EFFECTIVENESS OF CONCEPT ATTAINMENT MODEL ON ACHIEVEMENT IN ARABIC GRAMMAR OF STANDARD IX STUDENTS

Thesis

Submitted in partial fulfillment of the requirements for the degree of

Master of Education

By

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2005

DECLARATION

I, **Shamnad N**, do here by declare that this thesis entitled **"Effectiveness of Concept Attainment Model on Achievement in Arabic Grammar of Standard IX students"** has not been submitted by me for the award of any degree, diploma, title or recognition before.

Shamnad N.

Kottayam

CERTIFICATE

I, **Dr. Jaya Mary Louis**, do here by certify that this thesis entitled **"Effectiveness of Concept Attainment Model on Achievement in Arabic Grammar of Standard IX students"** is a bonafide study and research carried out by **Mr. Shamnad N** under my supervision and guidance.

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INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The process of teaching learning aims at transmission of knowledge imparting skills and formulation of attitudes, values and behaviour. Teaching is a complex activity, which is a cluster of different roles and responsibilities. A teacher has to master multiple roles in order to become more professional. The professional competence can be expanded in two ways: first by increasing the range of teaching strategies that are needed to be employed; second by becoming increasingly skillful in the case of these strategies (Joyce and Weil, 1972). The purpose of teaching is to maximize learning. (Gagne, 1963)

Bruner (1972) emphasized four major features of theory of instruction in effective teaching :

1. Predisposition towards learning
2. Structural body of knowledge
3. Sequences of material to be learnt
4. The nature and paring of reward and punishment.

It means that a theory of instruction in teaching is concerned with how what one wishes to teach can best be learnt, with improving rather than describing teaching. It is true that teaching is a process by which teacher and

students create a shared environment including sets of values and beliefs, which in turn colour their view of reality.

1.2 PURPOSE OF LANGUAGE TEACHING

Language is the gateway of knowledge. In order to equip ourselves with knowledge, we have to learn a language first. A person, who has command over many languages, is really more educated and wiser than the rest of his fellowmen.

Language teaching aims at improving the communication skills of pupil. Language is now recognized as something alive, changing and evolving along with culture. So the language we teach must be well suited for communication – oral and written. When the language is learned, the branches of knowledge lie open before the pupil. Thus the effectiveness of today's education depends on the efficiency of the pupil to use the language.

1.3 IMPORTANCE OF TEACHING ARABIC LANGUAGE

Learning of different languages promotes international understanding. Therefore it is necessary to learn foreign languages, which help to develop broad-minded individuals. Arabic language being a key to the cultural heritage

acts as a tool to inculcate moral and spiritual values and has a very importance role in this regard.

Arabic is an important language among world languages. About 25 nations use Arabic language as the *lingua franca* and the official language in their day-to-day life. Arabic is the mother tongue of 12 crores of people and it is read and understood by 30 crores, recited by more than 30 crores of people as the language of the Holy Qur'an

Even though, the language is in use for more than 4000 years and used by lacks of people through about 150 generations, no serious alterations has affected its originality. Arabic is a language approved by the United Nations for dealing in matters, and some international organizations like W.H.O., UNESCO, and I.L.O. have recognized and given cardinal place to Arabic language.

The modern American writer Philip.k.Hitty (1987) states that for many centuries in the Middle Ages, Arabic was the language of learning, welfare and progressive thought of the civilized world. Teaching Arabic as a foreign language will promote international understanding, develop broad-minded individuals and foster our cultural heritage.

1.4 NEED AND SIGNIFICANCE OF THE STUDY

Models of Teaching have an important place in language teaching. Joyce and Weil (1972) developed more than 20 models for achieving specific instructional goals and classified them into 4 families of which information processing strategies provide an effective means of knowledge in the schools. One of the important strategies in this family is Concept Attainment Model, which is designed to teach concepts in an effective way. It emphasizes on the development of both process skills and knowledge of the concept, which serve as the means to the development of the intellectual skills in students.

Several studies have been conducted to evaluate the different dimensions of Concept Attainment Model. Pani (1988) found that the Reception and Selection strategies of Concept Attainment Model were equally effective in terms of attainment of science concepts. Two investigators namely Sushama and Singh(1987) conducted a study and found that is more effective than Biological Science Inquiry Model. At the same time, Gagnrade (1987) compared the achievement of science of class VIII and class VII students taught using a combination of Concept Attainment Model and Lecture Method with those taught using Conventional Method and found that the first method is more effective.

Das (1986) found that Concept Attainment Model is effective in developing the teaching competencies of pre-service student teachers. For second language instruction, Louvet (1988) developed three strategies using the Concept Attainment Model: Reception, Selection and Organized material strategies.

However no attempt has been made, so far, to analyse the effectiveness of Concept Attainment Model on Achievement in Arabic Grammar. The investigators' experience and awareness regarding the methodology of teaching exists in the present school system convinced him that there is a felt need to change the method of Arabic instruction. Any meaningful attempt to evolve a new strategy of teaching will be a great help and remedy to the present monotonous system of instruction.

1.5 STATEMENT OF THE PROBLEM

The present study was undertaken with the objective of testing the effectiveness of Concept Attainment Model on Achievement in Arabic Grammar of standard IX students. The study has been entitled "The Effectiveness of Concept Attainment Model on Achievement in Arabic Grammar of Standard IX students".

1.6 OPERATIONAL DEFINITION OF KEY TERMS

Some of the important terms used in the present study are defined below for the sake of clarity.

Effectiveness: The term 'effectiveness' stands for the condition resulting when the influence of one factor or condition is dependent on the presence or absence of another factor or condition.

Concept Attainment Model: It is an approach to teaching concepts in which the teacher provides examples and non-examples of the concept and students determine the concept from the examples quoted(Eggen,1979).

Achievement in Arabic Grammar: In the present study 'Achievement in Arabic grammar' is considered as the total score obtained by an individual in the selected units of Arabic grammar, covering the cognitive domain of behaviour, namely knowledge, understanding and application. The grammatical areas selected for study are: The Subject (fa'il), Subject and Predicate (mubtada'and khabar), the Object (maf'ulun bihi), Verbal sentence (jumlathun fi'aliyyah), the Sentence (jumlathun mufeedah), the Subjunctive mood (nasb) to

imperfect verbs, the Quiescent mood (jazm) to imperfect verbs, the Genitive (jar-al-ism), the Adjective (na'th), the verb "Kana" and its sisters.

Standard IX: It is the second standard in the secondary school level.

1.7 HYPOTHESES OF THE STUDY

The following were the hypotheses formulated for the present study

1. There is significant difference in Achievement of Arabic Grammar between the IXth standard students taught using the Concept Attainment Model and Conventional Method.
2. There is significant difference in Achievement of Arabic Grammar between the IXth standard students taught using the Concept Attainment Model and Conventional Method under the categories of instructional objectives namely, knowledge, understanding and application.

1.8 OBJECTIVES OF THE STUDY

The objectives of the study were

1. to prepare instructional materials for teaching Arabic Grammar in standard IX based on Concept Attainment Model.

2. to find out the effectiveness of Concept Attainment Model in teaching Arabic Grammar.
3. to compare the effectiveness of Concept Attainment Model with the Conventional Method in teaching Arabic Grammar.
4. to compare the effectiveness of Concept Attainment Model with the Conventional Method in teaching Arabic Grammar under the following categories of objectives namely, knowledge, understanding and application.

1.9 METHODOLOGY IN BRIEF

The Non-equivalent pre-test post-test Experimental design was used in the present study. The study was conducted on a final sample of 40 students (two divisions of 20 students each) of standard IX of Muslim Girls Higher Secondary school, Kaniyapuram, in Thiruvananthapuram district. One division was selected as the Experimental group and the other as the Control group.

The tools used were

(i) Achievement Test in Arabic Grammar which was used both as pre-test and post-test, and

(ii) Lesson transcripts based on Concept Attainment Model and Conventional Method.

The Experimental group was taught using Concept Attainment Model lesson transcripts and the Control group in the conventional way. The effectiveness of Concept Attainment Model on Achievement in Arabic Grammar was determined by administering the Achievement Test to both groups. The data thus collected were tabulated and analyzed using statistical techniques like Mean, Standard Deviation, Critical Ratio, and Analysis of Covariance (ANCOVA).

1.10 SCOPE OF THE STUDY

The present study has made an attempt to test the effectiveness of Concept Attainment Model on Achievement in Arabic Grammar of standard IX. It is expected that the findings of the study will help the curriculum planners to make needed changes in the content of Arabic textbook. It will also help the teachers to understand the effectiveness and necessity for the application of model approach in the teaching of Arabic grammar. It will be of great help to all those who are concerned with educational strategies. It is hoped that the findings of the present study will help to open new frontiers in educational practices.

1.11 LIMITATIONS OF THE STUDY

It is hoped that the procedure adopted for the present study is adequate enough to throw sufficient light on the problem under investigation. Despite all possible precautions taken to get valid and reliable results, certain limitations have crept into the study, which are inevitable in the case of a study of the present type, conducted on Models of Teaching.

The limitations include the following:

1. The study was confined to only two classes due to lack of time.
2. Only 10 lesson transcripts on Arabic grammar were prepared due to the shortage of time
3. Due to limited time and resource at hand, the investigator could not specially evaluate the nurturing effects of the model.
4. Due to lack of time, the members of the Information Processing Family of Models were not included in the study.

1.12 ORGANIZATION OF THE REPORT

The report of the study is presented in six chapters, the details of which are given below:

Chapter 1: The first chapter presents the introduction, purpose of language teaching, importance of teaching Arabic language, need and significance of the study, statement of the problem, definition of key terms, hypotheses of the study, objectives if the study, methodology adopted, scope of the study, its limitations and the organization of the research report.

Chapter 2: The second chapter throws light on the theoretical background of Models of Teaching with special reference to Concept Attainment Model.

Chapter 3: The third chapter reviews the literature related to the present study.

Chapter 4: The fourth chapter describes the methodology adopted for the study, the variables used, selection of the sample, tools used for gathering data and the statistical techniques employed.

Chapter 5: The fifth chapter details the analysis and interpretation of the results.

Chapter 6: The sixth chapter summarises the procedures adopted, examines the tenability of the hypotheses, arrives at the conclusions and implications of the study, followed by a few suggestions for further research.

Chapter – 2

THEORETICAL OVERVIEW

2.1 PHILOSOPHY BEHIND MODELS OF TEACHING

According to the report of the Secondary Education Commission: “Even the best curriculum and the most perfect syllabus remain dead unless quickened to life by the right methods of teaching and the right kind of teacher”. It seems that the teaching learning process has become more mechanical than meaningful. Interesting, appealing and repeated encounters are a must for meaningful learning.

Suitable instructional strategies are essential for achieving the educational objectives. This led researchers to explore various methods and techniques for the development of cognitive, affective and psychomotor domains.

There is no single best way or teaching strategy that can be employed in all situations since the number of teaching goals is large and diverse in nature. The best technique is the one that will be most effective or reaching a particular goal in a given situation (Eggen, Kauchack and Harvert, 1979). This is the philosophy behind the Models of Teaching.

2.2 CONCEPT OF MODELS OF TEACHING

People in different contexts use the word ‘model’. In the teaching learning process, models have the same interpretation, as they have in the case of construction of dams, buildings, etc. Thus, Models of Teaching, like plans, patterns, or blueprints present the steps necessary to bring about a desired outcome. Models create the necessary environment, which facilitates the teaching learning process. It consists of guidelines for designing educational activities and environments. It is designed to achieve a particular set of objectives. It is not a substitute to any teaching skill. Rather, it creates the conducive teaching-learning environment by making the teaching act more systematic and efficient. There are many powerful Models of Teaching designed to bring about particular kinds of learning and to help students to learn more effectively. How teaching is conducted, has a large impact on students’ abilities to educate themselves.

2.2.1 Models of Teaching: Definition

A Model of Teaching, as explained by Joyce and Weil (1972) is a description of the learning environment. They describe it as “ a plan or pattern, which can be used to sharp curricula, to design instructional materials and to guide instruction in the classroom and other settings”. Models of Teaching have

great potentiality for developing the cognitive, affective and psychomotor behaviour of the learner in a balanced and integrated fashion.

A Teaching Model can be considered as a type of blueprint for teaching. It provides structure and direction for teaching. Models of Teaching afford a lively and provocative introduction to the complexity of teaching (Joyce and Weil, 1972). It consists of guidelines for designing educational activities and environments. A Model of Teaching emphasises the need for variety in the classroom by developing a teacher's repertoire of instructional approaches to meet a range of objectives. But Models of Teaching are not cure-alls or applicable to all teaching situations. Models of Teaching create the conducive teaching-learning environment in which teachers teach more effectively by making the teaching act more systematic and efficient.

2.2.2 Emergence of Models of Teaching

Although methods of teaching have passed through several developments, teachers all over the world followed fixed ways of teaching. It is because the educational programme for teachers prepares them to follow one of a few mixed ways of teaching, such as the Herbartian Method.

Attempts have been made by researchers to master the different approaches, strategies or styles of teaching with the objectives of instruction and pupils' learning styles. Dunn and Dunn (1979), Fischer and Fischer (1979), Elis (1979), and Joyce and Weil (1980), also believe that the strength in education rests in the intelligent use of this powerful variety of approaches – matching them with different goals and adopting

them to the student's style to reach out to differing children and to create a rich and multi-dimensional environment for them. Models of Teaching emerged out of the search by Joyce and Weil (1972) to find a variety of approaches or strategies of teaching to match the various learning styles.

