CHAPTER-I

INTRODUCTION

- The Scenario
- Fundamental elements of a Teaching Model
- Grouping of Teaching Models
- Orientation of the Concept Attainment Model
- Advance Organizer Model
- Conventional Method of Teaching
- Meaning of Economics and Importance of Teaching Economics
- Rationale of the Present Study
- Statement of the Problem
- Definition of the Terms Used
- Objectives
- Hypothesis
- Delimitations of the Study
- Procedure
- Sample
- Tools Used
- Statistical Analysis
- Chapterization
CHAPTER-I

INTRODUCTION

1.1 THE SCENARIO

Education is the initiation into something worthwhile. Education not only plays an important role in the teaching learning process, but also develops the innovative characteristics as confidence, economical standard and moral values in an individual. The individual looks upon the divine spark in man, of the true or rational self as the highest achievement of education, as Euken said, “True elevation of man through an inward rebirth” or “the awakening of the inner man which is the triumph of education”. And above all, Gandhiji had almost identified himself with such a view about the essence of education. He wrote, “By education-I mean all-round drawing out of the best in child and man-body, mind and spirit.” Undoubtedly education leads out the latent faculties, physical and mental capacities. It stimulates interest and aptitude. Education is a powerful instrument for unfolding the hidden capacities of the educand. Its major function consists in providing optimum conditions for the realization of this end.

Education is training for life for complete living. To live life well, it is essential to know life first of all. Knowledge of life comes through intellectual training, which results in power to understand the world. “Knowledge is the power by which the things are done,” said Socrates. It is knowledge which ensures success in any profession, vocation or calling. It is also evident that the knowledge gained through research is of the highest level because it is based upon systematic procedure operated scientifically. So, research plays an important role in educational practice. Research in education covers a vast area of teaching discipline.

According to Milton, “Teaching is not a ‘giving’ matter as is generally understood by layman but ‘giving and taking’ affair or pedagogically speaking a teaching-learning process, wherein the teacher not only teaches but learns
also, as teaching and learning are complementary process. Learning to learn is not just a slogan. It denotes a specific pedagogical approach that experiences the requirement of the learner. It is also a famous view that 'Pedagogy is not a profession, but a mission.' Missionary Zeal, as opposed to mercenary task, imbibles a spirit of fellow-feeling, sympathy, love, co-operativeness etc. towards the individual or the group wherein the missionary undertakes the job.

As education plays a vital role in the building of a nation, the progress of nation in various spheres like science, technology, economics, literature, commerce etc. depends on an effectively planned system of education. Education has become a complex process with the passage of time because of the complex nature of modern industrial civilization and explosion of knowledge due to scientific discoveries and inventions. In order to understand the progressive nature of society and to meet the challenges of time and educational aspirations of society, there is a need for an effective system of education. If the teacher is to adopt and restructure the learning experiences to meet the observations, interests and capabilities of the learner, his approach to teaching should be in relation to objectives of teaching, nature of learner and nature of content.

Measure of effective teaching strategy is the teaching-learning outcome, which, in turn, is the function of interaction between teacher, content and learner.

Teacher

\[
\begin{array}{c}
\text{Teacher} \\
\downarrow \\
\text{Content} \\
\downarrow \\
\text{Learner}
\end{array}
\]

Here teaching is not taking or giving alone and learning is not listening or receiving alone. Teacher and learner must be actively engaged in manipulating the system of objects and organism of interest so that inherent regulation in the experience can be discovered.

Generally, a traditional teacher equates the teaching with telling. But the idea of the modern teacher is totally different from that of traditional
teacher. He/She thinks that the teacher has to stimulate wholesome activity. His/Her task is not only different but requires a varied and diversified approach. He/She has to arrange the whole stage in an effective manner. Being an adapt artist as well as skilled craftsman, the teacher cannot work in the vacuum. In order to make the process of teaching-learning effective and profitable, in order to economise his/her efforts and in order to overcome the possible hurdles during the act of teaching, the teacher cannot but make use of certain time honoured as well as newer tools, techniques, tactics, methods, approaches, strategies as the media of teaching-learning.

The teaching process has reached new dimensions with the advancement of knowledge in all its allied fields quite abundantly. Its character has been radically changed from being a simple art of imparting information to the students in a passive manner to the active, complicated professional science of education, requiring professional preparation of teachers for longer duration, covering both the pedagogical theory and practical skills of teaching. Due to impact of modern scientific, engineering and technological advancements of teaching process, it is tending to become a technology by itself. As Pressey and other say, “Learning is an episode in which a motivated individual attempts to adopt his behaviour, so as to succeed in a situation which he perceives as leading to the goal.”

In recent past, a number of researches have been conducted on teaching learning process. New methods, techniques, strategies have been developed and new approaches have been discovered on the basis of research findings. The traditional approaches have been replaced by new ones.

Many analytical researches and a good deal of discussions have been going on in recent years to revitalize class-room teaching in Indian schools. Various Education Commissions and Committees have been set up from time to time by the Govt. of India. A critical analysis of the reports of different Education Commissions and Committees right from Secondary Education Commission (1955) to National Policy on Education (1986) shows that there has been only quantitative growth in education; and by and large, the
problems, drawbacks, corrective measures pointed out are not really very different as is clear from the various statements of different commissions.

Secondary Education Commission (1955) pointed out that, ".........education was too bookish and mechanical, stereotype and rigidly uniform..... The stress of Examination, the over crowded syllabus, the method of teaching and lack of proper material amenities tended to make education a burden rather than a figous experience." Report of Education Commission (1964-66) surprisingly speaks of the same thing, "......... will need radical changes if it has to meet the purpose of a modernizing, democratic in content, in size and composition of the students body, in the selection and professional preparation of teachers in organization." National Policy on Education (1986) has also observed that the goals of education system in items of relating it more closely to the lives of people, raising the quality of education, development of science and technology, have not been achieved. Hence a strong feeling of apprehension exists about the quality of education. Keeping in view the gloomy condition of education in the country, these Education Commissions have suggested changes in the education and have provided new curricular designs, guidelines for teaching and instructional materials. But unfortunately many of the recommendations of these commissions have remained confined to education writings only. These have been seldom reflected in actual teaching and learning operations of the class-rooms which is a means to reach the desired ends, represents an inadequate conception of learning. The cause for such an inadequacy lies in the gap between researches in the field of curriculum designs and those in the field of teacher education.

In India, it has been rightly pointed out in ‘An Effective use of School Curriculum’ NCERT (1978), that during the past few decades curriculum researchers and planners have been mainly concerned with curriculum as ‘intension’ but have not given much attention to curriculum as ‘transaction’; it is the later which is of utmost importance. Commendable efforts have been made to make curriculum more meaningful and realistic for the child but very little has been done by the way of preparing the teacher to achieve the goals of
education through an effective use of school curriculum. As a result of this, the students in the classroom do not understand the specific items of knowledge and are unable to comprehend the knowledge, gained. Thus real understanding is hardly achieved by the students as they try to cram the subject matter to pass the examination. Hence, the talent of child is not developed fully and so a voice of dissatisfaction is audible about the quality of education in schools. Educationists, planners, teachers and enlightened parents have raised their voice to improve the quality of education. A high level of achievement is expected from the students but in actual practice, it has been observed that a high degree of under-achievement is present at all the different stages of education. An assessment of pupils' achievement reveals that there is no uniformity in their achievements. Some of them do very well while some others achieve relatively less. There are still those who do very poorly. The later two categories of children are those of underachievers. According to researchers, the problem can be attributed to a number of factors. Chandra (1975) found that lack of learning material and proper co-ordination and lack of good rapport between teachers and students are the causes of low achievement.

The study by Z.N. Doctor (1984) indicated a relationship between classroom climate and academic achievement. Academic Achievement was found to be dependent on teachers' and pupils' behaviour, pupils' psyche and classroom climate. Upadhyaya's study (1984) also revealed that each of the three aspects of classroom environment namely interpersonal relationship, goal orientation and system maintenance and changes were significantly related to academic achievement.

Pandey (1981) and Puri (1984) studied the influence of environment as a factor to promote academic achievement among pupils. The former conclude that an urban environment was more conducive to better achievement than the rural environment while the later observed that the effect of environmental facility on both, general academic achievement and achievement in English language was significant. Trivedi (1987) reported better achievement by the
pupils belonging to upper socio-economic status group. Besides the studies of sociological factors, there are many researchers that reveal how inherent variables of the pupils like intelligence, interest, aptitude, anxiety etc. and the various teaching methods and techniques influence the achievement of pupils.

These studies on achievement of pupils indicate that achievement in a child is caused, promoted and affected by a number of variables such as variables arising out of the person or self, variable arising out of the teaching-learning set up, variables arising out of subject of study and so on. Each one of them is actually a cluster of variables, which individually or on interaction with others have their influence on achievement (Fourth Survey of Research in Education).

The question—how to raise achievement of largest number of pupils to the optimum level has received considerable attention from researchers and teachers. To raise achievement and hence to improve the quality of education in the classroom and to make the effective use of school curriculum, it is required to select and implement the appropriate teaching strategies. The appropriateness of teaching strategies is determined by the proper synchronization of educational objectives, nature of subject matter and nature of the learner and his environment. Crawford and others (1972) found that some new curricula and instructional strategies result in superior learning by pupils as compared to more conventional approaches. The model developed by Carroll’s is based on the assumption that the achievement of pupils can be optimized provided suitable techniques are used in a systematic manner.

