CHAPTER III

REVIEW OF RELATED LITERATURE AND STUDIES
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CHAPTER III

Review of Related Literature and Studies

This is nothing but an exhaustive survey of what has already been done concerning the problem which is being investigated and hence is an indispensable step in its analysis and evaluation. “A survey of related literature implies locating, reading and evaluating reports of research as well as reports of casual observations and opinion that are related to the individual’s planned research project” observes Aggarwal\(^1\) (1966). It helps the research worker to gather up-to-date information about what has been done in the particular area from which he intends to take up a problem of research.

Though our society has undergone dramatic changes in recent years, teaching methods have remained basically the same since the early 1900s observes Cuban\(^2\) (1988). These instructional techniques no longer meet the needs of our students. Yet many of the classroom tasks assigned to students are confined to low level, involving recognition or reproduction of memorized information of isolated skills, without much understanding of content in meaningful ways according to Doyle\(^3\) (1988). In addition, current instructional methods often seem antiquated and dull to children who have grown up with the stimulation of television and computers. The challenge for today’s institutions is to provide instructional experiences that sustain student interest and facilitate development of higher order skills. This can be accomplished
through the design of learning activities that engage students in relevant tasks and take full advantage of the use of technology instruction.

Rather than learning skills and facts in isolation, a constructivist approach to instruction stresses the importance of learning in a meaningful context observes Brown (1989). For example, knowledge is an integral part of the activity in which it is encountered. Thus learning is enhanced when it occurs in meaningful, authentic context. Brown suggests that present classroom teaching techniques, which often teach skills in isolation from a meaningful context, may be detrimental to the goals of education.

3.1. **Instructional Strategies**

Araveena (1997) examined a program for promoting skill development to facilitate effective communication. Findings, through reviews of curricula content and instructional strategies, suggest that both time constraints and limited background knowledge prohibited teachers from providing effective individual instruction. Writer's worker shop and cooperative learning strategies were all implemented and incorporated into a whole setting. Post-intervention data indicated that instructional strategy was effective in improving the communication abilities of targeted students.

Kovalchick (1998) explained the use of Electronic mails (E-mails) and technology portfolio's as an instructional strategy in pre-service teacher education technology courses. Introduction to Media and Computers in Teaching is an introductory level, two credit, pre-service teacher education course offered at the University of Virgina. In this course, the instructors use
E-mails as a way to examine the students' learning throughout the semester and to model a strategy they can later utilize in their own classrooms. After each class, students create an entry in their E-mails using a word processing program. The use of technology portfolios and E-mail places an explicit focus on the relationship between technology applications and instructional methods.

3.2. Modular Strategy

3.2.1. Studies conducted abroad.

Merwin and Donald (1972) conducted an experiment to find out the effectiveness of self-instructional modules in preparing Secondary School Social Studies Teacher Trainees. He found significant differences between the control group learning through conventional method and the experimental group learning through self-instructional module on the acquisition of knowledge and skills essential in planning, questioning and testing for higher cognitive process, favouring the experimental group. The experimental group found the module to be an enjoyable and effective device for developing understanding and skills in planning, questioning and testing.

Todd (1972) developed and evaluated a module for individualized self-directed instruction at the college level. The study showed that the students using instructional module were able to achieve objectives of the course in a manner different from normal college instruction. In addition, the instructional module was found to be better than the instructor's method in another class.
Williams and Keilkkari (1973) studied the effectiveness of module and the findings indicated that the teacher acquired the skills of the modules and used these skills in their classrooms. Teacher's use of the skill had an effect on the learning of the students.

An experimental study to investigate the feasibility of the modules, by comparing students who were taught by proficiency modules, with students taught by traditional approach was conducted by Dishner (1973).

Windell (1975) from his study with self-instructional teacher training module revealed that the modules were effective to produce reliable changes in trainee's knowledge and skill in the use of techniques for determining the reading level of the exceptional children.

Heller and Gate (1976) conducted a study to compare the effectiveness of instruction using a learning module approach with that of instruction using a traditional lecture discussions method in an undergraduate course entitled 'Psychology of Exceptional Child'.

The study revealed that it is possible to experiment within a traditional college of educational framework with learning modules. It remained to prove if innovative learning module programme result in significant gain for students. Both approaches could benefit students and a combination of the two might be viable and justifiable strategy.

Vaughan (1977) compared modular textbook instruction in an individualized, competency-based teacher education programme. The results showed that all subjects in both treatment groups were able to master each of
the teaching competencies involved in the study. However, the result of the study indicated a lack of significant differences between treatments.

Amien\(^4\) (1979) conducted a study in an Indonesian School in standard VIII. The control class was taught through a traditional teacher centred method using a lecture-cum-demonstration approach. Two treatment classes were taught through a student centred method using a modules approach. The findings of the study revealed that in achievement and retention the treatment classes were significantly higher than the control classes. There were no significant differences in the personality factors between groups. The correlations between pre-test scores and post-test scores revealed no significant differences in the effect of the instructional methods.

