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CHAPTER-II

REVIEW OF THE RELATED LITERATURE

2.1 INTRODUCTION

Research takes advantage of the knowledge which has accumulated in the past as a result of constant human endeavour. It can never be undertaken in isolation of the work that has already been done on the problems which are directly or indirectly related to a study proposed by a researcher. The review of related literature has a creative and analytical function. According to Good, Barr and Scates, review is essential for developing valid insights in the area of study and also for projecting tentative solution to the problem while W.R. Borg is of the opinion that related literature provides the infrastructure from which the study grows and a perspective against which it should be assessed. Brice Takman says that the review of related literature is an essential device for developing an adequate research spectrum. Review of the related literature, besides allowing the researcher to acquaint himself with current knowledge in the field or area in which he is going to conduct his research, serves the following specific purposes:

❖ The review of related literature enables the researcher to define the limits of his field.
❖ By reviewing the related literature, the researcher can avoid unfruitful and useless problem areas.
❖ Through the review of related literature, the researcher can avoid unintentional duplication of well established findings.
❖ The review of related literature gives the researcher an understanding of the research methodology which refers to the way the study is to be conducted.
❖ The review of related literature makes the researcher familiar with the recommendations of previous researchers listed in their studies for further research.
In a nutshell we can say that the review of related literature is always helpful in selecting the research problem, to eliminate the duplication of work, in setting delimitations of the problem, framing hypotheses and in getting current knowledge in the area of interest. The investigator also gets idea about theories, methods, samples, tools and statistical techniques. It also provides the benchmark with which the researcher can compare his own findings.

Teaching through ‘Models of Teaching’ is a recent approach. Though some of the theories, on which teaching models are based, may not be very recent, but the manner in which Joyce and Weil (1995) have intricately interwoven educational purposes, learning theories and teaching strategies, is novel and very promising as it includes a rationale of its likely effectiveness and provides a strategy to analyse the education process.

A teaching model includes guidelines for designing educational environment through specified ways to teaching and learning, to achieve specific goals. The scope of research in this field is very vast. The concept of models of teaching is multidimensional; therefore, the related research literature is spread along various dimensions. The theories, on which the models are based, have been tested experimentally and yield vast data. The investigator decided to confine the review of literature of the studies undertaken to measure the effectiveness of Concept Attainment Model, Advance Organizer Model, their comparative effectiveness and some other teaching models and teaching strategies. The review includes the studies undertaken to analyse whether the inductive or deductive method is more suitable for learning concepts. The review of the related literature has been presented by the investigator under the following sub-headings:

2.2 EFFECT OF CONCEPT ATTAINMENT MODEL IN TERMS OF ACHIEVEMENT

Lemake (1965) recognized the relationship between Concept Attainment and Information processing task. He found that the span and rote memory factors representing the memory domain were isolated and found to be clearly unrelated to the task factors. The results generally supported studies
using similar stimulus material and presentation models. The factor of the reasoning domain were all related in degree of task factors, however, Deduction and Spatial Scanning, factors thought to be related the domain, were only marginally related to the concept attainment and information processing factors.

James (1979) had conducted a study entitled ‘The effect of instructions and practice on concept identification’. The subjects were college students from introductory psychology courses.

Cook (1980) studied the effect of negative and positive instance in teaching mathematical concepts to freshmen. He observed that the students who were taught both positive and negative instance were better than those taught with positive instances only.

Douglas (1980) studied the efficiency of three procedures for sequencing examples with minimal stimulus variations between adjacent positive and negative examples, dynamic, static and static with maximal difference between example pairs. In the static treatment, two minimally different instance were presented simultaneously. In the dynamic treatment, single stimulus was altered to successively generate minimally different positive and negative instances. The study by Douglass (1980) mentioned above are based on Bruner’s Model of concepts is the Advance Organizer Model; which is deductive in its approach. Before one decides upon a model for teaching concepts, it is important to analyse which approach works better, inductive or deductive.

Prapvadee (1980) has studied the use of prototype and skill development instructional presentation forms in acquisition of Mathematical Concept a regular polygon.

Authony (1980) has studied the acquisition of ‘higher order test administration skills utilizing concept based training strategy. The main focus of the study was to know how would concept based training method will help in acquisition of higher order test administration skills.
Hovden (1980) had examined level of concept attainment of mathematical concept of 'variable' by college students.

Janner (1980) in his study entitled 'student mastery of classificational concept in Zoology course, tried to determine whether or not presentation in lab of definition example and non-example or salient defining attributes of Zoology concepts would enhance concept attainment.

Joseph (1980), in his study, the attainment of Mathematical set theory concepts were studied. These concepts were attained by those subjects having field development/global cognitive styles. The concepts were presented in written format employing three different instructional strategies a) Deductive b) Inductive and c) Cued Inductive

Clance (1980) had conducted a study entitled 'the effect of negative and positive instances in teaching mathematical concepts to freshman at Florida'. The subjects for this study to freshman of college.

Hoden (1980), the title of his dissertation was 'measurement of the levels of attainment by college mathematics students of the concept 'variable'. The subjects were college students.

Benesh (1980) had conducted a study of students learning Introductory Psychology course. The title of this study was 'prompting and feedback variable in the concept of programming'.

Tenner (1980) his dissertation was entitled 'students mastery of classification concept in introductory college Zoology'. The subjects were college students studying Zoology.

Prapadee (1980), his dissertation was entitled 'Acquisition of a mathematical concept by children using prototype and skill development instructional presentation forms. This study was conducted on third grade children.

Joseph (1980) had conducted a study entitled 'The interactive effect of global cognitive style and general mental ability' with three instructional strategies on mathematical concept task. The subjects were sixth grade children.
Siokan (1980) had conducted a study on pre-service teachers under the title ‘An evaluation of pre-service training concept strategy’.

Ettayab (1981) had conducted the study entitled ‘The effects of pictorial representation on concept learning’. The subjects were sixth grade children, 11 to 12 years old.

Siokan (1981) has studied on evaluation of pre-service teachers’ training concept strategy. Two concept teaching strategies were developed. First one was concept attainment strategy, second one was concept relationship strategy. Enneth (1981) had studied the effect of feedback and prompting on learning some psychological concepts from concept programmed material.

Chaudhary and Shobha Vidya investigated the effectieness of CAM and MLM in the learning of Hindi Grammar. The major objective of the study was to compare the effectiveness of CAM, MLM and the traditional method(TM). It was found that MLM was superior to CAM and TM.

Sansanwal and Sharma (1986) investigated the comparison of reception and selection strategies. They found that both strategies were equally effective in terms of attainment of science concepts. Males achieved significantly higher than females on science concept attainment test. There was no significant effect of interaction between treatment and sex on attainment of science concepts.

Sushma (1987) studied the effectiveness of concept attainment and Biological Science Inquiry Model for teaching Biology to eighth class. The effectiveness was appraised in terms of achievement in Biology and attitude towards biological science. Concept Attainment Model and Biological Science Inquiry Model were found to be more effective than the traditional teaching method with respect to achievement in Biology. Concept Attainment Model was found to be more effective than the Biological Science Inquiry Model with respect to achievement in Biological. Also, the study indicated that Concept Attainment Model changes attitude towards Biology more favourably than Biological Science Inquiry Model and traditional teaching methods.
Grewal & Kaur (1987) found Bruner’s Concept Attainment model to be more effective than Ausubel’s Advance Organiser model and traditional model of teaching while letter two do not differ from each other for concept learning in science.

Bulgren, Janis and others (1988) studied effectiveness of concept teaching routine in enhancing the performance of LD students in secondary level mainstream classes. Evolution of ‘Concept Diagrams’ and a related ‘Concept Teaching Routine’ used in 9 secondary school classrooms which included 32 LD (learning disabled) students, found that teachers successfully selected target concepts and implemented the teaching routine, whereas students (both LD and non LD) demonstrated gains in concept acquisition, notetaking skills and regular test performance.

Gupta (1988) compared Concept Attainment model and inductive thinking model on the criteria of achievement, self concept and attitude towards science and found that self-concept remained unaffected by either of the treatment. Inductive thinking model was found superior to concept Attainment model in terms of achievement and attitude towards science facilitating learning.

Sood and Sodhi (1988) studied 288 class IX students using 2x2x2 analysis of variance finding Concept Attainment Model to be superior to advance organizer model for teaching Hindi Concepts, intelligence level acting as redundant factor.

Awasthi (1988) similarly found with continuous demonstration with peer practice that both were equally effective in terms of theoretical understanding of Concept Attainment model while in terms of teaching competency intermittent demonstration with practice was significantly superior to previous model.

Saxena, S.P. (1988) studied the sequential attainment of concepts in Chemistry through predictable method at the secondary stage.
Agarwal and Misra (1988) studied the effectiveness of Reception concept Attainment Model for enhancing the attainment of science concepts and found it quite effective. Baveja (1988) concluded on the basis of an empirical study that the instructional efficacy for attainment of concepts is higher through information Processing Model and inductive thinking as compared with traditional method of teaching. She further found that inductive thinking model developed mental ability of the learners and also bring change in their thinking strategy towards the most effective one.

Chaudhary (1988) conducted a study to find out the efficacy of Concept Attainment Model for training pre-service teachers. The teaching of concepts through Concept Attainment Model resulted in active involvement of students in their learning, encouraged independent thinking and was found to be better than traditional method.

Gupta, Rita (1989) studied the development of geographical concepts among children of different age-groups and construction of improved geographical teaching material.

Awasthi, V. (1989) studied the development training strategies for science teaching by using Concept Attainment Model.