1.1.2 CONCEPT OF TEACHING MODELS

The research for good teaching models has agitated the minds of Bruce Jyoce and Weil Marsha. A model of teaching is defined as a plan or pattern that can be used to shape curriculum, to design instructional materials and to guide instructions in class-room- and other meetings. A model enables the teacher to enhance the ability of students to achieve various learning objectives and is not a substitute for learning skill. How teaching is conducted has a large impact on students’ ability to educate themselves. Successful
teachers are not simply charismatic, pervasive and expert presentators. Rather, they present powerful cognitive and social tasks to their students and teach the students how to make productive use of them. Thus, a major role in teaching is to create powerful learners. Teaching models also influence learning styles. A model of teaching is nothing more than a tool for thinking about the teaching situation, it is a set of concepts arranged to explain what teachers and students do in classroom, how they interact, how they use instructional material and how these activities affect students’ learning. Definitely, a model cannot take place of fundamental qualities in a teacher, such as knowledge of subject matter, creativity, and sensitivity to people. Rather it is a tool to help good teachers teach more effectively, by making their teaching more systematic and efficient. As with the blueprint, a teaching-model is a design for teaching, within which the teacher uses all the skill and insights at his or her command. No single approach to teaching is appropriate in all situations, and consequently, effective teaching requires alternative strategies to accomplish different goals. There is no one best way to teach. The best technique is one which will be most effective for reaching a particular goal in a given situation. The use of optimal strategies in teaching demands knowledge of alternatives. When a teacher identifies a goal and selects a particular strategy designed to reach that goal, we can say the teacher is using a models approach.

According to Weil and Bruce, a model is adaptable, an easy instrument that is modified to fit different type of subject-matter and different type of pupil-personalities. It is not a rigid formula for performing a job. It helps in information of an environment by giving ideas.

1.2 FUNDAMENTAL ELEMENTS OF A TEACHING MODEL

An instructional model gives valuable directives and blue prints for carrying out a task for the accomplishment of some specific goals. An effective use of model is to bring awareness of a theory in addition to practice. The essential elements involved in the description of a model give proper guidelines for utility of any model. These essential elements are:
1.2.1 Focus,
1.2.2 Syntax,
1.2.3 Social system,
1.2.4 Principles of reaction,
1.2.5 Support system and
1.2.6 Evaluation.

These six elements are the operational heart of each model, they tell us what activities should occur and when and appropriately, appropriate in what sequence.

1.2.1 FOCUS

It comprises of the objective of teaching. Every teaching activity is undertaken to achieve some defined objective to influence pupil's behaviour.

1.2.2 SYNTAX

The syntax or phasing of the model describes the action to be followed in the model. It shows the teacher how he should begin and proceed further.

1.2.3 THE SOCIAL SYSTEM

It expresses the interactive roles and relationships between the teacher and students and the type of norms to be followed. Models of teaching are classified into three categories according to the leadership role of the teacher & student. Some models which use the teacher as the centre of activity are called advance structured, others which provide equal relationship between teacher and students are termed as moderately structured, while some which place the students as the centre are called less advance structured.

1.2.4 PRINCIPLES OF REACTION

These are the directives for the teacher's response to the learners. These responses should be entirely suitable and discriminating. The golden rule of reaction provides the teacher with the 'rules of thumb' by which he 'tunes in' to the students and selects suitable responses to what the students
do. These are actually rules of viewing at the student and selecting a model suitable to his responses.

1.2.5 THE SUPPORT SYSTEM

Support system of a model gives success to a model in generating a desirable classroom environment by providing requisite teaching aids. This system includes supporting conditions necessary for the operation of the model that is, the requirement in addition to human skills, capacity and technical facilities, e.g. books, cassettes, films, self instructional system, trained experts, audio-visual aids etc.

1.2.6 EVALUATION SYSTEM

The teaching is imperfect without appraisal because without evaluation, attainment of goals can not be assessed. Various tests like oral tests, objective type tests of recall and recognition type, rating scales and questionnaires etc are administrated to evaluate the achievement of students.

So, the development of models of teaching is an attempt to translate the art of teaching into scientific concepts and relationships thereby, trying to give teaching a new language and new guidelines. The principles which relate theory to practice about the models of teaching are as follows:

1. There is a considerable order of alternative approaches to teaching.
2. Approaches make a difference in what is learned, as well as, how it is learnt. Implicitly, the approaches to teaching are sufficiently different from one another. They change the probability, that various kinds of outcomes will result if they are used.
3. Students are dynamic part of learning process and they react differently to any instructional method. Combinations of personality, aptitudes, interpersonal skills and previous achievement, contribute to approaches of learning styles.
1.3  GROUPING OF TEACHING MODELS

Models are arranged in terms of their specific educational goals. Review of literature pertaining to teaching models suggest a variety of sources.

Mitzel (1960) was the pioneer to suggest that research on teaching involved usage, process and product variables, Dunkin and Biddle (1974) examined the same field of research after fifteen years. Gage (1978) analyzed their procedures because he thought they led to results that were unnecessarily doubtful. Resenshine (1970) and Gage (1978) choose to focus on the process-product relationship. Schefler (1964) described three philosophical models, namely:

(i) the rule model by Kant,
(ii) Insight model by Plato and
(iii) The Impression model by John Locke

Dececco (1977) has analyzed three psychological models of teaching, namely:

(i) An Interaction Model by Flander,
(ii) A Basic Model of Teaching by Robert Glaser,
(iii) A Computer Based Teaching Model by Lawrence Stolarow and Danial Davis,

He has also described three historical models i.e. (a) Lecture Recitation Model, (b) The Monterssori Model, (c) The Human Relations Model by Combs and Syngg.

The instructional models designed by Joyce, B. and Weil, M. (1972) have been grouped into four families as per the nature of specific objectives to be achieved through these models. The four families of models given in their book are as follows:

1.3.1. Information Processing Models
1.3.2. Social Interaction Models
1.3.3. Personal Models
1.3.4. Behaviour Modification Models.
1.3.1 **INFORMATION PROCESSING MODELS**  
Information processing refers to the ways people handle stimuli from the environment, organize data, sense problems, generate concepts and solutions to problems and employ verbal and non-verbal symbols.

1.3.2 **SOCIAL INTERACTION MODELS**  
These models give priority to improvement of the individual’s ability to relate to others to improvement of democratic process, and to the improvement of the society.

1.3.3 **PERSONAL MODELS**  
These models emphasize the process by which individuals construct and organize their unique reality. They give much attention to emotional life.

1.3.4 **BEHAVIOUR MODIFICATION MODELS**  
The models in this group emphasize on changing behaviour from less productive to more productive patterns. Behavioural models have wide applicability, addressing a variety of goals in education, training, interpersonal behaviour and therapy.

**Table: 1.1**

**FAMILIES OF MODELS OF TEACHING**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Category of Model</th>
<th>Name of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Information processing Models</td>
<td>Inductive Thinking Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inquiry Training Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scientific Inquiry Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Concept Attainment Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advance Organizer Model</td>
</tr>
<tr>
<td>2.</td>
<td>Social Interaction Models</td>
<td>Group Investigation Model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social Inquiry Model</td>
</tr>
</tbody>
</table>
INFORMATION PROCESSING MODELS OF TEACHING

The models of this family share orientation towards the information processing capability to master information. Some information processing models are concerned with the ability of the learner to solve problems and thus emphasize productive thinking, others are concerned with general intellectual ability. A large number of models emphasize concepts and information development from the academic discipline. The route, however, is through intellectual functioning.

Seven models of teaching have been grouped under Information Processing Models. Each has a distinct goal. Table 1.2 gives the name of each model, with its goals and name of theorists on whose work the model was developed:
<table>
<thead>
<tr>
<th>S.No.</th>
<th>Models</th>
<th>Major Theorist</th>
<th>Mission or Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Inductive Thinking Model</td>
<td>Hilda Taba</td>
<td>Designed primarily for the development of inductive mental process and academic reasoning or theory building, also these capacities are useful for personal and social goals as well.</td>
</tr>
<tr>
<td>2.</td>
<td>Inquiry Training Model</td>
<td>Richard Suchman</td>
<td>Designed primarily for development of inductive mental process and academic reasoning or theory building, also these capacities are useful for personal and social goals as well.</td>
</tr>
<tr>
<td>3.</td>
<td>Scientific Inquiry</td>
<td>Joseph J. Schwds (also much of the curriculum reform movement of the 1960s)</td>
<td>Designed to teach the research system of a discipline, also expected to have effects in other domains (Sociological methods may to taught in order to increase social understanding &amp; social problem solving).</td>
</tr>
<tr>
<td>4.</td>
<td>Concept Attainment</td>
<td>Jerome Bruner</td>
<td>Designed primarily to develop inductive reasoning and also for concept development and analysis.</td>
</tr>
<tr>
<td>5.</td>
<td>Cognitive Growth</td>
<td>Jean Piaget Irving Sigel Edmund Sullivan Lowrance Kohlberg.</td>
<td>Designed to increase general intellectual development, especially logical reasoning, but can be applied to social and moral development as well.</td>
</tr>
<tr>
<td>6.</td>
<td>Advance Organizer Model</td>
<td>David Ausubel</td>
<td>Designed to increase the efficiency of information processing capacities of absorption in relation to bodies of knowledge.</td>
</tr>
<tr>
<td>7.</td>
<td>Memory</td>
<td>Harry Lorayne Jorry Lucas</td>
<td>Designed to increase capacity to memorize</td>
</tr>
</tbody>
</table>
In the present study, the models whose effectiveness is to be investigated is that of Concept Attainment and Advance Organizer. Both these models belong to the family of Information Processing Models.

**Information Processing Models**

- Inductive Models
  - The Concept Attainment
- Deductive Models
  - The Ausubel Model

### 1.4 ORIENTATION OF THE CONCEPT ATTAINMENT MODEL

The Concept Attainment model was originally designed by Joyce and Weil and is based on the research efforts of Jerome Bruner, et. al. 1956. Their work 'A Study of Thinking' culminated many years of research into the process by which people acquire concepts. To examine the learning of concepts, Bruner and his associates identify the following postulates about concept attainment:

1. The environment is full of diverse things and it would have been impossible for human being to adjust in it, if he has not endowed with the capacity to discriminate, to categorize things in groups and to form concepts.

