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CHAPTER I
INTRODUCTION

1.0.0. INTRODUCTION

Education is a process of manpower generation. It aims at the all-round development of the individuals. In this process, teachers shoulder the responsibility for the development of the cognitive, affective and psychomotor domains of the students. The teaching activity, therefore, should be so designed and performed that it can create a spectrum of learning environments capable of meeting various requirements of individual learners. Through years, therefore, teachers have used a variety of methods for individualisation of instruction. In the recent years, Models of Teaching have come out as one of the most exciting new approaches toward this end. It is said that models of teaching make a definite contribution to education in achieving all-round development of the students by guiding teachers in designing, organising and evaluating the instructional activities and environments which involve every student at every step of his learning in such a way that he becomes an effective and productive learner. Each model of teaching claims to accomplish specific instructional objectives.

No educational programme can stand on a hypothetical pivot. For the introduction of any programme or instructional strategy in the country, it is always essential to have sufficient empirical evidence for it. Educationists and researchers, therefore, have made efforts to study different models of teaching in terms of their prescribed objectives. This piece of investigation is a small contribution to research in the area of models of teaching. It is an attempt to try out Concept Attainment Model
(CAM) in the actual classroom situation to determine its effectiveness for teaching concepts of the English language.

The present investigation was addressed to the following questions.

Was CAM effective in terms of attainment of concepts of English, achievement in English, inductive reasoning and reaction towards the model? How did CAM differ from Traditional Method in terms of attainment of concepts of English, achievement in English and inductive reasoning? How did treatment, sex, self-concept and their various interactions influence attainment of concepts of English, achievement in English and inductive reasoning of the students? What was the contribution of intelligence, socio-economic status (SES), previous achievement in English and self-concept of English, achievement in English and inductive reasoning of the students taught through CAM or Traditional Method? To what extent were CAM and Traditional Method successful in bringing about the change in attitude of the students towards English? How did the students' reaction towards CAM taken at two different points differ?

Thus, the present investigation aims at examining the effectiveness of CAM with a focus on attainment of concepts of English. In this context, it is necessary to have a theoretical understanding of models of teaching, meaning of concept and CAM.

1.1.0. MODELS OF TEACHING

A model of teaching is a plan, an instructional design to provide experiences to students to facilitate learning. It can be used for effective teaching, development of instructional materials
and development of curriculum. Weil & Joyce (1978) define a model as a plan which "consists of guidelines for designing educational activities and environments. It specifies ways of teaching and learning that are intended to achieve certain kinds of goals". Eggen et al. (1979) call models "prescriptive teaching strategies" in the sense that the teacher's responsibilities during the planning, implementing and evaluating stages are clearly defined.

Models of teaching have the following characteristics:

1. Models of teaching are based on some empirically proved principles.
2. Each model has well-defined instructional effects.
3. In each model of teaching, there are defined steps arranged in a sequence. These steps can be repeated for times.
4. The activities and responsibilities of teacher and students are spelt out.
5. Models of teaching are learner-centred.

Keeping in view the characteristics of models of teaching Sansanwal & Sinh define a model as "a systematically developed outline wherein the activities for teachers and students are spelt out, arranged in a particular sequence and carried out in an appropriate environment for achieving well-defined objectives". Following the guidelines of the models of teaching, a teacher can create such teaching-learning situations as cause the students to interact in such a way that specific changes occur in their behaviour.

Joyce & Weil (1985) have designed several models on the basis of the research efforts of different educationists in psychologists.
1.1.1. Classification of Models of Teaching

Keeping in view the educational objectives achieved through various models of teaching, Joyce & Weil (1985) have classified these models into the following four categories which they call "families".

I. Information Processing Models

Models in this family are directed towards dealing with cognitive skills. They emphasize the active involvement of the student in learning through investigating environment and analysing data rather than a passive reception of stimuli and rewards. Eggen et al. (1979) define information processing as the intellectual skills required to analyse information which "include the ability to make observations and, through the use of inference, to generalise, to predict and to explain events." Here, the learner processes information through stimulus-response link. To turn information processing into effective learning the following points must be kept in mind while presenting information or content:

1. The attention of the students must be focussed on the presented content.

2. The level of the data must be in accordance with the mental level of the students.

3. Familiar and simple content must precede unfamiliar and complex content.

4. The medium used for presenting the content must be suitable to the level of the students.

Information processing models aim at intellectual growth. They
help students not only in acquiring content but also in developing thinking skills which will allow them to learn on their own.

