CHAPTER - II

THEORETICAL FRAMEWORK

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2.1 INTRODUCTION

In Chapter I it has been stated that the present study has been aimed at studying the effectiveness of the Advance Organizer Model (AOM) in relation to its instructional and nurturant effects. Prior to examining the effectiveness of the model, it is necessary to understand the theoretical framework on which the Advance Organizer Model of teaching is based. It has been already mentioned in the previous chapter that AOM is developed on Ausubel's theory of meaningful verbal learning. Therefore, an analysis of Ausubel's theory will certainly help in understanding the model of teaching adopted for the study. Like other cognitive psychologists under the information processing family of models of teaching, Ausubel also addresses the achievement of two broad objectives in the context of schooling. According to Ausubel (1985), "in setting our academic goals ..... we must be concerned with the ultimate intellectual objectives of schooling; namely, these are the long term acquisition of valid and usable bodies of knowledge and intellectual skills and the development of ability to think critically, systematically and independently". The achievement of these two objectives of schooling is possible if the classroom

learning is made meaningful. The Advance Organizer Model of teaching is the means through which classroom learning is made meaningful. Unless one knows the theory of meaningful verbal learning, it may be difficult to understand how learning is made meaningful through AOM. Hence, a discussion on the nature of meaningful verbal learning and its role in classroom teaching-learning process is necessitated. Before understanding the nature of meaningful learning, one ought to know the distinctions among the principal kinds of learning that can take place in the classroom.

2.2 PRINCIPAL KINDS OF LEARNING

There are two major processes which differentiate among the principal kinds of learning. One of the processes classifies classroom learning as reception and discovery learning whereas the other categorises it into rote and meaningful learning.

i) Reception versus Discovery Learning

In reception learning, the content matter to be learnt is presented to the student in the final form. He/she is not required to discover what is to be learnt. He/she can reproduce the same at a future time. On the other hand, in discovery learning, the principal content of what is to be learnt is not presented to the student but is discovered by him or her before he/she internalises the same. The discovery learning involves, unlike the reception learning, a process

in which the learner rearranges information, integrates the information with structure of knowledge in mind (cognitive structure), and reorganises or transforms the integrated combination in such a way as to generate a desired end-product or discover a missing means-end relationship (Ausubel et al., 1978).

ii) Rote versus Meaningful Learning

It is a widespread belief in educational circles that reception learning is always rote and discovery learning is inherently and necessarily meaningful. But, Ausubel (1961) disagrees with this belief and holds the view that both reception and discovery learning can be either rote or meaningful depending on the conditions under which learning occurs. According to him, meaningful learning takes place in both the cases if the learning task can be related in a nonarbitrary and substantive (verbatim) fashion to what the learner already knows, and if the learner adopts a corresponding set to do so. Rote learning, on the other hand, occurs if the learning task consists of purely arbitrary associations, as in puzzle box or maze learning; if the learner lacks relevant prior knowledge necessary for making the learning task potentially meaningful and if the learner adopts a set merely to internalize it in an arbitrary and verbatim fashion, eg. arbitrary series of words.

It is argued that much of the potentially meaningful material taught through reception method results in rote learning. Ausubel (1968) also holds the view that meaningful material learnt through discovery method can also lead to rote learning. For example, students memorise the steps of mathematics or physics problems and apply them mechanically to similar problems without understanding why they are performing the operations. Hence, Ausubel puts more stress on meaningful reception learning. It is because, as far as the formal education of the individual is concerned, the educational agency largely transmits ready made concepts, classifications and propositions. In any case, discovery methods of teaching hardly constitute an efficient primary means of transmitting the content of an academic discipline (Ausubel et al.,1978). It is, therefore, worthwhile to study the nature and concept of meaningful reception learning.

2.3 NATURE AND CONCEPT OF MEANINGFUL LEARNING

Ausubel (1967) defines, "By meaningful learning we mean primarily a distinctive kind of learning process and the outcome of this process, namely, the acquisition of new meanings". The learning process pre-supposes: (a) that the learning task is potentially meaningful or that it can be related nonarbitrarily and substantively to the learner's structure of knowledge (cognitive structure), and (b) that the learner manifests a corresponding set to so relate it.

From the definition, it is clear that there are two major criteria which make a learning material meaningful. And such a meaningful material is related to a corresponding set in the learner's cognitive structure. (a) The first criterion, nonarbitrariness, implies some plausible or reasonable basis for establishing the relationship between the new material and the relevant ideas in the cognitive structure. For example, the new information - the act of respecting each other's religion can be related to national integration, the information which already exists in the learner's cognitive structure. In this case, there is a reasonable basis of establishing the relationship between the two information. (b) The second criterion substantiveness (or nonverbatimness) means that an equivalent symbol or group of symbols can be similarly related to the same relevant ideas without any resulting change in meaning. In other words, the potential meaningfulness of the material is never dependent on the exclusive use of particular words. For example, the sum of the internal angles of a triangle equals a straight angle would mean the same to most geometry students as "the sum of the interior angles of a triangle equals 180 degrees".

