

# Asian Resonance

## A Comparative Study of Effectiveness of Concept Attainment Model and Memory Model on Students Achievement in English Grammar



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### Abstract

In the present study, pre-test, experimental treatment and post-test design was employed. The Experimental Group-I was taught English Grammar through Concept Attainment Model. Experimental Group-II was taught English Grammar through Memory Model and the Control Group was taught English Grammar through Conventional Method. The design comprised three stages. The first stage involved pre-testing of all the students of three groups on achievement in English Grammar, Intelligence and Socio-Economic Status. The second stage involved treatment of twenty weeks. The experimental treatment consisted of teaching of four units of English Grammar through Concept Attainment Model to Experimental Group-I, through Memory Model to Experimental Group-II and through Conventional Method to Control Group. In the third stage, the students were post tested on Achievement in English Grammar. The Results indicated that the students who were taught English grammar through Concept Attainment Model and Memory Model have shown significant improvement in the Achievement in English Grammar than the students who were taught through Conventional Method. The group of students taught English Grammar through Memory Model have shown significantly higher gain in achievement than the group of students taught English Grammar through Concept Attainment Model.

**Keywords:** Concept Attainment Model, Memory Model, Conventional Method, Intelligence, Socio-Economic Status, Achievement in English Grammar.

### Introduction

Education is continuous life long process. It is never ending, starts with the birth of an individual and it goes on till last day of the individual. Education makes an individual a real human being. Man becomes civilized man through education. He learns something at every moment and on every day. Education equips the individual with social, moral, cultural and spiritual aspects and thus makes life progressive, cultural and civilized. Education is a process of human enlighten and empowerment for the achievement of a better and higher quality of life. A sound and effective system of education result in the enfoldment of learner's potentialities, enlargement of their competencies and transformation of their interests, attitudes and values. Recognizing such an enormous potential of education all progressive societies have committed themselves to the universalization of education with an explicit aim of providing "Quality education for all"

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.

### Review of Related Literature

Chalmeh & et al (2012) provide practical sample of mastery teaching method on learning in first grade of primary school. Teachers in

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using this method should done stage assessments and final to realize the extent of students' skills and mastery regularly. So it can say that underlying mastery learning facilitation is practice step by step, examples about new concepts and skills of explanatory speech.

Fraizer (2007) in Randolph Macon Woman's College, Fraizer introduced model of concept attainment, goals, teacher duty and students and the application of this model from preschool to high school, meanwhile the effectiveness of this model in various s learning introduced constructive material of sweets and differences between meat foods, vegetable foods and restaurant foods by using concept attainment.

Hassard (2003) reported that the concept map is a tool that science teachers can use to determine the nature of students, existing ideas. The map can be used to make evident the key concepts to be learned and suggest linkages between the new information to be learned and what the student already knows. Concept maps can precede instruction, and be used by the teacher to generate a meaningful discussion of student ideas. Following the initial construction and discussion of concept maps, instructional activities can be designed to explore alternative frame works, resulting in cognitive accommodation.

Jaimini (1990) compared conventional method of teaching with alternative teaching strategies to enhance the learning of concepts and their retention. In his study, two models of teaching in Advance Organizer and Concept Attainment model were taken. Subjects were three intact sections of ninth grade that were highly comparable with respect to sex, achievement of science in previous class and number of students etc. Quasi experimental, non equivalent control group design was used. Finding of the study led to the conclusion that the Advance Organizer model and Concept Attainment model as teaching strategies were significantly more effective than the Conventional Method in fastening the conceptual learning efficiency in terms of comprehension and application of concept in Chemistry.

Joyce & et al (2009) in research investigated the effects of concept attainment model in learning Persian language and literature. Joyce in providing concept attainment model in the course of language classified words according to sound in primary and middle school and high school courses.

Mehra and Rathee (2004) investigated into the effect of Inquiry Training Model and Mastery Learning Model on achievement and retention in Mathematics of class Vth students. It was found that group of pupils taught Mathematics through Inquiry Training Model has scored significantly higher on the criterion Achievement Test than the group of pupil taught through the Mastery Learning Strategy.