II. Social Interaction Models

These models emphasize the development of capabilities for interpersonal relationships. They focus on the social issues being resolved through academic inquiry and logical reasoning. They lay stress on the development of skills which help individuals engage in democratic processes and work productively in the society.

III. Personal Models

Personal models are designed to develop the capacity for personal development in terms of creativity, self-concept, self-understanding and creative problem-solving. They also focus on the emotional development of learners.

IV. Behaviour Modification Models

Models of this family have evolved from attempts to develop efficient systems for sequencing learning tasks and shaping behaviours by manipulating reinforcement. The behaviour modification theorists emphasize changing external behaviour of the learners and describe them in terms of visible rather than underlying behaviours.

A model of teaching is not a substitute for teaching skills. It is rather a complementary. It has to become a flexible fluid instrument that is modified to fit different types of subject matter, and, which responds to the students who are different from one another. A teacher can use different models to reach different instructional goals. Concept Attainment Model (CAM) can
be used for teaching concepts. The meaning of concepts is explained in the following caption.

1.2.0. MEANING OF CONCEPT

Concept is a word or symbol which indicates a class or group, e.g., flower, river, beauty, love, etc. Concept is 'a category' (Bruner 1956) which is formed on the basis of those characteristics or attributes which are similar and also essential to a particular classification. The essential characteristic of concept is commonness or similarities among phenomena. Almost all educationists and psychologists who have defined concept have laid emphasis on the existing common characteristics in examples. Dececco (1970) defines concept as "a class of stimuli which have common characteristics". According to Bourne et al. (1971) concept is "any describable regularity of real or imagined objects or events". Good (1973) defines it as "an idea or representation of the common element or attribute by which groups or classes may be distinguished".

From the above definitions it can be said that concept is that form of data or content which places ideas, objects, persons or events into a category, taking into account their similarities and ignoring differences, and which is expressed through the medium of words or symbols. Thus concept is not a mere memorisation of individual facts or words. It is a generalised mental image based on the common essential attributes in different unique phenomena. For example, 'Vehicle' is a concept based on the common attributes, viz., mobility and means of transportation, in different things such as bicycle, motor car, truck, aeroplane, ship, etc. All these are the members of the same category on the basis of their common attributes but each one of them is unique because of its peculiar
features such as shape, size, colour, which are not essential for the concept 'vehicle'. Each concept has the following characteristics:

1. Concepts are expressed through the medium of some name or symbol, e.g., tree, book, +, -, etc.

2. Concepts always represent a class, e.g., "noun" represents the whole class of nouns as names and not a name of a particular thing or person.

3. Concepts are common nouns or abstract nouns, e.g., man, animal, love, etc. Mr. X can not be called a concept because it is a name of a particular person.

4. There must be more than one examples of a concept, e.g., "planet" is a concept and the earth, the mars, the venus, etc., are its examples.

5. Some of the common characteristics of a concept are essentially present in all the examples of that concept.

6. Some of the characteristics may be common in the examples of different concepts, e.g., in the sentences 'Swimming is my hobby' and 'I am reading,' the words 'swimming' and 'reading' have a common feature - 'verb ending in -ing,' - yet the two are examples of different concepts.

7. Concepts are the base of instruction and knowledge.

8. The same concept has different names in different languages or sometimes in the same language, too.

9. New concepts are formed along with the development of knowledge.

10. Concepts are found at every levels in every field or subject.

The previously formed concepts can be attained or understood. Understanding a concept means knowing all the elements of that concept.
1.2.1. Elements of Concept

Joyce and Weil (1985) have identified five elements of concept:

1. name;
2. attributes (essential and non essential);
3. attribute values;
4. examples (positive and negative); and
5. rule.

Name is a term or label given to a particular category for the purpose of communication, e.g., food, bird, democracy, etc.

Attributes are distinctive features of concept and they vary from concept to concept. Essential attributes are the common features that cause a person to place several things in one category. Non essential attributes are slight differences among the examples of the same category. It is the combination of essential attributes that make one concept different from another. For example, in the concept 'apple', shape, colour, taste and function (food) are the essential attributes, whereas size is a nonessential attribute.

A single attribute may have a range of acceptable values known as attribute values. The term attribute refers to the basic category such as colour, whereas the attribute value is the specific content of that category (yellow or red). In the above example of 'apple' the value range of the attribute 'taste' is from sweet-to-sour. The attributes and their value range, which distinguish one concept from another are called criterial attributes.