Thus, meaningfulness depends on two factors: i) the nature of the material to be learned, ii) and the availability of relevant content in the learner's cognitive structure. Even if the learning material is meaningful

but there is no corresponding meaningful set in the learner's cognitive structure, meaningful learning does not take place. For instance, the theory of operant conditioning which is itself meaningful may not be learnt meaningfully if the learner does not have such concepts as stimulus, response, chaining etc., in the cognitive structure. In the absence of meaningful learning set in the cognitive structure, the meaningful learning material is learnt in a rote fashion.

2.4 KINDS OF MEANINGFUL RECEPTION LEARNING

There are three major kinds of meaningful reception learning. These are (i) representational learning, (ii) concept learning, and (iii) propositional learning.

(i) Representational Learning

Representational Learning is the most basic type of meaningful learning. It occurs in the early childhood days. It involves learning the meanings of single symbols or words or learning what they represent. For example, when a child first learns the meaning of the word "Cat", it is proposed that the sound of the word, which is potentially meaningful but as yet has no meaning for the child, represents, or is equivalent to, a particular cat-object that he or she perceives at that moment. Hence, the child actively relates, in nonarbitrary and substantative fashion, the new concept of representational equivalence to relevant content in the

cognitive structure.

ii) Concept Learning

The second type of meaningful learning which helps in the acquisition of subject matter is concept learning. Ausubel et al. (1978) define concepts as objects, events, situations, or properties that possess certain criterial attributes and are designated by some word or symbol. There are two methods of concept formation. One is concept formation and the other is concept assimilation. In concept formation, the criterial attributes of the concept are acquired through successive stages of hypothesis formation, testing, and generalisation. For example, the children come to know the concept 'cow', after successive encounterings with cows, cats, dogs, monekys, and so on. Their successive encounterings with these species help them to form the criterial attributes of the concept 'cow".

But, all concept learning do not take place through concept formation. There are a number of concepts which are learnt through concept assimilation. Concept assimilation takes place in the post-childhood period or in the school-environment when the child's vocabulary increases. The process of concept assimilation involves the learning of new concept by way of using existing relevant concepts to define the criterial attributes of the new concept. For example, the new concept 'animal' can be learnt by using already

existing concepts such as dog, cat, cow, tiger, and so on to define the criterial attributes of the new concept 'animal'.

iii) Propositional Learning

Propositional learning involves the learning of the new ideas expressed in the form of a proposition (combination of concepts or ideas). In other words, the learner does not learn a single concept or idea but a combination of concepts or ideas (proposition) which give a composite meaning. For example, the theory of operant conditioning is a proposition (combination of concepts) which can be learnt meaningfully only after the component concepts have been learnt. The basic difference between concept learning and propositional learning is that in the former the criterial attributes of a new concept are related to cognitive structure to yield a new generic but unitary meaning, whereas in the latter, a new proposition is related to cognitive structure to yield a new composite meaning (Ausubel et al.,1978). How assimilation of concepts and propositions takes place in the cognitive structure of the learner is being discussed in the next section.

2.5 ASSIMILATION THEORY

It has been already stressed that meaningful learning occurs through establishing relationship between the new information with relevant ideas in the cognitive structure.

Both the new information and the existing idea interact with each other to yield the new meaning. The result of the interaction that takes place between the new information and the existing cognitive structure is an assimilation of old and new meanings to form a more highly differentiated cognitive structure (Ausubel, 1985). Assimilation takes place in the case of both concept and propositional learning when new information (concept or proposition) is linked or anchored to relevant ideas in the learner's cognitive structure. This process of linking new information to pre-existing segments of cognitive structure is referred to as subsumption (Ausubel et al.,1978).

In other words, it refers to the way in which the content of the new information is related to the relevant ideas in the cognitive structure. This subsumption relationship may be either (i) subordinate, (ii) superordinate, or (iii) a combination of two.

(i) Subordinate Subsumption or Learning

Subordinate subsumption takes place when the potentially meaningful information is subsumed under the more inclusive and general ideas in the cognitive structure. There are two types of subordinate subsumption:(a) Derivative and (b) Correlative.

(a) Derivative subsumption takes place when learning material is understood as a specific example of an established

concept in cognitive structure or supportive or illustrative of a previously learned proposition (Ausubel et al., 1978). For example, concepts like 'red', 'blue', 'yellow', etc. can be subsumed under the more inclusive concept 'colour'.