2.2.3 Characteristics of Models of Teaching

The main characteristics of Models of Teaching are the following

1. A Model of Teaching is not a combination of facts but on the other hand it is a systematic procedure to modify the behaviour of the learners,
2. All Models of Teaching specify the learning outcomes in detail on observable student performance,
3. Every Model of Teaching specifies in definite terms the environmental conditions under which a student's response should be observed,
4. A Model describes the criteria of acceptable performance, which is expected from the students, and
5. All Models of Teaching denote mechanisms that provide for students' reaction and interaction with the environment.

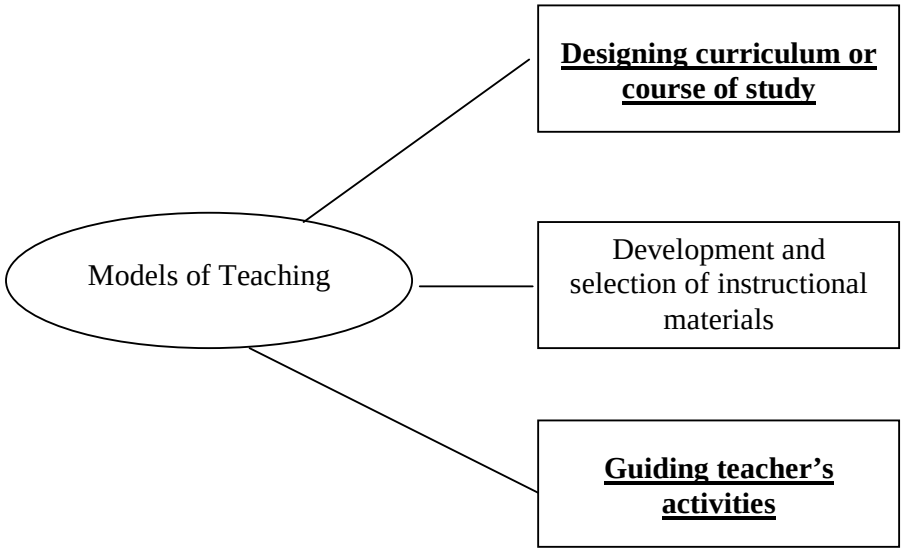
2.2.4 Functions of Models of Teaching

The following diagram explains the three functions of Models of Teaching.

Diagram 2.1

The diagrammatic representation of the functions of

Models of Teaching



2.2.5 Classification of Models

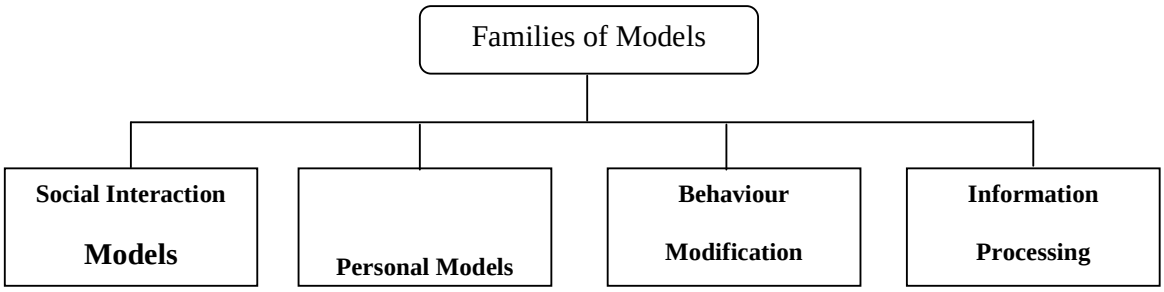
There are many Models of Teaching that are built around the mental process as ranging from systems for teaching general problem solving ability to procedures for teaching process.

Joyce and Weil (1972) developed more than 20 Models of Teaching, which are grouped on the basis of their chief emphasis. They had organized these models into 4 families, which are as follows:

1. Social Interaction Models.
2. Personal Models.
3. Behaviour-Modification Models.
4. Information Processing Models.

Diagram 2.2

Classification of Models of Teaching



1. **Social Interaction Models:** Social Interaction Models emphasise the relationship to society, and to other persons, and give priority to the importance of democratic process, and the importance of society.

2. **Personal Models:** Personal Models emphasise the process by which the individuals construct and organize their unique reality.

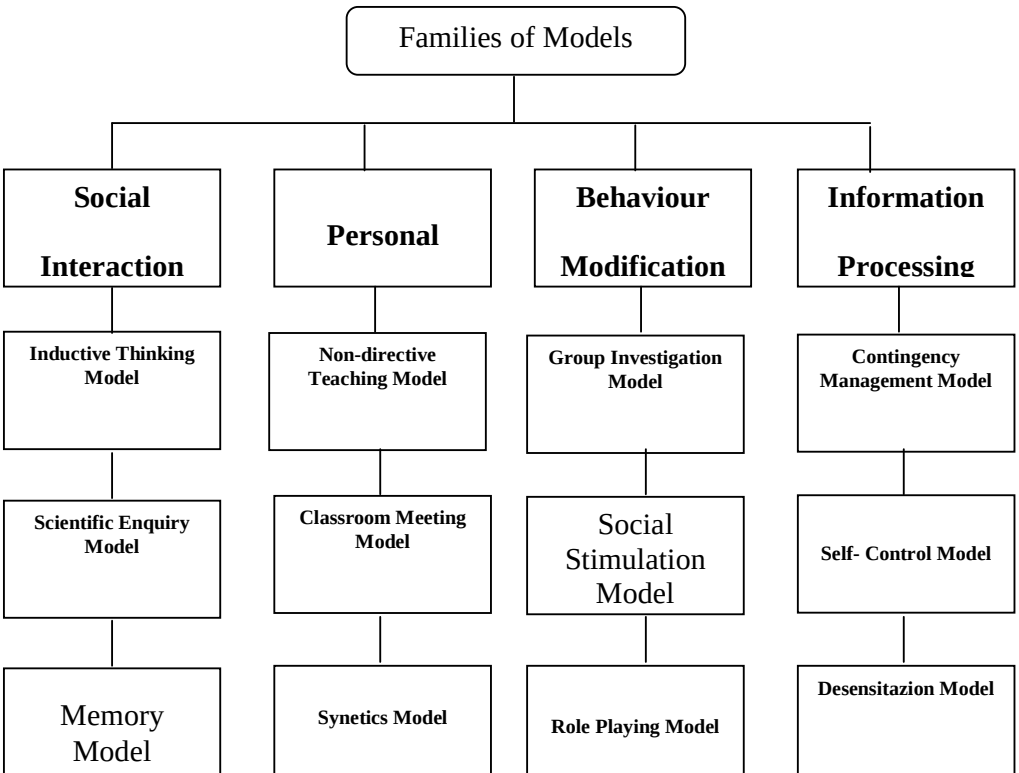
3. **Behaviour Modification Models:** These models attempt to develop efficient systems for sequencing learning tasks and shaping behaviour by manipulating reinforcement.

4. **Information Processing Models**: Information Processing refers to the way pupils handle stimuli from environment, organize data, sense problems, generate concepts and solutions to problems and employ verbal and non-verbal symbols (Joyce and Weil, 1978

The diagrammatic representation of the families of models are given below.

DIAGRAM 2.3

Families of Models of Teaching



The main Models that are coming under the Information Processing Family are given in Table 2.1

Table 2.1

Models coming under Information Processing Family

Model	Major Theorists	Goals
Inductive Thinking Model	**Hilda Taba**	**Designed primarily for development of model inductive mental process and academic reasoning, of theory building but these capacities are useful for personal and social goals as well.**
Inquiry Thinking Model	**Richard Suchman**	**Designed for the development of thinking skill in students**
Scientific Inquiry Model	**Joseph J schwab**	**Designed to teach the research system of discipline, but also expected to have effect instructionally the other domains**
Concept Attainment Model	**Jerome S.Bruner**	**Designed primarily to develop and achieve reasoning but also for concept development and analysis**
Advance Organizer Model	**David P.Ausubel**	**Designed to increase efficiency of information processing capacities meaningfully absorbs and relate bodies of knowledge**
Develop -	**Jean Piaget,**	**Designed to increase the general**

mental Models	**Irvin Sigel and Edmund Sullivan**	**intellectual developments especially logical reasoning.**
Memory Model	**Jerry Lucas**	**Designed to increase the capacity of memorization**

2.2.6 Components of a Teaching Model

The components of a teaching model, according to Joyce and Weil (1978) are as follows:

1. Syntax
2. Social system
3. Principles of reaction
4. Support system and
5. Instructional and Nurturant effects.

1. **Syntax:** The syntax describes the Model. It is the sequence of activities called phases. Each Model has a distinct flow of phases. Comparing the phases of Model reveals the practical difference between Models.
2. **Social system:** Social system describes student and teacher roles and relationship and the kind of norms that are encouraged. The concept of hierarchical relationship is explained as the sharing of intimating activity by the teacher and the learner, the location of authority , and the amounts of control over activity that emerges from the process of interaction. On the basis of social

system, Models can be classified as highly structured, moderately structured, and low structured models.

3. **Principles of reaction:** Principles of reaction guide the teacher's responses to the learner. They tell how to regard the teacher and respond to what he or she does.

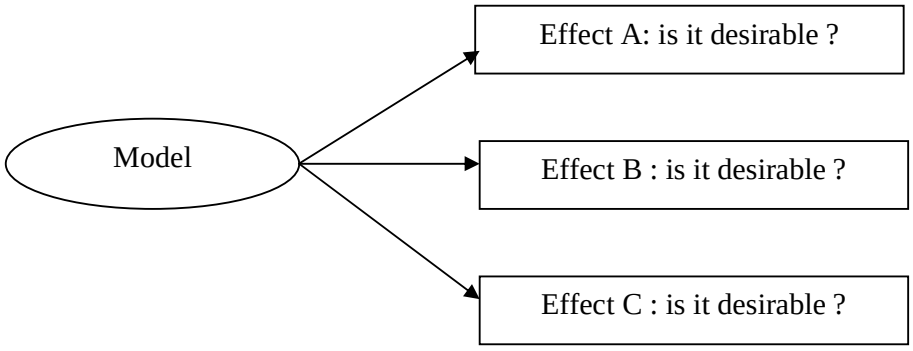
4. **Support system:** Support system refers to additional requirements beyond the usual human skills, capacities and technical facilities necessary to implement a Model.

5. **Instructional and Nurturant effects:** The description of the effects of a Model can validly be categorized as the direct or instructional effects and indirect or nurturant effects. The instructional effects are those directly achieved by leading the learner in certain directions.

The diagrammatic representation of the instructional and Nurturant effects of a model is given below

Diagram 2.4

Diagramatic representation of Instructional and Nurturant effects



2.3 CONCEPT ATTAINMENT MODEL (CAM)

The term Concept Attainment Model is historically linked with the work of Jerome S.Bruner and his associates. This Model is intended to teach specific concepts by comparing and contrasting examples that contain the concept with examples that do not contain the concept. It is built up from Bruner's work on the cognitive activity called categorizing. He is of the opinion that categorizing helps to reduce the complexity of environment and necessity for concept learning.

Categorizing activity has two components: the act of concept formation and the act of concept attainment. Concept formation is the act by which new categories are formed while in Concept attainment, the concept is determined in advance, and the task is to determine the concept on the basis of exemplars and non-exemplars.

The purpose of Concept Attainment Model is

1. to understand the nature of concepts,
2. to be more effective in attaining concepts,
3. to teach specific concepts, and
4. to become more aware of conceptualising activity and to employ it with unorganised data

2.3.1 The six elements of a concept

The main elements of a concept are name, essential attributes, non-essential attributes, positive exemplars, negative exemplars and rule.

1. **Name** : The name is the term or label given to a category. “Apple” “square”, “parliament” are all names given to a range of experiences, objects, configuration or process. As Concept Attainment Model is an inductive model, it proceeds from specific to general, the name must be written first.
2. **Essential Attributes** : The common features or characteristics that cause to place dissimilar items in the same category are called essential attributes. It is also called criteria or critical attributes. It helps pupils to distinguish between the exemplars and non-exemplars of the concept.
3. **Non-Essential Attributes**: Some of the slight difference among items in a category are called non-essential attributes. The task of learning a new concept is made more difficult by the presence of many non-essential attributes.
4. **Positive Exemplars:** Bruner used the term exemplar to indicate the array of all instances of the concept. Those instances that contain all the critical attributes are called positive exemplars.
5. **Negative Exemplars:** The absence of one or more essential attributes makes an instance a negative exemplar of the concept.
6. **Rule**: It is a statement specifying the attributes of a concept. A rule or definition is a device for summarising the findings of the search for attributes. A correct

rule statement merely reflects successful utilisation of the other elements of a concept.

2.3.2 Types of concepts

Attributes combine in three different ways to produce three types of concepts.