Baveja, B (1989a, 1989b) in her two studies compared the effectiveness of CAM with Taba's Inductive Thinking Model in regard to the Concept of learning Biology and also analysed the thinking strategies used by the learners. The two studies differed in their sample population and elaboration. The findings were quite similar in the two studies supporting the role of inductive thinking process in the process of conceptualization and generalization.

Sarla (1990) studied the conceptual errors of secondary school pupils in learning selected areas in modern maths.

Majumdar, G. Braja (1990) conducted a study on ‘Story Telling in Education, “A way of Concept Formation’.
Singh Diljeet, K. (1990) had conducted a study on effectiveness of Inquiry Training Model and Concept Attainment Model over traditional teaching method for teaching Physical Science.

Dass (1990) conducted a study on the effectiveness of Concept Attainment Model in terms of teaching competency of pre-service student teachers. He found that the Concept Attainment Model was effective when evaluated in terms of understanding of the model, training the model, and coaching in the class room and increased the teaching competency of the teacher by following a training strategy and peer-practice feed back.

Goel (1990) studied the effect of teaching through Concept Attainment Model on acquisition of language concepts. He found that Concept Attainment Model and conventional method of teaching were equally effective in terms of achievement in Hindi language concepts.

Kaur (1988) investigated the effectiveness of Bruner’s Model and conventional method of teaching for teaching of concepts in mathematics. The experiment was conducted on a sample of one hundred students of seventh class. The result of the study indicated that there was no significant difference in the efficacy of Bruner’s concept Attainment Model and conventional method of teaching for teaching of concepts in mathematics.


Mohan Radha (1991) conducted a study on effective Concept Learning in Secondary Education.

Manocha (1991) studied Reception, as well as, Selection strategies in comparison to the conventional method of teaching for teaching of concepts in biology. She found that there was no significant difference between Reception and Selection strategies with respect to achievement scores.

Khan and Siddiqui (1992) reviewed the effectiveness of concept attainment strategies. The findings of the review study were: (i) Concept Attainment Strategies were more effective than the traditional approach; (ii) personality factors had no significant effect on concept-attainment process;
(iii) these strategies were responsive to the needs of disadvantaged learners; and (iv) attainment of disjunctive concepts were more difficult than the attainment of conjunctive concepts.

Gupta K. Naresh (1993) analyzed the effect of CAM and Inductive Thinking Model of teaching on Achievement, self-concept and Attitude towards science. Following were the major findings of the study:

Hilda Taba's Inductive Thinking Model was found more effective when compared on achievement. The CAM was not effective in promoting attitude towards science. Hilda Taba's Model was effective in promoting attitude towards science. Hilda Taba's model was found more superior to CAM in promoting attitude towards science. Neither the CAM nor Hilda Taba was effective in bringing about significant changes in self-concept.

Alma Vera Preston (1993) of University of Texas at Austin, emphasized on concepts and definitions using manipulative materials, pictorial, representing small group activity, discussion regarding study skills and discussions about mathematics, anxiety would have on the attitudes, understanding, performance and self confidence of students. In the study, 21 basic mathematics skills classes with an enrollment of 295 students were studied. The data from the maths tests and the anxiety and attitude scale were analysed using multivariate analysis of variance. There was no apparent difference in students' maths success. No gender difference in achievement was found.

Gupta (1993) studied the relative effectiveness of some information processing models of teaching an mental processes and attitude towards science. He selected three models of teaching i.e. Concept Attainment Model, Inductive Thinking Model and Inquiry Training Model. The models of teaching had been found effective in developing reasoning and scientific creativity and also found effective in promoting favourable attitude towards science.

Lamm, Harriet Ann (1993) compared the Concept Attainment instructional strategy to the traditional lecture/discussion instructional strategy. The focus of the concept attainment strategy was an making the connection
between the physical/visual, oral and symbolic representations of the mathematical concepts. From observations, it was evident that factors other than those which can be controlled in the class room affected students performance. Prior knowledge greatly influenced the amount of new knowledge which the students acquired. This study provides an insight into the use of the C.A. strategy which needs further investigation with larger sample.

Chopra (1994) studied the effect of teaching through concept attainment model on acquisition of concepts in English language and concluded that the concept attainment model and conventional method of teaching were found to be equally effective in terms of achievement in English language concepts.

Carbonaro (1998) studied computational cognitive model of concept attainment. The goal of this thesis was to extend our knowledge of the use of computational cognitive modeling to issues of concept attainment. The networks' hidden cellular responses were examined using graphical and singular value decomposition. This examination was carried out on the dynamic and final state data produced by the network. It was concluded that constrained networks learned a set of rules, which produced greater discrimination among examples without any loss of correct categorization.

Brow (1999) studied human genetic concept attainment in secondary biology students. The purpose of this study was to determine if the use of specifically constructed case studies and a student Decision-Making Model facilitated learning genetic concepts. He found no significant difference between the control group (those sections who did not use the case studies and students Decision Making Model) and the experimental group (those sections who used the case studies and student Decision Making Model) on the genetic concept.

Driver, J.M. (2001) studied the effect of two teaching models (direct instructions and concept attainment model) on community college students in an on line college algebra lesson. He found no statistically significant difference in the two treatment groups. However, the results of the study
indicated a need for instructional designers to employ alternative teaching model, such as, the concept attainment model in an attempt to provide varying means of instructional delivery within online mathematics lessons for college students.

2.3 EFFECT OF CONCEPT ATTAINMENT MODEL IN TERMS OF INTELLIGENCE

Kanta (1989) studied the effectiveness for Concept Attainment Model in teaching concepts of chemistry in relation to intelligence and cognitive styles. In her study, a sample of one hundred twenty students of IX class was drawn. She found that teaching strategies helped the students in attaining and learning the concepts and intelligence also played a significant role in acquisition of concepts. The cognitive style did not show different effect with respect to teaching strategies.

Jalilvant (1999) conducted a study to find the effectiveness of Bruner’s Model of Teaching of concept learning in relation to the cognitive style and intelligence at secondary school stage and found that concept attainment model was superior to lecture method. Intelligence played no role for concept learning, cognitive styles also did not play any role in achievement in concept learning. He also found that girls had better performance than boys when taught by lecture method. Interaction between cognitive styles, intelligence levels and gender was found to be significant. Interaction among cognitive styles, gender and teaching models was found to be non significant on achievement in concept learning. Interaction among cognitive styles, intelligence levels, gender and teaching models was found to be significant.

Most of the studies conducted on concept Attainment Model indicated that CAM is more effective than TTM (Traditional Teaching Method) (Sharma, 1979; Cock, 1981; Sansanwal and Sharma, 1986; Sushma, 1987; Agarwal and Misra, 1988; Kanta, 1989; Baveja, 1988 and Chaudhari, 1988; Das, 199; Khan and Siddiqui, 1992; Carbonaro, 1997, Jalilvant, 1999), but studies of Kaur, 1984; Kaur, 1988; Goel, 1990; Manocha, 1991 and Brown, 1999 showed that CAM is not more effective.
2.4 **EFFECT OF ADVANCE ORGANISER MODEL IN TERMS OF ACHIEVEMENT**

The effectiveness of Advance Organizer in promoting learning and retention has been the subject of discussion for many decades. This time-period can be divided into three parts:

(i) The early 1960’s to the mid 1970’s, when various studies were conducted;

(ii) The mid 1970’s when the results of these studies were compiled; and

(iii) The period since late 1970’s when various studies were conducted with review and improved procedure (Barnes and Clawson, 1975; Lawton and Wanska, 1979; Mayer, 1978, 1979; Kiewra, Kenneth A. and Mayer, Richard E., 1997).

Ausubel (1960) found a significant difference between two groups in attainment of concepts in metallurgy. The experimental group studied a 500 word expository Advance Organizer which was more general, abstract and inclusive than the learning material. The control group studied the historical passage of same length. Ausubel and Fitzgerald (1961) compared the effectiveness of three types of introductory passages; a comparative organizer, an expository organizer and a historical introduction. They reported that the comparative organizer was found to be significantly higher when compared with expository organizer and the historical introduction.

Ausubel and Youssef (1963) compared the effects of an advance organizer and a non-ideational passage of historical and biographical nature. They found that the performance of the advance organizer group was significantly higher at 0.05 level.

Schulz (1966) compared a group that received two advance organizers with a group that did not receive advance organizers. The results obtained were found to be insignificant. Probably, the efficacy of Advance Organizer was reduced due to large time gap between its delivery and the subsequent teaching. He concluded that Advance Organizers are helpful in
learning for children who lack necessary process skills for the task to be learned.

Strinbrink (1970) treated the experimental group with conceptual advance organizer and daily advance organizer. The control group received the conceptual organizer at the end of the unit and did not receive daily advance organizers. He found a significant difference in favour of the advance organizer.

Narnes (1972) and Clawson (1972) each conducted a study of the effects of advance organizers. Both investigators reported no significant difference in favour of the groups using advance organizers. In the mid 1970's, at least, three major reviews of Advance Organizer studies were conducted (Barnes and Clawson, 1972; Faw and Wallex, 1976; Hartely and Davies, 1976). On the basis of the first two reviews, the authors concluded that Advance Organizer did not facilitate learning. The results from the third review were controversial. On the whole, twelve flaws were detected in the conduct of various studies and consequently attempts were made to remove the lacunae in the subsequent studies.

In the late 1970's investigations conducted after removing the earlier flaws, mentioned above, indicated that ‘Advance Organizer’ facilitated learning, as well as, retention (Alexander, Frankieqiez and Williams, 1979; Kozlo and White, 1980; Lawton and Wanskaw, 1979; Mayer, 1978, 1979; Luilen, 1980).

