

CHAPTER – II

REVIEW OF RELATED LITERATURE

CHAPTER – II

REVIEW OF RELATED LITERATURE

1.0.0 Introduction

Introduction, rationale of the study, objectives, hypotheses along with the delimitations of the study are presented in the Chapter-I. In this Chapter the researches related to the different variables of the present study are presented under different captions.

2.0.0 Researcher related to present study :

Superiority of Concept Attainment Strategies

Seggie (1969) studied the four groups of subjects for learning conjunctive and disjunctive concepts. The first condition required the classification of the stimuli in to positive and-negative categories, and second required that they be classified into neutral categories. The conjunctive concepts were significantly easier to learn only when the subjects were required to classify the stimuli in positive and negative terms. Under neutral conditions no difference existed between two types of concepts.

Klausimer (1970) examined the students to which cognitive style influenced the performance on concept identification problems of varying levels of complexity. In the experiment, 170 twelfth grader learned a concept identification task.

Experimental- I varied cognitive style (high, low and medium analytic) and complexity. As in experiment - I individual identified as high analytic, solved the concept identification problem with greater ease than that did low analytic subjects. Also the concept identification problem was solved easily in prompt only and verbal only in training conditions than the no training condition.

Chelbek (1970) tested the hypothesis that with disjunctive concepts, at presenting only negative instances would result in better performance than presenting only positive instances. Results were opposite to the previous views (which stated the positive instances were used more efficiently than negative instances by naive subjects attempting to solve conjunctive concept problems and that difference diminished with practice with subjects who were shown by only negative instances having significantly lower solution than those who were shown only positive instances and the difference diminished with practice.

Singleton (1977) investigated the procedure of informational redundant choices in a selection concept attainment in relation to age and intelligence, using 62 adolescents aged 12: 7-15: 6 drawn from lower middle ability range of comprehensive school. Subjects scoring below 20th percentile in intelligence were found to make a significantly greater proportion of such choices of discontinuity in the decrease in the redundancy with increasing age was confirmed.

Moore (1973) conducted a study to investigate the effect of concept difficulty of (a) the number of defining attributes, and (b) the level of conceptualization (LC) of the concept attributes. One hundred and three 10th

grade students were randomly divided into two groups and were assigned the task. The index of concept difficulty for group one was the ability to identify instances embodying the attributes of each concept. Group II of students responded to a test on the concept. That had been previously classified according to the information obtained on group-I. The index of ability to identify instances of the (a) concept difficulty was inversely proportional to the LC of concept attributes, (b) concept difficulty was differently affected by the number of conjunctive concept and was function of the interaction of the number of defining attributes and the mean LC of concept attributes.

Zammarelli (1977) investigated the effect of previous play experience on the task of concept formation involving basic four arithmetic. 24 children from 10 to 12 years of age were divided into three groups of eight subjects each matched on teachers rating of mathematical ability. A concept formation task was given as an initial measure of ability. Members of group-I designed toy whose operation embodied basic four rules: members of group- III had no experience with toy. Results showed, group-I gained more insight into the task and remembered the information more effectively in the short-term.

Contessa (1980) investigated the relationship between students' personality factors and cognitive development and the relationship between student personality factors and student ability to acquire the science concept of model building. Eighty-six eighth grade students were randomly assigned to either an experimental or a control group. The results indicated that particular student personality factors were related to level of cognitive development. There was no significant relationship between students' personality factors and concept acquisition.

Bergman (1980) investigated to expand the knowledge of the relationship of concept formation, achievement and reading achievement by investigating behaviour of groups of achieving females of IX grade. readers. Fifty-eight IX grade students in an all female academic high school in Philadelphia, Pennsylvania. (The criterion were reading ability, intelligence, years in school age. The result of the basic concept formation tests indicated that all subjects appeared to possess a categorical attitude, the ability to recognise the arbitrariness of a category and the ability to be able to consider a whole system.

Miller (1980) aimed at testing the Bruner's central thesis that younger the child the more perceptual and concrete concept are used. Concrete concepts were defined as classification based on attributes common to a group of objects. An abstract concept was defined as classification based on a feature common to a group of objects but requiring inference of some kind. The results of the study were inconsistent with Bruner's theory of cognitive growth.

Rollens (1980) studied the degree of which Texas High School senior attained the five selected concepts. Additionally, he investigated the influence of geographical location. School population size, sex and years of science background on the Texas High School seniors attainment. In the study, population was almost evenly divided between male and female seniors and between students with the required two years of science .