2. Categories enable the man to reduce the complexity of the environment. The category enables man to group together objects that have real differences but they classify together on the basis of their common traits.

3. The concept has five elements-name, examples, attributes, attribute values and rule.

4. Categorizing activity actually has two components the act of category formation (concept formation) and the act of concept attainment. Concept formation is the first step towards concept attainment.
5. In concept attainment, the concept is determined in advance. Then efforts are made to determine the elements of the concept. The concept formation is an act of contrast and invention. It is an act by which new categories are formed.

6. Concept formation and concept attainment differ significantly in terms of thinking process. The two process require different teaching strategies.

On the basis of above postulates and ideas, Bruner and his associates have developed a number of teaching models. Weil and Joyce have mentioned three models of concept attainment namely,

1. The Reception Model of Concept Attainment,
2. The Selection Model of Concept Attainment,
3. The Model of Unorganized/Mixed Material.

1.4.1 NATURE OF CONCEPT ATTAINMENT MODEL

Concept Attainment Model was advanced by Bruner. Bruner et. al. (1956) designed the task for concept attainment, which implicates the following steps.

- There is a series of examples to be tested which leads to the attainment of concept. The examples can be divided in terms of their attributes and attribute values.
- A hypothesis is made on the basis of an example or examples. A series of decisions are made before attaining concept.
- The evaluation of decision gives information about relevance of attribute and category membership of an example.
- A strategy is the sequence of decisions made for finding out valid attributes for concept attainment.
- The ‘Pay of Matrix’ is the set of inference following each decision and its outcome. Each decision about the nature of example may be regarded as having inferences for the decision-makers.

In the acquisition, retention and utilization of information the following pattern of decisions are made to meet certain object of the strategy.
(i) To ensure that the concept is attained with minimum number of encounters with relevant examples.

(ii) To ensure that a concept is attained with certainty irrespective of the number of instances one must test up to attainment.

(iii) To attain the concept surely, simultaneously minimizing amount of strain on consequences and memory capacity.

(iv) To minimize the number of wrong categorization before attaining a concept (Bruner, Goodnow and Austin, 1956).

During the process of concept attainment a strategy is chalked out from the observed pattern of decisions made by individual. Bruner formed an ideal strategy on the basis of formal property necessary to achieve certain goals, which are as follows:

(i) Maximization of information gained from our decisions and test;
(ii) Keeping the cognitive strain involved in the task within manageable or suitable limits;
(iii) Regulating any other form of risk consequent to make a decision and testing it.

These goals give a criterion to evaluate a strategy. An ideal strategy is primarily an analytical device used to measure the performance of human apparatus in the situation they are set (Bruner et al., 1966, p. 241).

Bruner and his associates have developed ideal strategies on logical grounds, on the basis of the nature of the concept, attributes and attribute values. An ideal strategy can be there by using which the problem solver will attain the concept in minimum number of encounters, but it may be cognitively straining, like, remembering many points at a time. Another ideal strategy can be such which requires less memorization and through which success is also sure. But it is comparatively more time-consuming. There is a third strategy – a compromise between the earlier two-serving the purpose of cognitive economy and rapid solution. The selection of strategy depends on certain factors, like nature of concepts, number and complexity of examples encountered, order of positive and negative examples, objectives and
inferences of categorization etc., Bruner and his associates mainly studied the maintenance of balance of various components like intake of information, cognitive strain and failure rate etc. during the process of conceptualization.

Bruner has divided the strategies of thinking into three major groups, depending upon conditions under which conjunctive concept attainment takes place. These are:

1.4.2 Concept Attainment under ‘Reception Conditions’,
1.4.3 Concept Attainment under ‘Selection Conditions’ and
1.4.4 Bruner’s Mixed Material Model.

1.4.2 CONCEPT ATTAINMENT UNDER ‘RECEPTION CONDITIONS’

This strategy is very flexible. An individual freely selects example to separate easily and efficiently those attributes which are useful for concluding a conjunctive grouping. The individuals main freedom lies in the selection of hypothesis and not in the sequencing of events. Whether the individual is partist or wholist, his hypothesis is bound to face one of the following contingencies:

(a) Positive confirming;
(b) Positive informing;
(c) Negative confirming; and
(d) Negative informing.

A good reception strategy is that in which the hypothesis is changed appropriately. One should know how to change the hypothesis in case of any contingency. Success depends upon what one does with the initial hypothesis if it is not in accordance with the new examples encountered. Under these conditions the following two strategies are applied:

(i) Focusing strategy,
(ii) Scanning/part scanning partist scanning strategy.

1.4.3 CONCEPT ATTAINMENT UNDER ‘SELECTION CONDITION’

When concept attainment model is used under selection condition then the student selects examples for testing hypothesis which he has formed on the
basis of first positive example given by the teacher. The teacher confirms the
students' hypothesis by founding the position of the example chosen. The
learner selects more examples, correspondingly and investigates their status till
the concept is attained. Therefore, the student controls the sequence of
eamples so that he could approach the examples suitable for testing his
hypothesis. According to Bruner the following categories come under
selection conditions:

(a) Successive scanning,
(b) Simultaneous scanning,
(c) Conservation focusing; and
(d) Focus sampling.

1.4.4 **BRUNER'S UNORGANIZED / MIXED MATERIAL MODEL**

This strategy is designed in a manner, to increase the intellectual load
on the learner. The learner is placed in a situation where he is able, to analyse
hypothesis as well as, advance the efficiency of his processing. Teacher gives
only one example to test the hypothesis. Rest of the examples are given by the
students for testing the hypothesis.

Bruner and his colleagues (Bruner, Goodnow and Austin, 1977, P. 233)
concluded that the individual operating under normal pressure tries to
minimize strain involved in pursuing several attributes which he attends to. He
can do this by grouping such attributes into a smaller number of classes or
patterns or by attending to some important attributes only. The Concept
Attainment Model is intended to produce long-term learning.

1.4.5 **CONCEPT AND CONCEPT ATTAINMENT**

a) **CONCEPT**

Many educationists and writers use the term 'Concept' without an
explicit definition, to refer to any object of knowledge but concept is an
abstraction made out of sense and having a great utility. Concept can be
defined as hypothetical constructs which are not observable but have an ability
to use abstraction for classification, communication and problem solving
according to standards of culture. In other words, a literate adult, one who has attained concept learns each concept for himself, communicates, classifies and learns from other sources through his cognitive structure. Therefore, it is essential to treat concept as a basis element of thought which has functional variability. A concept may be defined as a mechanism enhancing a person to categorize objects or events (Anglin 1977). Bruner, Goodnow and Austin accept the proposition that concepts are classification of categories and postulates that there are three kinds of concept: Conjunctive, Disjunctive and Relational.

Concepts are ideas and teaching on concepts is like rearing ideas, the seeds of thought, the method is earth furnishing the conditions in which it may develop, flourish and give best fruit according to its nature. But as only what has been sown in ground will ever grow in it, so nothing may be developed by experiments except the ideas submitted to it. The method itself will give birth to nothing (Claude Bernard). Implying the emphasis on teaching through concepts should be through proper methods.

According to Russell, “A concept is a generalisation about related data. It is more or less stable percept (a result of sensory experience). When a child has learned to distinguish cat from other animals, whether that cats be large or small, black, white, grey, giner or tortoise colour, he applies the word cat to the class of ideas and uses a concept.”

Mc Donald, “A concept is a classification of stimuli that have common characteristics.”

In the broad sense it can be said that concept is a general idea that stands for a general class and represents the common characteristic of all objects or events of the general class. Concept, as a tool, economises the efforts in thinking.

Klein (1987) suggests a concept is a symbol, which stands for a class or group of objects or events with common characteristics. He also says, concepts enhance the thinking process by incorporating new objects, events into existing categories.
(b) **ELEMENTS OF CONCEPT**

According to Bruner any concept has five elements:

1. **Name**: The name is the term given to a category. For example, vegetable, tree, table are all names given to different categories.

2. **Examples (Positive and negative)** refer to the instances of the concept, which contain all the criterial attributes of category, are the positive examples and negative examples do not have any criterial attribute of the concept. In other words, the instances which possess a concept are called positive examples and others are called negative examples.

3. **Attributes (essential and non-essential)** are the common characteristics that cause us to place examples in the same category. Essential attributes are those characteristics which are critical to the domain under consideration. Exemplars of a category have many other attributes that may not be relevant to the category itself are called non-essential attributes.

4. **Attribute value**, refer to the degree to which an attribute is present in any particular example. When the categorization issue turns on matters of degree, we call it an attribute value.

5. **Rule**: This refers to a final statement specifying the essential attributes of a concept. The rule emerges at the end of the process of concept attainment.

(c) **STRUCTURE OF CONCEPT**

According to Bruner (1956) three terms (examples, attributes, attribute values) are used to describe categorizing activity and concept attainment. According to him each term has a special meaning and function in all forms of conceptual learning, especially concept attainment.
Exemplars are instances of the concept. The concept is learned by comparing the positive exemplars and constructing them with the negative ones. Klein (1987) considers attribute as one of two main aspects of concept, and says an attribute is any feature of an object.

In the process of classification the different instances are tested and searched for their features ignoring the others. Any instances can be described in terms of their attributes and their attribute value. The combination of attributes make one concept differ from another. The distinguishing attributes and their value ranges are called criterial attributes and these are necessary to make difference between the members of different classes.

(d) **TYPES OF CONCEPTS**

The rule, which is one of the two main aspects of concepts (Klein, 1987), defines which objects or events are examples of a particular concept. A number of different rules may be used to define the attributes of a concept. So on some instances, the rules can be simple, in other cases, they can be more complex.

Therefore, different types of categories are constructed when different attributes are combined and exemplars of particular concept can be recognised by knowing the presence of different range of rules.

