Emergence of the Problem
CHAPTER-III

EMERGENCE OF THE PROBLEM

The previous two chapters introduced the variables involved in the study viz., teaching strategies, achievement, cognitive style and self-concept. Also review of related literature was presented in Chapter II. This chapter deals with the need of the study, statement of the problem, objectives, hypotheses and delimitations of the study.

3.1 NEED OF THE STUDY

A prominent feature of contemporary educational thinking in both developed and developing countries has been a growing concern about the effectiveness and efficiency of schools. Whether educational policy makers have looked locally, regionally, nationally, or internationally, they have found that few schools seem to be promoting quite the degree of learning excellence of which they are capable and/or is expected of them.

Studies of teacher effectiveness have failed to identify a single pattern of effective teaching. No single teaching model, howsoever attractive it may seem, is a perfect one. There is not any particular method of teaching which fits universally in all teaching situations, for all teachers and all students. It implies that we require a different method to teach different subjects at different grades to teach pupils with differential psychological characteristics.

To bring about a qualitative change in the system of education, the models of teaching need to be implemented faithfully in the classroom teaching with certain modifications. Keeping in view the previous history; National Council for Educational Research and Training (NCERT) has taken a wise step to introduce innovations such as programmed instruction, team teaching, models of teachers etc., at teacher training level. In this context,
the examination of effectiveness of teaching models has become important.

Though some of the theories on which teaching models are based may not be very recent, but the manner in which Joyce and Weil (1972) have intricately interwoven educational purposes, learning theories and teaching strategies, is novel and promising. The scope of research in this field is very vast.

Research studies on the Models of Teaching are found to be gaining increasing popularity. While selecting the models of teaching, it was kept in mind that the models of teaching used for the study should be applicable, functional and workable in Indian setting in the classrooms as a long-term perspective. Moreover, their instructional and nurturant effects were also matched with the objectives of the study.

Present study is an attempt to study the effectiveness of Richard Suchman's Inquiry Training Model from Information Processing Family and Bloom's Mastery Learning Model from the Behavioral Systems Family. The Information Processing Model shows an orientation towards information processing capabilities of students, and towards the systems that can improve their information processing capability. Information Processing Models refer to the ways people handle stimuli from the environment, organize data, sense problems, generate concepts and solution to the problem (Joyce and Weil, 1972).

These models are based upon a relatively new movement in psychological thinking which views the learner as an active investigator of his environment rather than a passive learner.

In the Fourth Survey of Research in Education (Buch, M.B. 1992), the research on teaching strategies was a part of the chapter on Research in Teaching, and less than twenty studies were reviewed under this section. In the Fifth Survey of Research in Education (1997), there is a separate
chapter, reviewing forty-four research studies on teaching strategies. This is undoubtedly an indicator of the momentum gained by research on teaching strategies (Singh, 1997). In all, the information processing models caught the attention of researchers much more than the other families of the models of teaching. A lot of studies have been conducted on Mastery Learning also. But a review of related literature indicates that very few studies have been conducted to study the effectiveness of Inquiry Training Model and Mastery Learning Model with respect to achievement, retention and self-concept in the context of cognitive styles. Besides this, research needs to be conducted to determine effectiveness of different teaching strategies at primary level for teaching subjects such as mathematics.

Related to Models of Teaching, the first study at Ph. D level was completed in 1983 by Chitriv at Nagpur, while at M.Ed. level, the first study was conducted by Buddhisagar in 1979 at Indore. In the past two decades, research studies have been conducted on Concept Attainment Model (Pani, 1985, Gangrade 1986; 1987; Agarwal and Mishra, 1988; Chaudhary, 1989; Bawa, 1991; Manocha, 1991; Viney 1992; Khan and Siddiqi 1992; Jalilvand, 1991); Advance Organizer Model (Buddisagar, 1979; Patania, 1980; Malik 1985; Rajoriya, 1986; Panda, 1986; Senapati, 1986; Rajoria 1987); Inquiry Training Model (Katyal, 1985; Dubey 1986); The cognitive Growth Model (Senapaty, 1985); The Jurisprudential Inquiry Model (Tiwari, 1986; Mishra, 1991 and Pandey, 1991); Non-directive Model (Sahani, 1986); and Synectics model (Malhotra, 1990; Kumari, 1990 and Martis, 1990).