(b) Correlative subsumption, on the other hand, takes place when the new information extends, elaborates, modifies or qualifies the previously learned concepts or propositions. For example, the act of respecting each other's religion or language is a characteristic/qualification of national integration, which is already learnt by the learner. In this case, the former information qualifies the latter concept.

(ii) Superordinate Learning

Superordinate learning or subsumption does not occur the way subordinate learning takes place. It occurs when one learns an inclusive new concept or proposition under which ideas in the cognitive structure are subsumed. For example, an inclusive, new concept 'animal' may subsume already familiar concepts like dog, cow, cat, lion, tiger, and so on which already exist in the cognitive structure.

(iii) Combinatorial Learning

Sometimes, there are certain concepts or propositions which can neither be subsumed under the already established ideas nor can themselves subsume the already established ideas. In such cases, the learning of new information gives rise to

combinatorial meaning. They are potentially meaningful because they consist of sensible combinations of previously learned ideas that can be nonarbitrarily related to a broad background of generally relevant content in cognitive structure by virtue of their general congruence with such content as a whole (Ausubel et al.,1978). Combinatorial concepts or propositions are difficult to learn because they can not be related to the existing relevant ideas in the cognitive structure as it is in the case of subordinate and superordinate learning. The examples of combinatorial learning are learning the relationship between demand and price, validity and reliability, mass and energy and so on. The processes of subsumption, superordinate and combinatorial learning that constitute the assimilation theory are internal cognitive processes involved in meaningful reception learning. These internal cognitive processes do not occur in the case of rote learning. Forms of meaningful learning as viewed in assimilation theory is presented in Table 2.1.

TABLE 2.1 : Forms of Meaningful Learning as Viewed in Assimilation Theory.

1. Subordinate Learning:

A. Derivative subsumption

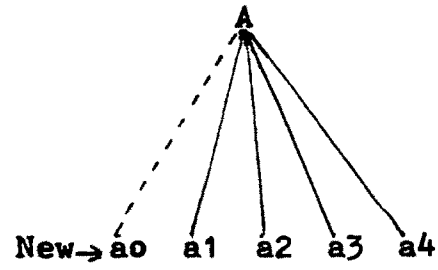
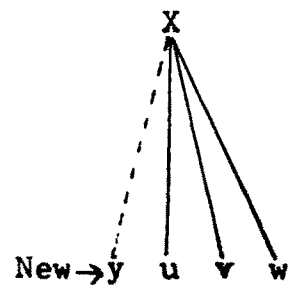


Table 2.1 contd.

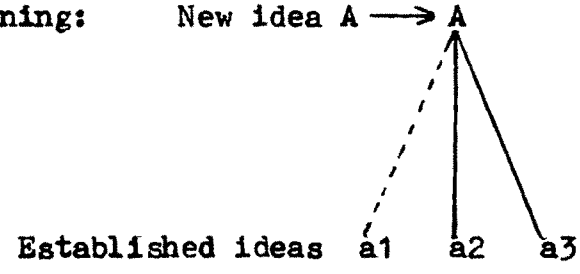
In derivative subsumption, new information ao is linked to superordinate idea A and represents another case or extension of A. The criterial attributes of the concept A are not changed, but new examples are recognized as relevant.

B. Correlative subsumption



In correlative subsumption, new information y is linked to idea X, but is an extension, modification, or qualification of X. The criterial attributes of the subsuming concept may be extended or modified with the new correlative subsumption.

2. Superordinate Learning:



In superordinate learning, established ideas a1, a2, and a3 are recognized as more specific examples of new idea A and become linked to A. Superordinate idea A is defined by a new set of criterial attributes that encompass the subordinate ideas.

Table 2.1 contd.

3. Combinatorial Learning: New idea A ⟶ B-C-D

Established ideas B C D

In combinatorial learning new idea A is seen as related to existing ideas B, C and D but is neither more inclusive nor more specific than ideas B, C, and D. In this case, new idea A is seen to have some criterial attributes in common with pre-existing ideas.

4. Assimilation Theory:

New information is linked to relevant, pre-existing aspects of cognitive structure and both the newly acquired information and the pre-existing structure are modified in the process. All of the above forms of learning are examples of assimilation. Most meaningful learning is essentially the assimilation of new information.

Source : Ausubel (1985), Page 76.

From the preceding discussions, it is clear that meaningful reception learning takes place when the new learning task is related to the learner's existing cognitive structure in a nonarbitrary and substantive manner. There are three major kinds of meaningful reception learning. These are representational learning, concept learning and

propositional learning. Representational learning involves learning the meanings of single symbols or words or learning what they represent, whereas concept learning and propositional learning refer to learning of new concepts and new propositions respectively. Assimilation of new information takes place in the case of both concept learning and propositional learning when the new information is linked to learner's existing cognitive structure. This process of linking the new information to the established ideas in the cognitive structure is called 'subsumption'. Subsumption relationship may either be subordinate, superordinate, or a combination of two. These three kinds of subsumption give rise to three kinds of learning, namely, subordinate, superordinate and combinatorial learning.