Haygood and Bourne (1965) classified the different types of concepts as follows:

1. Affirmation – an affirmative rule specifies a particular attribute defines a concept.
2. Negative – a negative rule states that any object or event having certain attributes is not a member of the concept.
3. Conjunction – this rule defines a concept based on the simultaneous presence of two or more attributes.
4. Disjunction – by the rule, concepts are defined by the presence of one or two or both common attributes.
5. Conditional – when a concept is defined by this rule, the "if, then" statement can be applied.
6. Bio-conditional/conditional rule defines a concept using the statement "if and only if."

Bruner (1956) has identified three types of concepts, namely, conjunctive, disjunctive and relational. A “conjunctive concept” is one defined by joint presence of the appropriate value of several attributes. The “disjunctive class” requires the presence of some attributes and absence of others. Disjunctive concepts are often defined by “either” “or” characteristics.

A “relational concept” like conjunctive concept has several attributes, but these bear some kind of relationship to one-another. So this class is defined by a specifiable relationship between defining attributes.

(e) CONCEPT LEARNING/CONCEPT-ATTAINMENT

Attainment of concepts constitutes an essential component of school learning, Gagne (1965) remarked, “It is the acquisition of concepts that makes learning possible...”. The learning of concepts is of utmost importance for human beings as they read, think and communicate with the help of concepts.

According to Taba (1965), “Learning is a transactional process. An individual organises, whatever he receives, by way of information, from whatever source, according to his current conceptual system.” Whenever two or more distinguishable objects or events are grouped or classified together and distinguished from other objects on the basis of some common features or property-characteristics, learning of new concepts occurs in the already acquired conceptual system (Bourne, 1965).

According to Russell (Encyclopaedia of Educational Research, 1966), “Concepts are learning that permeate thinking”.

The learning of concepts enables the individual to grasp in complex environmental stimuli, similarities and differences, without which he can not cope otherwise. In this sense, education gives the individual environmental mastery.

A concept is learnt at the formal level when the learner can define the concept by its relevant attributes, name relevant and irrelevant attributes,
evaluate examples and non-examples in terms of the presence or absence of relevant attributes and name the concept.

Russell notes that “The adult does not typically acquire new concepts so much as he learns new variation and hierarchies. The processes involved in concept formation are not closed to the adult, because vast number of concepts are formed by the time adulthood is reached, new concepts are merely less likely to occur. “Concept attainment is the search for and listing of attributes that can be used to distinguish exemplars from non-exemplars of various categories” (Bruner, Goodnow and Austin, 1967). Whereas concept Formation, which is the basis of the inductive model, requires the students to decide the basis on which they will build categories. Concept attainment requires a student to figure out the attributes of a category that is already formed in another person’s mind by comparing and contrasting examples (called exemplars) that contain the characteristics (called attributes) of the concept with the examples that do not contain those attributes (called non-exemplars). To create such lessons we need to have our category clearly in mind.

According to Encyclopedia of Educational Research, The Concept Attainment Strategy is concerned with no separate but related ideas, the nature of concepts themselves and the thinking process used by individuals to learn concepts.

1.4.6 ELEMENTS OF CONCEPT ATTAINMENT MODEL

The elements of the concept attainment model are given below:

i. SYNTAX

The concept attainment model has three phases of activity as given in table 1.5 Phase one involves data to the learner. Data is presented to the students in the form of sets of items called ‘exemplars’. Each unit of data is a separate example or non-example of the concept. The units are presented in pairs. The data may be events, people, objects, stories, pictures or any other differentiating units. The learners are informed that there is one data that all the positive examples have in common; their task is to develop a hypothesis
about the nature of the concept. The illustrations are presented in a pre-
arranged order and are labelled “yes” or “no”. Learners are asked to compare
and justify the attributes of the different examples.

Table 1.3
SYNTAX OF THE CONCEPT ATTAINMENT MODEL

<table>
<thead>
<tr>
<th>Phase one</th>
<th>Phase two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of Data and Identification of Concepts</td>
<td>Testing Attainment of the Concept</td>
</tr>
<tr>
<td>Teacher presents labelled examples Students compare attributes in positive and negative examples.</td>
<td>Students identify additional examples Teacher confirms hypotheses, names concept, and restates definitions according to essential attributes.</td>
</tr>
<tr>
<td>Students generate and test hypotheses</td>
<td>Students generate examples.</td>
</tr>
<tr>
<td>Students state a definition according to the essential attributes</td>
<td></td>
</tr>
</tbody>
</table>

Phase Three

Analysis of Thinking Strategies
Students describe thoughts
Students discuss role of hypotheses and attributes.
Students discuss type and number of hypotheses

Finally, they are asked to name their concepts and state the rules or definitions of the concepts according to their fundamental characteristics.

In phase two, the students test their attainment of the concept first by correctly identifying additional unlabelled examples of the concept and then by producing their own examples. After this the teacher (and students) confirm or reject their original hypotheses, revising their choice of concepts or attributes as necessary.

In phase three, students begin to analyze the approach by which they attain concepts. Some learners initially try broad designs and gradually narrow the field; others begin with more discrete designs. The learners can describe their patterns; whether they focussed on characteristics or concepts, whether
they did so one at a time of several at once and what happened at that time when their hypotheses were not confirmed. Did they change approach? Gradually they can compare the effectiveness of different strategies. Actually this is evaluation phase. The most common way of measuring for Concept Attainment is by asking students to provide or identify additional examples of the concept.

ii. SOCIAL SYSTEM

Before teaching with concept attainment model, the teacher chooses the concept, selects and organises the material into positive and negative examples, and sequences the examples. Most instructional materials, especially text books are not planned in a way that corresponds to the nature of concept learning as presented by educational psychologists. In most cases teacher will have to prepare examples, extract ideas and materials from texts and other sources, and put these in such a way that the characteristics are clear and that there are, indeed, both positive and negative examples of the concept. When using the concept attainment model, the teacher acts as a recorder to monitor the track of the hypotheses (concepts) as they are mentioned and of their attributes. The teacher also points out additional examples as needed. The three major functions of the teacher during concept-attainment activity are to record, prompt (cue) and present more data.

iii. PRINCIPLES OF REACTION

In the flow of the lesson the teacher needs to be supportive of the students' hypotheses, stressing that they are hypothetical in nature and to create a dialogue in which students test their hypotheses against each other. In the later stage of the model, the teacher must direct the students' attention towards analysis of their concepts and their thinking strategies, again being very supportive. The teacher should allow analysis of the merits of various strategies rather than attempt to seek the one best strategy for all people in all situations.
iv. SUPPORT SYSTEM

Concept attainment lessons require that positive and negative exemplars be presented to the students. It should be emphasized that the students’ task in concept attainment is not to invent new concepts, but to achieve the ones that have previously been selected by the teacher. Hence, the data sources need to be known beforehand and the attributes visible. When students are presented with an example, they describe its characteristics (attributes), which can then be recorded.

1.4.7 APPLICABILITY OF CONCEPT ATTAINMENT MODEL

(i) INSTRUCTIONAL USES

The utility of the Concept Attainment Model determines the form of a particular learning activity. For example, if the emphasis is on gaining a new concept, the teacher will emphasize through his or her questions or comments the attributes in each example (particularly the positive examples) and the concept label. If the emphasis is on the inductive process, the teacher might want to provide fewer clues and reinforce students for participating and persevering. If the stress is on the analysis of thinking, a short sample concept attainment exercise might be developed so that more time can be spent on the analysis of thinking.

The concept attainment model may be applied on children of all ages and grade levels. The teachers use the model very successfully with kindergarten children, who love the challenge of the inductive activity. For young children the concept and its examples must be relatively simple, and the lesson itself must be short and heavily teacher-directed. The normal curriculum for young children is filled with empirical concepts that readily lend themselves to concept attainment approach.

In early childhood education, the materials for examples are often available and require little transformation for their use as examples when the model is applied.

The concept attainment model is a perfect evaluation tool when teachers want to find out whether important ideas introduced earlier have been
mastered. It quickly changes the depth of students’ understanding and reinforces the previous knowledge.

The model can also be helpful in opening up a new conceptual area by starting a sequence of individual or group inquiries. For instance, a unit exploring the concept of culture could start with a series of concept attainment lessons followed by a simulation activity in which students experience the problems that persons of one culture have when they are first introduced to members of a different culture. From this encounter, students would be ready to read about different cultures.

(ii) **INSTRUCTIONAL AND NURTURANT EFFECTS**

The concept attainment approach can fulfil several instructional goals, depending on the stress of the particular lesson. They are prepared for instruction on specific concepts and on the nurture of concepts. They also enhance practice in inductive reasoning and opportunities for altering and improving students’ concept-building strategies. Finally, especially with abstract concepts, the strategies nature awareness of alternative approaches, a sensitivity to logical reasoning in communication, and a tolerance of ambiguity. A complete structural outline of the instructional and nurturant effects of Concept Attainment Model is given in Fig. 1.1.
Figure 1.1 Instructional and Nurturant Effects: Concept Attainment Model

1.5 ADVANCE ORGANIZER MODEL

Advance Organizer Model, designed by Ausubel, is a deductive Information Processing Model. This advance organizer acts as a cognitive roadmap, guiding the student over the new content to be learned. In the course of an Ausubel lesson the teacher helps students break major ideas down into smaller, related ideas. To ensure that these new ideas are retained and connected to existing cognitive structures, the teacher helps students determine the relationship between the new ideas and the old and among the new ideas themselves.

Ausubel’s primary concern is to help teachers organize and convey large amount of information as meaningfully and efficiently as possible. He
believes that the acquisition of information is a valid, indeed an essential goal of schooling, and that certain theories can guide teachers in their job of transmitting bodies of knowledge to their students. His stance applies to situations in which the teacher plays the role of organizer of subject matter and presents information through lectures, readings and providing tasks to the learners to integrate what has been learned. The Advance Organizer Model is designed to strengthen students’ cognitive structure, a term Ausubel uses for a person’s knowledge of a particular subject matter at any given time and how well organized, clear and stable it is. Ausubel maintains that a person’s existing cognitive structure is the foremost factor governing whether new material will be meaningful and how well it can be acquired and retained. Before we can present new material effectively, we must increase the stability and clarity of our students’ structure. This is done by presenting to them concepts that govern the information to be presented to them.