Mevaecch (2010) investigated academic achievement many of third and fifth grade student so have different educational backgrounds in cooperative

learning groups, mastery learning and integration method. Research results of Mevaecch showed that mastery learning and cooperative have been positive effects on students .

Newby & Ertner (2007) the mean effect size for teaching concept attainment has reported 0.65 that there is alignment between the findings. Results showed that mastery model causes to mastery students to learn the material and mastery in performance .

Renu (1997) investigated in to the effect of Mastery Learning Strategy and Concept Attainment Model on pupil achievement in science, their Self-Concept and classroom trust behavior. The results of the study revealed that Mastery Learning Strategy and Concept Attainment Model both help in raising the achievement of pupils and also help in improving the Self-Concept and class room trust behavior of the pupils. It was also reported that Concept Attainment Model is better approach than Mastery Learning Strategy in improving the achievement of students in science, whereas both these models were equally affected in case of Self-Concept and class room trust behavior.

Samantha and colleagues (2008) in research investigate positive effect on learning in use of concept attainment in arguing metaphor and introducing a variety of offering samples and they introduced offering a variety of sample such as: Offering all of positive samples before and after the offering negative examples Offering all of positive and negative samples, without stating its positive or negative. Identify the basic features and the selection of positive examples for the concepts learned in class. Use this template as a group activity .

Sidhu, R.K. and Singh (2005) investigated into the comparative study of Concept Attainment Model, Advance Organiser Model and Conventional Method in teaching of Physics in relation to intelligence and achievement motivation of class IX students. The sample consisted of 240 students of class IXth, enrolled in Government Senior Secondary School, Kanganwal, Government High School, Jhuner and Government Sr. Secondary School Sandaur (Distt. Sangarur, Punjab) divided into three groups (n=80 each) two experimental groups and one control group. Pre-test, post-test Control Group quasi-experimental design was employed. The statistical technique of three way analysis of variance (3x2x2) was used on gain score for finding out the main effect and interaction effect of teaching techniques, intelligence and achievement motivation on scholastic achievement in Physics of students and found that there was no significant effect between various teaching techniques, intelligence and achievement motivation on scholastic achievement of students for learning in Physics.

Slowin & Karoit (2009) were performed cooperative learning strategies, mastery learning and a combination of both in mathematics of ninth grade in Philadelphia schools. Results of this study showed that

will increased academic achievement of students, especially in primary school significantly

Yaghini (2008) in study with title "Evaluating the effects of concept attainment teaching model and traditional on the learning concepts of numerical mathematics during preschool from the perspective of educators In Shiraz" concluded that there is relationship between preschool children learning who trained numerical mathematics concepts by concept attainment and children in traditional group. It suggests educators of preschool centers that this model is used to enhance the power of thought and analysis in teaching their lessons.

### Models of Teaching

Model is a pattern of something to be made or reproduced and means of transferring a relationship or process from its actual setting to one in which it can be more conveniently studied. In the point of view of teaching, a model of teaching is to improve the instructional effectiveness in an interactive atmosphere and to improve or shape of curriculum. Model of teaching are the innovative practices which have drawn the attention of educational researchers and teachers since last few years.

Joyce and Weil (1980) have identified 23 models of teaching which are classified into four families – Information processing models, personal models, social Interaction models and behavioral modification models. Information processing may be defined as the ways people handle stimuli from the environment, organize data, sense problems etc. The goals of information processing models are to help individuals to acquire knowledge through an analysis of data from the world around us. They aim at intellectual growth of the individual. These models of teaching are inductive thinking model, enquiry training model, concept attainment model, cognitive growth model, biological Science Enquiry Model, Advance Organiser Model, and memory model.

Concept Attainment Model is inductive teaching strategy propounded by Jerome S. Brunner, Goodnow and Austi was used in this research and similar Memory model which was propounded by Henry Lorayne was used to improve the memorization of material by the student that they can recall it when needed. The capacity to take information to integrate it meaningfully and later to retrieve it at will is the final outcome of memory learning.

