CHAPTER THREE

THE PRESENT STUDY

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3.1 THE PROBLEM:

(a) A brief background:

Teaching, conceived as an interpersonal interactive process which occurs in a formalised instructional situation in which the teacher carries on an organised series of acts so that learning in students eventuates, is a highly complex and intriguing process and can be described as a "polymorphous" activity which takes many forms with no limit to the activities it can involve. It is obvious, therefore, that systematic research in teaching is an extremely delicate and difficult endeavour.

For a long time serious research in teaching could not be planned because of at least two reasons. First, we laboured under the belief that teaching is an art and not science and, thus, it could not be subjected to rigorous analytical scientific investigation. This poetic infatuation with the concept of teaching as an art and its attendant hangover lingers with some of us even today. If we are to develop a scientific
understanding of teaching process we need to have a serious second look at this popular belief that teaching is an art and not a science. Second, most of the psychologists and pedagogues believed that research in learning will provide an adequate body of knowledge that can be directly used in classroom teaching. Teaching was thus a 'mirror-image' of learning.

Fortunately, for the last three or four decades, the above reasons do not seem to have been impressing a group of researchers who have been making relentless effort to have a direct research attack on the complex problem of teaching. This search has been difficult and arduous and the result to date has been "chaotic, unorganised and self-serving" (Rosenshine and Furst, 1973). This 'largely unsuccessful history' can be attributed not only to the complex nature of the process of teaching being studied but also to the differences in conceptual frame-work and methodological approaches that characterise the work of different researchers in this area.

Research in teaching, which has been guided by the desire to find dependable answers to the problem of teaching and teacher effectiveness, and, thus, has a practical orientation, initially concentrated on the presage-product variables. The emphasis was on finding relationship between demographic and personality characteristics of the teachers and changes in their pupils' behaviours. The monumental work of Ryans and his associates (1960) is an example of one such attempt. Jangira and Sharma (1974) have reported some presage-product studies that have been conducted in India. One general conclusion that can be drawn from the results obtained in these studies is that
the attempt made to date has not been rewarding so far as our gaining an insight into the process of teaching is concerned. Even today we remain largely ignorant about how certain teacher variables are related to the changes he brings about in his students in the classroom. The possible functional relationship that might exist between teacher personality characteristics and student change is still unknown. Despite a considerable amount of research and a huge pile of data, the results have usually been not significant and often contradictory.

The consistent not significant trend reported in the findings of presage-product studies has, however, led researchers to have a second look at the whole approach of research in teaching. Among some researchers there is a growing awareness to search for alternative research approaches. This growing awareness can perhaps be best summed as below even at the risk of repetition:

"Of late, there is a growing consensus among researchers that it is the teaching not the teacher that is key to the learning of students. That is, it is not what teachers are like but what they do in interacting with their students in the classroom that determines what students learn and how they feel about learning and about themselves" (Bloom, 1972).

In the wake of this shift in emphasis in research in teaching an encyclopaedic catalogue of observational systems (Simon and Boyer, 1970) has grown and quite a number of survey and correlational studies have been conducted to find what our teachers do in interacting with their students in their classroom and how their teaching behaviours are related to student
change. Process-product studies in teaching focus directly on finding relationship between teaching behaviour and pupil learning. Enthusiasm in conducting process-product research does not mean neglecting presage-product studies. In fact study of teacher's attitude in relation to pupil learning is an important research area that needs more attention than it has received so far. Enthusiasm in process-product research does, however, mean that at present, this appears to be a more promising approach to understanding the complex process of teaching and teacher effectiveness.

Research effort adopting process-product studies is yet to yield dependable knowledge and, one must admit, that, by and large, its history has also been unsuccessful so far. There, however, have been some modest gains. To sum them up here we (i) now possess a large number of observational systems (ii) have a substantial body of descriptive and correlational data about classroom teaching behaviours as well as their relationships with pupil gain, (iii) can "programme" teachers to exhibit desired patterns of classroom behaviour, (iv) are becoming increasingly aware of the need for controlled experimental studies in natural classroom settings.