The model cannot be called a passive one provided the proper conditions are set up. During a lecture or other form of expository teaching, the listeners’ or watchers’ minds can be quite active. But they must be involved in relating material to their own cognitive structure. Ausubel describes the mind as an information-processing and information-storing system that can be compared to the conceptual structure of an academic discipline. Like the discipline, the mind is a hierarchically organized set of ideas that provides anchors for information and ideas and that serves as a storehouse for them.

ADVANCE ORGANIZER: THE MODEL OF TEACHING

The model of teaching developed here is based on Ausubel’s ideas about subject matter, cognitive structure, active reception learning, and advance organizers. The organizer is important content in itself and needs to be taught. It may be a concept or a statement of relationship. In either case, time must be taken to explain and develop the organizer, because organizer is the subsequent learning material. For example, students must fully understand
the concept of ‘economy’ before the teacher can use it effectively to organize factual information about different types of economies.

This model has got the potential for being used in all individual lessons or as an organisation pattern for curriculum designing. An organising statement called advance organiser acts as a bridge between the material to be learned and the learner’s cognitive structure (Eggen, Kauchak and Harder, 1979; Kiewra, 1997; Shushama, 1998). It also acts as a cognitive road map, guiding the students over the new content to be learned. Ausubel pointed out the presentation of an advance organiser as an explicitly cognitive structure of the new concept to be attained. In his opinion, this increases the meaningful learning of the concepts. The relationship between cognitive structure and the new concept is called the ‘Advance Organiser (AO)’ or ‘cognitive bridge’ (Novak, 1977). Ausubel’s model is also a deductive information processing model design to teach interrelated bodies of content where highly inclusive concepts or ideas are presented first, followed by less inclusive ones. Advance organisers are therefore instructional sets designed to provide students with an understanding of what this lesson is all about. They are one of the two cognitive studies (the other one is metaphor) that enables the learner to recall and transfer knowledge to new topic (Heinich), Molenda and Russel, 1989; West and Wolff, 2001).

The advance organiser performs two different functions corresponding to two different aspects of the unfamiliarity of meaningful learning material. Firstly, they provide ideational anchorage when new material is almost completely unfamiliar that the cognitive to totally barren of related concepts. Secondly, the advance organisers enhance the discriminability of new concepts from analogous and conflicting concepts and ideas in the learner’s structure.

Advance organiser is a bridging strategy that provides a connection between one unit and another. This connectivity is achieved through the advance organiser that organises new materials to be presented by outlining arraying and logically sequencing the main ideas or procedures in the new
material based in the learner’s prior knowledge. Advance organisers are some frame of reference that give students conceptual frameworks into which lessons, ideas, concepts and facts can be placed in an organised position (Ogogo, 2001).

The advance organiser is a concise prose passages about a paragraph in length, which introduces the new elements. Advance organisers are rich and powerful transition statements (Heinich, Lolenda and Russel, 1989; Stollaok, 1998; West and Wolff, 2001). The ‘organisers’ are at a higher level of abstraction and generality than the actual facts, concepts and generalizations that form the lesson itself (Eggen, Kauchak and Harder, 1979).

Hence, Ausubel’s model is a model designed to teach organised bodies of content in single lesson. It is therefore an organisational guide for curriculum development. ‘Organisers’ facilitate the learning of factual materials more than they do on the learning of abstract materials. Abstraction in a sense contains their own built-in-organisers (Ausubel and Robinson, 1969).

Advance organiser may be summed up as statements that are introduced in advance of the learning material itself and are designed to help the learner, learn and retain new material. The value of advance organisers specially depend upon how well organised the learning material itself is and are helpful in situations where the teacher must organise the content which is more necessary, with less abstract and less organised materials. Advance organisers are also instructional bits designed to provide students with an understanding of what the lesson is about. Sometimes, advance organisers are referred to as frames of reference (Eggan et. al., 1979; Joyce and Weil, 1990) which gives students conceptual framework into which lessons, ideas, concepts and facts can be placed in an organised manner. Therefore, the organiser is at a higher level of abstraction and generally than the actual facts, concepts and generalizations that form the lesson itself. They, therefore link the new material to more abstract ideas that already exist in the students’ cognitive structure.
1.5.1 MAIN FEATURES OF AUSUBEL'S MODEL

The main features of Ausubel's Advance Organiser Model can be summed up as follows (Hienich, Molenda, and Russel, 1989; Ogogo, 2001):

(i) The model begins with an advance organiser and proceeds by developing a structural or conceptual hierarchy and employs the process of progressive differentiation and integrative reconciliation (Ricci, 1999).

(ii) Ausubel's model is deductive, with broader, more inclusive idea presented first.

(iii) Ausubel's lessons land themselves to deductive format because of the extensive use of hierarchical outlines within the model. By its nature, a hierarchy has the most inclusive ideas at the top of its structure, followed by narrower and less inclusive ideas.

(iv) The model is interactive, students like being involved in lesson discussions rather than being passive listeners.

(v) Organisers facilitates the learning of factual material more than they do in the learning of abstract materials. Since abstraction contains their own built in organisers (Ausubel and Robinson, 1969).

(vi) The value of advance organiser partially depends on how well organised the learning material itself is.

(vii) The model uses examples, without the use of the examples, the abstraction is learned at the verbal rather than the conceptual level.

(viii) Advance organisers are helpful in situations where the teacher organises the content.

A complete structural outline of the characteristics of the Ausubel Model is given as in Fig. 1.2.
1.5.2 FORMULATION OF ADVANCE ORGANISERS

An advance organiser is a statement preceding the lesson that is designed to help the learner store and retrieve material that was learned. In this way the learner explores how individual concepts relate to each other and to the subject being taught. It links the content of the lesson to the learners' cognitive structure by helping them organise materials that are to be learned. The model is therefore used most effectively to sum up and related contents that have been previously learned in one way or the other.

Advance organisers are the practical inferences of Ausubel's subsumption theory of meaningful verbal learning. In subsumption theory, meaningful learning is determined by the organisation of the learners' prior knowledge to include the new knowledge into a logical organisation of information that leads to meaningful learning. Further researchers have found that this logical organisation is facilitated through advance organiser operating as a schema which organises unstructured texts to induce long term retention and transfer of general concepts into learners' cognitive structure (Heinich, Molenda and Russel, 1993; Ogogo, 2001).
1.5.3. **PURPOSE OF AN ORGANISER**

The purpose of an organiser is to bridge the gap between the known and unknown. It is a means of capitalizing on students’ prior knowledge about the material and possibly on how the students have previously organised it. It allows for reflection on prior knowledge and to draw upon knowledge that would facilitate comprehension of the knowledge. This facilitates information retrieval and finally, transfer.

1.5.4 **MAIN FEATURES OF ADVANCE ORGANISERS**

(i) The model begins with an advance organiser, is a concise abstract prose passage about a paragraph, and which proceeds by developing a structured or conceptual hierarchy and employs the process of progressive differentiation and integrative reconciliation;

(ii) It is an introduction to a new material to be learned;

(iii) Advance organisers are abstract outlines of new information and restatements of old knowledge;

(iv) It is a bridge that links similarities of the known with the unknown;

(v) Advance organiser structures new information based on the old knowledge;

(vi) Encourages transfer and application of old knowledge;

(vii) Advance organisers can also be used to teach concepts and generalizations; and

(viii) Consists of substantial intellectual information.

1.5.5 **TYPES OF ADVANCE ORGANISERS**

Advance organisers may be classified into three forms known as:

(i) Concept definition;

(ii) Generalization; and

(iii) Analogy
(i) CONCEPT DEFINITION

A concept definition is concise form of the great experience that go into making a concept. It concentrates attention upon useful aspects of the experience while neglecting others and is a means of marking the boundaries of a concept. Therefore, concept definition helps to determine set inclusion and set exclusion. A complete concept definition narrates the concept to a more inclusive set and then chooses some distinguishing attributes that discriminate it from other concepts in the set. Attributes of a concept are the distinctive features that a person uses to identify members of the concept. By observing the attributes of concepts, abstraction process takes place (Markle and Tiemann, 1969). Without identifying the attributes of a concept, the process of abstraction cannot take place. When learning a concept, learner must first differentiate between the relevant and the irrelevant characteristics and then must encode the important attributes for later use (Markle and Tiemann, 1969).

Concept is a class of stimuli that have common characteristics (DeCecco, 1968). These are formed to help the learner narrate and understand the environment. The categories that are formed are based upon those characteristic and attributes which are similar and are essential to a particular classification (Smith, 1975). Concepts are coding system, which we use to classify the stimuli from the world around us (Farnham-Diggory, 1972).

Concept definitions are most valuable to the students when they utilize terms that are already known to them. It is somewhat difficult for the students to learn a new term when is defined with other new terms. The teacher should use visual aids to explain the concept (Titsworth, 2000). Concrete experiences are critical for learners when relatively learned material is being reviewed. The teacher while planning must allow time required to teach concepts. Concepts may also be taught by joining them into groups to form generalizations. They are related and possess common characteristics (Markle and Tiemann, 1969) and may join together through a causal or correlated link (Martin, 1970). Concept definitions are valuable means that nourish the learner to achieve
mastery learning whenever the material to be taught is new or unfamiliar to the student, definitions can be quite valuable organizer of the content. Defining concepts in terms of super-ordinate concepts help to link new terms to the concepts that already exists in the student's cognitive structure, while the attributes in the definitions help differentiate the term from other related concepts.

Concepts are the form of data that results from the categorization of a number of observations. Concept formation occurs when members of a category are grouped together and abstracted in the sense that similarities are noted and differences ignored on the basis of these similarities, a rule for class inclusion is formed and conceptualization takes place. It is an idea that is the result of abstraction from all the concrete experience the learner had in his cognitive structure (Ogogo, 2001).