Housten and Pilliner (1974) investigated the effect of verbal teaching style on the attainment of educational objectives in physics. They found that the pupils taught in an open-ended style to achieve the more complex cognitive educational objectives rapidly than those taught by the other two methods. Conclusions of the study conducted by Bernard (1975) on the sample of grade twelve students proved that the use of Advance Organizer facilitated learning by students of the classification of behaviour management concepts.
Faw & Waller (1976) found that A.O. are more likely to be effective when the material to be learned is difficult, technical or unfamiliar or presented in a random and unorganized manner/fashion.

A study conducted by Hastley & Davis (1976) found that A.O. have a great effect on retention than on learning.

Mayer (1978) found that A.O. tend to aid lower ability learners more than higher ability learners.

A study conducted by Lantum & Wanska (1977), Ausubel (1978), Mayer (1979), Kazlows & White (1980) on failure to control for existing subsumers in cognitive structure found that without controlling for existing subsumers, it is impossible to judge whether A.O. are effective, for control group subjects may already have had sufficient knowledge to do equally well on the subsequent task. Mayer (1979) also pointed out that material to be learned may have a relevant subsumer embodied in it or may tend to deficit a relevant subsumer from the learner, a consideration that has been ignored by investigators. He also found that subject areas where A.O. might be most helpful are science and mathematics. It should be, however, noted that the degree of novelty and difficulty in a subject area is more important than the subject area perse. Lantum & Wanska (1979) found that A.O. using both content and process concepts are more effective than A.O. using either content or process concepts; A.O. using process concepts have a greater facilitative effect than A.O. using content concepts.

Gagne and Briggs (1978) in their Model of Instructional Design, proposed that the defined concepts were best taught by verbal expository methods, while rules were more effectively taught by guided discovery procedure. Gange and Briggs acknowledged, however, that defined concepts are a form or rule, and as such, are learnt in much the same way as rules. This ambiguity in the model was investigated using treatments, which contrasted expository discovery forms of presentation. Regression analysis showed that the guided discovery method was as effective as the discovery method on all measures.
Alexander, Frankiewicz & Williams (1979) found that written, visual and oral-interactive Advance Organizer have all been shown to facilitate learning and retention.

Kozlow and White (1980) found in their study that Advance Organizers show greater facilitative effect when audio-visual aids are used. Also in another study conducted by them, they found that comparative organizers tend to be more facilitative than expository organizers.

Joyce and Weil (1980) concluded that teachers intending to use A.O. in lecture will need a strong grasp of their subject matter including and understanding of its propositional structure – which concepts are most abstract and which are instantiations, for example. An understanding of this structure will permit the teacher to devise the alternative A.O. which may then be used in the lecture as ‘scaffolding’ upon which students can be led to build up subject matter knowledge.

Ausubel (1980) identified three activities that distinguish learning based on this model from traditional lecturing. The Advance Organizer promotes ‘integrative reconciliation’ by focusing students on the relationships-

(a) among parts of an idea, and
(b) between the idea, parts and its whole.

It also aids ‘active reception learning’ by taking into account the students’ frame of reference in the presentation of new material and by having students take on alternative points of view. A third distinguishing aspect of A.O. lecturing is that it is necessarily structured around the principles that define a discipline.

Borer, Garys (1981) found that strengthening students’ cognitive structure facilitates thereby their acquisition and retention of new information. This implies that comprehension indirectly influences learning and achievement.

Channa (1985) studied the effectiveness of Advance Organizers in Ausubel Model of teaching and developing some concepts of physicals at secondary level. It was found that there was no significant difference between
Ausubel's Model of teaching and traditional method of teaching for teaching in some concepts of physics.

Advance Organizers were tested for their efficacy in teaching life-science concepts. Effects of variation in Advance Organizer on the cognitive subsumption in life science were determined by Ghosh (1986). The study attempted to make an appraisal of the relative effectiveness of two different types of Advance Organizers on the criteria of immediate learning and retention i.e., cognitive subsumption by having learners of different cognitive styles and different levels of readiness of learning. The outcomes of the study were: (i) the cognitive subsumption of concept of life science was facilitated by the advance introduction of relevant subsuming concepts, (ii) both types of advance organizers facilitated retention (four weeks), (iii) instructional strategy with pictorial type of Advance Organizer was found to be better than the prose-passage type of Advance Organizer, (iv) cognitive subsumption of complex subject-matter was dependent on the factor of readiness for learning, (v) difference in cognitive style produced difference in cognitive subsumption of the learning task, (vi) for subject like life science, pictorial type of Advance Organizer enhanced learning and retention. The implication of this study is that effectiveness of different types of advance organizers varies with types of content to be taught and cognitive style. Conversely, same Advance Organizer does not seem to be effective for all types of subject-matter and all types of learners.

Pandey (1986) conducted a study on effectiveness of Advance Organizer and Inquiry Training Models for teaching social studies to class VIII students and found that both the A.O. and I.T. Models were significantly superior to traditional method in terms of pupils achievements, whereas all the three were equally effective in terms of pupils attitude towards social studies.

Rancourt (1986) investigated the effects of expository comparative Organizers on mathematical achievement and retention of secondary students. The sample of the study intended to report whether expository organizers that provide relevant approximate subsumers bearing a super ordinate relationship
to a new learning material promote higher achievement and retention comparative to organizers that contract similarities and differences between new and previously established learning.

Data analysis revealed that the comparative organizer group scored significantly higher beyond the 0.05 level than did the expository organizer group on both the achievement and the retention tests. An examination of the mean scores on the achievement and the retention tests for students of high and low mathematical ability in the comparative organizer group showed higher mean.

Carlos (1986) studied the separate and combined effects of student’s learning of (i) the use of Advance Organizers and organizers at the middle and at the end of each learning task, (ii) the enhancement of students’ prerequisites and mastery learning. The studies were conducted in different high schools and concepts of algebra and biology were taught using different instructional designs. The results of algebra study show that the use of organizers alone and combined use of organizers, enhancement of the prerequisites and mastery learning have significant positive effects on students learning. The combined use of the three strategies was slightly better than the advance organizers alone, in improving students’ achievement. However, in the biology study organizers were not effective in improving students’ learning.

The basic purpose of Lewis Elliott Harris’ (1987) study was to compare the effectiveness of an Ausubellian Advance Organizer and simplified readability of science content when used together or examination. The population for this study included 239 ninth randomly assigned to treatments. The equivalence of the classes was determined by the application of a pretest and reading scores from the California Achievement Test (C.A.T.). No significant differences were found among classes on either the pretest of reading scores from the C.A.T.

To test the effects of an A.O., introductory material was developed in accordance with Ausubel’s A.O. theory. To test the effects of readability
levels on students understanding and comprehension two types of written laboratory procedures were developed for investigations covering ten weeks. One type was written at a reading level close to the students own grade level while the other type was rewritten at a reading level close to the students own grade level while the other type was rewritten at a lower grade level without changing content. Readability levels were determined with the aid of two standardized readability formulae.

The A.O. group received a written organizer at the beginning of class prior to receiving written laboratory procedures. Students then received either of the two types of written laboratory procedure. The central group received no organizer or simplified written laboratory procedures. Upon completion of all study materials a post-test was administered to test groups from material taught during the study.

Overall results indicate that either the Advance Organizer or simplified reading material is significantly better than no treatment but the two together are significantly better than either alone. The results of the study supported Ausubel’s A.O. theory and use of simplified readability method, as a facilitator to learning. When both treatments were given together, a greater facilitation of learning occurred as compared to either alone.

Right Carol (1988) studied the effects of using an Advance Organizer to teach BASIC programming to primary grade children. Past research with A.O. has focused primarily on their use among adults. Because computer programming is becoming a popular curriculum component in primary schools, method of teaching programming to children must be developed.

Buddhisagar and Sansanwal (1989) studied the effectiveness of Advance Organizer material in terms of students’ achievement and their reaction. They came to the conclusion that Advance Organizer material was effective in terms of achievement of students on different criterion tests and reaction towards the instructional material.

Davis (1990) determined the effects of A.O. and Avert rehearsal on achievement scores of elementary school students in a historic house museum
educational programme. Three treatments were developed for this investigation. Treatment first, the control group received a traditional lecture which prevailed as the basic instructional method in most historic house museums. Treatment second, the group received an A.O. classroom presentation prior to the historic house museum visit followed by traditional lecture, Treatment third, the group and received the same traditional lecture. Besides, the third group was also involved in an evert rehearsal activity, a work book, during traditional lecture. analysis of cov. was used. However, the study failed to detect significant differences among the three treatment groups. Students felt that they would have learned more about the historic house museum if they had received the A.O. classroom presentation and the evert rehearsal activity.

Charles Kater (1990) studied the effect of Advance Organizer on short term learning. This study undertook an empirical comparative analysis of the efficacy of expository and comparative Advance Organizer which were delivered both orally and in written form for enhancing the short term learning of all supervisors of Defence contractor located in Kansas City Missouri, Columbia. Extensive empirical investigation of procedures of enhancing learning through the use of A.O. have been conducted by other researchers. Each incorporated simple multiple choice type test items administered immediately following the instruction. This study used short answer recall test items which were administered five days after the conclusion of instruction.

The result of the analysis did not provide statistically significant evidence to support the efficacy of either type of A.O. or delivery method. No statistically significant interaction existed between A.O. and delivery method. Although the two, A.O. and delivery method investigated in this study did not significantly increase the short term learning of four experimental groups, a continued need exists to examine methods of enhancing short term learning.

Gupta (1991) conducted an experiment to determine the effectiveness of Advance Organizer Model of Ausubel in developing teaching competence of student-teachers and their attitude towards teaching. She found that
Advance Organizer Model was effective in developing teaching competence among student teachers under simulated, as well as, class-room conditions.