Results indicated that 80 per cent level of mastery was attained that by the serious on the earth concepts. Results, also indicated seniors from schools in

the second largest size, range, male students with more than two years science background attained significantly higher scores.

Simon (1980) focussed on the effect of different kind of negative instances on identification of familiar concepts. Each subject viewed a series of four instances for each concept. One positive focal instance and three instances with three types of information, positive, negative, opposite or closely related negative concepts were randomly combined with different types of instances and presented in random order. The results of this study indicated that in the concept identification negative instances were more difficult to use than positive instances. The use of different kind of instances may involve abilities and process, which develop at different ages.

Cook (1981) examined the use of positive and negative examples in learning 15 standard concepts of college algebra and attitude towards mathematics. Group-I received positive and negative instances of mathematical concepts while group-II received only positive instances of the some concepts. The results indicated that students receiving positive and negative instance treatment did significantly better than receiving only positive instances. The attitude towards the mathematics for both groups improved. Group-I had a significant improvement but group-II did not.

Musa (1981) studied (a) to examine the effect of pictorial presentation of concept attainment, (b) to examine the effect of cognitive style on a concept learning, (c) to test the effect of interaction of each way of presentation i.e. abstract pictures and realistic picture with cognitive styles on the concept attainment. The results of the study indicated that (a) abstract pictures had significant effect on concept attainment, (b) realistic picture did

not have any effect on concept attainment, (c) cognitive style did not produce any effect on concept attainment, (d) interaction of cognitive style with abstract pictures was significant, and (e) interaction, of cognitive style with realistic picture did not have any effect.

Rowe (1981) investigated the effects of recall of past experiences by 8th grade students' identification with abstract effects. These effects were manipulated in two ways: (i) type of reading narrative, and (ii) specific recall directions contained within the reading narration. The subjects selected were 8th grade students selected from homes of predominantly middle and upper middle socio-economic class in North-West Harris County, Texas. Two reading narratives, one contemporary and second historical design, were utilised to elicit the students recall of experiences with the science concepts of force, mass, weight and acceleration. Findings indicated a positive relationship between the type of narrative reading (contemporary historical) and the recall of science concepts.

Pandey (1981) studied the teaching style and concept attainment in science. The result indicated that teaching styles had varying effect on both the levels of concept attainment as well as on total concept attainment as well as on total concept attainment and giving background information, encouraging student participation and giving opportunity for students to think in the course of teaching were behaviours conducive to better concept learning.

Change (1982) examined the effect of the filmic advance organizer (FAOs) on the learning and retention of facts and concepts from a sound film by regular and the mainstreamed educable mentally Retarded Learners

(EMRL). All subjects selected from 6th, 7th and 8th, graders in two middle schools in Louisville, Kentucky were assigned at three regular groups, received one of the treatments. It was concluded that FAOs prepared for the study appeared to be provided facilitating effect for the regular subjects in acquisition and retention of facts and concept presented in a consumer education film and ability levels did not differently affect the learning outcomes.

Hunnicutt (1982) examined the positive relationship between attainment of a skill concept and frequency of skills used and, additionally examined the relationship between attainment of a skill concept and qualitative measure of the skill used. Micro-teacher featured in the transcripts varied in the extent to which they acquired and used the concept of continuant questioning as a teaching skill. It was reported, however, that micro-teacher who had mastered the concept obtained higher mean assessment scores than those who was not mastered the concept. The result also indicated a positive relationship between mean assessment scores and consistency in skill use .

Charles (1982) studied the relative effectiveness of two methods using different methods of examples and non-examples for teaching social studies concepts. Group-I was presented a rational set of examples and non-examples followed by a rational set of instances and group-II was provided two examples of each concept. It was found that the second group, which received lessons through continuous examples, performed better on posttest than the other group.

Chitrive (1983) studied the differential effectiveness of Ausubel and Bruner strategies for acquisition of concepts in mathematics. The major findings of this study were; (i) both Ausubel and Bruner strategies were superior to traditional strategies for teaching mathematical concepts, (ii) Ausubel and Bruner strategies were equally effective for teaching mathematical concepts, (iii) conceptual style preferences of the students seemed to have differential effect on their acquisition of mathematical concepts when taught by Bruner strategy.