The first flush of enthusiasm with classroom interaction studies is over. Despite some gains, researchers appear to have emerged out of this short-lived enthusiasm with the belief that conceptual framework and methodological approach need rethinking and refinement. Perhaps future research approach is going to be more complex. May be this is one of the few ways to approach the complexity of the phenomenon—teaching. If our
goal is to develop a scientific understanding of the process of teaching, of finding how classroom teaching behaviours are related to changes in pupils so that teachers can be helped to be more effective than what they are today. Where do we go from our present research attempt?

There has been an increased realization among some researchers that one of the answers to the above question lies in conducting controlled studies of teaching in normal classroom situation. In fact, this approach holds a great promise to them. Controlled studies of teaching in normal classroom are concerned with process-product variables and may either be correlational or experimental in design. This realization is reflected in some of the recent writings. Jangira and Sharma (1974) have advocated for correlational and experimental studies. Rosenshine and Furst (1973) have suggested a research loop consisting of "(a) training teachers to use a certain package of materials, (b) using observational systems to describe instructional activities on variables considered important for the implementation of the specific programme and also on variables considered to have general educational importance, (c) studying the relationship between instructional activities and student growth (on a variety of outcomes) within those groups of teachers who are supposed to be using the experimental treatment, (d) changing training procedures and/or materials on the basis of these studies, and (e) conducting new studies to determine the effects of the modifications and to determine the new relationship between instructional activities and student growth." The sequence of these steps are not fixed. One might use the
results of experimental studies to develop new observational
instruments. An example of this descriptive-correlational--
experimental loop is the work of Nuthall and his associates
(1973). In fact, this work of the Christ-Church group is an
example of one of the most sustained research efforts and a
well executed study in the area of teaching behaviour. Other
isolated studies by Hutchinson (1963), Solomon (1963), Klienman
(1964), Perkins (1965), Spaulding (1965), Miller (1966), Beseda
(1972), Sharma (1972), and Lulla (1973) reflect some of the
attempts made in this direction.

(b) Statement of the Problem:

Do certain verbal teaching behaviour patterns even­
tuate in students' achievement more than others? The modest
available literature reviewed in the preceding chapter suggest that
that may be so. The assumption that controlled study of teach­
ing in normal classrooms might provide some answer to this
problem led the investigator undertake the present study. This
study was entitled:

"A Comparative Study of Verbal Teaching
Behaviour Patterns and Students' Achievement
in Terms of Instructional Objectives."

The main question raised in this study was whether or
not certain verbal teaching behaviour patterns affect students' subject-matter achievement more than others. Review of the
related literature presented in the preceding chapter provided
some indication that variance in subject-matter achievement
may also be related to differences in some verbal teaching behaviour patterns. In order to seek answer to the question raised in this study, three selected verbal teaching behaviour patterns were experimentally manipulated in normal classroom situation and an attempt was made to infer their effect on students' achievement in cognitive domain measured in terms of hierarchy of instructional objectives of knowledge, understanding and application.

Three different verbal teaching behaviour patterns have been considered in this study as antecedent process variables. These three different patterns were obtained by observing classroom interaction of (a) a group of teachers 'programmed' in the theory and practice of classroom interaction analysis using the observational system selected in the present study. This group was designated as experimental No. 1 group (E_1), (b) another group of teachers 'programmed' in the same way as E_1 but were further 'programmed' in greater and systematic use of verbal feedback and questioning behaviours. This group was designated as experimental No. 2 group (E_2), and (c) another group of teachers with no 'programming' as was done in (a) and (b). This group was designated as control group (C). The purpose was to achieve systematic variation in general indirectedness as well as verbal feedback and questioning in these three patterns of verbal teaching behaviours so that their differential effect, if any, on students' achievement measured in terms of instructional objectives of knowledge, understanding and application could be studied. Results of the related literature reviewed in the preceding chapter though often contradictory, suggest the possibility of
obtaining significant variance in students' achievement as a result of exposure to these differential treatments.