1. **Conjunctive Concepts** : In a Conjunctive concept , the appropriate values of several attributes are jointly present. Conjunctive concepts are often the easiest to learn and to teach because of the additive quality of their attributes and values. Simply, attributes and values are added together to produce a Conjunctive concept.
2. **Disjunctive Concepts** : Disjunctive concepts are defined by the presence of some attributes and the absence of others.
3. **Relational concepts** : A Relational concept is one that has a specific relationship between attributes. When a learner can
    - identify the positive exemplars of a concept from the negative exemplars on the basis of essential attributes,
    - distinguish between the essential and non-essential attributes in the positive exemplars of a concept, and
    - define the concept in terms of its attributes,

we can say that the learner has attained the concept.

2.3.3 Variations in Concept Attainment Model

There are three variations in concept attainment that have been built from the basic study of Bruner and his colleagues. Each has a slightly different syntax but all are developed from a common conceptual base.

1. **Reception Oriented Concept Attainment Model** : In this Model, the students are more receptive than active. The teacher has a more dominant role, acts as recorder, keeping track of the hypothesis and supplies additional examples.
2. **Selection Oriented Concept Attainment Model:** The Model places responsibility in the hands of the students. An example is not labelled until the student asks whether it is a 'yes' or 'no'. Student controls the sequence of the examples. The tracking and analysis of attributes is not as formal in this model as in Reception model. This model leads to a quicker attainment of the concept.
3. **Unorganised Model of Concept Attainment** : This Model is much more a group discussion than an instructional game, like the Reception and Selection strategies. The teacher's role is to facilitate discussion and ensure that it focuses on the development of a concept in the material.

Other variations of Concept Attainment Model suggested by Eggen, Kauchak and Harvert (1979) are the following:

4. **Concept Learning :** Concepts can be learned through the processof observation.

5. **Concept Enrichment** : When the concept formed by the students is not complete , concept enrichment exercise may be used. The goal of this is to define concepts more precisely.

2.3.4 Components of Concept Attainment Model

1. **Syntax**: The syntaxes of Reception Model of Concept Attainment and Selection Model of Concept Attainment Model are as follows.

A. Syntax of the Reception Model of Concept Attainment :

Phase 1: Presentation of data and identification of the concept

- Teacher presents labelled examples
- Students compare attributes of positive and negative examples
- Students generate and test hypotheses
- Students state a definition according to the essential attributes.

Phase 2: Testing the attainment of the concept

- Students identify additional unlabelled examples as ‘yes’ or ‘no’
- Teacher confirms students hypotheses
- Teacher names the concept

- Teacher restates definition according to essential attributes
- Students generate examples

Phase 3: Analysis of thinking strategies

- Students describe thoughts
- Students discuss role of hypotheses and attributes
- Students discuss type and number of hypotheses
- Teacher evaluate the strategies

In the first phase of the Reception Model, the teacher presents the positive and negative examples in the pre-determined sequence. This data may be in the form of pictures, anecdotes, sketches, diagrams, events or any other illustrations.

The pupils are told that there is one idea common in all the positive examples and that they have to compare and justify the attributes and form some hypotheses about the concept. When the pupils have analysed the examples and hypothesised, teacher ask the students to state a definition according to the essential attributes.

In phase two, the teacher presents unlabelled examples, and the students identify them as positive or negative. The teacher asks for reasons and confirms their hypothesis. When the teacher knows that the students have attained the concept, the teacher names the concept. The teacher does not ask the students to name it because they are not familiar with the name of the concept. Only when the students have already attained the concept, the teacher uses the Model for concept clarification and

may ask the students to name the concept. To test the attainment of the concept, the teacher asks the pupils to generate examples and label them as positive or negative instances of the concept.

In the third phase of the model, the teacher analyses the thinking strategies employed by the students. The students report their pattern of hypothesising, whether they focussed on attainment of concept, whether they did so one at a time or several at once, and how they changed their hypothesis when it was not confirmed.

Reception Thinking Strategies :

The two Reception strategies are Wholist and Partist. The Wholist strategy is to take the first positive instance of the concept and use it into, as a guide, comparing all the attributes of the first instance to those of subsequent instances to and modifying the hypothesis accordingly. It is similar to Focussing. In Partist strategy, the choice of a hypothesis is based on only part of initial strategy. The Wholist strategy is regarded as the ideal strategy, one that minimises strain and maximises performance.

B. The Syntax of the Selection Model of Concept Attainment

Phase I: Presentation of data and identification of attributes

- The Teacher presents unlabelled examples
- Students enquire which examples are positive based on the first positive instance given by the teacher
- Students generate and test hypothesis.

Phase II : Testing attainment of concepts :

- Students identify additional unlabelled examples.
- Students generate examples
- Teacher confirms hypothesis, names concept and restates definition according to essential attributes.

Phase III : Analysis of thinking strategies :

- Students describe thoughts
- Students discuss the role of hypothesis and attributes
- Students discuss type and number of hypotheses
- Teacher evaluates the strategies

Selection Thinking Strategies

According to Bruner and his associates there are four strategies used in Selection oriented Concept Attainment Model, viz.

1. Simultaneous scanning
2. Successive scanning
3. Conservative focusing
4. Focus gambling

In Simultaneous scanning, the student hypothesises more than one concept within first instance and his choice of next instances to first will be determined by the elimination of as many hypothetical concepts as possible per instance chosen.

A Successive scanner forms a concept hypothesis from the given positive instance and then tests it against other examples. The disadvantage here is that there is no assurance of giving maximum information possible. The advantage is the relief from cognitive strain as limited interference is required. The only strain is, one memory to keep track of the hypotheses that have been tested and which require further testing.

A student with the Conservative focusing strategy finds a positive instance and chooses instances that come after one attribute at a time. By choosing a particular instance as focus, the person decreases the complexity and abstraction of the task of keeping information he has encountered. Hence there is relatively more cognitive economy.

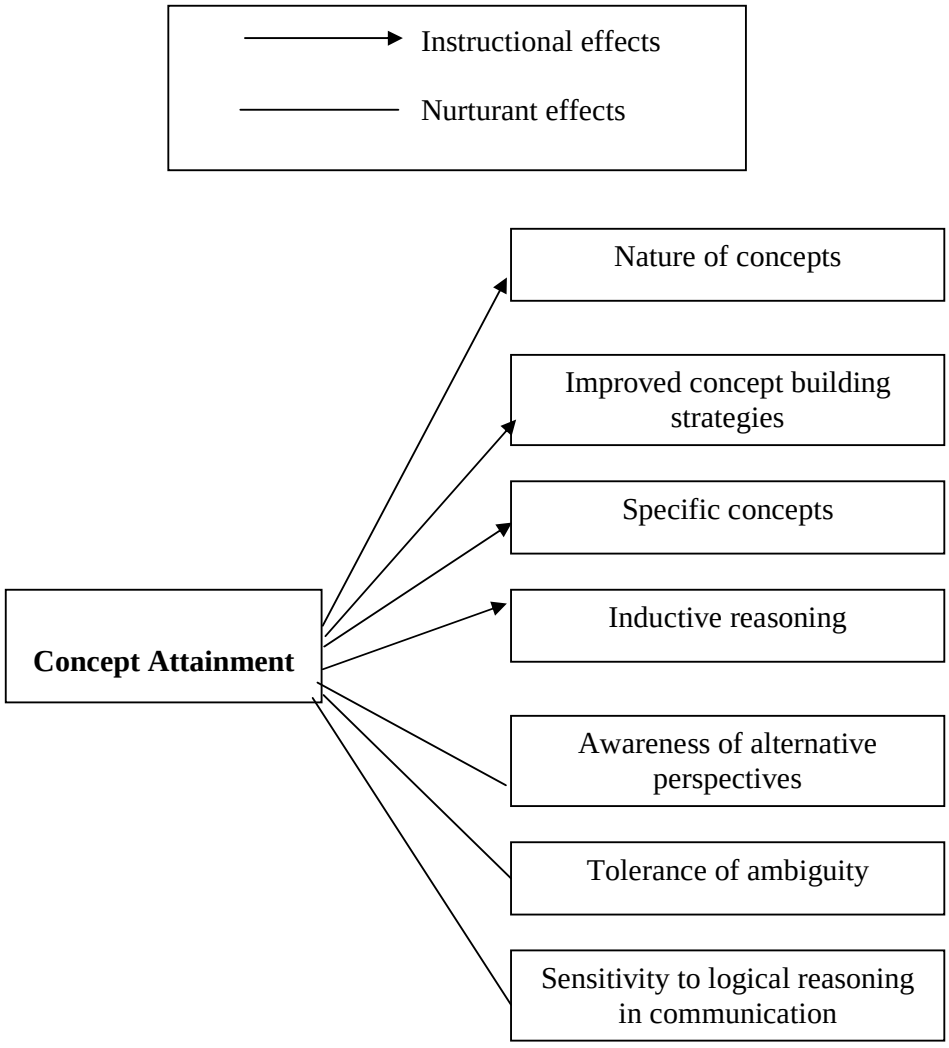
In Focus gambling, the student uses positive instance as a focus and changes more than one attribute at a time. The strategy makes use of fewer test choices. But there may be equal chances of requiring more test choices and therefore the name Focus gambling.

2. Instructional and Nurtural Effects :

The instructional and nurturant effects of Concept Attainment Model are depicted in the following figure.

Diagram 2.5

Instructional and Nurturant effects of Concept Attainment Model



3. **Social System :** In the Concept Attainment Model, the teacher is the controller of the situation. The three major functions of the teacher during concept attainment activity are to record, prompt (cue) and present additional data.

4. **Principles of reaction :** Principles of reaction guide the teacher's response to the learner. During the flow of the lesson, the teacher wants to be supportive of the student's hypotheses about concepts but to emphasize that they are hypothetical in nature and to create a dialogue in which the major content is a balancing of person's hypothesis against another.

5. **Support system :** Concept Attainment lessons require that positive and negative exemplars be presented to the students.

2.3.5. Rationale behind the Concept Attainment oriented instructional strategy

An instructional strategy is defined as a sequence of teaching. Learning models are designed to promote the attainment of a particular type of objectives. It is some thing a teacher arranges that is designed to establish the interaction between the teacher, the student, the subject matter, or any combination of these three dimensions.

Within the cognitive domain there is an important set of goals called information processing. Information processing goals are cognitive goals that focus on the acquisition of knowledge through an analysis of data from the world around us. Jean Piaget views cognitive growth as an interaction between the environment and the

child’s cognitive structure. Cognitive structure refers to the sum total of organized knowledge that an individual possesses at a time.

The goals of information processing are

- the development of intellectual capacities, and
- the acquisition of content.

Teachers who are interested in information processing goals have a dual objective:

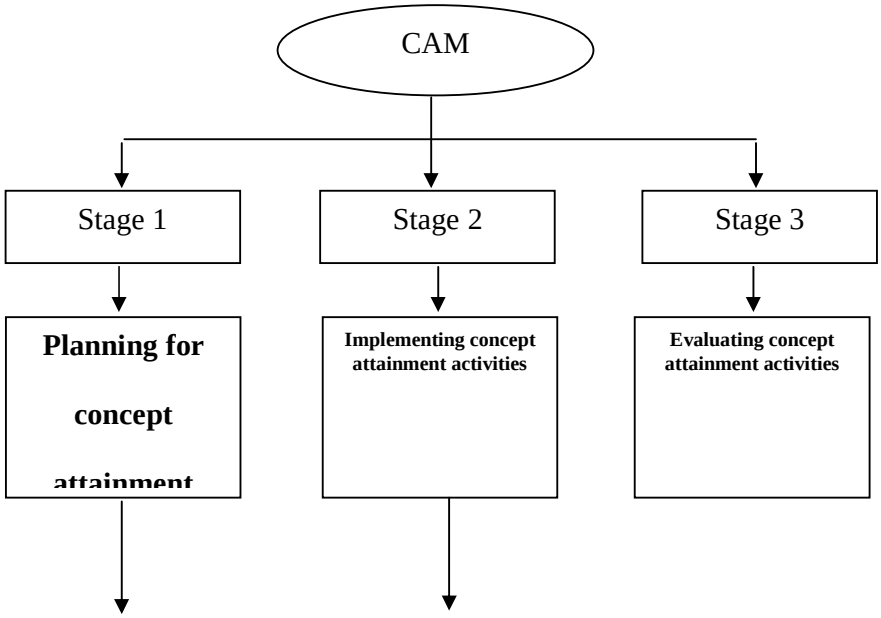
(1) To help students to acquire bodies of useful information, and

(2) To help them develop the thinking skills.

The three stages of Concept Attainment Model are depicted in the following diagram.

Diagram 2.6

A diagrammatic representation of strategies of Concept Attainment Model



- Identification of goals **- Presenting exemplars**

- Selection of exemplars **-Analysis of exemplars**

- Sequencing exemplars

- Medium of presentation

Chapter – 3

REVIEW OF RELATED LITERATURE

INTRODUCTION

The survey of related literature implies locating, analyzing and evaluating findings of relevant researches, study of published articles, going through portions of encyclopedias and abstracts etc. According to Good, Scates and Barr(1957), “a survey of related literature helps to show whether the evidence already available solves the problem adequately without further investigation and thus to avoid the risk of duplication”.

Since good research is based upon everything that is known in the area of research, the review of related literature provides a basis for the formulation of hypotheses. The review of related literature helps the researcher to delimit and define his problem, and also to avoid sterile problem areas.