Gerston (1983) studied the relative effectiveness of direct and inquiry oriented operations for teaching complex concepts and concept application at secondary school level. Thirty-eight school students in group of three were taught 'THE CONSTITUTIONAL RIGHTS OF YOUTH' and five instruction produced significantly higher scores on multiple choice test and essay test. An attitude questionnaire indicated that the students in the inquiry treatment found content were more challenging.

Kumara (1985) conducted a study to test effectiveness of reception concept attainment in terms of pupils achievements and their reactions. She taught general science concept to fifth standard through reception concept attainment model to the experimental group, while the same concepts were taught through the Traditional Method to the control group. The results indicated that (a) overall mean performance on achievement test of science concept of the experimental group was significantly higher than control group, (b) the experimental group had responded favourably to the various aspects of the CAM.

Pani (1985) compared the reception and selection strategy of concept attainment model in terms of attainment of science concepts and studied the effects of personality on attainment of concepts. In this study, two groups were taken; one group was taught science concepts through selection strategy another through reception strategy. Findings showed that (1) the reception strategy and selection strategy were found to be equally effective in terms of achievement of students, (2) personality factors did not affect attainment of science concepts.

Shepherd (1985) investigated that the cognitive demand considered necessary for the solution of biology problems (concrete or formal) and was related to students' understanding of biological science concepts. The sample consisted of eleventh grade students ($N=77$) enrolled in English classes in a sub-urban city in mid-west in which a major university was located. Results indicated the different sets of discrimination for the level of conceptual understanding for the concrete and formal biology concepts. Significant correlations were found between both the formal and concrete concepts and all background variables, with the exemption of age for both classifications of concepts and significant correlation with concrete and formal concept understanding.

Vermont (1985) investigated to determine the type of instructional strategy used influence (i) learning of the mole concept, and (ii) the level of students' misconceptions concerning selected concepts related to the mole. Three instructional strategies derived from piagetian and Ausubelian theories were implemented in an urban community college with freshman chemistry students.

These three strategies were the learning cycle, cognitive learning and development strategy, and a lecture laboratory strategy. Sample consisted of 60 students enrolled in the fundamentals of chemistry course at an urban community college during the 1983, first semester. The results indicated that for this sample the three methods were equally effective when used to teach various aspects of the mole concepts. The results, further, indicated that the three methods were equally effective in bringing about conceptual changes in which knowledge concerning mass and volume as well as the particular nature of matter matched the knowledge structure of experts in the area.

Agrawal (1985) studied effectiveness of reception model of concept attainment to teach science. The results indicated that the model was found to be effective in gaining the knowledge and understanding the concept.

Gangrade (1986) compared the combination of CAM and lecture method with Traditional Method for teaching science to class VII and VIII students. The combination of CAM and lecture method was found to be significantly superior to Traditional Method, when the groups were matched in respect to intelligence and attitude towards science and previous years achievement in sciences.

She also concluded that the attitude towards science contributed very little to the achievement in science of VII class, where as the attitude towards science contributed to some extent to the achievement in science of class VIII.

Geibprasert (1986) investigated the effects of a conceptual hierarchy upon learning and retention of mathematical concepts. The diagram and Venn diagram with respect to the levels of mathematics analysis and total

achievement was investigated. The experimental treatments, the diagram treatment and Venn diagram treatment presented. A conventional treatment was included as an aid to assessing the effects of experimental treatment. Treatment was assigned randomly. Significant differences between the pretest and posttest means were found across all treatments and for all levels of mathematics. No significant difference was found between treatments with respect to the levels of mathematics achievement.

Keller (1986) studied to build on the post work in discovery and expository learning as well in concept learning by (1) testing component display theory terminology to bring consistency to definitions of treatment groups and to achievement outcomes; (2) including procedural content as well as conceptual content; (3) comparing the effects and interactions of best examples and generalities (definitions or statements of the general ideas); (4) investigating effects of placement of the generality; and (5) distinguishing between three types of achievement outcomes (remembering self instructional booklets). One hundred and fifty four lessons on concepts or procedures in graphing results showed that the presence of the best examples and the generality significantly improved remembering the generality' for both types of content.