A perusal of these studies leads us to the inference that the conventional method of teaching different subjects at different levels was found to be less effective than models of teaching in terms of achievement of students. In spite of this, it is difficult to determine which instructional strategy, pattern of teaching or model of teaching is most appropriate for
teaching different subjects at different levels.

Present study is an attempt to study effectiveness of Inquiry Training Model and Mastery Learning Model for teaching mathematics to primary level students. The results of the present study are expected to benefit the teachers, teacher educators and students. Moreover, the investigator believes that a teacher who utilizes variety of teaching strategies is more likely to reach all students in the classroom. Keeping in view the importance of mathematics, the present study was planned. Mathematics was selected because it is one of the most important subjects in the school curriculum. Also the investigator has the experience of teaching mathematics.

3.2 STATEMENT OF THE PROBLEM

A COMPARATIVE STUDY OF THE EFFECTIVENESS OF INQUIRY TRAINING MODEL AND MASTERY LEARNING MODEL FOR TEACHING MATHEMATICS IN THE CONTEXT OF DIFFERENT COGNITIVE STYLES.

3.3 OBJECTIVES OF THE STUDY

1. To develop instructional material based on Inquiry Training Model and Mastery Learning Model for teaching mathematics to class V students.

2. To compare the mean gain on achievement scores of the three groups of students taught mathematics through ITM (Inquiry Training Model), MLM (Mastery Learning Model), Conventional Method (CM) of teaching.

3. To study the effectiveness of the three instructional treatments for the field independent and field dependent groups.
4. To study the effectiveness of the three instructional treatments for field independent and field dependent groups at knowledge and comprehension categories of objectives.

5. To compare the retention scores of the three groups of fifth class students taught mathematics through ITM, MLM and CM.

6. To study the effectiveness of the three instructional treatments for field independent and field dependent groups with respect to retention.

7. To study the effects of three instructional treatment for field independent and field dependent groups at knowledge and comprehension categories of objectives on retention scores.

8. To study the effect of three instructional treatments for field independent and field dependent groups with respect to self concept scores.

3.4 HYPOTHESES

Hypotheses for analysis of gain scores on achievement test in mathematics.

H1 The three instructional treatments yield comparable mean gain on achievement scores in mathematics.

H2 The field independent and field dependent groups yield equal mean gain on achievement scores.

H3 Comparable mean gain on achievement scores are yielded by students at knowledge and comprehension categories of objectives.

H4 There is no significant interaction between instructional treatments and types of cognitive style.
H5 There is no significant interaction between instructional treatments and categories of objectives.

H6 There is no significant interaction between types of cognitive style and categories of objectives.

H7 The three instructional groups attain comparable mean gain on achievement scores with both the types of cognitive styles at knowledge and comprehension categories of objectives.

Hypotheses for analysis of retention scores

H8 Retention is independent of instructional treatment.

H9 Retention is independent of types of cognitive style.

H10 Retention is independent of categories of objectives.

H11 Student taught through different instructional treatments attain comparable retention scores at knowledge and comprehension categories of objectives.

H12 Field independent and field dependent students retain comparably when taught mathematics through different instructional materials.

H13 Field independent and field dependent students retain comparably at knowledge and comprehension categories of objectives.

H14 Field independent and field dependent students retain comparably at knowledge and comprehension categories of objectives when taught through different instructional treatments.

Hypothesis for Analysis of Mean Gain Scores on Self-concept

H15 The three instructional treatments yield comparable mean gain scores on self-concept.
H16 Field independent and field dependent students attain equal mean gain scores on self-concept test.

H17 There is no significant interaction between instructional treatments and types of cognitive styles.

3.5 DELIMITATIONS

- The study was conducted on class V students of two schools of Rohtak, Harkishan Memorial Public School and St. Thomas Public School, affiliated to Central Board of Sec. Education, New Delhi.

- The study was conducted only on Mathematics syllabus of Class-V as prescribed by C.B.S.E., New Delhi.

- Only five units of mathematics were selected for instructional treatment.

- Only two models of teaching viz. Inquiry Training Model and Mastery Learning Model were selected for the study.

- The experiment was limited to 50 days of the academic session.