Positive examples or exemplars are the instances of a concept which help the learner choose the essential attributes of that concept. Negative examples are not the instances of the same concept, they are instances of another equivalent concept. They help the learner discriminate between the attributes which define
help the learner discriminate between the attributes which define
the concept and those which do not. For example, boy, earth,
beauty etc. are the positive examples of the concept 'noun' where
as 'go', 'the', 'hardly' are the negative examples.
Rule is a statement of definition which lists all the essential
attributes of a concept.

1.2.2. Types of Concepts

Concepts can be classified in the following ways:

I. Essential attributes is an important aspect of concept. On the
basis of combination of essential attributes in different
ways, Burner identified three types of concepts: conjunctive,
disjunctive and relational.

A conjunctive concept is the one in which, each positive
example possesses the appropriate values of all the essential
attributes. In other words, all the essential attributes
are connected with 'and', e.g., in the concept 'triangle', each
positive example must possess all the essential attributes,
viz., three sides, three angles and a closed figure.

Disjunctive concepts are identified by the presence of one or
another essential attribute or both. In other words, the
essential attributes of a disjunctive concept are connected
with 'or', e.g. the concept 'noun'. It is a name of a person
or a thing or a place.

Relational concepts are conjunctive concepts but there is a
special relationship among essential attributes of two things
or persons, e.g., 'father', 'mother', 'hot', 'cold', etc. are
relational concepts.
those which are not based on the understanding of other concepts. Secondary concepts are those which can be attained if another concept is understood clearly. For example, 'paper' is a primary concept and 'book' is a secondary concept.

III. Concepts can be structured or flexible due to their validity. The concepts whose meaning remains the same for all are structured concepts. Flexible concepts are those whose meaning differ for different people. Concepts in science are structured, whereas concepts in social sciences are usually flexible.

IV. Concepts are of three types from the viewpoint of how they are apprehended: concrete, inferred and idealised. The attributes of concrete concepts can be apprehended through senses, e.g., plant, river, etc. The attributes of inferred concepts need to be inferred from observation, e.g. emotions, attitudes, etc. can be inferred by observing the behaviour of a person. Idealised concepts such as honesty, democracy, etc., have no representatives in reality. Their attributes are not fixed and finite. The inferred and idealised concepts are also called abstract concepts.

Identifying the type of a particular concept makes clear the relationship and apprehension of attributes and the possible level of difficulty in learning that concept.

1.2.3. Concept Formation and Concept Attainment

Concept learning is a naturally occurring process in people of all ages. In a restricted meaning, concept learning refers to any activity which requires a learner to group two or more objects
together (Johnson 1971). This classification activity involves the act of generalising within classes and discriminating between classes. Through generalisation and discrimination, a learner groups various objects or events into categories on the basis of their similarities ignoring differences. Each category represents a different concept. This type of concept learning is called concept formation which is the first step toward concept attainment.

In the process of concept attainment, there is only a single concept previously determined by the teacher. The learner attains the concept from the given examples and nonexamples by identifying the essential attributes of the concept and by detecting the concept from given examples and nonexamples by identifying the essential attributes of the concepts and by detecting the concept rule out of the existing nonessential attributes. It requires the process of discovery which makes the learner go beyond the given information to new insights and generalisations. It enriches his thinking and develops problem-solving ability. Bruner has identified four levels of concept attainment: recognition or identification; classification; definition; and generalisation.

In short, concept formation is grouping the examples of a concept together, whereas concept attainment is testing positive and negative examples and searching for their features. According to Brunch, concept formation and concept attainment are two components of a single process of categorisation.

1.2.4 Thinking Strategies Used For Concept Attainment

The term 'thinking strategy' refers to the sequence of decisions people make as they encounter each examplar of a concept.
Bruner et al. (1956) identified six thinking strategies - four selection strategies and two reception strategies - by which people attain concepts.

The selection strategies are as follows:

(i) Simultaneous scanning;
(ii) Successive scanning;
(iii) Conservative focussing; and
(iv) focus gambling.

A simultaneous scanner holds more than one concept-hypothesis at a time and uses each example to determine which hypotheses to hold and which to eliminate. A successive scanner tries only one hypothesis at a time. A conservative focusser tests only one attribute of a concept keeping a positive example in focus. A focus gambler begins with a positive example as a focus and then tests more than one attribute at a time.

The reception strategies are:

i) wholist; and
ii) partist.