### Rationale of the Study

Change is a very important phenomenon of the present age and it affects the life of each and every individual. The world of today is changing rapidly because of the fast changes in the field of technology. Through education pupils must be prepared to face the challenges and to keep pace with the advancement of technology. But existing traditional method of teaching in our class room doesn't fulfill these objectives. The main purpose of teaching is to prepare students for examination. Generally, pupils memorize the content and reproduce the same in the examination. In such as environment, creative

thinking interest in enquiry activities and other skills e.g. problem solving skills, cooperative skill etc. cannot be developed among them.

The teaching model approach is one of the latest developments in the art and skills of teaching and various teaching models have been developed as a result of researches in educational psychology, teaching methods and effective teaching behaviours. These models have the potentiality of being matched to the objective of teaching as well as pupil's learning styles. These models have been classified under four families by Joyce and Weil (1985) The four families are: Informational Processing Models, Social Interaction Models, Personal Models and Behaviour Modification Models. The use of models of teaching in class room can help the teacher to improve the quality of teaching and to create a more conducive environment of learning for students In order to know the comparative effectiveness of models of teaching, the researcher in the present study will select two models of teaching, namely, Concept Attainment Model and Memory Model taken from the Information Processing Family of Model of Teaching

Ranjana (1992) conducted a study on the Effectiveness of Mastery Learning Strategy on VI graders in the subject of science and reported that students taught through Mastery Learning Strategy showed significant improvement in the achievement, Self-Concept and classroom trust behavior.

Studies were conducted to compare the Effectiveness of Concept Attainment Model and Biological Science Inquiry Model (Sushma Kumari, 1988), Concept Attainment Model, Inductive Thinking Model and Advance Organiser (Gupta, 1995) and Halda Taba's Inductive Thinking Model and Advance Organiser Model (Khare, 2000). It is evident from this brief survey of researches conducted in India on the use of Concept attainment Model and Memory Model that very little work has been done to test their effectiveness in Indian situations and to adapt them to our peculiar need Effectiveness of Concept attainment Model and Memory Model in achievement in English Grammar particularly has not been attended to adequately. Since the subject is gaining importance in school curriculum and has been made compulsory up to secondary level, research to use Concept Attainment Model and Memory Model to improve pupil's achievement in English Grammar needs to be conducted.

### Statement of the Problem

"A Comparative Study of Effectiveness of Concept Attainment Model and Memory Model on Student's Achievement in English Grammar"

### Definition of Key Terms

The key terms used in the statement of the problem are defined in operational terms.

### Effectiveness

It refers to the effect of particular treatment given to a learner which produces a significant change in pupil's behavior in terms of their achievement.

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## Concept Attainment Model

Concept Attainment Model is inductive teaching strategy propounded by Jerome S. Brunner, Goodnow and Austin. This model has been developed from the 'Study of Thinking'. The concept attainment strategy, as model of teaching, is concerned with two separate but related ideas: the nature of concept themselves and the thinking process used by individual to learn concept. Concept is the key building blocks for the structure of knowledge of the various academic disciplines. Concept is the distillate of sensory experiences and the vital link between external inputs and overt behaviours. They are vehicle of thought. They are the critical components of an individual's cognitive structure. Concept learning is thus regarded as identification of concept attributes which can be generalized to newly encountered examples and discriminate examples from non examples. Concept can be thought of as information about objects, events and process that allows us to differentiate various things or classes, Know relationship between objects and generate ideas about events, things and processes.

## Memory Model

Memory model is propounded by Henry Lorayne. It is agreed by all that the ability to remember is fundamental to intellectual, effectiveness. For from being a passive, trivial, memorizing and remembering are active pursuits. The capacity to take information, to integrate it meaningfully and later to retrieve it at will is the product of successful memory. Most important, individual can improve this capacity to memorize material so that they can recall it later when needed.

## Conventional Method of Teaching

In Conventional Method of teaching the teacher is the only active participant in the teaching learning process and the pupils are the passive listeners. He gives lecture to a class of nearly forty pupils, gives house assignment and administers tests periodically. These tests are given only to give marks to the pupils and have no value in terms of improving the quality of instruction.