Lynch (1986) investigated the function and effect of selected filmic coding elements of TV in exploring the presence and development in adolescent high school students of special skill involving concept of horizontally and vertically. One control and three experimental groups were randomly selected. Each group consisted of an equal number of males and females divided equally between the freshman and senior classes of a North Central KANSA public high school. All students were given the embedded

concept test. Tests, which measured mastery of the spatial concept horizontally, and verticality and a standardised test of spatial orientation were administered prior to the following TV tapes presented to the four groups of study. Results indicated that there were significant differences among treatment groups in performance on horizontal and vertical spatial concepts following the viewing of the TV tapes. The tapes containing selected filmic coding elements significantly affected the performance of high school adolescent on the test of spatial orientation. The four interactions produced by ANOV A revealed that sex, development level and filmic coding elements all affect the mastery of the spatial concepts being studied.

Agarwal and Mishra (1988) studied the effectiveness of reception concept attainment model of teaching for enhancing attainment of science concepts. Findings showed that the modified reception concept attainment model of teaching was effective in increasing the knowledge and understanding of science concepts of class-VII students and it helped in students' concept attainment.

Passi, Singh and Sansanwal (1989) studied the effectiveness of training in concept attainment model and inquiry training model in terms of understanding, reaction towards model and resultant willingness of teacher educators to implement the teaching models in educational programmes. They found that concept attainment model and inquiry training model training strategies in the form of lectures, theoretical discussions, demonstration and peer practice and perceptual feedback enhanced.

Bhaveja (1989) studied the efficiency of concept attainment model and inquiry training model with regard to the degree of conceptualization in biology. The found that the model specific outcomes were realised and the students who underwent lessons through the models sowed better conceptualization.

Manocha (1990) developed the textual material for teaching biology to class IX through CAM. She prepared the material in reception and selection strategy of concept attainment. She found differential effect on the achievement of students on biology. Students taught through the CAM based material produced significantly better results than the students taught through Traditional Method.

Singh (1990) studied the effectiveness of inquiry training model and concept attainment model over traditional teaching methods for teaching physical science. He found that the post test achievement scores were significantly higher than the pre-test scores when taught through inquiry training model or concept attainment model, but not in the case of traditional method of teaching.

Vaidya (1990) studied the effectiveness of MLM, CAM and Traditional Method for teaching Hindi to class VI. The results indicated that MLM was superior to CAM and Traditional Method. She also found that CAM was superior to Traditional Method in terms of achievement of students in Hindi. MLM and CAM influenced the students self-concept and their attitude towards the subject, Hindi.

Salvi (1991) studied the effectiveness of concept attainment model for teaching of the study showed concept attainment model was effective in

terms of attainment of concepts of English, achievement in English, inductive reasoning and reaction towards concept attainment model.

Bewa (1991) studied Bruner's ideas on the nature and acquisition of concepts and strategies that can be used in concept attainment. Finding of the study showed the concept attainment model was more effective than the conventional method for the knowledge and understanding levels for retention of concepts and for bringing about attitudinal changes.

Jaimini (1991) studied the relative effectiveness of teaching through the advance organizer model, concept attainment model and conventional model on conceptual learning efficiency and retention of concepts. He found that advance organizer model and concept attainment model were both more effective than the conventional method in fostering conceptual learning efficiency in terms of comprehension and application and advance organizer and application and advance organizer model and concept attainment model were both equally effective in concept learning.

Kaur (1991) studied the effectiveness of the Bruner and the Ausubel models for teaching of concepts in economics to high and low achieving students across creativity levels. He found that Bruner's model was more effective than the conventional method.

Mahajan (1992) studied the effectiveness of two models of teaching, viz. Bruner's concept attainment model and Ausubel's advance organizer model on the teaching abilities of student teachers and on achievement of students in various schools. He found that the achievement of students who were taught by the concept attainment model based on Bruner's theory were found

to be better than those of the students taught by Ausubel's advance organizer model and the routine method.

Mohanty(1992) studied the effectiveness of using the jurisprudentially inquiry model and the concept attainment model in the cognitive development in moral. Judgement moral concepts and personal values of secondary school students. Findings of the study showed concept attainment model produced better effect on the development of moral concepts of students than jurisprudentially inquiry model and concept attainment model produced greater effect on the development of moral judgement of the girls than the boys.

Ojha (1996) studied the effectiveness of the material developed on the lines of CAM for teaching economics to class-VIII and concluded that the developed material and the CAM was superior to traditional method of teaching in terms of achievement in economics.

Summarization

Looking to the review of researcher it can be observed that many researchers have studied concept attainment model by taking different objectives. There are also studies which attempted to correlate concept attainment model and academic achievement and also the general mental ability of the students.