In concept learning, generalizing occurs when an individual makes the same response to different things (Eggen, Kauchak and Harder, 1979). When teaching concepts to students certain aspects of concepts have proven more valuable than others. These are concept name, concept definition and characteristics. Concepts should be learned as meaningful abstraction rather than as names.

(ii) GENERALIZATION

Generalizations have the abilities to summarize large amounts of information. When using generalizations as advance organisers, teachers must be certain that each of the concepts in generalization is understood thoroughly by the learners. Therefore, advance organisers are effective in the way in which they provide intellectual road maps for materials which follow generalizations. This is because of their summarizing nature which is maximum effective. Whenever generalizations include concepts already well known to the learners, they usually become more effective. The functioning of the organiser is to provide ideational scaffolding for the stable incorporation and retention of the differentiated material that will follow the lesson (Eggen,
Kauchak and Harder, 1979); Heinich, Molenda and Russel, 1989, 1993; Witiw, 1997; Ogogo, 2001).

Generalization used as advance organiser by breaking down the concept into subordinate concepts and present them in structural outlines in hierarchical forms (Eggen et. al., 1979; Joyce and Weil, 1990; Wells, 1999; West and Wolff, 2001). Generalization also involves the use of progressive differentiation in which concepts are continually or progressively divided into sub-concepts until the lesson is completed. Generalization also operates in the form of integrative reconciliation. This process helps the students to understand ideas. The learning outcomes of the process is a unified body of knowledge in which relationships are noted and differences recognised.

(iii) **ANALOGY AS ADVANCE ORGANISER**

Ausubel (1963) pointed out that comparative Advance Organiser is the most effective type of Advance Organiser. The correct use of analogy as advance organiser can contribute to improved understanding of scientific concepts, but inappropriate use can foster ideas that are different from scientific beliefs (Venville, Grady, Treagust and David, 1997) and deep seated analogies can profoundly affect the way of research findings are interpreted (March, 1990). Analogies should therefore be based on their greater familiarity to the students. This is when their values will be meaningful to them. The value of Analogy as advance organiser depends upon the following two factors:

(i) The familiarity of analogy to the students and,

(ii) The degree of overlap between the ideas to be taught and the analogy used.

When analogy is used as advance organiser, the area of overlap could serve as a conceptual framework and anchors for new material to be learned. This will encourage the students to use the organiser as a reference point making analogy look similar to the mnemonic device used to remember desired information (Pittman and Kim, 1999). Therefore, more familiar the analogy, the easier it will be to use for retrieving information. Fully planned
analogies may provoke interest and add a measure of humour to the activity, which is an advantage in any learning environment (Baker and Keith, 1998; Britton, 1999; Ogogo, 2001).

An Advance Organiser is defined by Ausubel as introductory information presented at a higher level of abstraction or generality. According to Joyce and Weil’s analysis, teachers intending to use advance organisers in lecture will need a strong grasp of their subject matter, including an understanding of its proportional structure— which concepts are more abstract and which are instantaneous for example, an understanding of this structure will permit to device alternative advance organisers, which may then be used in the lecture as ‘Scaffolding’ upon which students can be led to build up subject matter knowledge.

1.5.6 GOALS AND ASSUMPTIONS OF ADVANCE ORGANIZER MODEL

Ausubel’s primary concern is to help teachers organize and convey large amounts of information as meaningfully and efficiently as possible.

Ausubel maintains that a person’s existing cognitive structure is the foremost factor governing whether new material will be meaningful and how well it can be acquired and retained. Before we can present new material effectively, we must increase the stability and clarity of our students’ cognitive structures.

THE ROTE LEARNING ISSUE

Meaningful learning is intellectually linked to what we have learned previously, we must be able to transform this new knowledge and to apply it creatively in novel situations. Rote learning, in contrast, typically lacks conceptual and critical approaches to the information we acquire. It usually does not prepare us to transform this knowledge or to apply it in new contexts.

Ausubel points out the need for many types of learning processes because each promotes different educational objectives. Whether or not material is meaningful depends more on the preparation of the learners and on
the organization of the material than it does on the method of presentation. If the learner begins with the right ‘set’ and if the material is solidly organised, then meaningful learning can occur. The key to meaningful learning involves solidly connecting the new learning material with existing ideas in the learner’s cognitive structure.

**IS RECEPTION LEARNING PASSIVE**

Ausubel assumes that for meaningful verbal learning to occur, the learner plays an active role, whether covert or overt. However, this does not occur automatically, the teaching model for reception learning must be designed to facilitate these active mental operations.

According to Ausubel, there is a parallel line between the way subject matter is organized and the way people organize knowledge in their minds (their cognitive structures). He expresses the view that each of the academic disciplines has a structure of concepts (and/or propositions) that are organized hierarchically (Ausubel, 1963, P.18).

1.5.7 **ELEMENTS OF ADVANCE ORGANISER MODEL**

The elements of Advance Organiser Model are given below:

i. **SYNTAX**

The advance organiser model has three phases of activity. Phase one is the explanation of the advance organiser, phase two is the explanation of the learning task or learning material and phase three is the strengthening of cognitive organisation. Phase three evaluates the relationship of the learning material to existing ideas to enhance an active learning process. A summary of the syntax appears in Table 1.4.

The activities are planned to increase the clarity and stability of the new learning material so that fewer ideas are lost, confused with one another, or left vague. The students should interact with the material as they receive it by relating the new learning material to personal experience and to their existing cognitive structure and by taking a critical stance towards knowledge.
Phase one consists of three activities: Clarify the objective of lesson, presenting the advance organizer and prompting awareness of relevant knowledge.

Table 1.4
SYNTAX OF ADVANCE ORGANISER MODEL

<table>
<thead>
<tr>
<th>Phase one</th>
<th>Phase two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation of advance</td>
<td>Presentation of Learning task or material</td>
</tr>
<tr>
<td>organiser</td>
<td></td>
</tr>
<tr>
<td>Clarity aims of the lesson</td>
<td>Present material</td>
</tr>
<tr>
<td>Present organiser</td>
<td>Maintain attention</td>
</tr>
<tr>
<td>Identify defining attributes</td>
<td>Make organisation explicit</td>
</tr>
<tr>
<td>Give examples</td>
<td>Make logical order of learning</td>
</tr>
<tr>
<td>Provide Context</td>
<td>material explicit</td>
</tr>
<tr>
<td>Repeat</td>
<td></td>
</tr>
<tr>
<td>Prompt awareness of learner’s</td>
<td></td>
</tr>
<tr>
<td>relevant knowledge and experience.</td>
<td></td>
</tr>
</tbody>
</table>

Phase Three

Strengthening cognitive organisation

- Use principles of integration reconciliation.
- Promote active reception learning
- Elicit critical approach to subject matter
- Clarify

After the presentation of the advance organiser in phase one, phase two presents the learning material (learning task) in the form of lectures, discussion, films, experiments or reading. Two plans of action are important here. The first is to maintain student’s attention. Another action is to make the organisation of the learning material explicit to the students so that they have an overall sense of direction.
The aim of phase three is to anchor the new learning material in the student's existing cognitive structure, that is, to strengthen the student's cognitive organisation. Ausubel identifies four activities:

1. Promoting integrative reconciliation,
2. Promoting active reception learning,
3. Eliciting a critical approach to subject-matter and
4. Clarification.

The commencement of phase three is shared by teachers and students. At first, however, the teacher will have to respond to the students' need for clarification of some area of the topic and for amalgamation of the new material with existing knowledge.

Besides presenting the material, the teacher has several other functions to perform when using advance organizers. The teacher arranges the new material in a serial order under some concepts and propositions during the planning of the lesson. During the course of instruction he repeatedly arranges the knowledge under more inclusive concepts to make it understandable and presentable. The teacher must point out disagreements, conflicts and similarities between existing knowledge and new knowledge. The teacher must translate the new material into a frame of reference that has personal meaning for the student, that is, the material must reflect the student's encounters and cognitive background.

ii. SOCIAL SYSTEM

In advance organiser model, the teacher grasps control of the cognitive structure, as it is continually necessary to relate the learning material to the organisers and to help students differentiate new material from previously learned material. In phase three, however, the learning situation is ideally much more interactive with students starting many questions and comments. The successful achievement of the material will depend on the learning desire to amalgamate it with prior knowledge, on their critical faculties, and on the teacher's presentation and organisation of the material.
iii. **PRINCIPLES OF REACTION**

The teacher's asked or not asked responses to the learner's reactions will be guided by the goals of clarifying the meaning of the new learning material, discriminating it from and reconciling it with existing knowledge, making it personally relevant to the students, and helping to promote a critical approach to knowledge, ideally, students will initiate their own questions in response to their own drives for meaning.

iv. **SUPPORT SYSTEM**

Well ordered material is the critical support requirement of this model. The impact of the advance organiser depends on an integral and appropriate link between the conceptual organizer and the content. This model provides rules for building (or reorganizing) teaching materials.

1.5.7 **APPLICABILITY OF ADVANCE ORGANIZER MODEL**

(i) **INSTRUCTIONAL USES**

The Advance Organiser Model is specifically useful to structure extended curriculum series or courses and to teach students systematically in the key ideas of a field. Step by step, major concepts and propositions are explained and amalgamated, so that at the end of a period of teaching, the learners should gain perspective on the entire area being studied.

The model can also be designed to teach the skills of effective reception learning. Critical thinking and intellectual reorganisation can be explained to the learners, who receive direct instruction in orderly thinking and in the notion of knowledge hierarchies ultimately. They can use these techniques independently in new learning. It means, this model can increase effectiveness in reading and watching films, and in other "reception" activities.