The literature reviewed is organized under three heads viz.,

(1) Studies related to Concept Formation Techniques,

(2) Studies related to Concept Attainment Model, and

(3) Studies related to Teaching of Arabic.

3.1 STUDIES RELATED TO CONCEPT FORMATION TECHNIQUES

Several studies were conducted to investigate how children conceptualize from their experiences and what are the techniques used by them in concept attainment. A series of tests were administered to identify the effects of several factors on concept formation. Some of these studies are reviewed below.

Carol (1968) investigated the effects of concrete and formal cognitive behaviour and methods of instructional feedback (minimum and maximum) on the generalization of concept attainment over varying intervals of time between an initial learning and test task. It was found that there was a significant relationship between cognitive level and performance, and the formal group performed more efficiently than the concrete group.

Another study conducted by Butts (1971) on the degree to which children conceptualize from science experience revealed that more and better concepts will be developed when the student is given more opportunity to experience. Moreover first hand experience will result in meaningful learning.

In the study conducted by Gordon (1972), some strategies used in concept attainment were identified. The sample consisted of 60 nursing clinicians given the task of diagnosing the current state of a patient from among 32 possible states when meaningful materials permitted prediction of the most likely hypotheses, subjects took

advantage of this early in the task. Similarly, when opportunities to test attributes were limited, more information was extracted by multiple hypotheses testing. Both of these procedures increased inferential strain but decreased the risk of not having sufficient information to attain the concept.

An attempt was made by Ingison (1973), using 400 students, ranging from 5 to 15 years of age, to administer a series of tests of concept learning and development as a test of the Conceptual Learning and Development (CLD) model. Various levels of attainment of the concept of the ‘equilateral triangle’ were measured.

In the study conducted by Hills and Ochs (1974) ‘Model Rockets as Concept Models’, it was revealed that hobbies could serve as a powerful vehicle in the teaching of difficult concepts. The current Model Rockets can be utilized as an excellent model for learning many different science and mathematical concepts. They stated that the troubles of using concepts could be cleared through this model concept. The Model Rockets had become the mechanism for understanding several important science and mathematical concepts.

Information collected by Ngoi (1974) validated a model of level of concept attainment to be used in the assessment of elementary school children’s attainment of 15 theoretical concepts within the conceptual scheme of the particle nature of matter. The findings showed that there was an assistance of a cumulative hierarchy to the levels of study, and the scaling of these levels appears to be different from the order

suggested in the model. The order proceeds from recall to application and to generalization.

Another study conducted by Swanson (1974) on the effects of a number of positive and negative instances, concept definition and emphasis of relevant attributes on the attainment of three environmental concepts by sixth grade children. He found that his students actually performed better when given examples and non-examples with a definition.

An analytical study by Povey and Hill (1975) raised a question: ‘can pre-school children form concepts? They selected 56 children between the ages of two years and four months, and four years and ten months and were given tests relating to the acquisition of both the specific and generic concepts. The results conflict with the widely held view that pre-school children cannot form generic concepts. Nearly all the children were able to identify the specific concepts.

The objective of Shyres’ (1975) study was to understand the concept of proportionality through a training sequence based upon the structure, which underlines the formal level. The findings showed that there was no evidence of transfer of structure except in the presence of identical elements. However, training showed transfer to the overall concept of proportionality with both experimental groups making a significant gain from pre-test to post-test.

Makhdom (1976) investigated the effects on concept attainment of training for hypothesizing and evaluating defining attributes. The findings of the study did not show the training for hypothesizing and evaluating to be sufficient for formal level concept attainment among subjects able to classify examples and non-examples and to discriminate and name attributes.

An attempt was made by Buchman (1979) to investigate the relationship between cognitive style and concept attainment efficiency, success and strategy in college undergraduates. The findings showed that the conditions of high task complexity and salient irrelevant cues produced a significant but low relationship between cognitive style and concept attainment efficiency and success.

In a study, Pandey (1981) evolved teaching styles, on the basis of verbal interaction taking place in the class-room, determined the effect of teaching style on concept attainment at various levels, to identify the teaching behaviours commonly exhibited by teachers and determined the effect of individual teaching behaviour on concept attainment. He found that all teaching behaviours are not frequently observed in teachers. The teachers' questioning has significant positive effect on both the levels, classificatory and formal of concept attainment.

With a view to study the process of concept attainment, Lee (1983) investigated the interactive effects of the personal traits of conceptual development and the different presentation forms of concept attainment. It was found that there was a statistically

significant difference between instruction based on the definitions and examples and that based on the examples only.

Mathew (1984) conducted a study to determine pre-requisites for learning certain concepts in physics of standard IX in high schools of Kerala. A test of concept attainment conducted on 460 students showed that:

(1) the use of every concept in physics at high school level is based on certain essential pre-requisites, and.

(2) concept formation in physics depends on the pre-requisite knowledge of the students.

In his study, Hanclosky (1985) made a comparison of task analysis, advance organizer and concept elaboration methods in teaching concepts and principles. He found that the task analysis group performed significantly higher than the advance organizer and concept elaboration groups in both concept and principle learning.

Another study conducted by Jagadish (1986) based on the students awareness of productivity oriented aspects with reference to the concepts learnt in mathematics up to standard IX to prepare a new strategy of teaching for productivity. The main finding of the study was that the students' awareness in economic productivity with reference to the concepts learnt in mathematics is not at all satisfactory.

The study conducted by Ponick (1986) investigated the instructional design that facilitates concept learning and focused on manipulating visual cognitive processes

affecting concept attainment by the learner. The sample consisted of 71 university undergraduates. There was no significant difference among the treatment groups while significant difference was found in favour of the animation treatment.

An important study by Jacob (1988) about the functioning of concept formation and intellectual development showed wide variation in piagetian schemes of concepts taught than in specific scientific concepts. Insignificant correlation was also seen among achievement in science, some selected physical science concepts and piagetian tasks.

Johnson (1992) demonstrates a model for teaching concept attainment that gives students experience in conceptual thinking. By studying a particular concept inductively, examining examples and non-examples, students work together to come to share meanings of the concept and then reflect upon their thinking.

Another study of Pritchard (1994) described the concept attainment process as students develop skills for inductive and deductive thinking while learning subject matter in any field in a constructive way. A definition and overview of the model are presented, with guidelines for using the concept attainment approach to design and deliver instruction and to evaluate student learning of subject matter and thinking skills.

In a recent study conducted by Nelson and Pan (1995), an instructional programme was constructed that explored the responses and perceptions of pre-service

elementary school teachers while finding and using characteristics to construct categories or concepts. The programme integrated ideas about teaching thinking skills using computers and video-disk images were used to develop programmes so that students could organize concepts.

Another analytical study was conducted by Portwood (1995) to determine if generalities, examples and practice presentation forms as defined in the component display theory would affect the learning of concept-classification, procedure-using, and principle-using tasks among Malaysian students. The results of the study indicated that significant differences did exist among the treatment groups within the presentation forms for the principle-using tasks.

3.2 STUDIES RELATED TO CONCEPT ATTAINMENT MODEL

Concept Attainment Model is a member of the Information Processing Family Models. Several studies were conducted to determine whether Concept Attainment Model is effective than many other teaching methods. Some of such studies are briefed below.

Mills (1973) studied the effect of a proposed model for motivation on the Concept Attainment Model of selected high schools and college students. It was found that the instructional use of the proposed model for motivation was effective in increasing concept attainment of the high school population whereas for the undergraduate college population, the model made no difference in concept attainment.

Peters (1973) determined whether the Concept Attainment Model that encompassed a systematic procedure for defining concepts and structure material to facilitate comprehension for both good and poor readers, was superior to the textbook approach. He found that there was a significant difference between the effectiveness of Concept Attainment Model and the textbook approach.

An attempt was made by Bihari (1986) to study the effectiveness of three training strategies in teaching Concept Attainment Model. The study was in terms of (a) teaching competency of student teachers, (b) understanding of the model, (c) coaching through the model, (d) reaction towards the model and (e) willingness to implement the model. The researcher found that three training strategies namely peer feedback and practice in quardo, peer feedback and practice in pairs and demonstration followed by practice in quardo were equally effective for developing teaching competence.

The effectiveness of Concept Attainment Model (Reception oriented) with variations in demonstration in terms of specific teaching competencies of pre-service teacher trainees was studied by Choudary and Katre (1986). It was found that

(1) the reactions of the students did not differ due to the different treatment given to the groups, and

(2) a large body of student teachers' reaction to the model and their willingness to implement the model indicate a favourable reaction towards it..

The objective of the study conducted by Dalton (1986) were to learn about teachers' thinking processes as they attempted to implement in their classrooms two recently acquired Models of Teaching (Concept Attainment and Synetics). He investigated the relationship of these processes with their success in transferring the new Models of Teaching into their active teaching. The sample consisted of 10 teachers with no previous experience with either the Concept Attainment teaching strategy or the Synetics strategy. Two teachers with three years of experience were used in both strategies. He found that teachers using these two strategies reported nearly twice as many thought related to both goals/objectives and instructional procedures.

Das (1986) studied the effectiveness of Concept Attainment Model in terms of (A) teaching competencies of pre-service student teachers, (B) understanding the Model, (C) reaction towards the Model at the various stages of training, (D) coaching the Model and (E)previous achievement. He found that Concept Attainment Model is effective in developing the teaching competencies of pre-service student teachers.

In another study Gagnrade (1987) compared the achievement on science of class VIII and class VII students when taught using a combination of Concept Attainment Model and Lecture method and when taught through conventional method by taking separately intelligence, attitude towards science and previous year achievement in science as covariates. He found that the combination of Concept Attainment Model and Lecture method was significantly superior to the Conventional Method of teaching science to class VIII and class VII students when the groups were matched in respect of intelligence, attitude towards science and previous year achievement.

A comparative study by Sushama and Singh (1987) evaluated the effectiveness of Concept Attainment Model and Biological Science Inquiry Models of teaching on pupils' achievement in biological studies. Three sections of class VIII students were taken for the experiment. Pre-test and post-test were conducted for the experiment and control groups before and after the experiment. From their study, it was found that Concept Attainment Model is more effective than Biological Science Inquiry Model.

Louvet (1988), using the Concept Attainment Model, developed three strategies for second language instruction: the Reception, the Selection and the organized materials strategies. All these strategies use analytical and evaluative thinking skills during the Concept Attainment lesson, focusing on teacher objectives, general content, and the process being used. Specific examples are provided of how the three strategies can be used in classrooms.

In another comparative study, Pani (1988) compared Concept Attainment scores of groups through Reception and Selection strategies of Concept Attainment, and studied the effect of personality factors on Concept Attainment scores of two groups. He found that the Reception and Selection strategies were equally effective in terms of attainment of science concepts.

With a view to assess the concept attainment, Zacharia (1989) assessed the effect of Concept Attainment Model on the teaching of Economics in standard VIII in schools of Kerala. It was concluded that it is possible to teach concepts in Economics

in high school classes through Concept Attainment Model. Moreover Concept Attainment Model is more effective than the conventional method in teaching of Economics.

3.3 STUDIES RELATED TO TEACHING OF ARABIC

Many studies were conducted by researchers to find out the difficulties faced by teachers and students of Arabic language. Researches were carried out to prepare various types of instructional aids, and to offer insights into new strategies. Some of such studies are mentioned here.

Carrol and Leonard (1963) conducted a study in the Hardward summer school in 1962. A Control group was taught Arabic in the traditional grammar translation method, for approximately 15 hours, while the Experimental group used a set of self-instructional materials accompanied by tapes for the same amount of time. These materials are called ‘grafdrils’. The authors concluded from the results of the tests that the new technique is, in general, a more efficient method of teaching a writing system than either (a) a lecture type presentation or (b) self-study from a textbook.

In his two-volume work, Mansoor (1965), introduced students to modern Standard Arabic with concentration on the style employed in formal documents and international treaties. It is assumed that the intermediate student using the Arabic readers has control of the essentials of Arabic grammar, but has not been adequately exposed to modern literary Arabic texts and especially documentary texts.

In another study, Mc Carus and Rammuny (1968) prepared three sets of instructional materials for the teaching of Arabic phonology and script, on the basis of the studies of (1) the phonologies of American English and Modern Literary Arabic (MLA), (2) the MLA writing system, and (3) the vocabularies of 11 Arabic textbooks used in the United States. The effectiveness of these materials was tested in the classroom and revisions were made.

An attempt was made by Rammuny (1973) to study individual instruction and the teaching of Arabic phonology and script. The results obtained from experimentation with this new approach have offered new insights into methods of teaching and students' needs. The programme was used by four classes of first year Arabic of the Department of Near Eastern Studies at the University of Michigan. It attempts to evaluate their effectiveness in facilitating the learning of Arabic sounds and writing systems.

A study was conducted by Omar (1974) to design a manual to provide instruction for persons who have learned a dialect of Eastern Arabic well and who desire to use a Western Arabic dialect, the Moroccan. Attention is given to the recognition of correspondences between the two dialects, emphasizing those deceptive correspondences that may lead to interferences in the transfer from one dialect to another.

Thompson and Thomas (1983) describe various aspects of written Arabic that have been identified as contributors to observed error production and weaknesses in writing skills of Arabic-speaking learners of English.

In an investigation, Campbellt (1986) studies why graduates of Arabic courses in English-speaking countries are so few in number and why they so often compare poorly in spoken language performance with graduates of other language courses. The most important factor in this phenomenon is the gap that separates written Arabic from spoken Arabic.