The implication of peer tutors and module mediated mastery learning was investigated by Mudjiman\(^5\) (1982). The basic research question was: Can the mastery learning strategy be applied by teachers’ using modules and peer tutors? The results showed that modules and peer-tutors were effective mediators of the mastery learning strategy when the students index to measure achievement. Peer-tutor and module mediated mastery learning was more effective than the other strategies in responding to the complexity of learning materials.

Greenberg\(^6\) (1984) investigated the effectiveness of a multimedia functional reading module. Use of the videocassette lesson with computer practice was compared to videocassette use with paper and pencil practice. The modules focused on the functional reading skill. The 't' test, Pearson
product moment correlation and chi-square test were applied to analyse the data.

The findings revealed that no significant difference existed between the posttest performance of the two groups. There was significant correlation between strategy scores and application scores. There was a significant score favoring the computer treatment in response to a question about enjoyment of the follow up practice.

Mohammad\(^1\) (1988) developed and evaluated a modularized individualized instruction science course in Kuwaiti secondary schools. The purpose of the study was to develop, implement, and evaluate a science course in accordance with modularized, individualized instruction principles. Samples included 497 pupils and 16 teachers. Both treatment group were administered pre-test, post-test, achievement and attitude tests. Major findings of the test was modularized, individualized instruction was significantly effective in producing overall achievement.

3.2.2. Studies conducted in India.

Sansanwal\(^1\) (1978) developed an instructional strategy for teaching Research Methodology at M.Ed and M.Sc (Home Science) level. Various components of this strategy were PLM, library work, discussion, unit tests and discussion on unit tests. In this study the effectiveness of each component was studied on the basis of reactions of students involved in the experiment. Each component and the sequence in which these were used in the instructional process were found to be effective. Since the objectives of
teaching the subject differ from subject to subject, there is a need to evolve an instructional strategy for teaching a subject at a particular level.

The objective of this study was to develop and study the effectiveness of instructional strategy in terms of (a) achievement of students on criterion test (b) reactions of students towards each component as well as the whole of Instructional strategy.

This study was conducted on B. Ed students admitted during 1978–79 in the Department of Education, University of Indore. All the admitted students were divided into three groups, each consisted of 60 students. Of these two groups were selected randomly designated as experimental and control groups. Both groups included students from different disciplines like arts, science, life science, home science etc. There were graduates and postgraduates in both the groups. The medium of instruction was Hindi.

For developing instructional strategy an analysis of "LEARNING" a topic from Educational Psychology was carried out. For this topic specific objectives were stated in behavioural terms. The conclusions were

(i) The instructional strategy was found to be effective to the extent than 70% of students got above 70% marks on criterion test.

(ii) Individual component and instructional strategy as a whole was found to be effective in terms of students reaction towards them.

Shajahan¹⁹ (1980) designed and developed modules for teaching science in standard VI and VII and studied the effectiveness of the modules as an instructional method with respect to the conventional method. The
findings of the investigation revealed that Modular way of learning was more effective than the conventional method in the case of some modules while in the case of other modules it was found as effective as the conventional method. An overwhelming majority of students possessed a favourable attitude towards modular instruction. The teacher's reactions to modular approach of instruction were favourable.

Mukhopadhyay\textsuperscript{20} (1981) studied on microteaching Vs modular approach.

The objectives were:

1. To study the development of selected teaching competencies through microteaching and modular approaches,

2. To compare the effectiveness of microteaching and modular approaches in developing selected teaching competencies.

It was hypothesized that there would be no significant difference in the performance of the groups trained through microteaching and modular approaches. The study was conducted on 24 teacher trainees. Random sampling was done. Post-factor analysis was done to match the two groups. The self-learning modules, one each on questioning and reinforcement, were developed and used as training material for one group. The other group was trained through microteaching. At the end both groups appeared for a performance based post-test. The major findings of the investigation were:

1. In questioning ten from each group satisfied the criterion referenced test, whereas on reinforcement nine from microteaching group and
seven from the modular approach group satisfied the criterion reference test.

2. Both the treatments were equally effective

Gabriel and Pillai\(^21\) (1981) conducted a study, which reports an attempt to modularize learning at collegiate level in India. A difficult unit in Biology was identified and modular learning material was developed, using local resources. The feasibility of this approach over the traditional teaching approach in terms of learning efficiency, learning time and mastery level is reported. The students who experienced modular scheduling were found to be superior in understanding of concept and retention of concept. Time taken by the modular group as a whole to gain 80 per cent mastery, as compared to the control group was found to be in the ratio 2:5. It was also found that the students preferred individualized learning, and more number of and different types of multimedia approaches rather than the usual classroom lecture.