In the wholist strategy, the subject takes the first positive example in toto as a guide comparing all the attributes of that example to those of the subsequent examples and modifies the hypotheses accordingly. In the partist strategy, the choice of the hypothesis is based on only the part of the first positive example. If the initial hypothesis is not confirmed, the partist refers back to all previous examples and changes the hypothesis. Bruner and his associates found that most people, under reception conditions, are wholists in their initial approach to the problem.

Learning and teaching of concepts has received much importance because of their educational uses.
1.3.0. IMPORTANCE OF TEACHING CONCEPTS

In the present time the importance is given to the intellectual development of pupils. This development partly depends on teaching of concepts because concepts are an important tool of thinking. Concept learning serves as a basis for still higher form of cognitive work. It also makes for economy in presenting experiences. Some educational uses of concepts are as follows:

i) Learning of concepts enables one to develop efficient categories grasping similarities and differences in an array of environmental stimuli and thus reduces the complexity of the environment and gives individuals the environmental mastery.

ii) Concepts help individuals to identify the objects of and to describe and to understand the world around them.

iii) Concepts reduce the necessity of constant learning by enabling individuals to progress through a discipline and to acquire increasing amounts of knowledge. As long as an object or event displays the defining characteristics of a class, one does not have to relearn at each encounter.

iv) Concepts provide direction for instrumental activities.

Knowing a concept in advance, one can arrive at important decisions in anticipating or planning future activities.

v) Concepts make further instruction possible. Most of the teaching in school and college at advanced level is done through verbal instructions. These instructions would be fruitful only if the students had already learnt and
Helping children learn concepts efficiently is a fundamental purpose of schooling (Joyce & Weil, 1985). It is essential for teachers to use the right techniques for teaching concepts. Teaching the students symbols without providing the necessary experience for conceptualisation becomes merely a factual learning through association which mostly leads the students to acquire incomplete or wrong concepts. If they are taught through the process of conceptualisation, they can learn faster, retain longer and apply the learning to new situations. Marsha Weil & Bruce Joyce (1978) have developed a model for teaching concepts through conceptualisation. It is known as Concept Attainment Model (CAM).

1.4.0. CONCEPT ATTAINMENT MODEL (CAM)

Concept Attainment Model (CAM) is an information processing model developed by Weil & Joyce (1978) on the basis of the research work by Bruner and his associates (1956). It is a teaching strategy to help students attain concepts efficiently by making them responsible for determining the concept on the basis of the provided examples and nonexamples of the concept, thus emphasizing students' active involvement and promoting a thorough understanding of the concept as well as developing thinking skills in students.

A concept attainment activity proceeds in the following manner. The concept is decided in advance by the teacher but not announced to the students. Teacher presents a sequence of instances to the students. They must find out or be told whether each instance is
whether it exemplifies the concept or not.

At each encounter students identify the attributes of an example, compare the attributes of positive examples and contrast them with those of negative examples. The form hypotheses about the concept or attributes, test them in the light of further examples, accept or reject them and reformulate hypotheses. This process continues till all students become satisfied that they have attained the concept. Once the concept is attained, students analyse attributes distinguishing essential attributes from nonessential ones and state a definition or concept rule including all the essential attributes of the concept. At last, the teacher confirms the definition and supplies the concept name if the students cannot. Then, students analyse and evaluate the thinking strategies through which they attained the concept in order to find out the best one.

1.4.1. Strategies of CAM

On the basis of different situations for attaining concepts there are three strategies of CAM: (i) Reception Strategy; (ii) Selection Strategy; and (iii) Unorganised Materials Strategy.

Reception Strategy

Reception strategy is more direct in teaching concepts. In this strategy it is the teacher who determines the type and order of the examples to be presented. The labelled examples are presented in a pre-arranged order. Students compare and contrast the attributes of positive and negative examples and identify the concept by framing and testing hypotheses about attributes or concept. Here, teacher or students or both maintain the record of attributes. Then the attainment of the concept is tested by
asking students to identify unlabelled examples and generate new examples. Students then enumerate essential attributes of the concept, state the definition and supply concept name. At last the thinking strategies used for attaining the concept are analysed by the students.

Selection Strategy

In the selection strategy, an array of unlabelled examples is presented before the students. Students choose from these examples and ask whether the selected example is a 'yes' or a 'no'. Then students frame hypotheses on the basis of the attributes of the positive examples and test them. Having tested the hypotheses, students name the concept, enumerate its essential attributes and define the concept. At last they analyse the thinking strategies used by them for attaining the concept.