A study was made by Magrath (1987) outlines a curriculum model for Arabic that closely follows the natural approach. The method stresses skill development through language use in a variety of realistic situations from the outset of the course. It differs from traditional approaches to Arabic instruction in its emphasis on the communication of meaningful messages rather than strict focus on grammar and translation.

In his analytical study, Remsbury (1988) considers interference problems of Arabic-speaking learners of French and English on four levels: single-word, grammar-rule, intonation, and the study of French and English literature.

Chalhoub (1993) investigated whether different groups of native speakers assess second language learner's language skills differently. For three elicitation techniques, subjects who were six learners of college level Arabic as a second language, tape

recorded performing three tasks: participating in a modified oral proficiency interview, narrating a picture or a story, and reading a text aloud. Results indicated variability of performance across tasks as well as between individuals. In sum, it was found that oral ability, tasks and raters -all affected students' scores.

An investigation was made by Maamouri on the causes of low levels of educational achievement and high illiteracy rates in some Arab countries. He found that its causes are directly related to the complexities of Standard Arabic language used in formal schooling and non-formal education. He recommended that the Arabic language needs urgent language planning strategies to standardize it and make it more accessible to many of its speakers

CONCLUSION

The studies related to Concept Formation techniques show that children conceptualize from their learning experiences. They also reveal that more and better concepts will be developed when the students are given more opportunity to experience first hand experience. All research studies on Concept Attainment Model revealed that the Model is highly effective than the Conventional Method in enhancing concept attainment among school students. Many studies related to Teaching of Arabic showed that there are serious complexities in the teaching of standard Arabic language in formal schooling and non-formal education. There is an urgent need to apply new strategies to vitalize the teaching-learning environment.

All these related studies helped the investigator to know the different dimensions of concept attainment and directed him in conducting his study on the effectiveness of Concept Attainment Model over the Conventional Method in teaching Arabic Grammar of standard IX students.

Chapter – 4

METHODOLOGY

Methodology occupies a very important place in any kind of research. The vehicle of research cannot perform its function without it, since it is methodology that lays out the way that formal research is to be carried out and outlines the detailed descriptions of variables and procedures adopted. Methodology is the description of procedures or techniques adopted in a research study or investigation. It outlines the entire research plan. It includes the description of the techniques or methods and tools the researcher has used for collecting, organizing and analyzing the data.

The details of the method adopted, variables of the study, tools used, sample selected, procedure adopted in the administration of the tools and statistical techniques used for the analysis of data are given below.

4.1 METHOD ADOPTED

The study is intended to test the effectiveness of Concept Attainment Model of teaching over the Conventional Method of teaching with special emphasis on Arabic Grammar of standard IX. Experimental design has been adopted for the study. Experimental design gives valid conclusions about relationship between independent and dependent variables (Best and Khan, 1989).

In the present study, the experimental group and control group were naturally assembled groups. So the investigator decided to conduct the study using the 'Non-equivalent pre test-post test experimental design'.

4.2 VARIABLES OF THE STUDY

Variables are the conditions or characteristics that the experimental group manipulates, controls, or observes. In the present study, the independent; dependent and the control variables play their own roles.

4.2.1. Independent Variable

In experimentation, the manipulated variables are called independent variables. It is under direct control of the experiment that may vary it in any way desired (Sax, 1979). In this study, the method of teaching i.e. Concept Attainment Model and Conventional Method of teaching are the independent variables.

4.2.2 Dependent Variable

The dependent variables are conditions or characteristics that appear, disappear or change as the experimenter introduces, removes or changes independent variables (Best, 1980). Here Achievement in particular Arabic Grammatical areas of standard IX is the dependent variable.

4.2.3 Control Variable

The variables whose effects must be controlled are called Control variables. The Control variable considered for the present study are previous achievement in

Arabic Grammar, which are pre-requisites for mastering the new topic, sex, age, teacher factor, time of data, length of instruction, etc

4.3 TOOLS USED IN THE STUDY

Tools are the techniques which are appropriate for the collection of certain type of evidence or information for conducting the research. The tools used for the present study are given below.

4.3.1 - Lesson transcripts based on Concept Attainment Model

4.3.2 - Lesson transcripts based on Conventional Method of teaching

4.3.3 - Achievement Test in Arabic Grammar (used as pre-test and post-test)

The detailed description of the tools used in the study is provided below.

Lesson transcripts

The investigator prepared lesson transcripts for the grammatical areas from IXth standard Arabic textbook. Lesson transcripts were prepared according to Concept Attainment Model and Conventional Method of teaching for each grammatical area. Thus, ten lesson transcripts were prepared based on Concept Attainment Model and Conventional Method. The prepared lesson transcripts were shown to experts in the field of Education and Arabic education and appropriate modifications made.

The details regarding the preparation of the lesson transcripts are given below.

4.3.1 Lesson transcripts based on Concept Attainment Model

The investigator tried to follow the syntax of Concept Attainment Model (Reception model) for the preparation of the lesson transcripts.

Syntax of Concept Attainment Model (CAM)

Syntax of the CAM describes the main steps of teaching using the Model. There are three phases in the syntax of the Reception Model of Concept Attainment. The activities in each phase are as follows.

Phase 1 : Presentation of data and identification of the concept

- Teacher presents labelled examples
- Students compare attributes of positive and negative examples
- Students generate and test hypotheses
- Students state a definition according to the essential attributes.

Phase 2: Testing the attainment of the concept

- Students identify additional unlabelled examples as ‘yes’ or ‘no’
- Teacher confirm students hypotheses

- Teacher names the concept
- Teacher restates definition according to essential attributes
- Students generate examples

Phase 3: Analysis of thinking strategies

- Students describe thoughts
- Students discuss role of hypotheses and attributes
- Students discuss type and number of hypotheses
- Teacher evaluate the strategies

Concept Attainment Model is designed to teach concepts only. **Four steps** have been identified in planning and organizing Concept Attainment lessons. They are

(a) Selecting the concept,

(b) Analyzing the concept,

(c) Determining objectives, and

(d) Preparing examples.

There are four activities involved in the **first step** of selecting a concept. They are

(a) Locating the concept,

(b) Deciding if it is a concept,

(c) Deciding if it is worth teaching, and

(d) Deciding if it is appropriate for the learners.

The **second step** is analyzing the concept in terms of

(a) Its essential attributes and non-essential attributes, and

(b) Its type (conjunction, disjunction, or relational).

The investigator has listed all the essential and non-essential attributes of the concepts that he had chosen. The types of the concepts were also determined.

The **third step** is determining objectives of teaching Concept Attainment Model can be employed towards several educational ends, which can be broadly classified into a general objective 'teaching a concept'. It may mean any or all of the following specific behavioural objectives:

(i) Students will correctly recognize unlabelled examples,

(ii) Generate new examples of the concept,

(iii) Locate examples of the concept in textbook, or other resources,

(iv) Locate an example and describe the essential attributes as they appear in this new concept, and

(v) State the concept rule.

The **last step** in preparing a lesson is preparing examples. The 'yes' examples should contain all the attributes of the concept. The 'no' examples should contain none of the attributes or only some of the attributes. If the concept is conjunction, the 'yes' examples must be introduced firstly. If the concept is disjunction, 'no' examples should

be introduced firstly. It is necessary that the medium selected for presenting the examples should be a suitable one.

Keeping the key aspects of Concept Attainment Model explained above, the investigator prepared 10 lesson transcripts for teaching Arabic Grammar of standard IX.

The grammatical concepts selected were

1. The Subject (fa'il),
2. Subject and Predicate (mubtada' and khabar),
3. The Object (maf'ulun bihi),
4. Verbal sentence (jumlathun fi'aliyyah),
5. The Sentence (jumlathun mufeedah),
6. The Subjunctive mood (nasb) to imperfect verbs,
7. The Quiescent mood (jazm) to imperfect verbs,
8. The Genitive (jar-al-ism),
9. The Adjective (na'th), and
10. The verb "Kana" and its associates.

The age of the students, their intelligence level and previous knowledge were also taken into consideration while lesson transcripts were prepared. The media for presenting the examples were demonstrations, exhibiting objects, diagrams, charts, pictures and verbal examples.

After the lessons were prepared, the investigator made a teaching analysis using the following questions, prepared by Joyce and Weil (1978).

(1) Did the teacher state the purpose of the game?

(2) Did the teacher explain the procedure of the game? (How the 'yeses' and 'nos' function)

(3) Did the initial 'yes' clearly contain the essential attributes?

(4) In teaching a conjunction concept, did the teacher begin with 'yes' example?

(5) Did the teacher ask questions that focused students thinking on the essential attributes?

(6) Did the teacher ask the students to compare the 'yes' examples?

(7) Did the teacher ask the students to contrast the attributes of the 'yes' examples with those of the 'no' examples?

(8) Did the teacher present labeled examples?

(9) Did the teacher ask the students to generate and test the hypothesis about the identity of the concept?

(10) Did the teacher ask the students to name the concept?

(11) Did the teacher ask the students to state the essential attributes of the concept?

(12) After the concept was agreed upon, did the teacher present additional examples and ask whether they contained the concept?

(13) Did the teacher ask the students to justify their answers?

(14) Were the students able to supply their own examples to fit the concept?

(15) Did the teacher ask the students to justify their examples by identifying the essential attributes?

(16) Did the teacher ask the students to describe the thinking process they used in attaining the concept?

(17) Did the teacher ask the students to reflect on the roles of the attributes and concepts in their teaching strategies?

(18) Did the teacher ask the students to evaluate the effectiveness of their strategies?

Based on the suggestions of the experts, some changes were made in the form and content of the lesson transcripts. Model lesson transcripts are given as Appendix A (general outline) and Appendix B (English version and Arabic version).

4.3.2 Lesson Transcripts based on the Conventional Method

The lesson transcripts, which were prepared in the Conventional Method are included as Appendix C (English and Arabic versions).

4.3.3 Achievement Test in Arabic grammar (used as pre-test and post-test)

An Achievement Test was conducted as pre-test and post-test to test the previous knowledge and post academic ability of students. The test contained 25 objective type questions. One score was assigned for each correct answer.

Items were prepared keeping in mind the objectives of learning and the content of the topics. Adequate directions were provided in the question paper. Separate answer sheets were given for answering. Out of the 25 questions, seven were at knowledge level, nine were at understanding level and nine were at application level. The maximum marks for the test was 25. The test items prepared were shown to experts and some changes effected accordingly. The Achievement Test in Arabic Grammar is provided as Appendix D. The details of weightages given to objectives, content selected, and difficulty level along with the blue print are given below.

4.3.3.1 Weightages to Objectives

Categories of objectives selected for the preparation of the test are knowledge, understanding and application. The details of weightages assigned to these objectives are given below as Table 4.1.

Table 4.1

Weightages to objectives

Sl. No.	Objectives	Marks	Percentage
1	Knowledge	7	28
2	Understanding	9	36
3	Application	9	36
Total		25	100

4.3.3.2 Weightages to Content

The weightages assigned to the selected grammatical areas in Arabic are given in the following table.

Table 4.2

WEIGHTAGES TO CONTENTS

Sl. No.	Content	Marks	Percentage
1	**The Subject**	2	8
2	Subject and Predicate	2	8
3	The Object	2	8
4	Verbal sentence	1	4
5	The Sentence	2	8
6	The Subjunctive mood	3	12
7	The Quiescent mood	3	12
8	The Genitive	3	12
9	The Adjuctive	3	12
10	The verb ‘Kana’ and its associates	4	16
Total		25	100

4.3.3.3 Weightages to Difficulty Level

The details of weightages assigned to the different levels of difficulty of each item in the Achievement Test are given below as Table 4.3.

Table 4.3

Weightages to Difficulty Level

Sl. no.	Difficulty Level	Marks	Percentage
1	Easy	9	36
2	Average	9	36
3	Difficult	7	28
Total		25	100

4.3.3.4 Blue Print of the Test

The Blue Print is the 3-D chart showing weightages assigned to the different contents, objectives and form of questions at a glance. The Blue Print of the Achievement Test is provided as Table 4.4.

Table 4.4

Blue print of the Achievement test

Objectives / Contents	Knowledge	Understanding	Application	Total
The Subject	1(1)	1(1)	-	2
Subject and Predicate	-	1(1)	1(1)	2
The Object	1(1)	-	1(1)	2
Verbal sentence	1(1)	-	-	1
The Sentence	-	1(1)	1(1)	2
The Subjunctive mood	1(1)	1(1)	1(1)	3
The Quiescent mood	1(1)	2(1)	-	3
The Genitive	-	1(1)	2(1)	3

The Adjective	1(1)	1(1)	1(1)	3
The verb ‘Kana’	1(1)	1(1)	2(1)	4
Total	7	9	9	25

N.B: Numbers inside brackets indicate marks and numbers outside brackets indicate number of questions.

4.4 SAMPLE OF THE STUDY

Sampling means the procedure in which a subject is selected from a large number of observations. A sample represents a broader population.

The present study was conducted on a total sample of 40 IXth standard students of Muslim Girls Higher Secondary School, Kaniyapuram, Trivandrum. The students of two divisions of standard IX were selected. One group was considered as the Experimental group and the other as Control group. Each group comprised 20 students.