## Achievement in English Grammar

Achievement in English Grammar with respect to this study is confined to performance as indicated by their scores on the English achievement test. The test is developed by the investigator covering all the topics of class IXth syllabus of English Grammar in CBSE schools for experimental treatment.

## Objectives

- 1 To study the mean achievement scores, on the criterion achievement test in English Grammar before the experimental treatment.
- 2 To study the mean achievement scores, on the criterion Achievement Test in English Grammar after the experimental treatment.
- 3 To study the mean gain scores, on the criterion Achievement Test in English Grammar after the experimental treatment.

## Hypotheses

In order to realize the objectives of the study following hypotheses were tested.

- H1** There is no significant difference in the mean score, on the criterion Achievement Test in English Grammar, of the three groups of students, to be taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching before the experimental treatment.
- H2** There is a significant difference in the mean scores, on the criterion Achievement Test in English Grammar, of the three groups of students, to be taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching after the experimental treatment.
- H3** There is a significant difference in the mean gain scores, on the criterion Achievement Test in English Grammar, of the three groups of students, to be taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching after the experimental treatment.

## Design and Procedure of the Study

Research design is the blueprint of the procedure that enables a researcher to test hypothesis by reaching valid conclusions about relationships between independent and dependent variables (Best, 1981). Fate of any activity and its outcome depends essentially upon its design. Kerlinger (1974) described "Research design as the plan, structure and model of investigation conceived so as to obtain answers to research questions and control variance" Thus, design provides a picture of what and how to do the work. In any research project, design provides the investigator a blue print of research dictates the boundaries of project and helps in controlling the experimental, extraneous and error variances of the problem under investigation.

## Design

In the present study, pre-test, experimental treatment and post-test design was employed. It involved three groups of students, two experimental groups and one control group. The Experimental Group-I was taught English Grammar through Concept Attainment Model. Experimental Group-II was taught English Grammar through Memory Model and the Control Group was taught through Conventional Method. The design comprised three stages. The first stage involved pre-testing of all the students of three groups on achievement in English Grammar, Intelligence, Socio-Economic Status.

The second stage involved treatment of twenty weeks. The experimental treatment consisted of teaching of English Grammar through Concept Attainment Model to Experimental Group-I, through Memory Model to Experimental Group-II and through Conventional Method to Control Group. In the third stage, the students were post tested on Achievement in English Grammar. The design of the study is presented below in

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**Table: 1.1.**  
**Design of the Study**

| Sr.No. | Duration | Phase  | Groups  | Activity  |
|--------|----------|--|---|---|
| 1.     | One week | Orientation to test and Practical demonstration of Concept Attainment Model and Memory Model |   |   |
| 2.     | 1 Week   | Pre- Test  | Experimental Group-I (N-40)<br>Experimental Group-II (N-40)<br>Control Group (N-40) | Test administered<br>i) Socio-Economic Status of pupils<br>ii) General Mental Ability or Intelligence of pupils<br>iii) Achievement in English Grammar  |
| 3.     | 20 Weeks | Treatment  | Experimental Group-I (N-40)<br>Experimental Group-II (N-40)<br>Control Group (N-40) | Group -I taught English Grammar through Concept Attainment Model<br>Group -II taught English Grammar through Memory Model<br>Control Group taught English Grammar through Conventional Method |
| 4.     | 1 Week   | Post Test  | Experimental Group-I (N-40)<br>Experimental Group-II (N-40)<br>Control Group (N-40) | Test administered<br>1. Achievement Test in English Grammar   |

**The Sample**

Purposive sampling was used for the present study. The Sirsa School, Sirsa was selected. Four sections of IXth class were taken. These were divided in to three Groups i.e. Experimental Group - I and Experimental Group - II and Control Group having 60 students in each group.

The Experimental Group - I, Experimental Group - II and Control Group were equated on Mental Ability or Intelligence and Socio-Economic Status. After equating the groups, there were 40 students in Each Experimental Group- I, Experimental Group - II and Control Group.