When ideas or information need to be presented, renewed or clarified, the advance organiser is useful. It can also be applied after simulation activities are reviewed. Similarly, in the process of long-term inquiry training
activities, the instructor might introduce new ideas using the Advance Organizer Model.

The activities planned to strengthen intellectual organization can be simultaneously applied to the clarification of ideas in whatever teaching context they appear, as can the technique of an organizer.

(ii) **DESIGNING LEARNING MATERIAL AND CURRICULUM**

The 'anthropology curriculum project', advanced at the University of Georgia, was based on presentational approaches of teaching and designed with the inclusion of advance organizers and other principles of meaningful verbal learning theory. The anthropology curriculum project showed well the use of advance organizers in the design of curriculum or text material.

(iii) **INSTRUCTIONAL AND NURTURANT EFFECTS OF ADVANCE ORGANISER MODEL**

The credible teaching values of this model seem quite clear. The ideas that are used as the organiser are learned, as well as information presented to the students. The ability to learn from reading, lectures and other media used for presentations is another effect, as are an interest in inquiry and precise habits of thinking. A complete structural outline of the instructional and nurturant effects of Advance Organiser Model is given in Fig. 1.3
Figure 1.3 Instructional and Nurturant Effects: Advance Organizer Model

1.6 CONVENTIONAL METHOD OF TEACHING

Conventional method of teaching is the approach of teaching in which curriculum materials are taught as they are written. The classrooms are asserted by teacher talk activities.

According to Good (1973) conventional teaching is that type of teaching in which teacher presents the entire content to be learnt in the final form. In this approach, the student is not required to make any independent discoveries. An appropriate example of conventional teaching is the verbal instruction of the lecture hall. Teachers normally use lecture-cum-question method, as used in the classrooms, which is not structured and not very
effective both in terms of understanding and involvement of the students in learning.

The terms associated with conventional method are expository, traditional and lecture method. All these terms convey same meaning. Many researches have taken Conventional Approach as the method of teaching where the lessons are not well planned, objectives are not thrashed out in behavioural terms and planning is not used as a part of the teaching programme.

1.7 MEANING OF ECONOMICS AND IMPORTANCE OF TEACHING ECONOMICS

The term ‘Economics’ in English language has its origin in two Greek works: Oikos (household) and Nemein (Management). Thus they mean ‘management of household; Economics is a social science which studies how human beings make choices to use scarce resources to satisfy their unlimited wants. Tradition of Economics in India dates back to about 500 B.C. Kautilya, the famous thinker of ancient India, wrote the world famous book, ‘ARTHSHASTRA’, a treasure of knowledge for India.

As a social being, it is natural for man to depend upon others. This relationship has been growing and developing along with the development of the civilization and culture. Human relationships have grown complex. Human needs have become unlimited. Today it is not easy for man to discern which need is the main and which is subsidiary. There is a constant vissle for the achievement of the needs and fulfilment of the wants. In his attempt to fulfil his needs and satisfy his wants, man performs various activities, As wealth or money has the power to satisfy various needs and wants, most human activities are directed towards earning money and amassing wealth. In order words, most of the activities of man are economic activities which come under the subject matter of ‘Economics’. We can say that Economics has left no corner or sphere of human life untouched. It has a direct impact on society and modern man. It has significant importance in production, consumption,
distribution, national income etc. So the entire global society must be literate in Economics.

1.8 **RATIONALE OF THE PRESENT STUDY**

Print materials are now and probably will remain an important resource in the classroom. A perpetual concern of educators is the preparation and use of materials that are organised in such a way that maximizes learning. A crucial area of interest among educators has been the development of techniques to facilitate students' learning from text.

In India, teachers, by and large, are unable to adopt appropriate methods for teaching various subjects due to lack of comprehensive knowledge of such methods which consequently hinder student's learning. The gap, could not be accepted in teacher training programmes. Even, otherwise and actual teaching practices in educational institutions. This problem can be avoided by increasing the professional competence of teachers through communicating to them exhaustive knowledge of the latest theory of teaching and of the teaching strategies perfected elsewhere.

Concepts play a major role in the entire human activity. People think, read, understand, communicate and construct theories with the help of concepts, so learning of concepts is fundamental for academic growth.

The comprehensive, lasting and productive learning of concepts can be achieved by proper management and manipulation of intellectual structure. Learning is deeply related with the intellectual structure of an individual. It is encouraged by chaining the new concepts, through links to the previously known concepts and ideas. In this way, new concepts make their place in the group of concepts in the cognitive structure of an individual.

The ideational relationships: connection can be established easily by understanding proper strategies. Such strategies can not be adopted indiscriminately. But these are compatible to the environment. It is important to find out strategies and methods of teaching, matching with the Indian environment, to accelerate teaching/learning.
The Concept Attainment Model developed from the work of Bruner (1956) is an approach to teaching which provides an insight into the thought process of learners. This model supports both knowledge of attributes that reveal the concept and strategies for constructing the concept.

The second model, which is designed to strengthen students' thought process, is the Advance Organiser Model based on Ausubel's theory of meaning of verbal learning (1963). Ausubel points out the presentation of an 'Advance Organiser, as an explicit cognitive structure of the new concepts to be attained. According to Ausubel, this enhances the meaningful learning of the concepts. This link between cognitive structure and the new concept is called the 'Advance Organiser (AO)' or 'Cognitive Bridge' (Novak, 1977). In his view, the introduction of relevant subsumers, concepts (organisers) facilitates the learning and retention of new and meaningful material. He bases his hypothesis on the assumption that cognitive structure is hierarchically organised in which highly inclusive concepts are at the top and subsumers, less inclusive, sub-concepts and informational data are at the bottom (Ausubal, 1963); The advance organisers perform two different functions corresponding to two different aspects of the unfamiliarity of meaningful learning material. Firstly, they provide ideational anchorage when the new material is almost completely unfamiliar, that is, the cognitive is totally barren of related concepts. Secondly, the advance organiser increases the discriminability of new concepts from analogous and conflicting concepts and ideas in the learner's cognitive structure. The first model teaches concept inductively, whereas, the second model proceeds deductively. The Advance Organiser Model also aims at developing the habit of precise thinking.

Change is a very important phenomenon of the present age and it affects the life of each and every individual. The world of today is changing rapidly because of the fast changes in the field of science, technology, economy and commerce etc.

To meet the demands of an increasingly complex world, classroom must be converted into a 'Learning Environment'. New innovations and
discoveries are needed in every sphere of knowledge and all this require a spirit of developing logic, critical thinking, increasing reasoning ability, to show high achievements and attainments in all fields.

Economy and issues related to economics affect each and every sphere of human beings' life. Hence, to make teaching of economics in schools accordingly to the needs of twenty first century, the whole thrust has to change from 'memory based' learning to 'comprehensive based' learning. Each concept of economics should be very clear to all the students. The students' role is to master these concepts and information of economy organized and presented by the teachers to them. Therefore, serious research is needed to evolve effective methods of teaching economics at school stage.

As reported in the Fourth, Fifth and Sixth Surveys of Research in Education, there is need to investigate the effectiveness, usefulness and validity of models of different families, particularly of Learning from Information Processing.

So, the present study was conducted to investigate the effectiveness of concept attainment and advance organizer models in teaching of 'economics' – the subject having important place in school curriculum as well as in daily life.

1.9 STATEMENT OF THE PROBLEM
A comparative study of the effectiveness of Concept Attainment and Advance Organizer Models on students’ achievement in Economics.

1.10 DEFINITION OF THE TERMS USED
1.10.1 CONCEPT ATTAINMENT
Concept Attainment or Concept Learning is a naturally occurring process in people of all ages. The process involves seeing similarities in the objects in the world, forming categories on the basis of similarities, and abstracting from the categories. In concept attainment, there is teaching of concepts through the use of examples.
1.10.2 **ADVANCE ORGANIZER**

The advance organizer model is designed to strengthen students’ cognitive structures i.e. a person’s knowledge of a particular subject matter at any given time and how well organized, clear and stable it is. In this approach, the purpose is to explain, integrate and interrelate the material in the learning task with previously learning material.

1.10.3 **CONVENTIONAL METHOD OF TEACHING**

In conventional method of teaching, the teacher is the only active participant in the teaching learning process and the students are the passive listeners. The teacher gives home assignments and administers test periodically. These tests are given only to give marks to students and have no value in terms of improving the quality of instructions.

1.10.4 **EFFECT**

In this study effect referred to a particular treatment given to a subject to bring about desired behavioural change. This change was observed in achievement in Economics through both pre and post treatment criterion test.

1.10.5 **INTELLIGENCE**

Intelligence was one of the intervening variables in the present study, which is one of the most important variable that affects schooling. So this variable has been briefly discussed henceforth.

According to dictionary meaning intelligence is, “The capacity to acquire and apply knowledge”. Indeed, the basic concept of intelligence is that it is the ability to adjust adequately to the new and different environment.

Stern (1914) argues that “Intelligence is a general capacity of an individual, consciously to adjust his thinking to new requirements. It is a general mental adaptability to new problems and conditions of life”. However, Binet points out that intelligence is judgement or common initiative, the ability to adapt oneself and again to judge well, understand well, reason well. These are the essentials of intelligence.
In view of Weschler, "Intelligence is the aggregate or global capacity of an individual to act purposefully, to think rationally and to deal effectively with his environment". Hollingworth says, "An intelligent person learns how to do and how to get what is wanted."

1.10.6 SOCIO-ECONOMIC STATUS

Socio-Economic Status was another intervening variable of present study. Social status is the position of the individual within the social relationships. It is that specific position of the individual in his relationship with other individuals by virtue of which he desires respect and prestige and whereby he exerts influence. It is known by the symbols or sings and actions of the respect rendered to him. The status in a group may be inherited. In modern society, the status is acquired. It is achieved on the basis of occupation, membership of certain associations and organisations, type of house in which a person lives, the area in which the house is situated, the ownership of various household materials, e.g., radio, T.V., machines, car, telephone and cellphone, etc as well as the education, the type of schools in which he had studied, type of newspaper subscribing, caste and prestige acquired by the individuals. The economic factors play an important part in determining social status, which include the total income of the family, savings, capacity to collect money in emergency etc. Therefore, it is better to call this factor as socio-economic rather than social or economic factors or status.