4.5 PROCEDURE ADOPTED IN EXPERIMENTATION

The procedure adopted for conducting the experiment is as follows.

4.5.1 Pre-test Conducted

The investigator made necessary arrangements with the Head Mistress of the school selected for the experiment. The Achievement Test was administered

to both the groups before teaching them the concepts. The scores that were collected from the answer sheets comprised the pre-test scores.

4.5.2 Learning by the Experimental Group

The Experimental group was taught with the help of the lesson transcripts based on Concept Attainment Model. There were 10 lesson transcripts. Two weeks time was used for teaching the topic. Simple demonstrations, diagrams and verbal examples were used for presenting the selected grammatical concepts.

4.5.3 Learning by the Control Group

The Control group was taught the same topic in the conventional way by the investigator himself. Equal time was used for teaching the Control group.

4.5.4 Post-test Conducted

Prior information regarding the grammatical areas on which Post-test will be conducted was given to both Experimental and Control groups. The Post-test was administered to both the groups simultaneously. There was complete supervision by the class teacher and the investigator. Answer sheets were collected and scored. The scores obtained comprised the post-test scores. The

Achievement Test scores (both pre-test and post-test) of the Experimental and Control groups are provided as Appendix E.

4.6 Statistical techniques employed

The Pre-test scores and the Post-test scores of the Experimental and Control groups were consolidated for statistical analysis. Since the Experiment was conducted using intact, previously unequated groups, the technique of **analysis of covariance** was applied for analyzing the data. Through covariance analysis one is able to effect adjustments in final or terminal scores which will allow for differences in some initial variables. The details of the analysis of data using covariance and other relevant statistical techniques are compiled and presented in the fifth chapter.

Chapter – 5

ANALYSIS AND INTERPRETATION OF DATA

INTRODUCTION

"Analysis of data is the heart of the research report" (Best, 1983). Analysis of data means studying the tabulated material in order to determine inherent facts or meanings. It involves breaking down existing complex factors into simpler parts and putting the parts together in a new arrangement for the purpose of interpretation" (Sukhia, 1983).

The major aim of the study was to test the effectiveness of Concept Attainment Model in the teaching of Arabic Grammar of standard IX. Non-equivalent pre-test post-test Experimental design was adopted for the collection of data. Two unequated groups were selected for the study. An Achievement Test was administered before and after teaching. The data collected were analysed using appropriate statistical methods.

The investigator made the analysis and interpretation of data according to the objectives made by him before the experiment. He compared the Experimental group and the Control group according to their pre-test and post-test scores.

5.1 COMPARISON OF PRE-TEST SCORES OF PUPILS IN THE EXPERIMENTAL AND CONTROL GROUPS

The Mean and Standard Deviation of the pre-test scores of pupils in the two group were learned with Concept Attainment Model and Conventional Method were

computed found out. The critical ratio was also found out and tested for significance. The data and results of test of significance are given in Table 5.1

Table 5.1

Data and result of test of significance of the difference between the Means of Pre-test scores of pupils in Experimental and Control groups

Group	No. of pupils	Mean	S.D	Critical Ratio (C.R.)	Level of significance
Experimental group	20	4.7	3.35	0.38	P>0.05
Control group	20	4.35	2.35		

The above table shows that there is no significant difference between the means of the pre-test scores of the pupils in the Experimental group and Control groups (C.R.=0.38, P>0.05). This means that the two groups do not differ significantly in the initial academic ability of pupils. So it can be concluded that the two groups are more or less of the same ability.

5.2 COMPARISON OF POST-TEST SCORES OF PUPILS IN THE EXPERIMENTAL AND CONTROL GROUPS

The Mean and Standard Deviation of the post-test scores of pupils in the Experimental group and Control group were computed. The Critical Ratio was found out and tested for significance. The data and results of test of significance are given in Table 5.2

Table 5.2

Data and result of test of significance of the difference between the means of Post-test scores of pupils in Experimental and Control groups

Group	No. of pupils	Mean	S.D	Critical Ratio (C.R.)	Level of significance
Experimental group	20	18.15	4.06	4.67	P<0.01
Control group	20	13.15	2.6		
C.R. is significant at 0.01 level					

The table value shows that there is significant difference between the means of the post-test scores of the pupils in Experimental and Control groups (C.R.=4.67, P<0.01). This means that the two groups differ significantly in their post academic ability. Since the mean score of the Experimental group is greater than that of the Control group, the Experimental group is superior to the Control group in Achievement. So it can be concluded that the Concept Attainment Model is more effective than the Conventional Method in teaching Arabic Grammar.

5.3 COMPARISON OF THE EFFECTIVENESS OF CONCEPT ATTAINMENT MODEL OVER THE CONVENTIONAL METHOD IN THE TEACHING OF ARABIC GRAMMAR

The scores of 40 students of two classes treated with Concept Attainment Model and Conventional Method were subjected to Analysis of Covariance to

determine the difference existed in the effectiveness of the two approaches. Total Sum of Squares, Mean Square Variances and F-ratio for the pre-test and post-test scores of the Experimental and Control groups were computed. They are given in Table 5.3.

Table 5.3

Summary of Analysis of Covariance of Pre-test and Post-test scores of pupils in the Experimental and Control groups

Source of variation	df	SSx	**SSy**	MSx(Vx)	Msy(Vy)
Among Means	1	1.23	250.0	1.23	250.0
Within Groups	38	56.75	589.1	1.49	15.50
Total	39	57.98	839.1		

Fx = 0.82

Fy = 16.13

From F table df = 1/38

F at 0.05 level = 4.08

F at 0.01 level =7.31

The F ratios for the 2 sets of scores were tested for significance. Since the table value of Fx for df 1/38 is 4.08 at 0.05 level, the obtained Fx is not significant. The Fy obtained (Fy = 16.13, P< 0.01) is significant at 0.01 level because the table value for

Fy for df 1/38 is 7.31. The Analysis of Variance of the Y means indicates that there exists significant difference between Concept Attainment Model and the Conventional Method of teaching Arabic Grammar.

The Total Sum of Squares and Adjusted Mean Square Variance for post-test scores were computed. F ratio was calculated. They are given in Table 5.4

Table 5.4

Summary of Analysis of Covariance for the Pre-test and Post-test scores of pupils in the Experimental and Control groups

Source of variation	df	SSx	**SSy**	SSxy	Ssy.x	Msy.x (Vy.x)	Sdy.x.
Among Means	1	1.23	250.0	17.50	193.48	193.48	3.48
Within Groups	37	56.75	589.1	89.85	446.84	12.08	
Total	38	57.98	839.1	107.35	640.32		

Fyx = 16.02

From table F df = 1/37

F at 0.05 level = 4.12

F at 0.01 level = 7.42

Since the obtained F ratio 16.02 is greater than the table value 7.42, it is significant at 0.01level (Fy.x = P< 0.01). This significant F ratio for the adjusted post-test scores shows that the two final Mean scores of pupils in the Experimental group

and that of the Control group differ significantly after they have been adjusted for differences in the pre-test scores.

The Adjusted Means for the post-test of pupils in the Experimental and Control groups were computed using Correlation and Regression. They are given in Table 5.5.

Table 5.5

Data for Adjusted Means for the Post-test scores of pupils in the Experimental and Control groups

Groups	N	Mx	**My**	My.x (adjusted)
Experimental Group	20	4.70	18.2	17.87
Control Group	20	4.35	13.2	13.43
General Means	40	4.53	15.65	

The Adjusted Means for post-test scores were tested for significance of df 1/37. The t value obtained was 4.05. The table value for significance for df 37 is 2.71 at 0.01 level. So the obtained value is significant at 0.01 level ($t = 4.05$, $P < 0.01$).

The significant t value shows that the two Means differ significantly. This means that the Experimental group and the Control group differ significantly in their Post-test Achievement. Since the Adjusted Mean score for the Experimental group is greater than that of the Control group, the Experimental group is superior to Control group. It may be concluded that the students taught using Concept Attainment Model performed better than those taught using the Conventional Method of teaching.

5.4 COMPARISON OF THE EFFECTIVENESS OF CONCEPT ATTAINMENT MODEL OVER THE CONVENTIONAL METHOD UNDER THE DIFFERENT CATEGORIES OF OBJECTIVES

The effectiveness of Concept Attainment Model over the Conventional Method was determined using the total scores obtained from the Experimental and Control groups. Effectiveness of Concept Attainment Model over Conventional method was found under each category of objectives such as knowledge, understanding and application.

The details of analysis under each objective are presented below.

5.4.1 Comparison of the effectiveness of Concept Attainment Model over the Conventional Method of teaching Arabic grammar under the objective - Knowledge

The scores of 40 students of two classes taught using Concept Attainment Model and Conventional Method for the objective – Knowledge, were subjected to Analysis of Covariance to determine the difference that exists in the effectiveness of the two approaches. Total Sum of Squares, Mean Square Variances and F-ratio for the pre-test and post-test scores of the Experimental and Control groups were computed. They are given in Table 5.6.

Table 5.6

Summary of Analysis of Covariance of Pre-test and Post-test scores of pupils in the Experimental and Control groups under the objective- Knowledge

Source of variation	df	SSx	**SSy**	MSx(Vx)	Msy(Vy)
Among Means	1	0.10	42.0	0.10	42.02
Within Groups	38	21.00	134.0	0.55	3.53
Total	39	21.10	176.0		

Fx = 0.18

Fy = 11.92

From F table df = 1/38

F at 0.05 level = 4.08

F at 0.01 level =7.31

The F ratios for the two sets of scores were tested for significance. Since the table value of Fx for df 1/38 is 4.08 at 0.05 level, the obtained Fx is not significant. The Fy obtained (Fy = 11.92, P< 0.01) is significant at 0.01 level because the table value for Fy for df 1/38 is 7.31.

The Total Sum of Squares and Adjusted Mean Square Variance for post-test scores were computed. F ratio was calculated. They are given in Table 5.7

Table 5.7

Summary of Analysis of Covariance for the Pre-test and Post-test scores of pupils in the Experimental and Control groups for the objective - Knowledge

Source of variation	df	SSx	**SSy**	SSxy	Ssy.x	Msy.x (Vy.x)	Sdy.x.
Among Means	1	0.10	42.0	2.05	37.92	37.92	1.75
Within Groups	37	21.00	134.0	20.60	113.74	3.07	
Total	38	21.10	176.0	22.65	151.66		

Fyx = 12.33

From table F df = 1/37

F at 0.05 level = 4.12

F at 0.01 level = 7.42

Since the obtained F ratio 12.33 is greater than table value 7.42, it is significant at 0.01level (Fy.x =12.33, P< 0.01). This significant F ratio for the Adjusted post-test scores shows that the two final Mean score of pupils in the Experimental group and that of the Control group differ significantly after they have been adjusted for differences in the pre-test scores.

The Adjusted Means for the post-test of pupils in the Experimental and Control groups were computed using Correlation and Regression. They are given in Table 5.8.

Table 5.8

Data for Adjusted Means for the Post-test scores of pupils in the Experimental and Control groups of objective- Knowledge

Groups	N	Mx	**My**	My.x (adjusted)
Experimental Group	20	2.40	7.6	7.50
Control Group	20	2.30	5.5	5.55
General Means	40	2.35	6.53	

Adjusted Means for post-test scores were tested for significance of df 1/37. The t value obtained was 3.52. The table value for significance for df 37 is 2.71 at 0.01 level. So the obtained value is significant at 0.01 level ($t = 3.52$, $P < 0.01$).

The significant t value shows that the two means differ significantly. It means that the Experimental group and the Control group differ significantly in their Post-test Achievement. Since the Adjusted Mean score for the Experimental group is greater than that of the Control group, the Experimental group is superior to Control group. It may be concluded that the students taught by Concept Attainment Model performed better than those taught using the Conventional Method of teaching under the objective - Knowledge.

5.4.2 Comparison of the effectiveness of Concept Attainment Model over the conventional method of teaching Arabic grammar under the objective - Understanding

The scores of 40 students of two classes taught using Concept Attainment Model and Conventional Method of teaching for the objective – Understanding, were subjected to Analysis of Covariance to determine the difference existed in the effectiveness of the two approaches. Total Sum of Squares, Mean Square Variances and F-ratio for the pre-test and post-test scores of the Experimental and Control groups were computed. They are given in Table 5.9.

Table 5.9

Summary of Analysis of Covariance of Pre-test and Post-test scores of pupils in the Experimental and Control groups under the objective- Understanding

Source of variation	df	SSx	**SSy**	MSx(Vx)	Msy(Vy)
Among Means	1	0.10	28.9	0.10	28.90
Within Groups	38	19.40	130.2	0.51	3.43
Total	39	19.50	159.1		

Fx = 0.20

Fy = 8.43

From F table df = 1/38

F at 0.05 level = 4.08

F at 0.01 level =7.31

The F ratios for the two sets of scores were tested for significance. Since the table value of Fx for df 1/38 is 4.08 at 0.05 level, the obtained Fx is not significant. The Fy obtained (Fy = 8.43, P< 0.01) is significant at 0.01 level because the table value for Fy for df 1/38 is 7.31.