**Variables**

In the experimental researches the relationship between three types of variables namely independent, dependent and intervening variables are studied. All these three kinds of variables which were identified for the study are discussed below.

**Independent Variables**

Different methods of teaching which were used in the present study to see their effect on achievement of students in English constitute the independent variables. The experimental Group-I was

taught English through Concept Attainment Model, Memory Model and Conventional Method were the three independent variables for the present study.

**Dependent Variables**

Achievement in English Grammar was the dependent variables. This variable was to measure twice during the course of the study first before the experimental treatment which is pre-test stage and then after providing experimental treatment i.e. post-test stage.

**Intervening Variables**

There are certain variables which have their effect on the learning outcome. These variables, known as intervening variables, can influence both.

It is necessary to control all those variables that may affect the dependent variables. Hence suitable: the independent and dependent variables. Different intervening variables in a research study can be nature of school, grade level, subject to be taught, intelligence of students, Socio-Economic Status of pupils, previous knowledge of pupils etc. These intervening variables was controlled either experimentally or statistically.

**Table: 1.2**  
**Independent, Dependent and Control Variables**

| Independent Variables    | Dependent Variables               | Control Variables  | Control Employed   |
|--------------------------|-----------------------------------|--|--|
| Concept Attainment Model | 1. Achievement in English Grammar | 1. Nature of school  | 1. Administrative (Single school)  |
| Memory Model             |                                   | 2. Grade Level (Only IXth grade to be taught)  | 2. Administrative (Four sections of grade IXth)  |
|                          |                                   | 3. Subject to be taught (same topic of English Grammar in all the three groups to be taught) | 3. Administrative (same topic of English Grammar in all the three groups to be taught) |
| Conventional Model       |                                   | 4. Students Socio -Economic status   | 4. Experimentally  |
|                          |                                   | 5. Students intelligence   | 5. Experimentally  |

**Tools Used**

For the purpose of collecting data related to different variables covered in this study, following tools were used.

- 1 English Grammar Achievement Test (Developed by the investigator herself) to measure the achievement of student's in English Grammar.

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- Raven's Progressive Matrices developed by J.C. Raven (2000) to measure the intelligence of students.
- Socio-Economic Status Scale by Dr. Gyanendra P. Srivastva (1991) measure the Socio-Economic Status of the Students.

### Experimental Procedure

It consisted of three stages: (i) Pre-testing (ii) Experimental treatment (iii) Post-testing.

#### Pre-testing

Before the commencement of experiment, pre-tests was conducted. This was administered in all the three groups by the investigator herself. Cooperation of the class teacher was sought for conducting the tests properly. All the instructions were explained clearly to the students before administering the test. The pre-testing programme is given in Table: 1.3

**Table: 1.3**

**Programme of Pre-Testing**

| Sr. No. | Test administered to Control Group | Test administered to Experimental Group-I | Test administered to Experimental Group-II |
|---------|------------------------------------|---|--|
| 1.      | Intelligence Test                  | Intelligence Test                         | Intelligence Test                          |
| 2.      | Socio-Economic Status Scale        | Socio-Economic Status Scale               | Socio-Economic Status Scale                |
| 3.      | Achievement Test                   | Achievement Test                          | Achievement Test                           |

#### Experimental Treatment

After pre-testing the experimental treatment of teaching English Grammar to Class IX students was started. All the three groups i.e. Control Group, Experimental Group-I and Experimental Group - II were taught by the investigator herself. The Control Group was taught through Conventional Method of teaching. Experimental Group-I and Experimental Group-II were taught through Concept Attainment Model and Memory Model respectively

#### Statistical Analysis

Statistics has become an indispensable tool for research. It is fundamental to the proper analysis of data. In order to achieve the objectives of the study, the data collected was statistically analyzed using the following techniques.