Hopper\(^22\) (1982) designed and developed modules for teaching certain units in biology in standard XI. The effectiveness of three modular approaches of teaching viz., self learning, peer group learning and peer group learning with teacher intervention was evaluated through an experiment adopting the rotation group design. The major findings of the study were:

(i) All the three structured modular approaches of teaching were effective in terms of mean gain. However, the self-learning approach was more effective than the other two modular approaches.
The modular approach in teaching biology led to significant increase in the academic motivation of the student.

There was no relationship between intelligence and mean gain in achievement through modular instruction.

Sharma\(^2\) (1991) compared the effect of various modes of classroom teaching involving video-based instruction, teacher discussion, demonstration, self-experimentation, etc., on the achievement in science of the secondary level learners. The conclusions drawn favoured most the video-based instruction while self-experimentation under the guidance of the teacher was found to be least effective of all the models.

3.2.3 Study conducted in Kerala

Mollykutty\(^2\) (1991) studied the Effectiveness of Modular Approach in Teacher Education and Requisites for Implementation. The study revealed that modular approach has not been introduced formally and structurally in any of the Teacher Education Institutions. And the UGC Curriculum Development Committee which was entrusted with the task of the preparation of model curriculum for the Postgraduate and Undergraduate course in Teacher Education have advised the use of Modular approach and also presented the model curriculum as modules.
3.3 **Mastery Learning Strategy**

3.3.1. *Studies conducted abroad.*

Washburne\(^{25}\) (1922) conducted a study on educational measurements as key to individualizing instruction and promotions. This study indicated that only when achievement replaces time as the constant factor in the schools can instruction be individualized to meet the needs and capacities of the child.

To examine the Carroll Model, Sjogren\(^{26}\) (1967) carried out a study on achievement as a function of study time. The sample of 208 adults learned each three different learning programmes. The results supported the Carroll model in that there was a significant positive relationship between the ratio of time spent to the time needed and learning measures.

Wright\(^{27}\) (1967) conducted a study to investigate the relationship between subject mastery and time. This study demonstrated that while the majority of children do reach a selected criterion level of achievement they differ in the rate at which they attain this level.

Kim\(^{28}\) (1968) conducted a study on learning rates, aptitudes and achievements to find out the relations between aptitudes and both learning rates and both learning rates and achievement levels. The results indicated that learning rates and achievement levels were interchangeable, ability to understand instruction affects learning rate, and particular aptitudes were related to learning rate for each task. Kim also studied about the Bloom strategies for mastery learning, in 1969. The findings indicate that 74 per cent of the experimental students compared to only 40 percent of the control
students attained mastery criterion. Also the data revealed that mastery learning was most effective for students with below average I.Q. In 1970 Kim et al carried out another mastery learning project in the middle schools. The results indicated that the percentage of experimental students attaining master varied widely across the sample schools. 72 percent and 61 percent of the students reached the mastery criterion by learning English and Mathematics respectively.

Gentile\textsuperscript{29} (1970) had undertaken a mastery approach to the teaching course in introductory educational psychology. The approach produced striking cognitive and especially affective results.

Beihler\textsuperscript{30} (1970) carried out a study on mastery learning strategy for teaching introductory undergraduate educational psychology to reduce examination pressure and competition among students. The strategy seemed to be especially effective, cognitively and affectively.

Burns\textsuperscript{31} (1979) has estimated the average effective size of mastery learning programmes compared to non-mastery programmes. The findings indicated that the average in mastery learning classes would achieve better than 80 to 85 percent of the students in non-mastery classes.

Obando\textsuperscript{32} (1991) studied the relationship between instructional treatment manifested on mastery learning and non-mastery learning strategies. Analysis of variance and correlated groups t-tests suggested significant achievement scores and time invested favouring the master approach but non-significant differences regarding perseverance.
Uhrig\textsuperscript{33} (1992) conducted a study to examine the feasibility, problems, benefits and implications of the use of mastery learning strategy in secondary marketing programmes implementing mark Ed model programme. The study found that in spite of the few problems associated in implementing the strategy, the mastery learning strategy and the concepts of the mark Ed model programme provide opportunity for most students to achieve at mastery levels.

Since Bloom's seminal publication in 1968, the preponderance of the mastery learning literature has been focused on the North American experience and its socio-cultural interpretations with only occasional documentation of mastery learning efforts in other parts of the world. Results of this study suggest that mastery learning can combine the strengths of direct instruction with the strengths of discovery learning.