A study conducted by Dr. Smriti Swarup, M. Buddhi Sagar & Renuka Rajoriya (1991) on influence of study habits and instructional material 'with' and 'without' Advance Organizers on achievement of B.Ed. students found that the instructional material with A.O. was found to be superior than the without A.O. Also it is assumed that before reading a lesson intensively, the student may try to catch on what the lesson is about. By doing so, he may actually try to establish a mental act for studying a particular content. Similarly, he may try to relate the materials learned on one subject with those learned to another so that he may subsume the new learning with the previous knowledge. When a meaningful material is presented to the students in the form of an A.O. they try to provide an encourage to their previous knowledge gathered from other sources and the new learning material thus constitutes, the most orderly, efficient and stable way to retaining it for future availability.

Heinrichs (1991) studied the effects of Advance Organizers tool on learning and application of software commands. The purpose of the experiments was to test the effects of an Advance Organizer showing similarities in word and spreadsheet processing tasks on learning 'application software commands'. The results of the study revealed that the Advance Organizer was of little help in enhancing simple recall and retention of application commands. However, the Advance Organizer provided a useful cognitive framework for transferring knowledge of the new application software package.

Ruangruchira (1992) studied the effect of Advance Organizer on student achievement in chemistry. The subjects included 181 first year college students enrolled in 2 sections of chemistry. The subjects were randomly assigned by sections into two treatment groups and one control group. The results revealed that Advance Organizer group performed significantly better than the control and introductory-passage groups on achievement post-test and retention-test.
Duran Heide (1992) in his study analyzed the effects of an Advance Organizer on cognitive structuring of content accessed from a computer hypertext. The purpose of this study was to determine whether cognitive structuring of new information gained from a hypertext can be mediated by an A.O. This study investigated change in the knowledge structures of tenth grade American History students as a result of their reading a brief computer hypertext. Knowledge structures were displayed in the form of concept maps composed on the computer screen.

No statistical difference was found between the experimental and control groups. The difference between honors and regular students, pretest to post-test increase in degree of consistency for connecting lines approached significance. Significant differences were found between honors and regular students on both, pretest and post-test with respect to relationship stated. This research showed that both honors and regular students can learn from reading a computer hypertext, but A.O. does not appear to mediate changes in learners perspectives. The findings also corroborate research concluding that hypertexts are more productive for higher ability learners, that high ability subjects have their own way of integrating presented information and that subjects who read an A.O. require less time to read the content it precedes.

Patnayak & Monakan (1993) looked into the effectiveness of Advance Organizers in teaching history and found that the students taught with A.O. performed better than those taught through conventional approach.

Pandey and Purohit (1993) investigated the efficacy of Advance Organizer Model (AOM) in comparison to traditional teaching method (TTM) for learning outcomes in educational psychology of B.Ed. students. Their study revealed that Advance Organizer Model was superior to traditional teaching method.

Panda (1994) studied the effect of Advance Organizers and found that the group in which A.O. were introduced performed better than those taught through conventional method.
Davidson (1997) conducted a study of Advance Organizers in student centered rich learning environments. He came to the conclusion that the advance organizer did provide some focus to students. Further the learning task that accompanied the advance organizer did seem to make students' behaviour in the learning environment more goal-directed. About one third of the objects were focused on the learning task that the advance organizer provided.

Kirkman (1997) studied the effects of an oral advance organizer on immediate and delayed retention. The purpose of this study was to examine the effects of a comparative advance organizer in a moral format on learners’ immediate and delayed retention of foods and nutrition subject matter when controlling learners’ prior knowledge level. He found that no single treatment condition was more effective in facilitating immediate and delayed retention of text.

Renshaw (1997) studied the effect of content versus structure graphic organizers on nursing students’ achievement and attitudes when using computer interactive videodisk simulations. He found that neither the type of guidance nor the presence or absence of guidance, had any significant effect on achievement or on attitude towards computer assisted instruction as a creative medium.

Witiw (1997) investigated the effectiveness of advance organizers, presents through technology, on the academic success of basic aviation meteorology students. He found that use of technology significantly increased the achievement of students’ knowledge. Conceptual Technology also significantly increased students’, knowledge when measured by post-tests administered immediately following the treatment.

Wylie (1997) studied the effect of implementing a supplemental research-based instructional unit on students’ cognitive related obstacles associated with linear equation solving in algebra. This study was conducted to investigate students’ cognitive obstacles related to their thinking about variables, variable expressions, uniting, and equation solving techniques.
ANCOVA results failed to show that the instructional until had an effect on the cognitive obstacles formed by the students and investigated in this study.

Results did not show significance, students with advance organizers, either a picture or title, could not score significantly better than students without an advance organizer.

Hatch (1998) studied the effect of varied advance organizer strategies in facilitating learner achievement of specific educational objects. The purpose this study was to examine the potential effects of using specific learning objectives to create advance organizers, practice exercises, and feedback and to vary their positions within instructional materials to improve learner achievement. He found that there were no significant differences in performance scores between locus of control groups among the treatment. The instructional treatments used in this study did not indicate significant differences in learning performance except on the Drawing Test. The Drawing Test was administered to evaluate learners’ ability to construct and/or reproduce items in their appropriate context. All three treatments containing the advance organizer, practice, and feedback strategy revealed significant improvements in performance on the Drawing Test when compared to the control group.

McManus (1998) examined non linearity of instructional presentation and advance organizer in relationship to learner self regulation. Data analysis of achievement measures showed two near significant (p=0.052 and 0.054) interaction, between advance organizer by level of non-linearity and level of nonlinearity by self-regulated learning. The results were not statistically significant.

Pruliere (1998) studied the effect of picture and title advance organizer on the second language comprehension and production in French as measured by a dictation task recall task. In this study he investigated the following questions: if learners are provided with advance organizers before the dictation task, will the dictation become more comprehensible to them? Will they score higher on the dictation?
Ricci (1998) studied the application of a construct-oriented approach to the use of advance organizers for training. In this study previous research has examined the use of advance organizers as a method to enhance reading comprehension and to facilitate optimal knowledge organization. Results of research concerning the use of advance organizers have been mixed and it has been suggested that one reason for these results is a lack of theoretical guidance in defining advance organizers and testing learning outcomes. Traditional assessment methodologies include tests of recall and recognition, as well as, measure of transfer and retention.

Data were collected to test differences in three advance organizers. The first two organizers were developed to target the development of declarative and structural knowledge. The third advance organizer was developed based on Ausubel's (1960) definition of an advance organizer and was, therefore, termed as traditional organizer. Results from a pilot study showed that in the absence of training, neither of the three advance organizers differentially contributed to knowledge outcomes. Results from the second experiment, however, did not show an ability for a specific organizer to enhance a related knowledge outcome nor did the data show any effects for participant reaction by experimental condition. However, results showed that participants who were provided organizers prior to training showed significant positive correlations between structural knowledge outcomes and task performance. Conversely, participants who were provided organizers following training did not show a significant correlation between structural knowledge outcomes and task performance.

Chamberlain (1999) conducted a study of teacher behaviour which contributes to the academic success and satisfaction of remote distance learners in a two way interactive video environment. He came to the conclusion that the frequency of teacher questioning, use of advance organizer, frequency of instructor to camera eye contact, frequency of direct communication between the instructor and the remote site, and wait time were found to significantly contribute as individual behaviour to students' academic
success. Students’ perceptions of timely feed-back and integration of students presentations were found to significantly contribute as individual behaviours to student satisfaction.

McKenzie (1999) studied elementary teachers’ opinions of the use of a content enhancement strategy: Graphic Organizers. The teachers considered graphic organizers beneficial in helping the visual learner, organizing student-thinking and helping students to understand and remember information.

Shrader (1999) investigated an exploratory study of the effects of learner-controlled sequencing and advance organizers in a Web-based environment. His study explored to the body knowledge concerning the effective integration of information from hypertexts into an existing knowledge base by providing the organizational structure necessary for students to acquire and apply new information.

Wells (1999) studied the effect of the use of concept maps on community college students’ conceptual understanding of biology course content. The major purpose of this study was to measure the change, if any, in students’ conceptual understanding of biology course content using concept maps (experimental) or a standard lecture format. The effectiveness of the use of concept maps as advance organizers were measured. The effectiveness of the use of concept maps as advance organizers were measured. The final concern was the relationship between conceptual understanding of biology course content and the students’ cognitive development level.

The findings of his investigation were as follows: (i) concept maps used as advance organizers had a significant effect on students’ conceptual understanding of biology course contents. (ii) The use of concept maps as advance organizers had a significant effect on students’ conceptual understanding of biology when they were classified according to their cognitive development level, age, gender, major course time and educational background; (iii) a significant relationship between cognitive development level and conceptual understanding was also found.
Callahan (2000) conducted an experiment comparing object-oriented activities with a verbal presentation as preparation for a museum visit. His study examined the effectiveness of using object-oriented preparatory activities when used in a manner of an advance organizer. The primary goal was to examine the effects of an advance organizer that is object-oriented (treatment) when compared to a verbally presented activity (control), when both were used as preparation for touring a local history museum.

An analysis of data from the measure, using Analysis of Covariance (ANCOVA), suggested a non-significant relationship between the two preparatory methods. Other areas that were evaluated include the covariates of academic achievement and student gender. The covariate of gender resulted in a non-significant F-value while the covariate of academic achievement resulted in a significant F-value (when considered in a ‘between groups’ arrangements).