After having an idea of meaningful reception learning, it is relevant to know whether it is active or not, whether it facilitates retention of subject matter, and whether it helps in structuring or organization of subject matter. These points are being discussed in the coming sections.

2.6 ACTIVE RECEPTION LEARNING

The meaningful reception learning is criticised as passive. Because the learner is not active in meaningful reception learning as he/she is in the case of discovery learning. But Ausubel discards this idea and strongly holds the view that reception learning is active. According to him,

the activeness of reception learning depends on one's need for integrative meaning and vigorousness of one's self-critical faculty. The learners, therefore, must involve themselves in active effort in struggling with the material, in looking at it from different angles, in reconciling and integrating it with related or contradictory knowledge, and in reformulating it from the standpoint of their own frame of reference and terminology. Learners who passively receive new material or organise themselves to memorize do not engage in these particular activities.

Ausubel assumes that for meaningful learning to occur, the learner plays an active role, whether covert or overt. Therefore, the teaching approaches must develop ways of facilitating an active variety of reception learning characterised by an integrated and precise understanding of subject matter. Precise thinking develops as a result of acquiring precise and integrated meanings.

2.7 MEANINGFUL RECEPTION LEARNING AND MEANINGFUL RETENTION

Closely associated with meaningful learning is meaningful retention of learning material. Ausubel (1968) propounds that in meaningful reception learning, the distinctive attribute of both learning and retention is a change in the availability or future reproducibility of the meanings derived from the assimilated

learning material. According to him. learning refers to the process of acquiring meanings from the potential meanings presented in the learning material and of making them more available, whereas retention means the process of maintaining the availability of a replica of acquired new meanings. Therefore, retention of meangingful material depends on the initial availability of the meanings in the cognitive structure and their maintenance by way of regular practice. Retention of meaningful learning is comparatively superior to retention of other kinds of learning because of its quality of acquiring meanings and maintaining them through assimilation during retention interval.

2.8 MEANINGFUL LEARNING AND ORGANIZATION OF SUBJECT MATTER

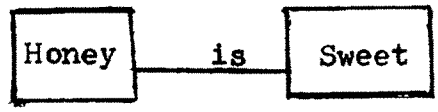
Ausubel relates meaningful learning with organisation of subject matter. He believes that there is a parallel between the way subject matter is organised and the way people organise knowledge in their minds. Each of the academic disciplines has a structure of concepts and/or propositions that are organised hierarchically (Ausubel,1963). At the top of each discipline, there are a number of very broad, abstract concepts which subsume a number of concrete concepts.

Hence, a primary and exceedingly difficult task in planning curriculum and designing instruction is to identify concepts in any given discipline and to organize these concepts into some hierarchical or relational scheme (Ausubel,1985). When such hierarchically organised concepts/propositions of a

particular discipline are presented to the students, they become an information processing system for them. In other words, they form an intellectual or cognitive map which students use to analyse and solve problems within that particular discipline. Therefore, the cognitive map can be compared to the conceptual structure of an academic discipline. Ausubelian conceptual structure is described in the form of concept map by Novak et al.(1981). The development of conceptual structure or concept map as given by Novak et al.(1981) has been opted for the present investigation. Novak alongwith others developed a tool called 'Concept mapping' in 1972 to represent students' knowledge structures before and after instruction (Novak, 1990). This technique is based on Ausubel's theory of meaningful verbal learning which requires a conscious effort on the part of the student to relate new knowledge to knowledge previously acquired. Concept mapping is a pedagogical technique to help students see explicitly how new concepts can be related to previously learned concepts (Novak et al.,1981). They have provided guidelines both for preparation and scoring of a concept map/conceptual structure.

2.9 NATURE OF CONCEPT MAP OR CONCEPTUAL STRUCTURE

The simplest form of a concept map has been given by Gardner (1980). To him, two concepts when linked by logical connectives like 'because', 'although', or by simple verbs constitute a concept map. For example:



In this example, honey and sweet are two concepts which are linked by the connective 'is'. Boxes are put to highlight the concepts. When such a concept map increases in complexity by adding more concepts to it, it becomes a complex concept map. But, Novak et al.(1981) developed concept mapping technique based on Ausubel's Meaningful Verbal Learning Theory (1963, 1968), which has the best "Psychological", organisation when concept maps are constructed hierarchically, with the most general, more inclusive concept at the top, and less inclusive concepts at the subordinate "levels". There is always a judgement as to what represents the best hierarchy for any subject matter, but people knowledgeable in the subject can generally reach a consensus on "reasonable" maps (Novak et al.,1981). The psychological principles behind concept mapping is Ausubllian "subsumption" learning which views new knowledge as related and assimilated under already known, more general relevant concepts. Concept maps are also a way of representing externally the web of concepts and propositions in long term memory that comprises the individual's cognitive structure.