Lancy\textsuperscript{34} (1996) studied the effect of cooperative and Mastery Learning Methods on Primary Grade Students' learning and retention of facts. A 2 x 2 (cooperative x mastery) factorial design compared the achievement of 120 students randomly assigned by grade level stratification to one of four treatment conditions; cooperative learning; mastery learning; cooperative-mastery learning; and a control treatment (no cooperative or mastery learning). All subjects were administered a written pretest, and delayed posttest of their understanding of concepts. The results of the study is that the cooperative mastery learning method is in line with the current early childhood practices and has the capacity for simultaneously boosting conceptual
development and language development of young children. This capacity is said to stem from the method’s provision of (a) specific, positive feedback; (b) a social context for sustained effort and involvement in a topic; (c) child-child communication exchanges; and (d) adult-child communication exchanges.

3.3.2 Studies conducted in India.

Yadav\textsuperscript{35} (1984) investigated the effect of mastery learning strategy on pupil’s achievement in Mathematics, their self-concept and attitude towards mathematics. The objectives of the study are (1) to compare the mean achievement scores of two groups of pupils taught in mathematics with and without the use of mastery learning strategy. (2) to compare the performance of scores of two groups of pupils taught mathematics with and without the use of mastery learning strategy. (3) to compare the attitude towards mathematics of two groups of pupils taught mathematics with and without the use of mastery learning strategy. The results showed significant difference in respect of their achievement in mathematics. The group taught through mastery learning exhibited a significantly higher achievement in mathematics than the other group.

Patadia\textsuperscript{36} (1987) conducted a study on “A strategy for mastery learning in the fifth grade geometry”. The objectives of the study are (1) to develop strategies for mastery learning in geometry for the pupils of the fifth grade (2) to validate the effectiveness of the developed strategies the findings of the study are (1) the strategy developed worked well as 88.24% pupils of experimental group scored a minimum of 70 % marks. (2) The achievement of
the experimental group was found to be significant higher than that of the control group. (3) the strategy was liked by the pupils and was feasible in the real classroom situation.

Mathur\textsuperscript{37} (1988) conducted a study on the effectiveness of the mastery-learning programme to investigate its effect on achievement, self-concept and attitude of pupils towards statistics. Mathur found that mastery learning strategy as an effective strategy in terms of achievement, self-concept and attitude towards statistics for both undergraduate and postgraduate students. His study also established the effectiveness of mastery learning strategy in reducing the gap between repeaters and non-repeaters.

Chaudhari\textsuperscript{38} (1989) conducted a study on the effect of mastery learning strategy on pupils achievement in English grammar and their attitude and found that there was no significant difference between the mean achievement scores of learning and receiving instruction through mastery learning strategy and conventional method of teaching.

Vaidya\textsuperscript{39} (1990) studied on the effectiveness of the mastery-learning programme on achievement, self-concept and attitude of pupils towards Hindi. Vaidya compared Mastery Learning Strategy (MLS) with Concept Attainment Model (CAM) and the Traditional Method (TM) with Concept Attainment Model (CAM) and the Traditional Method (TM). The findings of this study indicated that MLS was more effective than CAM or TM in

(i) Facilitating learning and enhancing the achievement level and

(ii) Improvement in self-concept and attitude towards the subject.
Verma\textsuperscript{40} (1991) conducted a study on the "Effects of personalized system of Instruction (PSI) and Mastery Learning (ML) on achievement of average students and student promoted on lenient criteria. He found that both techniques were better than conventional teaching. He also found that "Prompted" students (low achievers) when taught thorough PSI or ML approach performed significantly better on the summative test as compared to pass students (average achievers) taught through the conventional method. It implies that low achievers, if taught through PSI techniques can perform better. It is a pointer to the problem of low achievement, which can be effectively tackled.

Thomas\textsuperscript{41} (1995) conducted a study on "Mastery learning in the regular classroom". This study revealed that mastery learning offers a way for teachers to offer individualization instruction to students and to help more of their students be successful in learning.

3.3.3. Study conducted in Kerala.

Thankam\textsuperscript{42} (1997) studied an 'effects of mastery learning on certain affective outcomes of mathematics learning'. The major objectives of the study were

(a) To compare the effect of mastery learning approach and the traditional method on mathematics interest of ninth standard pupils.

(b) To compare the effect of mastery learning approach and traditional method on the mathematics interest on ninth standard pupils in the following sub samples.
(c) To compare the effect of mastery learning approach and the traditional method on the self-concept of ninth standard pupils.

The major findings of the study were the following:

(a) The mastery learning approach is more effective than the traditional method in enhancing mathematics interest of ninth standard pupils.

(b) The mastery learning approach is more effective than the traditional method in enhancing mathematics interest on ninth standard (i) Boys (ii) Girls (iii) Rural pupils (iv) Urban pupils (v) High intelligence group (vi) Low intelligence group (vii) High socio-economic status group and (viii) Low socio-economic status group.

(c) The mastery learning approach is more effective than the traditional method on the self-concept of ninth standard pupils.
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