The analysis showed that the students’ test scores were not affected by either learner-controlled sequencing or advance organizers. The results revealed an unexpected effect on the time students spent learning and applying new material. Programme control produced more efficient learning by reducing the time which students spent on learning of new material. Students who were given programme controlled sequencing completed the instructional materials 13 per cent less than those who were given learner-controlled sequencing. Advance Organizers produced more efficient learning by reducing the time students spent applying the newly learned material. Students who were given advance organizers completed the performance test in 15 per cent less time than those who were not given advance organizers. The study revealed that those who consistently took the least amount of time were students using programme-controlled sequencing with advance organizers.

Titsworth (2000) studied the effects of teacher immediacy, organizational lecture cues, and student note taking on students’, affective and cognitive learning. He came to the conclusion that the teacher immediacy had its most substantial effect on immediate student effect, and have some
negative effects on cognitive learning. Cognitive learning was influenced by a combination of factors. Note taking consistently had main effect on cognitive learning with effect sizes ranging from 0.07 to 0.25. Organizational cues also had a moderately consistent effect on cognitive learning.

Immediacy appeared to distract students from learning details from a lecture in the short term; immediacy resulted in longer retention of information for students. The quantity and organization of students' notes in the note taking condition also significantly predicted their scores on achievement tests.

Underhill (2001) tested the effect of advance organizers and reading ability on seventh grade science achievement. The purposes of the study were to investigate whether: (i) an advance organizer facilitates both immediate and delayed recall, (ii) the reading ability of students and the type of pre-instructional material they receive effect recall and (iii) reading ability has an effect on recall with younger students.

The findings of his investigation were as follows:

(i) There was no significant difference on immediate and delayed recall of learning material between students, who received a written organizer, a graphic organizer, or an introductory passage,

(ii) there was a main effect for time to testing and a main effect for reading ability and

(iii) there was no interaction between reading ability and the type of pre-instructional material.

Calandra, B.D. (2003) studied the effect of advance organizers and web-based instructions on preservice teachers' achievement and attitudes. The results of the study indicated that the use of advance organizers before a one-time, web-based activity on the Holocaust did not significantly improve users' knowledge on that subject or their attitude towards traditionally marginalized groups as compared to a control group with no advance organizers.
2.5 EFFECT OF ADVANCE ORGANIZER MODEL IN TERMS OF INTELLIGENCE

Lucas (1972) using 196 seventh grade science students, tested the effects of three types of advance organizers; written, visual, and audio. He found no significant differences in favour of any of the organizers, nor could he find any significant interaction between treatment and intelligence reasoning ability and sex.

On the basis of the findings of his study, Snow (1976) concluded that the treatment of advance organizers used for placing the burdens of information processing on learning is beneficial for high ability students, but it retards the learning of low ability students.

Saloman (1978) found that students with low aptitude score could be helped by using films, which emphasize the strategies to be used in subsequent learning task. He also found that films confused the students of high ability.

Kausik (1988) studied the long-term effect of A.O. achievement in biology in relation to reading ability, intelligence and scientific attitude of the learners. The outcomes of the study were:

(i) The general introduction or an overview which generally precedes learning material was less effective as compared to the advance organizers (ii) the benefit derived from advance organizers was positively correlated with higher intelligence, reading comprehension and scientific attitude.

Most of the studies conducted on advance organizer model show that it facilitates learning outcomes (Ausubel, 1960, 1961, 1963; Schulz, 1966; Steinbrink, 1970; Bernard, 1975; Ghosh, 1991; Pandey and Purohit, 1993; Davidson, 1997; Within, 1997; Hatch, 1998; Brarambe, 1999; Mckenzie, 1999 and wells, 1999), whereas some other studies show that advance organizer model does not facilitate learning (Lucas, 1972; Chanana, 1985; Kirkman, 1997; Renshaw, 1997; Mc Manus, 1998; Pruliere, 1998; Callahan, 2000; Umar 2000; Underhill, 2001 and Calandra, 2003).
2.6 EFFECT OF ADVANCE ORGANIZER MODEL AND CONCEPT ATTAINMENT MODEL TERMS OF ACHIEVEMENT

Shingaki & Brown (1980) conducted an investigation to determine utility of models of teaching with four variables – teaching experience, conceptual level, creativity and intelligence. Study was based on the models of teaching of Bruner, Taba, Ausubel, Harvey & Schroder from information processing family. Several correlation were found to be significant.

Chitrive (1993) investigated the effectiveness of Ausubel and Bruner strategies for acquisition of concepts of mathematics. The main objectives of the study were to ascertain comparative effectiveness of (i) Ausubel strategy with traditional strategies on various criteria of concept acquisition; (ii) Bruner's strategy with traditional strategies on various criteria of concept acquisition.

He came to the conclusion that Bruner's Model is more effective than the traditional teaching with respect to teaching of mathematical concepts. Comparison of Ausubel and Bruner strategies revealed that there was no significant difference between the scores of the two groups on ‘Concept Knowledge Test’. The Ausubel and Bruner strategies were found to be equally effective for teaching of concepts in Mathematics. However, mean performance of Ausubel group on concept transfer test was found to be significantly better than that of Bruner group. Therefore, Ausubel strategy was considered to be superior to Bruner strategy, as far as, enhancing concept transfer was concerned.

With respect to Heuristic Transfer Test, mean performance of Bruner group was found to be significantly better than that of Ausubel group. Hence, it was concluded that Bruner strategy is superior to Ausubel strategy with respect to: (i) discovering new relationships, (ii) short-term retention and (iii) long-term retention. The most important finding of the study was that conceptual style preferences of students seemed to have differential effect on
their acquisition of concepts when taught by Ausubel strategy but conceptual style preferences of the students did not seem to have differential effect on their acquisition of concepts when taught by Bruner strategy. Analysis of the results of this study indicated that in a group consisting of students with different conceptual style preferences, Bruner’s strategy should be preferred.

Kumari K. (1985) conducted the study ‘An Experimental study of Interaction Effects of Deductive, Inductive Strategies, Creativity and Learning Objectives on Achievement’. The objectives of the study were: (i) to analyse the effectiveness of inductive and deductive strategies, (ii) to evaluate the interaction effects of deductive, inductive strategies and creativity in achievement, (iii) to study the interaction effects of deductive, inductive strategies and learning objectives on achievement, (iv) to investigate the interaction effects of creativity and learning objectives on achievement and (v) to analyse the interaction effect of deductive, inductive strategies, creativity and learning objectives on achievement. The findings were:

i) Inductive and deductive strategies were equally effective with regard to students’ achievement (ii) The combined strategy was more effective than inductive or deductive strategies taken separately. (iii) Creativity and sex factors did not have an interaction effect on achievement (iv) The strategies of instruction, creativity and sex factors did not have any interaction effect on achievement of students (v) The instructional strategies were more effective at knowledge level than at comprehension level of achievement. (vi) The combined and inductive strategies did not interact with taxonomic categories with regard to achievement of students.

Passi, Singh and Sansanwal (1986, 87, 88) tried to establish the effect of differential variation in components of models of teaching in terms of competence, understanding, reaction and willingness to implement. The model included in the study were Concept Attainment Model, Inquiry Training Model, Advance Organizer Model and Jurisprudential Inquiry Model. Two models were studied at a time. The training in models of teaching in the form of lecture/demonstrations/discussions and peer group practice pens feedback
did enhance the understanding of theoretical aspects of the models and in their classrooms. The training strategy was found to be effective in terms of theoretical understanding and a favourable reaction towards models. The reaction scale used was more of an attitude scale.

Kaur (1986) studied the effectiveness of Ausubel's Advance Organizer Model, Bruner's Concept Attainment Model and conventional method of teaching for learning of concepts in science. She found significant difference among the effectiveness of Ausubel’s Advance Organizer Model, Bruner's Concept Attainment Model and Conventional method of teaching for learning of concepts in science. The results also pointed out significant difference in the effectiveness of Ausubel's Advance Organizer Model and Bruner's Concept Attainment Model for learning of concepts in science. The Bruner’s Model was found to be much more effective than Ausubel’s Model.

Grewal and Kaur (1987) found Bruner's Concept Attainment Model to be more effective than Ausubel's Advance Organizer Model and traditional method of teaching while later two do not differ from each other for concept learning in science.

Sood and Sodhi (1988) studied 288 class IX students using 2x2x2 analysis of variance finding Concept Attainment model to be superior to advance organizer model for teaching Hindi Concepts, intelligence level acting as redundant factor.

Sood, Kamla (1990) compared Advance Organizer and Reception strategies for acquisition of language concepts in relation to cognitive style, intelligence and creativity.

Kumari, Sucheta (1990) studied about the instructional and nurturing effects of the synectics model of teaching on the creative ability in language.

Gupta Suman (1991) checked the effectiveness of Advance Organizer Model of Ausubel in developing the teaching competence of student teachers and their attitude towards teaching.
Mahajan Jyotsna (1992) studied long-term effect of Advance Organizer upon achievement in biology in relation to reading ability, intelligence and scientific attitude.

Kaur (1990) studied the efficacies of Bruner's Concept Attainment Model, Ausubel's Advance Organizer Model and Conventional method of teaching for learning of concepts in Economics. She found that there was significant difference between the efficacies of Concept Attainment Model and Advance Organizer Model. The results also proved that there was significant difference between the Concept Attainment Model and Conventional method of teaching for learning of concepts in Economics. She also reported that Concept Attainment Model was superior to conventional method of teaching. Advance Organizer Model was more effective than conventional method of teaching for learning of concepts in economics.

Jaimini (1991) studied the effect of teaching strategies on conceptual learning efficiency and retention in relation to divergent thinking. In this study the relative effectiveness of Advance Organizer Model and Concept Attainment Model on Conceptual learning efficacy and retention of chemistry concepts in relation to divergent thinking was investigated. The result of the study revealed that Advance Organizer Model and Concept Attainment Model were equally effective in fostering concept learning, the Advance Organizer Model was comparatively more effective in concept learning to pupils with high divergent thinking while concept Attainment Model was more effective to pupils with low divergent thinking. The Advance Organizer Model was found to be more effective than concept Attainment Model in the retention of concepts irrespective of the level of divergent thinking of the pupils.