2.10 FEATURESOF A CONCEPT MAP

The following are the broad features of a concept map :

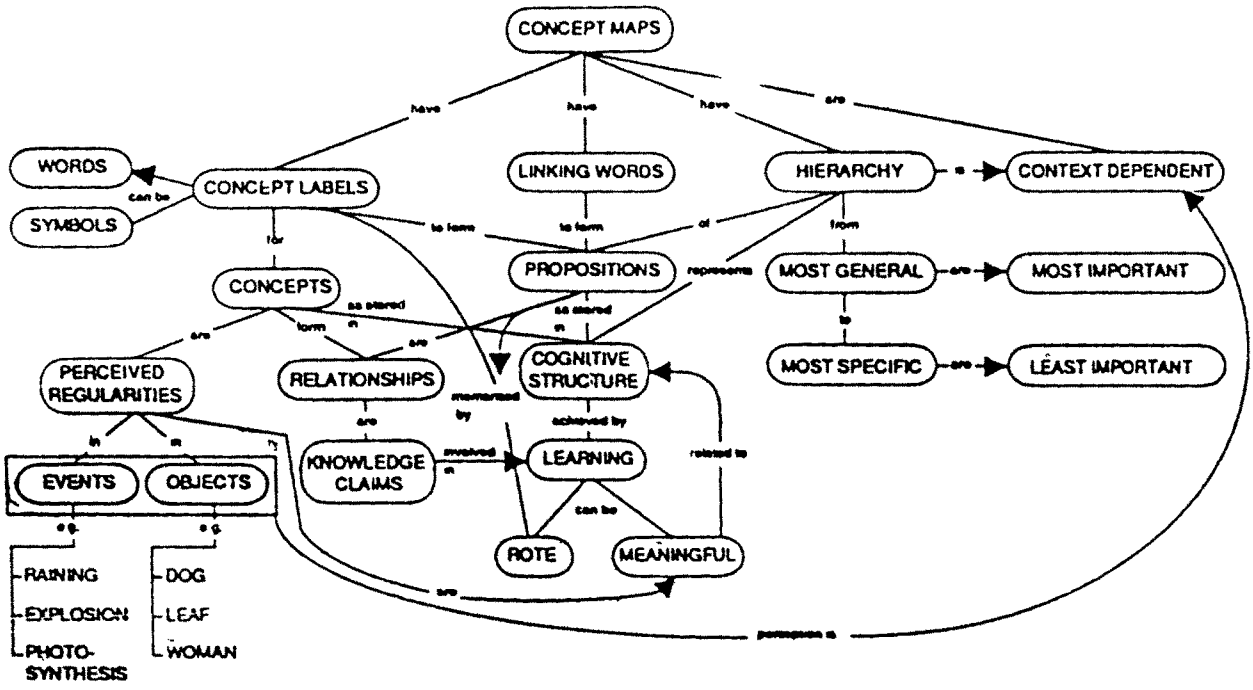
1) Concept map is a means by which concepts and the organisation of subject matter can be represented.
2) It is a two-dimensional representation of a discipline or a part of discipline (Stewart et al., 1979). This means the concept map not only identifies the major points of interest (concepts) but also illustrates the relationship among the concepts.
3) It shows the degree of inclusiveness of the concepts.
4) It is hierarchical in structure.
5) It shows a pattern of concepts from general to specific.
6) It shows the branching of inclusive concepts.
7) It shows the cross links among concepts.

The concepts and propositions involved in concept mapping are shown through a concept map in the Figure 2.1.

2.11 PROGRESSIVE DIFFERENTIATION AND INTEGRATIVE RECONCILIATION

There are two major processes which characterise development of conceptual structure and thereby help in promoting meaningful learning and retention of potentially meaningful learning material. These are progressive differentiation and integrative reconciliation. Progressive differentiation is the process through which the learner discriminates or differentiates the new information from the

FIGURE 2.1 : A Concept Map Showing Key Concepts and Propositions involved in Concept Mapping



Source: Novak, J.D., 1990, p. 30.

already relevant ideas before he/she assimilates the new information with the old ideas. For example, the learner already knows that the army is part of the India's defence. Later on, he is presented the new information i.e. the navy is also part of the India's defence. Now the learner discriminates the navy, the new information, from the army, the old idea, before both the ideas are assimilated into his/her cognitive structure.

