achievement Test has been given in the appendix.

3.10. Reaction Scale for Teaching (Self-Prepared):

A Reaction Scale for teaching has been prepared by the investigator. The Reaction Scale consists of 22 statements (11 favourable and 11 unfavourable). The favourable and unfavourable statements have been put in a haphazard way. While scoring, the favourable responses have been awarded +1 mark and unfavourable responses have been awarded 0 mark.

3.11. Techniques of Data Analysis:

The following statistical analysis will be done to interpret the collected data.

1. The 't' test has been used to test the significance of difference between the control and experimental groups of Student-Teachers on T.A.I. at pre-test and post-test level.

2. The 't' test has been used to test the significance of difference between the control and experimental groups of Student-Teacher on T.A.B. at pre-test and post-test level.

3. The 't' test was employed to test the significance
of differences between the gain scores of control and experimental groups of Student-Teachers on T.A.I. and T.A.B.

4. The 't' test was also employed to find out the significance of differences between the pupils under the charge of experimental and control groups on Attitude Scale/Reaction Scale at pre-test and post-test level.

5. The 't' test was also used to test the significance of difference between the charge of experimental and control groups at pre-test and post-test level.

The following formula was used to test the significance of difference between the two Mean's.

\[
\frac{M_1 - M_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}
\]

Where

- \( M_1 \) = Mean of the first group.
- \( M_2 \) = Mean of the second group.
- \( s_1 \) = S.D. of the first group.
- \( s_2 \) = S.D. of the second group.
- \( N_1 \) = No. of individuals in first group.
- \( N_2 \) = No. of individuals in second group.

What was the formula for \( s \) calculated to be \( \sqrt{\frac{x^2}{N-1}} \) or \( \sqrt{\frac{x^2}{N}} \)