By the terms 'socio-economic status' we mean any group of persons coming closer to each other on the continuum of education, occupation, income, caste and culture. Charplin (1928) has offered most widely used definitions of socio-economic status as "the position that an individual or family occupies with reference to the prevailing average standard of culture, possession, effective income, material possessions and participation in group activity of community."

The Michigan State Department of Education in conducting the state-wise assessment in 1971, defined socio-economic status similarly i.e. students’
socio-economic status is often thought to be a function of three factors (i) family income, (ii) parents' educational level and (iii) parents' occupation.

Socio-economic status, in the present study is measured with social class scale developed by Rajbir Singh, Radhey Shyam and Satish Kumar. SES scores have been used to match the three groups.

1.10.7 ACHIEVEMENT IN ECONOMICS

It is the level of learning in a particular area of the subject in terms of knowledge, understanding, skill and application.

1.11 OBJECTIVES

1. To compare the mean achievement scores, on criterion achievement test in Economics, of two groups of students to be taught Economics with and without the use of Concept Attainment Model, before experimental treatment.

2. To compare the mean achievement scores, on criterion achievement test in Economics, of two groups of students to be taught Economics with and without the use of Concept Attainment Model, after experimental treatment.

3. To compare the gain scores, on criterion achievement test in Economics, of two groups of students, one to be taught Economics with Concept Attainment Model and other with Conventional Method of teaching, after the experimental treatment.

4. To compare the mean achievement scores, on criterion achievement test in Economics, of two groups of students to be taught Economics with and without the use of Advance Organizer Model, before the experimental treatment.

5. To compare the mean achievement scores, on criterion achievement test in Economics, of two groups of students to be taught Economics with and without the use of Advance Organizer Model, after the experimental treatment.
6. To compare the gain scores, on criterion achievement test in Economics, of two groups of students, one to be taught Economics with Advance Organizer Model and other with Conventional Method of teaching, after the experimental treatment.

7. To compare the mean achievement scores, on criterion achievement test in Economics, of two groups of students, one group to be taught Economics with the use of Concept Attainment Model and other group to be taught Economics with the use of Advance Organizer Model, before the experimental treatment.

8. To compare the mean achievement scores, on criterion achievement test in Economics, of two groups of students, one group to be taught Economics with the use of Concept Attainment Model and other group to be taught Economics with the use of Advance Organizer Model, after the experimental treatment.

9. To compare the gain scores, on criterion achievement test in Economics, of two groups of students, one to be taught Economics with Concept Attainment Model and other with Advance Organizer Model, after the experimental treatment.

1.12 HYPOTHESES

H1 There is no significant difference in the mean achievement scores, on criterion achievement test in Economics, of the group of students taught Economics through Concept Attainment Model and the group of students taught Economics through conventional method, before the experimental treatment.

H2 There is no significant difference in the mean achievement scores, on criterion achievement test in Economics, of the group of students taught Economics through Concept Attainment Model and the group of students taught Economics through conventional method, after the experimental treatment.

H3 There is no significant difference in the mean gain scores, on the criterion achievement test in Economics, of two groups of students,
one taught Economics with Concept Attainment Model and other with Conventional Method of teaching, after the experimental treatment.

H₄ There is no significant difference in the mean achievement scores, on criterion achievement test in Economics, of the group of students taught Economics through Advance Organizer Model and the group of students taught Economics through conventional method, before the experimental treatment.

H₅ There is no significant difference in the mean achievement scores, on criterion achievement test in Economics, of the group of students taught Economics through Advance Organizer Model and the group of students taught Economics through conventional method, after the experimental treatment.

H₆ There is no significant difference in the mean gain scores, on the criterion achievement test in Economics, of two groups of students, one taught Economics with Advance Organizer Model and other with Conventional Method of teaching, after the experimental treatment.

H₇ There is no significant difference in the mean achievement scores, on criterion achievement test in Economics, of two groups of students, one group taught Economics with Concept Attainment Model and the other group taught Economics with the use of Advance Organizer Model, before the experimental treatment.

H₈ There is no significant difference in the mean achievement scores, on criterion achievement test in Economics, of two groups of students, one group taught Economics with Concept Attainment Model and the other group taught Economics with the use of Advance Organizer Model, after the experimental treatment.

H₉ There is no significant difference in the mean gain scores, on the criterion achievement test in Economics, of two groups of students, one taught Economics with Concept Attainment Model and other with Advance Organizer Model, after the experimental treatment.
1.13 DELIMITATIONS OF THE STUDY

Keeping in view the time available and limited resources the study has been delimited as under:

1. The study could conducted on any class but it was delimited to the XIth class only.

2. Although there are various Teaching Models, the present study was confirmed to Advance Organizer and Concept Attainment models only.

3. The effectiveness of Concept Attainment Model and Advance Organizer Model was studied in the case of teaching of Economics only.

4. There are three variations of CAM (Concept Attainment Model), out of these three only Reception Concept Attainment Model was used.

5. The study could conducted on a variety of other educational outcomes but it was conducted only on achievement.

6. The sample of the study was selected through purposive sampling.

7. The treatment duration was 16 weeks only, each period was of thirty five minutes.

8. Only one criterion test was conducted to evaluate the effectiveness of teaching employed in this study.

1.14 PROCEDURE

The purpose of the present study was to compare the effectiveness of Concept Attainment Model and Advance Organizer Model on students' achievement in Economics. In this study, pre-test, post-test controlled group design was used. It involved three groups of students: the experimental group (E₁) taught Economics through Concept Attainment Model, the experimental group (E₂) taught Economics through Advance Organizer Model and the controlled group taught Economics through the conventional method of teaching.

The design consisted of three stages. The first stage involved pre-testing of students on achievement in Economics, intelligence and socio-
economic status. The second stage will involve treatment of 16 weeks. The experimental treatment consisted of teaching of Economics through Concept Attainment and Advance Organizer Models and controlled group was taught through conventional method of teaching.

The third stage, the stage of post-testing, included testing of achievement of students in Economics.

Table 1.5
DESIGN OF THE STUDY

<table>
<thead>
<tr>
<th>Stage</th>
<th>Duration</th>
<th>Control Group</th>
<th>Experimental Group(E₁)</th>
<th>Experimental Group(E₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Pre Testing</td>
<td>One Week</td>
<td>Measurement of:</td>
<td>Measurement of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1. Intelligence of students</td>
<td>1. Intelligence of students</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Socio-Economics status of students</td>
<td>2. Socio-Economics status of students</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Achievement in Economics</td>
<td>3. Achievement in Economics</td>
</tr>
<tr>
<td>II</td>
<td>Treatment Administration</td>
<td>16 Weeks</td>
<td>Teaching Economics through conventional method</td>
<td>Teaching Economics through Concept Attainment Model</td>
</tr>
<tr>
<td>III</td>
<td>Post Testing</td>
<td>One Week</td>
<td>Measurement of:</td>
<td>Measurement of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1. Achievement in Economics</td>
<td>1. Achievement in Economics</td>
</tr>
</tbody>
</table>

1.15 SAMPLE

The sample consisted of 90 students studying in XI class. The sample was divided into three groups. One group formed control group and the other two groups constituted the experimental groups E₁ and E₂. The sample was taken from Shri Ram Public School, Jawahar Nagar, Rohtak, D.A.V. Public School, Rohtak and Shiksha Bharti Public School, Rohtak. Thirty students from each school were taken.
1.16 **TOOLS USED**

For the purpose of collecting data related to different variables covered in this study, three tests were employed. These will include:

1. Economics Achievement Test (developed by the investigator herself) to measure the achievement of students in Economics.

2. Jalota’s Verbal Group Test of General Mental Ability to measure intelligence of students.

3. Socio-Economics Status Scale developed by Rajbir Singh, Radhey Shyam and Satish Kumar to measure socio-economic status of students.

4. Lesson plans developed by the investigator according to CAM, AOM and Conventional method of teaching. Transparencies were also prepared by the investigator.

1.17 **STATISTICAL ANALYSIS**

In order to achieve the objectives of the study, the collected data were statistically analysed using the following techniques:

1. The analysis of co-variance was used in order to adjust students achievement in Economics, intelligence and socio-economic status scores of students.

2. Mean and standard deviations was computed in respect of intelligence, socio-economic status and achievement.

3. ‘t’-test was applied for testing the significance of difference between the means of students’ Achievement in Economics at pre-test stage. ‘t’-test was used on post-test and gain scores of different variables.

1.18 **CHAPTERIZATION**

In the present study, chapters were organised as follows:
CHAPTER-I
Introduction :

In this chapter scenario about teaching, Models of teaching, Information Processing Models, Concept Attainment Model, Advance Organizer Model, Rationale of study, statement of the problem, definition of key words, objective, hypothesis and delimitations were discussed.

CHAPTER-II
Survey of Related Studies:

In this chapter related studies in India and abroad were discussed.

CHAPTER-III
Method and Procedure:

In this chapter procedure of the study, brief description of the CAM and Advance Organizer Model, sample, tools and source, method of data collection and statistical analysis of data were discussed.

CHAPTER-IV
Analysis, Interpretation and Discussion of Results:

In this chapter, effect of CAM, effect of Advance Organizer Model on students’ achievement in Economics, result and interpretation were discussed.

CHAPTER-V
Conclusions, Educational Implications, Limitations and Suggestions:

In this chapter, conclusions, educational implications and suggestions for further research were discussed.

CHAPTER-VI
Summary

This chapter was devoted to present the summary of present study under various captions namely statement of the problem, definition of key words, objectives, hypothesis, method and procedure, results, conclusions, implications and suggestions.