Gupta (1995) concluded that out of three information processing models of teaching employed for teaching science concepts, concept attainment model and inductive thinking model were found to be superior to advance organizer model of teaching for teaching of concepts in science to class IX students.
2.7 EFFECT OF ADVANCE ORGANIZER MODEL AND CONCEPT ATTAINMENT MODEL IN TERMS OF INTELLIGENCE AND ACHIEVEMENT MOTIVATION

Chaudhari and Vaidya (1990) investigated the effect of Advance Organizer Model and Concept Attainment Model. This experimental study was conducted on thirty student-teachers of B.Ed. class who were selected on voluntary basis and assigned to three different groups on the basis of intelligence. They came to the conclusion that concept Attainment Model produced significantly better effects than either Advance organizer Model or the traditional method. However, no significant differences were found in the competency of student-teachers teaching through Advance Organizer Model and traditional method.

Sood, K. (1990) studied the comparative effectiveness of Advance Organizer Model and Concept Attainment Model for acquisition of language concepts in relation to cognitive style, intelligence and creativity. He found that Concept Attainment Model was more effective than Advance Organizer Model in teaching of concepts in Hindi. He also found non significant interactional effect between various teaching techniques, intelligence, creativity levels and cognitive style in learning of concepts in Hindi.

Agarwal (1997) studied the effect of teaching strategy in relation to creativity on conceptual learning of class XI students of commerce in which she studied the effect of Advance Organizer Model and Concept Attainment Model on concept learning and retention of concepts. The major findings of the study were that (i) the advance organizer model and concept attainment model were found more effective than conventional method of teaching in fostering concept learning; (ii) concept attainment model was found more effective than the conventional method. (iii) advance organiser model and concept attainment model were found significantly different in the measure of concept retention while both were found equally effective in fostering concept learning; (iv) the high creative group showed better concept learning when taught by advance organiser model.
Kaur (2000) studied the effectiveness of Concept Attainment Model and Advance Organizer Model and Conventional Method of Teaching for learning of concepts in chemistry. She found significant difference among the efficacies of Bruner’s Concept Attainment Model, Ausubel’s Advance Organizer-Model and Conventional Method of Teaching for Learning of Concepts in Chemistry. Her results pointed out that Bruner’s Concept Attainment Model was superior to Ausubel’s Advance Organizer Model for learning of concepts in Chemistry. Concept Attainment Model was more effective than conventional method of teaching. She also found non-significant interactional effect between various teaching techniques, academic achievement, intelligence and achievement motivation in learning of concepts in chemistry.

Singh Perminder, (2004) studied the ‘Effect of Concept Attainment Model and Advance Organizer Model on Scholastic Achievement in Physics as Related to Intelligence and Achievement Motivation of Ninth Class students’. He found that both A.O. and C.A.M. are superior to traditional method of teaching.

2.8 EFFECT OF OTHER MODELS AND STRATEGIES IN TERMS OF ACHIEVEMENT

Sharma (1965) compared a programmed model with traditional method in teaching of a lesson in Geography. He found that there was a considerable gain in teaching by Programmed Model over traditional method of teaching.

Gibian (1979) studied a Problem Solving Model in chemistry. It was found that instruction on a specific Problem Solving Model produced significant achievement.

Kaur (1983) investigated the effectiveness of Programmed Instruction Method for teaching Biology to ninth class students in relation to their habits. she found that Programmed Instruction Method was a more effective method than the Traditional Method for teaching biology to ninth class students of both groups i.e. those having good study habits, as well as. those having poor study habits.
Warner (1984) conducted a study to investigate whether a brief, essentially self-directed, video-taped model of human relations training could result in increased teacher affective sensitivity to students. He came to the conclusion that the teachers who viewed the video-taped programme did significantly better on all three outcome measures.

Mevarch and Rich (1985) studied the effects of Computer-Assisted Mathematics Instruction on Disadvantaged Pupils’ cognitive and affective development. They found that in a combined CAI traditional programme, as opposed to only traditional instruction, students consistently scored higher on both cognitive and affective measures, while grade level and gender were non-significant.

Brar (1985) investigated the effectiveness of Inquiry Training Model with variations in peer practice strategy in terms of specific teaching competence on inservice secondary school teachers. He found that both experimental groups gained significantly in terms of comprehension of theory of Inquiry Training Model. But, no significant difference was found in the post-test scores among experimental groups. Thus, it was concluded that both the experimental groups gained equally in theory orientation.

Bhal (1986) studied the effectiveness of the programme for improvement of children’s handwriting. The results showed that effectiveness of the programme existed.

Malhotra (1986) found that the Jurisprudential method is an open-minded approach to teaching, where confrontational dialogue surrounds the argumentation. It helps in analyzing public issue and values implied therein on jury fashion though this method cannot be used in all types of units in social sciences, even then it is quite useful to adopt this method whereever it does not involve any type of financial, administrative or organizational problems.

Gakhar (1987) compared two methods of teaching geometry viz. Analytical and Traditional. The study revealed that reasoning power of te students is developed by analytical method.
Kothari (1987) conducted a study to compare programmed learning method, assignment method and traditional method. He came to the conclusion that Assignment method is more effective than programmed learning method, as well as, traditional method, in terms of achievement of pupils. Both programmed learning method and traditional method are equally effective in terms of achievement of the pupils.

Sharma (1987) studied the comparison of Modular Teaching strategy with traditional teaching. He found that modular teaching strategy is more effective than traditional teaching. It may, therefore, be said that the modular teaching could bring richness in the instructional process which the traditional teaching could not.

Kathuria, R.P. (1988) studied the effect of teacher led, self-learning, peer group discussion; a mass media approaches of teacher population education on knowledge, attitude and beliefs of the students of classes IX and X about population explosion in India.

Bhaveja, Bharti (1989) conducted an experimental study of information processing models of teaching in schools of India.

Gautam and Pachauri (1990) conducted a study on Inductive Thinking Model and traditional method of teaching physics to class VIII students. The authors proved that the Inductive Thinking Model was highly effective in classroom teaching.

Singh (1990) studied the effectiveness of Inquiry Training Model and Concept Attainment Model over traditional teaching method for teaching physical sciences. He found that both the models were equally effective in the teaching of physical science to class IX students.

Carter (1992) studied the effects of teaching through Learning Strategies Intervention Model in a sixth grade science class. The sample for the study was two intact classes composed of thirty-seven sixth grade students in each class. Student’s attitude showed no significant change in the attitude of control group scores. No significant difference was found between overall
academic performance or study habits of the experimental and control groups, or in their proficiency of answering true/false test-items.

Liao (1993) studied the effects of Analogies and Conceptual Models in scientific text. The relative effect of Analogy, Conceptual Model and the interaction of two significant in either of the two analyses where only one covariate at a time was involved. However, when neither covariate was used, the effect of use of analogy was significant.

Singh (1993) studied the effect of Inquiry Training Model of teaching on cognitive development and acquisition of science process skills in relation to self-concept and intelligence. He found that (i) Inquiry Training Model of teaching was more effective in the acquisition of science process skills as compared to conventional method of teaching, (ii) there was a significant difference in the development of cognitive structure of students exposed to Inquiry Training Model as compared to conventional method of teaching and (iii) strategies did not interact significantly with the level of self concept or with the level of intelligence in the development of cognitive structures.

Patel (1994) studied the effectiveness of Inductive Thinking Model in Teaching of Chemistry. The study was conducted on one hundred students of +2 level. He came to the conclusion that (i) the Inductive Thinking Model of teaching was a more effective method of teaching in comparison to the traditional method of teaching in terms of developing reasoning ability of the students and (ii) the Inductive Thinking Model of teaching was more effective as compared to the traditional method of teaching in terms of retention of reasoning ability of the students.

Prema and Kayathri (1994) conducted a study to find out the effectiveness of Jerry Lucas' Memory Model in Learning Botany. The major outcomes were: (i) training through Jerry Lucas' Memory Model positively influenced retention of what is learnt in Botany by +1 students and (ii) the statistical analysis of post-test performance of experimental and control groups showed that there was a significant difference in the two groups in their post-test achievement.
Kaur (1995) studied the effectiveness of Inquiry Training Model in the development of process skills in geography in relation to cognitive style and personality types and found that in the development of process skills in geography among class IX students: (i) Inquiry Training Model is more effective method than the conventional method of teaching; (ii) teaching techniques and cognitive style do not have any interaction effect; (iii) teaching technique and personality type do not have any interaction effect; and (iv) teaching technique, cognitive style and personality type do not have any differentiate effect.

Panda (1995) conducted study in Mastery Learning Model as a promising approach to meet individual differences in the class-room. The study was confined to the Bloom's Mastery Learning Model. The major finding of the study was that Mastery Learning Model is more effective irrespective of rural or semi-urban areas, poor or middle socio-economic status (SES) students, boys and girls, scheduled caste, general category and students belonging to agriculture or service families as compared to students following conventional method of teaching. Even the results of the total sample indicated that the experimental group differed significantly at the immediate and delayed levels in retention from the control group.

Sharma K.D. (1996) conducted a study on 'Comparative Effectiveness of selected models for teaching physical sciences to low achievers of secondary level'. In this study, the researcher studied the effectiveness of development of science process skills in low achievers through two models of teaching. The Inductive Training Model and the Advance Organizer Model the process skills focused upon were: observation, formulation of hypothesis, classification, comparison measurement, qualification, prediction and drawing inferences. The findings of the study were:

— There is significant gain in the achievement of low achieving pupils when taught through the two specific strategies as compared to conventional method.
— The Inductive Strategy developed the skills of classification, formulation of hypothesis, drawing inferences and predictions.