The Total Sum of Squares and Adjusted Mean Square Variance for post-test scores were computed. F ratio was calculated. They are given in Table 5.10

Table 5.10

Summary of Analysis of Covariance for the Pre-test and Post-test scores of pupils in the Experimental and Control groups for the objective - Understanding

Source of variation	df	SSx	**SSy**	SSxy	Ssy.x	Msy.x (Vy.x)	Sdy.x.
Among Means	1	0.10	28.9	1.70	26.23	26.23	1.79
Within Groups	37	19.40	130.2	14.80	118.91	3.21	
Total	38	19.50	159.1	16.50	145.14		

Fyx = 8.16

From table F df = 1/37

F at 0.05 level = 4.12

F at 0.01 level = 7.42

Since the obtained F ratio 8.16 is greater than table value 7.42, it is significant at 0.01level (Fy.x = 8.16, P< 0.01). This significant F ratio for the Adjusted Post-test scores shows that the two final Mean score of pupils in the Experimental group and that of the Control group differ significantly after they have been adjusted for differences in the pre-test scores.

The Adjusted Means for the post-test of pupils in the Experimental and Control groups were computed using Correlation and Regression. They are given in Table 5.11.

Table 5.11

Data for Adjusted Means for the Post-test scores of pupils in the Experimental and Control groups of objective- Understanding

Groups	N	Mx	**My**	My.x(adjusted)
Experimental Group	20	1.30	6.2	6.16
Control Group	20	1.20	4.5	4.54
General Means	40	1.25	5.35	

Adjusted Means for post-test scores were tested for significance of df 1/37. The t value obtained was 2.86. The table value for significance for df 37 is 2.71 at 0.01 level. So the obtained value is significant at 0.01 level (t = 2.86, P < 0.01).

The significant t value shows that the two means differ significantly. It means that the Experimental group and the Control group differ significantly in their Post-test Achievement. Since the Adjusted Mean Score for the Experimental group is greater than that of the Control group, the Experimental group is superior to Control group. It may be concluded that the students taught by Concept Attainment Model performed better than those taught using the Conventional Method of teaching under the objective - Understanding.

5.4.3 Comparison of the effectiveness of Concept Attainment Model over the Conventional Method of teaching Arabic grammar under the objective - Application

The scores of 40 students of two classes taught using Concept Attainment Model and Conventional Method of teaching for the objective – Application, were subjected to Analysis of Covariance to determine the difference existed in the effectiveness of the two approaches. Total Sum of Squares, Mean Square Variances and F-ratio for the pre-test and post-test scores of the Experimental and Control groups were computed. They are given in Table 5.12.

Table 5.12

Summary of Analysis of Covariance of Pre-test and Post-test scores of pupils in the Experimental and Control groups under the objective- Application

Source of variation	df	SSx	**SSy**	MSx(Vx)	Msy(Vy)
Among Means	1	0.10	13.2	0.10	13.23
Within Groups	38	5.50	16.8	0.14	0.44
Total	39	5.60	30.0		

Fx = 0.69

Fy = 30.00

From F table df = 1/38

F at 0.05 level = 4.08

F at 0.01 level =7.31

The F ratios for the two sets of scores were tested for significance. Since the table value of Fx for df 1/38 is 4.08 at 0.05 level the obtained Fx is not significant. The Fy obtained (Fy = 30.00, P< 0.01) is significant at 0.01 level because the table value for Fy for df 1/38 is 7.31.

The Total Sum of Squares and Adjusted Mean Square Variance for post-test scores were computed. F ratio was calculated. They are given in Table 5.13

Table 5.13

Summary of Analysis of Covariance for the Pre-test and Post-test scores of pupils in the Experimental and Control groups for the objective - Application

Source of variation	df	SSx	**SSy**	SSxy	Ssy.x	Msy.x (Vy.x)	Sdy.x.
Among Means	1	0.10	13.2	1.15	12.28	12.28	0.66
Within Groups	37	5.50	16.8	1.75	16.19	0.44	
Total	38	5.60	30.0	2.90	28.47		

Fyx = 28.06

From table F df = 1/37

F at 0.05 level = 4.12

F at 0.01 level = 7.42

Since the obtained F ratio 28.06 is greater than table value 7.42, it is significant at 0.01level (Fy.x =28.06, P< 0.01). This significant F ratio for the Adjusted post-test scores shows that the two final Mean score of pupils in the Experimental group and that of the Control group differ significantly after they have been adjusted for differences in the pre-test scores.

The Adjusted Means for the post-test of pupils in the Experimental and Control groups were computed using Correlation and Regression. They are given in Table 5.14.

Table 5.14

Data for Adjusted Means for the Post-test scores of pupils in the Experimental and Control groups of objective- Application

Groups	N	Mx	**My**	My.x(adjusted)
Experimental Group	20	0.95	4.3	4.28
Control Group	20	0.85	3.2	3.17
General Means	40	0.90	3.73	

Adjusted Means for post-test scores were tested for significance of df 1/37. The t value obtained was 5.34. The table value for significance for df 37 is 2.71 at 0.01 level. So the obtained value is significant at 0.01 level ($t = 5.34$, $P < 0.01$).

The significant t value shows that the two means differ significantly. It means that the Experimental group and the Control group differ significantly in their Post-test Achievement. Since the Adjusted Mean Score for the Experimental group is greater than that of the Control group, the Experimental group is superior to Control group. It may be concluded that the students taught by Concept Attainment Model performed better than those taught using the Conventional Method of teaching under the objective - Application.

The consolidated results of ANCOVA and Adjusted Means of Post-test scores for pupils in the Experimental and Control groups are given in Table 5.15 and Table 5.16 respectively.

Chapter – 6

SUMMARY OF THE STUDY, IMPLICATIONS AND SUGGESTIONS

6.1 STUDY IN RETROSPECT

The present study was designed to examine the effect of Concept Attainment Model on Achievement in Arabic Grammar of standard IX. The method used for the study was Non-equivalent pre-test post-test experimental design. The data collected were computed and analyzed using appropriate statistical techniques. The details are:

6.1.1 Hypotheses of the study

The following were the hypotheses formulated for the study

(1) There is significant difference in Achievement of Arabic Grammar between the IXth standard students taught using the Concept Attainment Model and Conventional Method.

(2) There is significant difference in Achievement of Arabic Grammar between the IXth standard students taught using the Concept Attainment Model and Conventional Method under the categories of instructional objectives namely, knowledge, understanding and application.

6.1.2 Objectives of the study

The objectives of the study were

(1) to prepare instructional materials for teaching Arabic Grammar in standard IX based on Concept Attainment Model.

(2) to find out the effectiveness of Concept Attainment Model in teaching Arabic Grammar.

(3) to compare the effectiveness of Concept Attainment Model with the Conventional Method in teaching Arabic Grammar.

(4) to compare the effectiveness of Concept Attainment Model with the Conventional Method in teaching Arabic Grammar under the following categories of objectives namely, knowledge, understanding and application.

6.1.3 Methodology in brief

The Non-equivalent pre-test post-test experimental design was used for the present study. The study was conducted on a final sample of 40 students (two divisions of 20 students each) of standard IX of Muslim Girls Higher Secondary School, Kaniyapuram, in Thiruvananthapuram district. One division was selected as the Experimental group and the other as the Control group.

The tools used were The Achievement Test in Arabic Grammar (used as pre-test and post-test), and lesson transcripts based on Concept Attainment Model and Conventional Method. The Experimental group was taught using Concept Attainment Model lesson transcripts and the Control group in the Conventional way. The effectiveness of Concept Attainment Model on Achievement in Arabic Grammar was determined by administering the Achievement Test to both groups. The data thus collected were tabulated and analyzed using statistical techniques like Mean, Standard Deviation, Critical Ratio and Analysis of Covariance (ANOVA) to compensate for the lack of equivalency between the groups.

6.2 CONCLUSIONS BASED ON THE FINDINGS

The conclusions that emerged out of the analysis of data using different tools are:

1. **The Concept Attainment Model is more effective than Conventional Method in teaching Arabic Grammar in standard IX.** This conclusion was deduced from the following findings:

When the post-test scores of the pupils in the Experimental and Control groups were compared, the difference between their Means was found to be statistically significant (CR=4.67, $p<0.01$). The Experimental group was found

to be superior to the Control group (Mean for Experimental group, M1=18.15 and Mean for Control group, M2=13.15)

The ANCOVA in pre-test scores and post-test scores of the pupils in the Experimental group and the Control group showed significant difference between the two groups (Fy.x for df 1/37 = 16.02 p <0.01).

The Adjusted Means for post-test scores were tested for df 1/37. The t value obtained was significant at 0.01 level (t =4.05, p <0.01). The significant t value confirms that the two Means differ considerably. The conclusion is that the Experimental group is better than the Control group in performance. So the Concept Attainment Model is better than the Conventional Method.

2. **The Concept Attainment Model is more effective than Conventional Method in teaching Arabic Grammar under the objective – Knowledge.** This conclusion was deduced from the following findings:

At the Knowledge level, the Experimental group is superior to the Control group. So the Concept Attainment Model is better than Traditional Method in realizing the objective- Knowledge. The following findings confirm this.

The ANOVA for pre-test and post-test scores of the pupils in the Experimental group and the Control group showed significant difference

between the two groups. (Fy.x = 12.33 p <0.01). The Experimental group was found superior to the Control group.

The Adjusted Means for post-test scores corresponding to the objective- Knowledge were tested for df 1/37. The t value obtained was significant at 0.01 level (t=3.52, p <0.01). The inference is that Concept Attainment Model is better than Conventional Method in developing the objective- Knowledge.

3. **The Concept Attainment Model is more effective than Conventional Method in teaching Arabic Grammar under the objective– Understanding.** This conclusion was deduced from the following findings:

At the Understanding level also the Experimental group is superior to the Control group. So Concept Attainment Model is better than Conventional method in realizing the objective- Understanding. The following findings confirm this.

The ANOVA for pre-test and post-test scores of the pupils in the Experimental group and the Control group showed significant difference between the two groups (Fy.x = 8.16 p <0.01). The Experimental group was found superior to the Control group.

The Adjusted Means for post-test scores corresponding to the objective- Understanding were tested for df 1/37. The t value obtained was significant at 0.01 level (t =2.86, p <0.01). The inference is that Concept Attainment Model is better than Conventional Method in developing the objective- Understanding.

4. **The Concept Attainment Model is more effective than Conventional Method in teaching Arabic Grammar under the objective – Application.** This conclusion was deduced from the following findings

At the Application level, the Experimental group is superior to the Control group. So the Concept Attainment Model is better than the Conventional Method in realizing the objective- Application. The following findings confirm this.

The ANOVA for pre-test and post-test scores of the pupils in the Experimental group and the Control group showed significant difference between the two groups (Fy.x = 28.06 p <0.01). The Experimental group was found superior to the Control group.

The Adjusted Means for post-test scores corresponding to the objective- Understanding were tested for df 1/37. The t value obtained was significant at

0.01 level ($t = 5.34$, $p < 0.01$). The inference is that Concept Attainment Model is better than Conventional Method in developing the objective- Application.

Hence it is concluded that the Concept Attainment Model is better than the Conventional Method in teaching Arabic Grammar.

6.3 TENABILITY OF HYPOTHESES

The tenability of the hypotheses framed for the study is discussed below.

Hypothesis I: There is significant difference in Achievement of Arabic Grammar between the IXth standard students taught using the Concept Attainment Model and Conventional Method.

The first hypothesis is accepted since the ANCOVA of pre-test and post-test scores of pupils in the Experimental and Control groups showed that the Experimental group is superior to the Control group. The value obtained is significant at both .05 and .01 levels.

Hypothesis II: There is significant difference in Achievement of Arabic Grammar between the IXth standard students taught using the Concept

Attainment Model and Conventional Method under the categories of instructional objectives namely, knowledge, understanding and application.

The second hypothesis is accepted since the ANCOVA of pre-test and post-test scores of pupils in the Experimental and Control groups showed that the Experimental group is superior to the Control group with respect to the objectives Knowledge, Understanding and Application. The values obtained for the three objectives were found to be significant at both .05 and .01 levels.

6.4 EDUCATIONAL IMPLICATIONS

The Concept Attainment Model will encourage the students to engage in learning activities with maximum enthusiasm and this will help them to understand the subject matter more vividly. The Method also helps to correlate the theoretical concepts of Arabic Grammar and its application, which is not so effective in the Conventional Method.

The Concept Attainment Model will help the students to learn the theory and apply the newly acquired knowledge simultaneously. The conclusions of the study prove that the Concept Attainment Model has helped the students to score better in the Achievement Test.

The teachers also were encouraged to learn more and test their knowledge when Concept Attainment Model is used. The teachers should have a thorough knowledge in the subject to conduct such classes. The teacher should be able to clear all the doubts of students. The classes will be lively and there will be good teacher-pupil interaction.

Since the results of the present study prove the effectiveness of the Concept Attainment Model in teaching Arabic grammar, it can be applied in the teaching of grammatical elements in other languages also. The study may help in selecting suitable activities to attain specific objectives for IXth standard students.

6.5 SUGGESTIONS FOR IMPROVEMENT

The findings of the study reveal that Concept Attainment Model is definitely better than the Conventional Method for student achievement. A few suggestions are put forth for improving the effectiveness of teaching.

1. The students should be made aware of the necessity of concept attainment. They should be made familiar with different strategies of concept attainment and the hierarchical structuring of knowledge
2. Since the application of Models of Teaching in the classroom will facilitate better learning and retention, these Models should be introduced in schools of Kerala.