Unorganised Materials Strategy

This strategy is mostly used for teaching concepts related to social sciences or other ideal-type concepts wherein attributes are not always explicit. In this strategy, passages or paragraphs are presented as examples. Students identify the concept by reading the unorganised material in these passages, identify the attributes used in them and evaluate the concept by discussing the adequacy and appropriateness of the attributes being used, and then, by comparing the attributes of other examples with the attributes of the concept. Then, the students state the name, the attributes and the definition of the concept.

1.4.2. Syntax of Reception Strategy

Syntax describes how teaching-learning process takes place. It
describes the series of activities which teacher and students have to perform. There are three phases in the syntax of Reception strategy of CAM.

PHASE I: Presentation of Data and Identification of Concept

In this phase, first of all, teacher explains the procedure of the model, that is, the activities to be done by the students in the different phases. (This is done in a few lessons till the students clearly understand all the phases of the model). Then, teacher presents labelled examples and nonexamples one by one in a prearranged sequence. Students are informed that there is one idea that all the positive examples have in common; their task is to develop hypotheses about the concept. Students compare and justify the attributes of the examples at each encounter, formulate and reformulate hypotheses and test them. A record of attributes/hypotheses is maintained by students in a worksheet.

PHASE II: Testing Concept Attainment

In this phase, teacher tests the attainment of concept, that is, whether students have attained the concept or not, by asking them to identify additional unlabelled examples and by generating new examples. Then, teacher asks students to enumerate the essential attributes of the concept, name the concept and define it on the basis of the essential attributes. If the students cannot name the concept the teacher supplies the name.

PHASE III: Analysis of Thinking Process

In this last phase, students analyse their thought processes. First, teacher asks students to make it clear how they attained the concept, that is, which thinking strategies they used. For this, the teacher asks questions like; whether they focussed on
attributes or concepts, whether they tested one hypothesis or more at a time, and what happened if their hypothesis was not confirmed. Gradually, students begin to compare the effectiveness of different thinking strategies and decide which one was the best for attaining the concept. Teacher merely guides them in coming to conclusion.

1.4.3. Social System

In the social system the roles to be played by teacher and students are explained. In CAM, teacher and students play the following roles.

Teacher's Role:

1. Prior to teaching, teacher selects the concept. He selects, organises and arranges positive and negative examples in such a way that the attributes become clear. While doing this, he keeps in mind the age and intellectual level of the students.
2. During teaching, the teacher explains the activities to be done by the students in the different phases of CAM. Teacher acts as a controller of action, but students are encouraged for interaction and free dialogue. Teacher guides the thinking of students towards inductive process.

Students Role:

1. Students act according to the instructions of teacher.
2. Students record examples and attributes/hypotheses on their worksheet.

1.4.4. Principles of Reaction

The rules followed by teacher in controlling student activities
are called principles of reaction. In CAM, teacher reacts to the students' responses in the following way:

1. Teacher supports students' hypotheses by creating a dialogue in which one pupil's hypothesis is balanced against another's.

2. If needed, teacher presents more examples, and also focusses students' attention on specific features of the examples.

3. Teacher encourages students to generate examples.

4. Teacher turns their attention towards analysis and evaluation of their thinking strategies by assisting them.

1.4.5. Support System

The materials and facilities needed for implementing a model of teaching are called support system. For implementing CAM, the following are needed:

1. Teachers need to be trained in teaching through CAM.

2. Teachers need to have enough examples of a concept to be taught. The examples should be so carefully selected and organised that students can understand the concept thoroughly.

3. Certain audio-visual aids are needed to present examples.

1.4.6. Planning for Concept Attainment Teaching

Prior to teaching, teacher has to select and organise material for concept attainment. There are three steps for planning concept attainment lessons: i) selecting and analysing the concept, ii) determining objectives; and iii) preparing exemplars.

Selecting the concept means recognising a concept and making sure
whether it is worth teaching and relevant, and whether it is suited to the age and intellectual level of students. Analysing the concept means identifying it in terms of i) its essential and nonessential attributes; and ii) its type.

Determining objectives means identifying specific educational goal/goals because the use of a particular type of strategy depends on educational goals.

Preparing exemplars or instances is the most important task. The first requirement for preparing examples is to determine the most appropriate medium of presentation. Teacher has to select those examples which 'represent' the concept clearly. The next step is generating and listing positive and negative examples and arranging them in a sequence that allows students to acquire a complete and accurate concept. Except for a disjunctive concept, positive examples must contain all the essential attributes of a concept; negative examples, less than all attributes. Positive examples should represent all the varieties of illustrations of the concept. Teacher should generate enough examples so that some can be used for testing students' attainment of the concept.