— Because of the development of the information processing skills with the help of teaching strategies, the retention of the concepts among the students was also much better as compared to conventional method.

— There was a significant improvement in attitudes of students towards science when taught with the help of teaching strategies as compared to the conventional method.

Bharambe (1999) conducted a comparative study of teaching Geometry by using Advance Organizer Model, analytic-synthetic method and traditional method. The study was conducted on 540 students of ninth standard. The major findings were: (i) advance organizer model was more effective in comparison to analytic than traditional method of teaching and (iii) advance organizer model is far more effective than traditional method of teaching.

Jain Sangeeta (1999) conducted a comparative study of the effectiveness of inductive thinking model and mastery learning model on students’ achievement in commerce and their self concept.

Banta, Shailja (1999) studied the learning strategies and motivational components of academic performance of P.G. students in distance and campus based education.

Martindale (1999) examined the effects of three teaching models on under-graduate college students achievement in an on-line self-paced lesson. The purpose of this study was to compare three teaching models from three district model classifications for effectiveness in an on-line self-paced lesson. These models included direct instruction from the behavioural models, concept attainment from the information processing models, and group discussion from the social interaction models. He found that there was a significant interaction effect between teaching model employed and previous World Wide Web experience of the participants. This may indicate that direct instruction is more effective for Internet novices, while more experienced
users benefit from teaching model, such as, concept attainment and group discussion.

Umar, I.N. (2000) studied the effects of cognitive styles and learning strategies (Advance Organizer, concept map, outline, no learning strategy) on Malasian pre-college students in a hyper-media environment and found that there were no significant difference among the Advance Organizer group, the concept map group, the outline group and the no learning strategy group.

Sivakumar P. and Jeynath K. (2003) studied the efficacy of Wolfinger’s Discovery Demonstration Method of Teaching Chemistry at higher secondary level and found that discovery demonstration method of teaching was more effective than conventional method of teaching.

Idayavani D. and Shanti S. (2003) studied the impact of Video Assisted Instruction in school’s and found that the students taught through Video Assisted Instruction performed significantly well than the students taught by traditional lecture method in learning the concepts.

2.9 EFFECT OF OTHER MODELS AND STRATEGIES IN TERMS OF INTELLIGENCE AND ACHIEVEMENT MOTIVATION

Sodhi (1977) investigated Programmed Learning in chemistry in relation to taxonomy of educational objectives, intelligence and personality traits at the higher secondary level. He concluded that intelligence acted as a redundant variable so far as overall achievement. Some personality traits were reported to be significantly co-related with achievement.

Basu (1981) studied the effectiveness of Multimedia Programmed Materials in the teaching of physics and found that on the criterion of overall achievement: (i) the multi-media semi-programmed instruction was better than the strategy of Programmed Teaching; (ii) the Multi-media Linear Programmed Instruction was better than the Multi-media Semi-programmed Instruction; (iii) the Multi-media Branching Programmed Instruction was better than the Multi-media Linear Programmed Instruction and (iv) the Multi-media Hybrid Programmed Instruction was better than the Multi-media
Branching Programmed Instructions. A significant difference was also found in achievement through the different strategies due to difference in ability.

Kaur (1985) conducted an experimental study in academic performance through linear programme in relation to intelligence, self concept and achievement and found that high n-achievement and students achieved significantly higher than students with low n-achievement did.

Khare (1986) conducted a comparative study of traditional and structural approaches to teaching of English with reference to their outcomes. He found that intelligence was an important factor in achievement of all the areas of English i.e. spelling, comprehension, composition, pronunciation, applied grammar and vocabulary.

Dutt (1987) studied the effect of problem solving strategies on problem solving ability in science of high school students in relation to anxiety levels, cognitive style and intelligence. He found that the intelligence of the solver significantly affected the problem solving ability irrespective of the strategies of training.

Kaur (1987) studied the impact of psycho-social variables on academic achievement of secondary school students. The results of the study indicated that achievement motivation and academic achievement were significantly correlated.

Gill (1989) conducted a study to find the effect of training strategies on creative problem solving skills and cerebral dominance in relation to intelligence, personality, cognitive style. He found that high intelligence subjects scored higher originality than low intelligence level irrespective of training strategies.

Malhotra (1990) studied the effectiveness of Synectics Model in development of creativity in Hindi. He found that Synectics Model was effective on the factors of fluency, flexibility, originality and elaboration in the various areas of language skills. The effectiveness had a high positive correlation with the intelligence level of students.
Pandey (1991) investigated the instrumental and nurturant effects of Jurisprudential Inquiry Model of teaching. He found that the intelligence and socio-economic status of the pupils interacting with the development of certain values, such as, equality, tolerance and justice etc.

Sawkney (1993) studied the effectiveness of Mastery Learning Model of teaching on acquisition and retention of algebraic concepts and found that above average and average ability students secured significantly higher scores than the below average students.

Kaur and Lekhi (1995) reported that intelligence was positively and significantly correlated with academic achievement and high intelligence group was significantly better than the lower one.

2.10 SOME MORE RESEARCH STUDIES ON CAM IN INDIA

Pandey (1981) evolved teaching styles on the basis of verbal interaction taking place in the classroom; determined the effect of teaching style on science concept attainment at various levels, to identify the teaching behaviours commonly exhibited by science teachers and determined the effect of individual teaching behaviour on concept attainment at various levels. He found that all teaching behaviours were not frequently observed in the science teachers. Extended lecturing was negatively related with different levels of concept attainment and the segment of formal level, excepting for segment of problems and definitions with which it was positively correlated. The teacher’s questioning had significant positive effect on both the levels, classificatory and formal of concept attainment. Teaching styles had varying affects on both the levels of concept attainment as well as total concept attainment.

Antimadas (1986) developed the model competency of pre-service teacher trainees by adopting CAM with three different training strategies.

Bihari (1986) studied the effectiveness of three training strategies in learning CAM in terms of teaching competency of student-teachers. The researcher found that the three training strategies namely peer feedback and practice in quardo, peer feedback and practice in pairs and demonstration
followed by practice in quardo were equally effective for developing teaching competence.

Gangrade 91987) compared the achievement of science of class VIII students taught through combination of CAM and Lecture Method (LM) with those taught through Traditional Method ™ by taking separately intelligence, attitude towards science and previous year achievement in science as covariates.

Sushma (1987) studied the effect of CAM based teaching pupil achievement, the effect of Biological Science Inquiry Model (BSIM) based teaching on pupil achievement and the effectiveness of TM. CAM was found to be more effective than BSIM and TM.

Rajoria (1987) studied the effect of method of teaching, residential background and their interaction on achievement in science of class VIII students by taking separately, intelligence and previous year achievement in science; the contribution of intelligence, attitude towards science, Achievement value-Anxiety and previous year achievement in science to achievement in science of Class VIII students of different residential background taught through AOM and TM.

R. Chanderlekha (1996) studied the effectiveness of learning of educational concepts through strategies.

B. Saminathan (1997) studied the effects of Information Processing Approach on developing problem solving ability in Physics.

K. Rajmmal & Dr. P.S. Balasubramaniam (1996) studied the effectiveness of concept mapping strategy for teaching to B.Ed. trainees.


G. Kumudha (2000) in his study 'A Comparative study of the effects of Traditional Lecture Method and Concept Mapping strategies of teaching in Physics of Higher Secondary students' found concept mapping strategy more effective than traditional lecture method.
N. Pongodi (2000) studied about the use of concept in Concept Attainment in students of standard XI and found CA more effective than LM.

### 2.11 SOME MORE RESEARCH STUDIES ON CAM OUTSIDE INDIA

Lenke (1965) identified the relationships between Concept Attainment and Information Processing tasks. He found that the span and rote memory factors, representing the memory domain, were isolated and found to be clearly unrelated to the task factors.

Nicholson (1966) concerned with the logical structure of a concept and the efficiency with which early adolescents attain conjunctive and disjunctive concept, when varied stimuli are used, had a sample of 80 young adolescents from ninth grade of a military school.

Mascolo (1967) found that significantly greater performance was demonstrated by groups having a course organized around the key conceptual schemes as compared to groups having a course not so organized.

Murphy (1969) predicted teaching style from the teacher's conceptual system. No statistically significant differences were found for differences on the variables of teachers delivering information, sanctioning obedience to rules and efficiency general support.

Overstreet (1970) studied processes deemed necessary to external hypothesis testing theories of simple concept attainment to more complex concept problems.

Kyle (1971) determined whether competitive and co-operative conditions have a differential effect on the amount of student-participation and learning; examined whether students react more positively to one or the other of the conditions; and investigated possible relationship between achievement and the other dimensions of the study. He found that students learnt no less in the cooperative condition and preferred the cooperative condition. Participation did not appear to be a factor in the level of understanding and did not seem to be affected by either condition.
Selden (1971) found that the effect of mode of presentation was significant while the effects of organization of materials and complexity of informational field were not found to be significant.

Cason (1972) developed and tested an information processing model of concept learning incorporating a hypothesis generation mechanism.

David (1973) studied the effects of presenting new concepts embedded in 230-words-prose passages. It was concluded that ease of learning concepts from prose materials involves complex combinations of factors.

Simpson (1975) made the objective of his study 'to what extent can variables identified in studying concept attainment in a highly controlled laboratory situation have similar effect on concept attainment of social studies concept? He found that there was a higher score for subjects who had two levels of critical properties identified. This was found statistically significant difference.