3. The teachers should be given an orientation to the theoretical bases of Models and their practical utilities in classrooms.
4. Teachers should be encouraged to use these Models in the classrooms.
5. Ideas regarding Models of Teaching should be given to the students, teachers, and parents to improve teaching learning conditions.
6. The curriculum designers should also develop awareness on Models of Teaching so that they can implement them in the curriculum.

6.6 SUGGESTIONS FOR FURTHER RESEARCH

It is hoped that the present study will open doors for further research in the area of Models of Teaching. Some of the possible areas in which further studies can be carried out are listed below.

1. The present study was conducted to test the effectiveness of Concept Attainment Model in Arabic Grammar. The study can be executed to other subject areas.
2. Similar studies can be conducted at other levels also- at college, and lower and higher secondary school level.
3. Other members of the Information Processing Family Models can be employed to test their effectiveness.

4. The designers of Models of Teaching claim that different models could be overlapped so as to obtain full use of Models. A lot of research can be done in this area.
5. This study was intended to evaluate the effectiveness in attaining instructional goals. The other objectives of the model taken for the study have a good scope for further research.
6. A survey can be conducted among teachers regarding their opinion about the use of Concept Attainment Model. Such a study will be helpful in analyzing the expert opinion of teachers and also may give an insight into the practical difficulties that the teachers could encounter in conducting such classes.
7. The opinion of students and their parents can be collected through a survey.
8. A survey can be done to identify the schools in which some innovations are used to improve the teaching-learning process, the various innovations done and its effects can be studied.
9. Attitude of educational experts towards Models of Teaching can be found out through studies.
10. Other teaching strategies may also be tested to study their effectiveness in teaching languages.

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APPENDIX – A

CONCEPT ATTAINMENT MODEL

GENERAL OUTLINE OF LESSON TRANSCRIPTS

Lesson Transcript 1

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX
Name of Concept	: The Subject (fai'l)
Essential Attributes	: The subject is a noun
	It will be preceded by a verb
	It will indicate the doer of the action
Non-essential Attributes	: Gender form
	Number of the subject
Positive Exemplars	: sparrow, child, horse, fish
Negative Exemplars	: flew, walked, played, swimming
Rule	: The Subject is a noun in the nominative
	case, preceded by a verb
	and indicating the agent of the action.
Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

Lesson Transcript 2

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX

Name of Concept	: The Subject (mubtada')
Essential Attributes	: a noun in nominative case Sentence begins with subject
Non-essential Attributes	: Predicate as a noun Gender form
Positive Exemplars	: apple, the photo, walking, the train
Negative Exemplars	: is sweet, is beautiful, is useful, was fast
Rule	: The Subject (mubtada') is a noun in the nominative case, with which the sentence begins. It will be definite in most of the cases

Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

Lesson Transcript 3

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX
Name of Concept	: The Object (mafu'lun bihi)
Essential Attributes	: a noun in the accusative case It indicates the person or thing that suffered the action
Non-essential Attributes	: accusative case as (fath), transitive verbs have objects
Positive Exemplars	: (tied) the rope, (washed) the dress
Negative Exemplars	: the servant, the girl

Rule	: The Object is a noun in the accusative case indicating the person or thing that suffered the action.
Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

Lesson Transcript 4

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX
Name of Concept	: verbal sentence
Essential Attributes	: It begins with verb It is composed of a verb and its subject
Non-essential Attributes	: It will be accompanied by an object Accusative case of object as (fathat)
Positive Exemplars	: The snow falls, take the book, the wolf howled
Negative Exemplars	: The road is crowded, the atmosphere is moderate
Rule	: The verbal sentence begins with a verb and is composed of a verb and its subject.
Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

Lesson Transcript 5

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX
Name of Concept	: The Sentence
Essential Attributes	: A group of words that make a complete sense. Each words are considered to be part of sentence.
Non-essential Attributes	: A sentence is made up of two or more words. It is sometimes nominal.
Positive Exemplars	: The sun is rising, the boy slept
Negative Exemplars	: The girl , in the water
Rule	: The Sentence (jumlatun mufeeda) is a group of words that make a complete sense which is made up of 2 or more words.
Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

Lesson Transcript 6

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX
Name of Concept	: The subjunctive mood (Nasb) to imperfect verbs
Essential Attributes	: The presence of a (nasib) attaches

subjunctive mood to imperfect tense,
Tense should be imperfect

Non-essential Attributes : The vowel mark of (nasb) as (fathat)
Presence of (nasib) amidst the sentence

Positive Exemplars : sparrow, child, horse, fish

Negative Exemplars : flew, walked, played, swimming

Rule : The imperfect verb will be given subjunctive mood if it is precede by any one of the particles of (nasb : an, lan, kay, and idhan)

Type of Concept : conjunctive concept

Mode of presentation : Group activity,demonstration, charts, verbal examples

Thinking strategy : wholist

Lesson Transcript 7

Name of the teacher : Shamnad. N

Subject : Arabic Grammar

Standard : IX

Name of Concept : Quiescent mood (jazm) to imperfect verbs

Essential Attributes : The presence of a quiescent particle attaches the mood (jazm)to tense
The tense should be imperfect

Non-essential Attributes : The vowel mark of (jazm) as quiet (sukun)
Presence of particle at the beginning of the sentence

Positive Exemplars : Khalid has not learnt his lesson
Don’t walk quickly

Negative Exemplars	: The aeroplane is flying, the cloud moves
Rule	: The imperfect verb will be given the vowel mark of (jazm) if it is preceded by any one of the particles of (jazm) like (lam, lamma, lam of prohibition, la as imperative, in as conditional etc).
Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

Lesson Transcript 8

Name of the teacher	: Shamnad. N
Subject	: Arabic Grammar
Standard	: IX
Name of Concept	: The genitive (jarr al ism)
Essential Attributes	: Particles of (jarr) are applied to nouns only, a noun will be given (jarr) when it is preceded by a preposition
Non-essential Attributes	: Particles of (jarr) are function like Preposition, the genitive will be in nominative sentence.
Positive Exemplars	: Rain fell from the sky (it rained), apple falls on the ground
Negative Exemplars	: I saw the sky, ground is very big.
Rule	: A noun will be given (jarr) when it is preceded by preposition (particles of (jarr)) like (min, ila, an, ala, fe, bi, li, etc)
Type of Concept	: conjunctive concept

Mode of presentation : demonstration, charts, verbal examples
Thinking strategy : wholist

Lesson Transcript 9

Name of the teacher : Shamnad. N
Subject : Arabic Grammar
Standard : IX
Name of Concept : The adjective (na'th)
Essential Attributes : A word that denotes quality in a noun, the adjective follows the preceding noun in the vowel mark
Non-essential Attributes : Adjective as a noun, adjective as definite
Positive Exemplars : useful, wide, large
Negative Exemplars : book, ground, house
Rule : The adjective (na'th) is a word that denotes a quality in a noun that precedes it and the qualified noun is called (man'ut). The (na'th) follows the (man'ut) in the vowel marks.
Type of Concept : conjunctive concept
Mode of presentation : demonstration, charts, verbal examples
Thinking strategy : wholist

Lesson Transcript 10

Name of the teacher : Shamnad. N
Subject : Arabic Grammar
Standard : IX

Name of Concept	: The verb (kana) and its associates
Essential Attributes	: They precede nominal setences, they give vowel mark (raf') to subject and (nasb) to predicate
Non-essential Attributes	: Subject and predicate of (kana) and sisters as nouns
Positive Exemplars	: the horse was big, the sun rose
Negative Exemplars	: the horse is big, the sun is raising
Rule	: The verb (kana) and its associates (sara, amsa, asbaha, adhha, dhalla, bata, lysa, etc) as they precede nominal sentences give the vowel mark (raf') to their subject and (nasb) to their predicate.
Type of Concept	: conjunctive concept
Mode of presentation	: demonstration, charts, verbal examples
Thinking strategy	: wholist

APPENDIX – B

Concept Attainment Model

Lesson Transcript

English Version

Elements of Concept

Name of Concept : The Subject (fai'l)
Essential Attributes : The subject is a noun
It will be preceded by a verb
It will indicate the doer of the action
Non-essential Attributes : Gender form
Number of the subject
Positive Exemplars : sparrow, child, horse, fish
Negative Exemplars : flew, walked, played, swimming
Rule : The Subject is a noun in the nominative case, preceded by a verb
and indicating the agent of the action.

Learning Activities	**Learning responses**
Phase I : Presentation of data and identification of the concept	
Today we are going to play a game. The following examples will give you an idea of a certain concept. If an the example does provide the concept, I will	Orientation to the process

say ‘yes’ and if the example does not provide the concept, I will say ‘no’. Now let’s start. Teacher : The teacher shows a chart which has two columns . First column contains some verbs and second column contains nouns. Teacher presents one noun and says: This is an ‘yes’ example. Can you say what is my idea? Students : Noun Teacher : Teacher presents another noun from the chart preceded by a verb - ‘what is my concept?’. Students : Subject Teacher : ‘flew’ is a ‘no’ example, any guess? Students : The subject Teacher : Good! Can you say the characteristics of the concept? Students : No! Teacher : The subject is a noun, can you guess another one? Students : No	Teacher presents the first labeled example **First hypothesis** Teacher presents second example. Second hypothesis Teacher presents third example Third hypothesis Teacher states an essential attribute

Teacher : It will be preceded by a verb, can you say another essential attribute? Student : Subject indicates the agent of the action Teacher : very good! , can you say a non-essential attribute ? Students : No! Teacher : Subject is singular, can you guess another one? Students : Subject is masculine gender Teacher : very good! **Phase II : Testing the attainment of the concept** Teacher : Can you say 'child' is an 'yes' example or 'no' example? Students : It is an 'yes' example Teacher : Good! 'walked' is an 'yes' example or	Teacher states another essential attribute Students state attribute of the concept Teacher states a non-essential attribute Students state another non-essential attribute. Teacher presents unlabelled example

'no' example? Students : It is a 'no' example Teacher : Good! Can you say another 'yes' example? Students : Man Teacher : Good! Can you say a 'no' example? Students : Slept Teacher : Good! Can you define the concept? Student : Subject is a noun, it will be preceded by a verb Teacher : Good! **Phase III : Analysis of Thinking Strategies** Teacher : Can you explain how you arrived at the concept? Students : Your first example was the noun 'sparow'. From that I thought that the concept was a	Students label unlabelled example Teacher presents another unlabelled example Students label the example Students generate additional example Students generate non-example Students state concept rule. Teacher tests the thinking strategy of

noun. Your third example was the verb 'flew' and it was a 'no' example. It helped me to reject my first hypothesis and to arrive at a new hypothesis ie the concept is the subject Teacher : What about the other examples? Students: When you present the ' yes' example preceded by the 'no' example, I arrived at a hypothesis that subject will be preceded by a verb, and other examples assured my hypothesis. Teacher : Now I will explain you other characteristics of the concept – the subject : Subject is a nominative case and it will indicate the doer of the action. Now let's wind up the class, thank you ! Students : Thank you very much!	students Students describe their thought process Students analyse their hypotheses Teacher explains the concept

Appendix – C

Conventional Method

LESSON TRANSCRIPT

English Version

Topic :The Subject

Class : IX

Curriculum Objectives : To improve grammatical accuracy

To listen to instructions and respond accordingly

To use appropriate language in real life situations

Learning Activities	Learning Responses
Area : The Subject Warming up Preparation : **<u>Who teaches you?</u>** The teacher teaches you. Who studies in school? Students study in school (writes on black board and underlines 'students') Presentation : Activity 1: shows the pupils a chart on which the following sentences are	The teacher presented these sentences and he was able to arouse their interest in

written. Babu reads newspaper Rahim washes his face Fatima writes a letter	the particular structure. Learning material: chart helped them to understand the subject
Activity 2 : Imagine the incidents in your class room. (shows a chart on which the following sentences are written)	The pupils were very much interested in the incidents of their class Teacher succeeded in drawing their attention to the structure.
Students come to class Ramu sits on the bench Rahim takes his book Teacher arrives the class	Learning material : charts helped them to follow the structure
Teacher explains that all the underlined words are subjects. They indicate the doer of actions. They will be preceded by a verb. They are nouns. They have the mood of (raf')	
Production	Pupils: They wrote meaningful

Teacher asks the students to make meaningful sentences with the subject. Post-plan How far the objectives are achieved? The students were able to give meaningful sentences.	sentences. The teacher succeeds in making them understand the structure, the subject.

APPENDIX – E

ACHIEVEMENT TEST SCORES OF EXPERIMENTAL AND CONTROL GROUPS

Sl. No.	Experimental Group		**Control Group**	
	Pre-test	**Post-test**	**Pre-test**	**Post-test**
1	4	17	4	12
2	4	18	5	14
3	5	21	5	12
4	5	19	4	10
5	3	8	4	13
6	8	24	7	12
7	6	23	4	11
8	8	24	3	8
9	3	10	4	15
10	5	21	4	13
11	5	21	5	17
12	4	19	4	22
13	4	22	3	16
14	5	10	5	15
15	3	17	6	15
16	4	15	5	12
17	4	18	4	16
18	4	17	3	11
19	4	19	4	8
20	6	20	4	11
Total	94	363	87	263
Mean	4.7	18.2	4.35	13.2