Implicit in the former process is another cognitive process called 'integrative reconciliation'. It refers to that process through which the learner determines similarities and differences between the new information and the old ideas and reconciles real or apparent inconsistencies between them. For instance, in the former example, the learner is able to differentiate between the two concepts - the army and the navy, but is unaware of the relationship that exists between them, then it can be said that integrative reconciliation has not taken place in the learner. It occurs if the learner is able to see the relationship between the two concepts i.e. the army and the navy are parts of India's defence.

Both these processes have significant application in designing curricular material and in planning and executing classroom instruction. In case of curriculum construction, most general and inclusive ideas of the discipline are

presented first followed by gradual increase of successive ideas in greater details and learning of successive ideas is meaningfully related to what has been presented before. Exactly the same way, the teacher, while providing information to the students in the classroom, may start with presentation of more inclusive ideas first followed by subordinate ideas and go on reconciling between the new information with what has already been presented by him/her. Therefore, progressive differentiation and integrative reconciliation are two processes which are involved in the acquisition and retention of meaningful learning. These two processes or principles as they are called by Ausubel et al. (1978) are implemented by advance organizer.

2.12 ADVANCE ORGANIZER

Ausubel et al. (1978) defines "An advance organizer is a pedagogic device that helps implement principles of progressive differentiation and integrative reconciliation by bridging the gap between what the learner already knows and what he needs to know if he is to learn the new material most actively and expeditiously". Advance organizer plays an important role in facilitating meaningful learning and retention of new information. Ausubel (1968) describes advance organizers as introductory materials which are presented in advance of the learning task and at a higher level of abstraction, generality and inclusiveness than the learning task itself. Its major functions are to explain

integrate, and interrelate the material in the learning task with the already learnt material and to help the learner discriminate the new material from the previously learnt material. Thus, it provides an ideational scaffolding for the stable incorporation and retention of the more detailed and differentiated material that follows in the learning passage (Ausubel, 1968). Summaries and overviews are not considered as advance organizers as they stress the main points of the materials omitting less important information. The most effective organizers are those that use concepts, terms, and propositions that are already familiar to the learner, as well as appropriate illustrations and analogies (Joyce and Weil, 1980). For example, the intention of the teacher is to teach students factors affecting and promoting national integration. In this case he/she may use the concept of national integration as the basis of advance organizer and factors affecting and promoting national integration may be used as auxiliary organizers.

There are two types of advance organizers - expository and comparative. Expository organizer comprises more inclusive, general or superordinate ideas that could subsume or provide ideational anchorage for unfamiliar material. They provide a general model of class relationship as a general subsumer for a new class, subclasses, and species before more limited subsumers (classes) are provided for the particular subclass or species (Joyce & Weil, 1980). For example, before

discussing kinds of meaningful reception learning such as representational, concept and propositional learning, the teacher may build an expository organizer around the concept of meaningful reception learning, describing the nature of meaningful reception learning with the help of suitable examples.

On the other hand, comparative organizers are used when there is familiar learning material. They aim at integrating new concepts with basically similar concepts existing in cognitive structure and simultaneously discriminate between the old and new concepts with a view to preventing confusion caused by their similarity. Comparative organizers are mostly presented in the form of analogies. For example, before discussing the concept and functions of a computer system, the teacher may formulate and present a comparative organizer comparing the concept of computer system with that of the human brain system. Thus, the advance organizer may be like, "the computer system is just like the human brain system".

The effectiveness of the advance organizer in facilitating meaningful learning and retention has been extensively studied by the researchers over the past three decades. A brief description of those studies indicating both facilitative and non-facilitative effects of advance organizers has already been presented under the rationale of the study in the Chapter I.

2.13 ADVANCE ORGANIZER MODEL OF TEACHING

The Advance Organizer Model of teaching (AOM) is designed on Ausubel's ideas about cognitive structure, active reception learning, organization of subject matter and advance organizer. AOM is needed by the teacher when his/her primary concern is to present large bodies of information as meaningfully and effectively as possible. It has significant application in the presentational mode of teaching (lecturing), where the teacher's job is to help students acquire subject matter and students' primary goal is to master information and ideas. Ausubel is, therefore, one of the few psychologists, who have related the theory of learning with the classroom teaching-learning activities. His model of teaching is a sincere attempt towards building up of a theory of teaching.

2.14 DESCRIPTION OF ADVANCE ORGANIZER MODEL

Like any other model, the operations of the AOM are described in terms of its syntax, social system, principles of reaction and support system.

i) Syntax

The Advance Organizer Model has three phases of activities. Phase one is the presentation of the advance organizer, phase two is the presentation of the learning task or learning material and phase three is the

strengthening of cognitive organization.