Bachman (1979) studied the relationship between cognitive style and concept attainment efficiency. He found that verbal ability, Cue relevance/Saliency and task complexity are important mediators in the relationship between F1 and CA efficiency and success. The measures of CA strategy was found to be unrelated to F1 difference.

Shineman (1980) investigated the effect on the information processing behaviour of student-teachers having similar or different conceptual interaction of student-teachers' conceptual levels and their cooperating teachers' conceptuals on the student-teachers' initial and final information processing behaviour. Significant differences were found between initial and final information processing behaviour.

Fulton (1981) determined whether selected teaching strategies used to teach science concepts while integrating the improvement of reading language skills would significantly reduce the reading difficulties of VII grade students. Data analysis revealed:

(i) significant means score differences between the control group and Method A the Science Concept test. Differences also existed between
method B, and method C and between Method C and control group (method D).

(ii) there was no significant differences on the vocabulary sub-test.

Nuzum (1983) developed an instructional package for teaching arithmetic story problem solving skills and examined the efficiency of that method on the story problem solving performance of four learning disabled students. He found that a method which included instruction to mastery in analysis, task specific and procedural knowledge was responsive to the needs of the learning disabled in this study.

Lee (1983) investigated the interactive effects of the personal traits of conceptual development and the different presentation forms of concept attainment. It was found that there was a statistically significance difference between instruction based on the definitions and examples, and based on the examples only form.

Hanclosky (1985) made a comparison of Task Analysis, Advance Organizer and Concept Elaboration Methods in teaching concepts and principles. He found that the task analysis group performed significantly higher than the AO and concept elaboration groups in both concept and principles learning.

Dalton (1986) attempted to implement in his classroom two recently acquired models of teaching (Concept Attainment and Synectics) and investigated the relationship of those processes to the success in transferring the new models of teaching into the active teaching repertoire. He found that teachers using these two strategies report nearly twice as many thoughts related to both goals/objectives and instructional procedures.

Bodolus (1986) examined the use of concept mapping, after Navak, as a strategy to facilitate meaningful learning based on a theoretical structure. It was found that the experimental and traditional groups did significantly better on the context Post-test than the control group while the experimental group using the mapping process did only slightly better than the traditional group.
Qeballos (1986) made the objective of his study to know the effects of Concept Teaching Methods on Cognitive Thinking ability. He found that there was no significant differences between or within groups.

Ponick (1986) investigated instructional design that facilitates Concept learning, and made focus on manipulating visual cognitive processes affecting concept attainment by the learner. There was no significant difference existed among the treatment groups. A significant difference was found favour of the animation treatment.

Anice James & P.S. Balasubramaniam (1999) conducted the study on some related cultural cognitive affective variables and concept attainment and problem solving ability in Maths of High School students.

2.12 SOME MORE STUDIES ON ADVANCE ORGANIZER MODEL OUTSIDE INDIA

Allen (1969) had conducted a study on ninth grade students under the title “The effects on the learning and retention by using Advance Organizer on memory level”.

The findings showed that the effects of advance organizer was not apparent on the first test but on the second test they enhanced the effects of treatment questions for average and below average students and resulted in general rather than question specific facilitation of learning for above average students.

Stein Brink (1970) had conducted a study on 77 fifth grade and 79 sixth grade black elementary students under the title “Cognitive achievement among disadvantaged black elementary students.

The findings showed that the differences among the treatment classes who were taught by different teachers were not significant. The interaction of teachers by treatments was not significant.

Munford (1971) the title of his dissertation was “The effectiveness of Advance Organiser in facilitating Learning and retention. This study was conducted on college students.
Hershman (1971) had conducted a study entitled "The Utility of Advance Organiser and behavioural objectives for improving achievement in physics at the College level". The subjects were college students.

The findings showed that there were no significant differences that could be attributed to treatment effect with assurance; the behavioural objectives were more able to help the lower ability students in most of the cases; and the motivation and level of aspiration of the students were the decisive variables that marked the treatment effects.

Barrow (1973) had conducted a study on seventh grade students under the title, "Effectiveness of an Advance Organizer or historical introduction on the variables of I.Q. reading comprehension, work study, skills and sex upon Learning and retention.

Folker (1973) in his dissertation entitled, The effects of adjunct post-questions and expository advance organizes on problem solving from prose test. This study was conducted on introductory psychology students.

Graber (1975) compared the efficiency of two procedures for questioning between A.Os and low level teacher questions. Result of the study showed that no organizer was significantly superior to the organizer was significantly superior to the other and there was no significant advantage for one rate of questioning over another.

The findings of the study showed that no organizer was significantly superior to the other, and there was no significant advantage for one rate of questioning over another.

Kersten (1976) in his study entitled, The effects of an A.O. on the Learning and retention of material on matrices. The subjects were college students.

Goodman (1977) reported the effects of treatments on the learning of a unit on descriptive statistics. The result showed no significant effect due to treatment and no significant interactions. There was a significant effect due to ability.
Stallan (1978) had conducted study entitled, The effect of individualized learning materials by using two types of pre-instructional strategies with high and low readers”. The subjects were high-school students.

The findings showed that on the basis of main effect for method of instruction and reading level there was no significant difference between mean gain scores of the three groups.

Oppong (1978) reported the facilitative effects on achievement of organizers learnt to mastery using geography materials. This study was conducted on ninth grade social study students.

Aman (1981) had conducted a study entitled, “The programmed instruction situation”. The subjects were ninth grade industrial art students.

It was found that an advance organizer combination with the LAP was more effective in decreasing magnitude of error on post-test scores than was the LAP alone; and the advance organizer was probably not direct teaching material as indicated by the correlated ‘t’ test performed on the pre-test and post-test scores of treatment group.


Livington (1984) The title of his dissertation was “The effect of A.O. and direct instruction passages for high and low ability students. The subjects were eight grade students. It was concluded that there was no statistical difference between the treatment means High ability subjects in the Advance Organizer group achieved significantly higher scores than low ability students in this group on all three occasions.

Comes (1985) found that students working in groups of three and four on computer tutorials had significantly better rates of learning than, students working alone, while no significant differences in achievement or retention were observed.

L. Sekkappan (1998) studies the effectiveness of information Process approach and found it superior from traditional approach.
Mckenzie (1999) studied elementary teacher's opinions of the use of a content enhancement strategy: Graphic Organizers. The teachers considered graphic organizers, beneficial in helping the visual learner, organizing student-thinking and helping students to understand and remember information.

### 2.13 SOME MORE STUDIES ON AOM IN INDIA

Panda (1986) studied the effectiveness of A.O. and Traditional method of teaching. The study was based on sixty students of class ninth. Students were tested on the previous knowledge before the treatment was given. A post-test was administered at the end of the study. It was concluded that the difference between the mean achievement of pupils studying through A.O. and TM were significant.

Senapati (1986) compared programmed learning material, Advance Organizer Material and Traditional Methods in terms of achievement of students studying through them. Sample consisted of 139 student-teachers in the Department of Education in DA at Indore. He found that the PLM method and TM were equally effective in terms of achievement of students on criterion test. The AOM was effective than both the PLM and TM in terms of achievement of students on criterion test.

Budhisagar (1986) studied the effect of treatment, intelligence, attitude towards coaching profession and their interactions on overall achievement of students. The sample consisted of 139 student-teachers in the Department of Education in D.A.V. at Indore. The findings was that the instructional material based on operant conditioning model is PLM and that based on AOM, were effective in terms of achievement of students on different criterion tests and reaction of students.


Mahajan, Jyotsna, (1992), A comparative study of the effectiveness of two models of teaching, Bruner’s concept Attainment Model and Ausubel’s Advance Organizer Model of teaching abilities of student-teachers and on
achievement of students in various schools. Ph.D. Edu., Shreemati Nathibai Damodar Thackersey Women’s University.

Shrader (1999) investigated an exploratory study of the effects of learner-controlled sequencing and advance organizers in a web-based environment. His study explored to the body of knowledge concerning the effective integration of information from hypertexts into an existing knowledge base by providing the organizational structure necessary for students to acquire and apply new information.

**OVERVIEW**

The foregoing review of related literature shows that for comparing the effectiveness of different models, various levels of education i.e. primary, high senior secondary schools and colleges have been taken. Some researchers have studied the effectiveness of various models of teaching for teaching and training of teacher educators and student-teachers (Dass, 1990; Pande & Purohit, 1993). Some researchers have studied the effectiveness of various of teaching for teaching of science subjects (Sodhi, 1977; Gibian, 1979; Basu, 1981; Kaur, 1983; Gautam and Pachaur, 1990; Singh, 1990; Carter, 1992; Singh, 1993; Patel, 1994; Prema and Kayathri, 1994 and Shiva Kumar and Heynath, 2003) at school level. The review also shows that only a few investigators have conducted studies on the Advance Organizer Model and Concept Attainment Model for teaching subjects like Economics.

Out of the above studies only a few have examined the effectiveness of different models of teaching in relation to achievement of students.

The investigator could find hardly any study on the effectiveness of Concept Attainment Model and Advance Organizer Model on students’ achievement in Economics (Kaur 1991). Therefore, there is need to carry out studies at different stages of education and ranging across different subjects, also achievement is influenced by the characteristics of learners. Hence, to reach any generalizations, it is necessary to study the effects of treatment in relation to different characteristics of the learners.
Keeping in view the importance of teaching of Economics, the investigator decided to take this subject to examine the effectiveness of Concept Attainment Model and Advance Organizer Model. These models of teaching were applied to XI class students to determine their achievement in Economics.

The present study attempted to fill the gap that had not been investigated by other researchers.

That is, a comparative study of the effectiveness of Concept Attainment and Advance Organizer Models on Students' Achievement in Economics.