Teacher should be very much careful in organising the presentation of data. The presentation of examples should begin with a positive one except in a disjunctive concept wherein the first example should be negative. The 'yes' and 'no' examples should be interspersed and sequenced in such an order that they systematically test the attributes.

Teacher should also devise a means for recording all the attributes and concept hypotheses, as these are identified in the first phase of the model. There should be provided enough space
for all students to view all examples simultaneously.

1.4.7. Instructional and Nurturant Effects of CAM.

A model of teaching is used for achieving certain instructional objectives. These are called its instructional effects. The nurturant effects are those effects which are produced besides the instructional effects. The instructional and nurturant effects of CAM are as follows.

Instructional Effects:

i) awareness of nature of concepts;
ii) improvement of concept-building strategies;
iii) Learning of specific concepts;
iv) Development of inductive reasoning.

Nurturant Effects:

i) Awareness of alternatives;
ii) Tolerance of ambiguity (of nature of the concept but appreciation of logic);
iii) Sensitivity to logical reasoning in communication.

1.5.0. RATIONALE

It is a common experience of teachers that the traditional methods and techniques have failed to produce effective learning of concepts on the part of the students. One reason of this may be that, generally, concepts related to different subjects are taught through the lecture method. In the lecture method, the teacher dictates the definition of a concept with a few illustrations and sometimes asks students to reproduce the definition and thinks that concept learning has taken place. What happens in reality is that students associate the given examples with labels and cram
concept. Such rote-learning mostly leads the students to acquire incomplete or wrong concepts. They do not have proper and exact control over the learnt concepts. Sometimes, they do not know even the contexts of the terminology. As a result, students fail to use the learnt concepts in a new situation. They also fail to understand other concepts and information based on these concepts.

The problem of incomplete or wrong understanding of concepts becomes worse for the students in learning English as a second or foreign language wherein they do not have much opportunity to learn and use the language outside the classroom. In day-to-day learning, this problem retards the speed and progress of the students because they have to relearn concepts each time. On the other hand, the teacher does not have enough time to spend for teaching the same concepts. Therefore, the teacher proceeds further without bothering about those concepts. If the basic concept of English are acquired thoroughly by the students, they may understand instruction and learn the language easily. This may develop their interest in English, which may, in turn, result into better achievement in English. Teachers, therefore, need to use efficient and effective strategies of teaching concepts. The most important question at this stage is: Which instructional strategy is efficient and effective for teaching concepts of English?

Concept Attainment Model (CAM) developed by Weil & Joyce (1978) claims to help students learn concepts efficiently. But it is undesirable to accept the model as suitable to the Indian students without having sufficient background of experimental findings. Researchers in India, therefore, have made efforts to study the effectiveness of CAM for teaching concepts in different subjects at different levels of education (vide 2.3.0). At the teacher
training level, researchers developed various teaching strategies in CAM and found it effective in terms of teaching competency of teacher trainees and their reaction towards the model (Passi, Singh & Sansanwal 1985-86; Bihari 1986; Das 1986; Das 1986; Chaudhary 1988).

At the school level, Chitriv (1983) tried out CAM for teaching mathematical concepts to class XI students and reported that CAM was significantly superior to Traditional Method.

Kumara (1985), Pani (1985), Sharma (1986), Gangrade (1986, 1987) and Grewal & Kaur (1987) concluded that CAM was effective for teaching concepts in science to the students of class V to class IX.

Chaudhary & Vaidya (1988) found CAM as equally effective as Traditional Method but less effective than Mastery Learning Model for teaching concepts of Hindi grammar to class VI students.

It is clear from the above description that the results with regard to the effectiveness of CAM in terms of attainment of concepts in mathematics and science were promising. But these researches have certain limitations that prevent the investigator from arriving at a conclusion. These researches are too few in number to provide sufficient empirical evidence. There is inconsistency among the findings of these researches as regards the comparison of CAM and Traditional Method. Chitriv (1985), Gangrade (1987) and Grewal & Kaur (1987) found CAM to be superior to Traditional Method, whereas Sharma (1986) and Chaudhary & Vaidya (1988) reported that the two methods were equally effective. Due to this inconsistency in the findings, it can not be generalised that CAM is better than Traditional Method.
be generalised that CAM is better than Traditional Method.