Phase one comprises three activities: clarifying the aims of the lesson, presenting the advance organizer and prompting awareness of relevant knowledge.

Clarifying the aims of the lesson is meant for obtaining students' attention and orienting them towards learning goals. These are essential for meaningful learning. The second task is presentation of advance organizer. Advance organizer must be constructed very carefully and in such a way that students can make distinction between AO and the learning task. It must be distinguished from summaries and overviews. While presenting advance organizer, whether expository or comparative, the teacher should point out the essential features of it, explain it with the help of examples. It is useful to illustrate the organizer in multiple contexts and to repeat it several times. Finally, to develop integrative cognitive structure, it is important to prompt awareness of the learner's prior knowledge and experience that might be relevant to this learning task and organizer.

In the phase two, the learning material in the form of lectures, discussions, films, experiments or reading is presented to the students. There are three major concerns here. (a) First is to maintain students' attention;

(b) Second is to make the organization of the material explicit so that students have overall sense of direction. (c) Third is to make the learning material logical for students' comprehension.

In the phase three, the learning material is anchored in the students' cognitive structure. Ausubel identifies four activities under this phase (1) promoting integrative reconciliation; (2) promoting active reception learning; (3) eliciting a critical approach to knowledge; and (4) clarification. Some of these activities are also covered under the phase two.

The teacher can facilitate reconciliation of the new learning material with the existing cognitive structure in several ways. These are : (1) remind students of the ideas (the larger picture); (2) ask for a summary of the major attributes of the new learning material; (3) repeat precise definitions; (4) ask for differences between aspects of the material; and (5) ask students to describe how the learning material supports the concept or proposition that is being used as a subsumer.

Active learning can be prompted by : (1) asking students to describe how the new material relates to a single aspect of their existing knowledge; (2) asking students for additional examples of the concept or proposition in the learning material; (3) asking students to verbalize the essence of

the material, using their own terminology or frame of reference; (4) asking students to examine the material from alternative points of view; and (5) relating the material to contradictory material, experience, or knowledge.

A critical approach to knowledge is developed by asking students to recognize assumptions or inferences that may have been in the learning materials to judge and challenge these assumptions and inferences and to reconcile contradictions among them.

Finally, the teacher can clarify students' doubts about the learning material by providing additional information, rephrasing previously given information or applying the ideas to a new problem or example.

All these techniques may not be used in all lectures. It is upto the teacher to decide their uses depending on learners' characteristics and the nature of curriculum. But, he/she must be aware of these techniques. The syntax of the AOM is presented in Table 2.2.

ii) Social System

The teacher, in this model, controls the intellectual structure because he/she has to always relate the new information with the already learnt ideas in the cognitive structure. Therefore, it is more teacher-oriented.

TABLE 2.2: Syntax of the Advance Organizer Model

PHASE ONE : PRESENTATION OF ADVANCE ORGANIZER	PHASE TWO: PRESENTATION OF LEARNING TASK OR MATERIAL	PHASE THREE: STRENGTHENING COGNITIVE ORGANIZATION
Clarify aims of the lesson.	Maintain attention.	Use principles of integrative reconciliation.
Present organizer.	Present material.	Promote active reception learning.
Identify defining attributes.	Make organization explicit, Make logical order of learning material explicit.	Elicit critical approach to subject matter.
Give examples.		Clarify.
Provide context.		
Repeat.		
Prompt awareness of learner's knowledge and experience.		

Source: Joyce and Weil, 1980, Page 85.

iii) Principles of Reaction

The teacher's responses to the students' reactions are always guided by the purpose of clarifying the meaning or new information and differentiating it from the already learnt material and reconciling it with the same.

iv) Support System

The effectiveness of the advance organizer depends on an integral and appropriate relationship between the conceptual organizer and the content.