3.2 **HYPOTHESES**

In this study the following null hypotheses asserting no true differences were tested:

1.1 There is no significant difference in mean achievement at knowledge level of students exposed to verbal teaching behaviour patterns of C and C groups of teachers.

1.2 There is no significant difference in mean achievement at understanding level of students exposed to verbal teaching behaviour patterns of C and C groups of teachers.

1.3 There is no significant difference in mean achievement at application level of students exposed to verbal teaching behaviour patterns of C and C groups of teachers.

2.1 There is no significant difference in mean achievement at knowledge level of students exposed to verbal teaching behaviour patterns of C and C groups of teachers.

2.2 There is no significant difference in mean achievement at understanding level of students exposed to verbal teaching behaviour patterns of C and C groups of teachers.

2.3 There is no significant difference in mean achievement at application level of students exposed to verbal teaching behaviour patterns of C and C groups of teachers.
3.1 There is no significant difference in mean achievement at knowledge level of students exposed to verbal teaching behaviour patterns of E₁ and E₂ groups of teachers.

3.2 There is no significant difference in mean achievement at understanding level of students exposed to verbal teaching behaviour patterns of E₁ and E₂ groups of teachers.

3.5 There is no significant difference in mean achievement at application level of students exposed to verbal teaching behaviour patterns of E₁ and E₂ groups of teachers.

3.3 TERMS DEFINED:

Each concept included in the above hypotheses has been operationally defined as follows:

1. Verbal Teaching Behaviour

   Those verbal acts of the teacher which are directed at achieving instructional objectives and occur within the context of classroom interaction. Taking attendance is not verbal teaching behaviour.

2. Pattern

   Following Flanders (1970, pp. 4), a pattern is defined as a short chain of events that can be identified, occurs frequently enough to be of interest, and can be given a label (or name) since this often facilitates thinking, e.g. a questioning pattern.

3. Achievement

   Cognitive growth in a student resulting from teaching.
4. **Knowledge**
   **Objective**
   Cognitive operations characterised by recall and recognition of facts, terms, definitions, concepts, principles, processes etc. It emphasizes most the psychological process of memory.

5. **Understanding**
   **Objective**
   Cognitive operations characterised by ability to translate, interpret and extrapolate.

6. **Application**
   **Objective**
   Cognitive operations characterized by the ability to apply ideas, rules of procedures and methods to new situations.

7. **Experimental**
   **No. 1 group**
   (E₁ group)
   **Teachers**
   Teachers "programmed" in the theory and practice of classroom interaction analysis using the observational system selected in the present study.

8. **Experimental**
   **No. 2 group**
   (E₂ group)
   **Teachers**
   Teachers "programmed" as in the case of E₁ group with additional programming in greater and systematic use of confirmatory and corrective feedback as also in asking cognitive memory, convergent, divergent and evaluative questions.

9. **Control group**
   **Teachers**
   (C Group)
   Teachers not "programmed".

Terms E₁ group of students, E₂ group of students and C group of students mean three different groups of students who were exposed to verbal teaching behaviour patterns of E₁ group of teachers, E₂ group of teachers and C group of teachers respectively.

3.4 **DELIMITATION**

The scope of the present investigation was limited
to the following points:

1. This is a short range experimental study spread over teaching of 8 sequential lessons by each teacher in a unit in general science.

2. Students' achievement in terms of instructional objectives have been measured immediately after the unit of instruction is over.

3. In terms of hierarchy of instructional objectives in cognitive domain only three objectives of knowledge, understanding and application have been included as product variables for investigation.

4. Trained science graduates teaching general science to 7th class serve as the sample of teachers.

5. The study is restricted to 7th class students reading in some of the Hindi medium boys' higher secondary schools of Ajmer.

6. For the purpose of obtaining statistical control, initial differences among students in intelligence and previous level of related knowledge only have been considered.

7. Only verbal teaching behaviours have been considered.

8. Only one interaction analysis category system has been used.

9. Classroom interaction data have been collected with the help of trained live observers.