Further, in all the studies except in those by Chitriv (1983) and Grewal & Kaur (1987) the sample was selected from the students of class V to class IX belonging to the state of Madhya Pradesh only. Thus, these studies have a limitation from the point of view of variety of the sample.

It is also noticed that most of the studies were concerned with the teaching of concepts in science. Only two researchers studied CAM in terms of attainment of concepts in mathematics (Chitriv 1983) and in Hindi grammar (Chaudhary & Vaidya 1988). Thus, little or less coverage is given to the subjects other than science.

Due to the above limitations, i.e., small number of researches, inconsistency among the findings, less coverage given to the students from all states at every stage of education and less coverage to all subject areas, it would be too early to generalise about the effectiveness of CAM. It needs much of experimentation covering all subjects at every stage of education. The present investigation is a step in this direction. Since no research efforts have been made to determine the effectiveness of CAM for teaching concepts of English, the investigator made an attempt to study CAM in this context and compare it with Traditional Method.

Further, it was evident from the review of the past researches that no researcher except Gangrade (1987) evaluated CAM in terms of achievement of the students in the particular subject. Achievement is of paramount importance in the present society. The effectiveness of any educational system is gauged to the extent the pupils involved in the system achieve (Anand & Padma 1986). Hence, it is desirable that the instructional methods and
strategies used enhance achievement of the students. Achievement in English, therefore, was taken up as a dependent variable in the present investigation.

Besides its main objective of concept attainment, CAM produces other instructional effects such as understanding of nature of concepts, improvement in concept building strategies and development of inductive reasoning. It also produces some nurturant effects such as awareness of alternatives, tolerance of ambiguity and sensitivity to logical reasoning in communication. These effects are hypothetical. There is a need to conduct experimental studies in order to provide empirical evidence to the instructional as well as nurturant effects of CAM. To bridge this gap, inductive reasoning was included as a dependent variable in the present investigation.

It was concluded by the former researchers that attitude towards a subject had significant effect on achievement. (Koppar 1970; Abraham 1974; Joseph 1979; Jain 1979; Kuchedkar 1981; Gangrade 1987). This implies that if more favourable attitude is developed in students, they would achieve more in a particular subject. It is, therefore, desirable for the instructional strategies that they help in developing favourable attitude towards a subject. Hence, an urge was felt to study CAM and Traditional Method in terms of change in the students' attitude towards English.

It is important to determine the effectiveness of any strategy on the basis of the reaction of the students towards that strategy. In the past researches it was found that the subjects expressed favourable reaction towards CAM (Passi, Singh & Sansanwal 1986-86; Kumara 1985; Bihari 1987; Das 1986; Sharma 1986; Gangrade 1986; Awasthi 1988; Chaudhary 1988). In the present investigation it
two points - in the beginning and at the end of the treatment - and to study whether there was a significant change in their reaction.

It is obvious that besides the instructional strategy, certain student characteristics influence learning. It is necessary to identify some of these factors and find out their impact on the criterion variables. Keeping this in view, the former researchers studied concept learning in relation to several student characteristics (vide 2.4.0.)

Intelligence was found to be positively related to concept learning (Osier & Fivel 1961; Osler and Trautman 1961; Gakhar 1981; Jabbal 1981). However, Mansfield (1960) found insignificant relationship between the two.


Gakhar (1981) found significant effect of SES on concept learning.

Davis (1984) reported that verbal concept formation was influenced by reading ability. Contessa (1980) and Pani (1985) studied concept attainment in relation to various personality factors and concluded that personality had no effect on attainment of concepts. Das (1986) found insignificant interaction between treatment and personality.

Cognitive style was found to have insignificant effect on concept
learning by Sheel (1981) and Eltayeb (1981), where as Poslock (1982) concluded that cognitive style influenced the learning of abstract concepts. As regards interaction between cognitive style and treatment, Sheel (1981) found no significant effect, whereas Eltayeb (1981) reported significant effect of cognitive style when it interacted with Abstract Picture Training Treatment.

Chitriv (1983) found conceptual style preferences to be insignificant while teaching concepts through CAM, but significant while teaching through Advance Organiser Model.

It is clear from the above description that the influence of the factors like sex, personality factors, intelligence, cognitive style, reading ability, conceptual style preferences, etc., was studied in the past researches. But it is not possible to draw any generalisation on the basis of the findings of these studies because these studies were either the single studies or there was inconsistency among the findings in the case of more than one study. Further, there are still many other student characteristics which may affect attainment of concepts. Some of these are: adjustment, anxiety, neuroticism, creativity, study habits, self-concept, etc. These factors need to be studied in the context of attainment of concepts. To fill this gap, sex and self-concept were taken up as independent variables, besides treatment, in the present investigation.