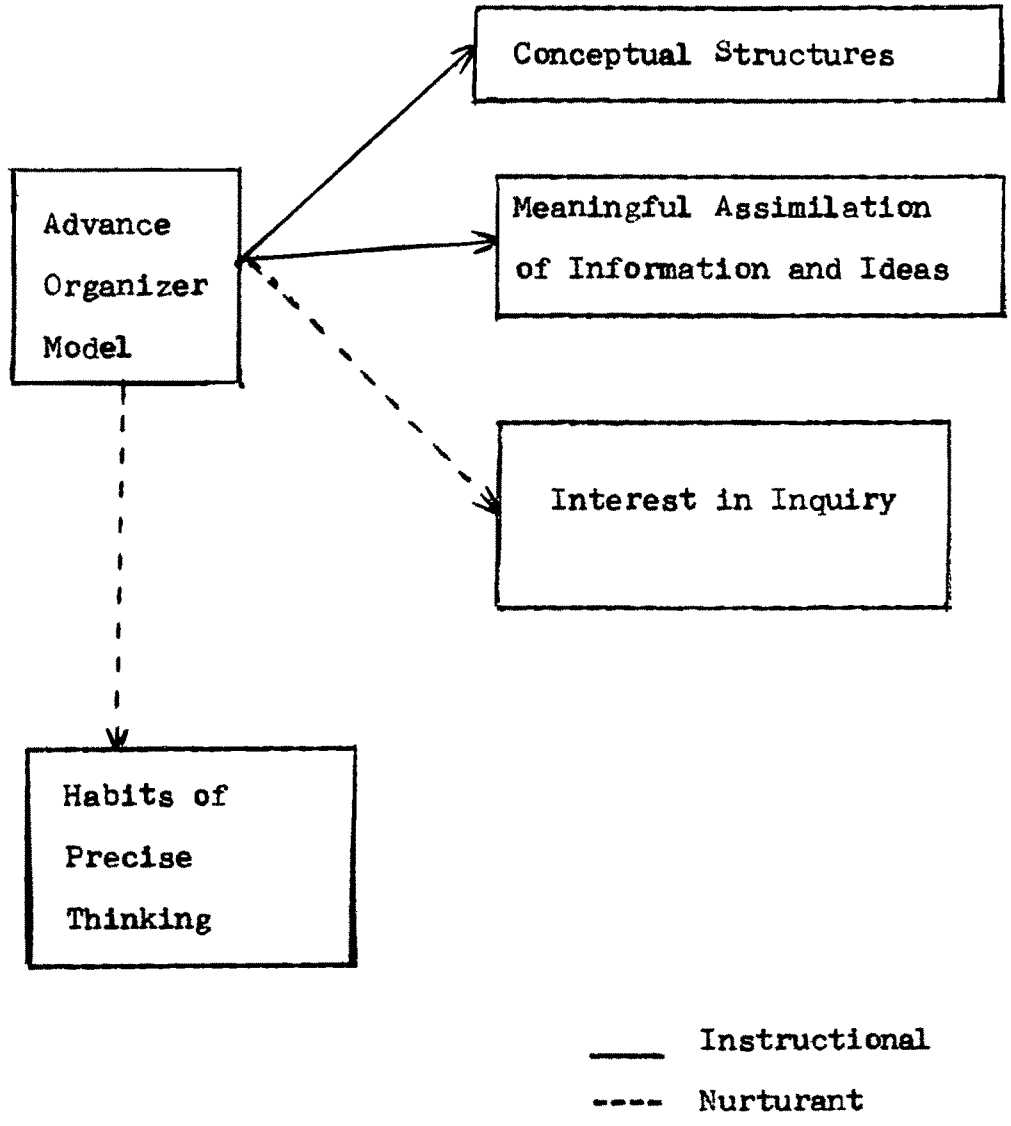
2.15 INSTRUCTIONAL AND NURTURANT EFFECTS OF AOM

Instructional and nurturant effects of the advance organizer model have been defined under the explanation of the terms in the Chapter I. However, to repeat them again, instructional effects of the AOM are conceptual structures and meaningful assimilation of information and ideas. Nurturant effects are interest in inquiry and habits of precise thinking. Instructional and nurturant effects of AOM are presented in the Figure 2.2.

2.16 SUMMARY

There are two major processes which differentiate among the principal kinds of learning. One of the processes classifies classroom learning as reception and discovery

FIGURE 2.2: Instructional and Nurturant Effects of Advance Organizer Model



Source: Joyce and Weil, 1980, page 92.

learning, whereas the other categorises it into rote and meaningful learning. Ausubel puts stress on meaningful reception learning. According to him, meaningful reception learning takes place when the new learning task is related to the learner's existing cognitive structure in a non-arbitrary and substantive manner. Ausubel classifies meaningful learning into three major kinds of learning, namely, representational learning, concept learning, and propositional learning. Assimilation of new information takes place both in the case of concept and propositional learning. According to Ausubel, meaningful learning is active, facilitates retention of subject matter, and helps in conceptual organisation. Progressive differentiation and integrative reconciliation are two processes or principles which help in conceptual organisation.An advance organizer is a pedagogic device that helps in implementing principles of progressive differentiation and integrative reconciliation by bridging the gap between what the learner already knows and what he needs to know. Advance Organizer Model of teaching is based on the idea of advance organizer. The operations of the advance organizer model are described in terms of its syntax, social system, principles of reaction, and support system. The model has two instructional as well as two nurturant effects. In the next Chapter, a survey of researches conducted on advance organizer and Advance Organizer Model is being presented in order to situate the present investigation in the context of past researches.