1.6.0. STATEMENT OF PROBLEM

The title of the present investigation was worded as:

A study of the effectiveness of Concept Attainment Model for teaching concepts of the English language.
1.7.0. DEFINITION OF TERMS

The following words used in the title are defined with a view to clarifying the connotation in which they are used in the present investigation.

i) Study :

An investigation. A thorough enquiry into, especially including a piece of writing on, a particular subject (Longman Dictionary of Contemporary English).

ii) Effectiveness :

An ability to make improvement in students' scores on a criterion test.

iii) Concept Attainment Model (CAM):

A model of teaching developed by Weil & Joyce (1978) for helping students attain concepts by analysing the attributes of the given positive and negative examples and by framing and testing hypotheses about the concept (vide 1.4.0.).

iv) Concept :

A category. A form of data, expressed through the medium of word or symbol, representing a class of stimuli having common characteristics (vide 1.2.0.).

v) Concepts of the English language :

The selected grammar concepts of English.

1.8.0. OBJECTIVES

The present investigation was carried out with the following
objectives:

1. To study the effectiveness of CAM in terms of; a) attainment of concepts of English; b) achievement in English; c) inductive reasoning; and d) reaction towards CAM.

2. To compare CAM and Traditional Method in terms of: a) attainment of concepts of English; b) achievement in English; and c) inductive reasoning, separately, by taking intelligence, socio-economic status (SES) and previous achievement in English as covariates.

3. To study the influence of treatment, sex, self-concept and their various interactions on: a) attainment of concepts of English; b) achievement in English; and c) inductive reasoning, separately.

4. To study the contribution of intelligence, SES, previous achievement in English and self-concept in the prediction of: a) attainment of concepts of English; b) achievement in English, and c) inductive reasoning, separately, of the students taught through CAM.

5. To study the contribution of intelligence, SES, previous achievement in English and self-concept in the prediction of: a) attainment of concepts of English; b) achievement in English; and c) inductive reasoning, separately, of the students taught through Traditional Method.

6. To study the change in attitude towards English of the students taught through CAM as well as of those taught through Traditional Method.

7. To study the change in students' reaction towards CAM.
1.9.0. HYPOTHESES

The following null hypotheses were formulated:

1. There will be no significant difference between the adjusted mean gain scores for attainment of concepts of English of the two groups when intelligence, SES and previous achievement in English are taken as covariates.

2. There will be no significant difference between the adjusted mean scores for achievement in English of the two groups when intelligence, SES and previous achievement in English are taken as covariates.

3. There will be no significant difference between the adjusted mean gain scores for inductive reasoning of the two groups when intelligence, SES and previous achievement in English are taken as covariates.

4. There will be no significant influence of treatment, sex, self-concept and their various interactions on the students' attainment of concepts of English.

5. There will be no significant influence of treatment, sex, self-concept and their various interactions on the students' achievement in English.

6. There will be no significant influence of treatment, sex, self-concept and their various interactions on the students' inductive reasoning.

7. There will be no significant change in attitude towards English, of the students taught through CAM.
8. There will be no significant change in attitude towards English, of the students taught through Traditional Method.

9. There will be no significant change in reaction of the students towards CAM.

1.10.0. LIMITATIONS

The present investigation has the following limitations:

1. The present investigation was carried out on class IX students of Gujarati medium schools.

2. The investigation was based on the students living in Amdavad city.

3. Only the selected grammar concepts of English were taken up for the experimentation.

4. From three variations of CAM, only the reception strategy was taken for the study.

1.11.0. SCHEME OF CHAPTERISATION

A brief description of the chapters to follow is given below:

Chapter II - Review of Related Literature.

This chapter throws light on the past research studies carried out in the field along with a summary of major points by the investigator.

Chapter III - Methodology

In this chapter the methodology followed in carrying out the present experimental study is described. It gives the details with respect to sample, design, tools, procedure of data collection
and the statistical techniques used for analysing the data.

Chapter IV - Results and Discussion

The results obtained through the statistical analyses of the data are tabulated, interpreted and discussed in chapter IV.

Chapter V - Summary and Implications

In the last chapter a summary of the report is given along with the major findings, observations and implications of the investigation.

Thus this thesis contains the detailed description of all the essential steps taken in carrying out the present investigation. It also contains bibliography and appendices.