- Analysis of variance (ANOVA) was used on pre-test, post-test and gain scores of Achievement Test in English Grammar. Analysis of variance was also used on pre-test Intelligence test scores and Socio-Economic Status score of control variables'

**Table: 1.4 Summary of ANOVA for the Pre-Test Achievement Scores in English Grammar Between Experimental Group-I, Experimental Group-II & Control Group**

| Sources of Variance | Degree of freedom (df) | Sum of Squares (S.S.) | Mean Squares (M.S.) | F Value      | Level of Significance                         |
|---------------------|------------------------|-----------------------|---------------------|--------------|---|
| Between             | (3 - 1) = 2 (a-1)      | 37.92                 | 18.96               | 18.96        | Not significant at 0.01 level of significance |
| Within              | (120-3) = 117 (N-a)    | 834.09                | 07.13               | 07.13 = 2.66 |   |

It is clear from the Table 1.4 that the F value of 2.66 for df (2,117) for the Experimental Group - I, Experimental Group - II and Control Group is not significant at 0.01 level. This reveals that there is no

- Mean and Standard Deviations were used on pre-test, post-test and gain scores of Achievement Test in English Grammar .
- "t" test was applied for testing the significance of difference between the Experimental Group - I, Experimental Group - II and Control Group on means achievement scores and means gain scores of post testing stage.

#### Interpretation of the Results

Student's Achievement in English Grammar of the three groups have been compared by employing analysis of variance (ANOVA) . The results of three groups are given below.

#### Interpretation of the Results on Achievement in English Grammar

In the scheme of this study, students Achievement in English Grammar is the first outcome variable. This has been studied here focusing on the following objectives:

- To compare the mean achievement scores, on the criterion Achievement Test in English Grammar, of the three groups of student, to be taught English Grammar with the use of Concept Attainment Model , Memory Model and Conventional Method of teaching, before the experimental treatment.
- To compare the mean achievement scores , on the criterion Achievement Test in English Grammar, of the three groups of students, to be taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching, after the experimental treatment.
- To compare the gain scores, on the criterion Achievement Test in English Grammar, of the three groups of students, to be taught English Grammar with the use of Concept Attainment Model , Memory Model and Conventional Method of teaching, after the experimental treatment.

Students Achievement in English Grammar of the three groups have been compared by employing analysis of variance (ANOVA). The ANOVA results are given below.

The three groups have been further compared using 't' test. For this purpose, the following tables provide the mean, standard deviation and 't' values in respect of post-test and gain scores of experimental and control groups of students.

significant difference in the pre-test mean achievement scores of two Experimental Groups and Control Group.

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Table: 1.5

Summary of ANOVA for Post- Test Achievement Scores in English Grammar Between Experimental Group - I, Experimental Group - II & Control Group

| Sources of Variance | Degree of freedom (df) | Sum of Squares (S.S.) | Mean Squares (M.S.) | F Value                           | Level of Significance                     |
|---------------------|------------------------|-----------------------|---------------------|-----------------------------------|---|
| Between             | (3 -1) = 2 (a-1)       | 1281.95               | 640.97              | $\frac{640.97}{15.37}$<br>= 41.70 | Significant at 0.01 level of significance |
| Within              | (120-3) = 117 (N-a)    | 1798.75               | 15.37               |                                   |   |

Table: 1.5 indicate that the F- value of 41.70 for df (2,117) for the Experimental Group - I, Experimental Group - II and Control Group is significant at 0.01 level. It shows that there is a significant difference between the post-test mean achievement scores of Experimental Group - I, Experimental Group - II and Control Group. This can, further be tested by applying the 't' test. "t" test has been applied to test the significance of difference between the means of (i) Experimental Group - I and Control Group (ii) Experimental Group - II and Control Group (iii) Experimental Group - I and Experimental Group - II . These have been discussed below.

Table: 1.6

Difference in Post-Test Mean Scores of the Students of Experimental Group - I and Control Group on Achievement in English Grammar

| Treatment              | N  | Mean  | S.D. | 't' value | Level of Significance                     |
|------------------------|----|-------|------|-----------|---|
| Experimental Group - I | 40 | 31.20 | 4.58 | 5.06      | Significant at 0.01 level of significance |
| Control Group          | 40 | 26.12 | 4.42 |           |   |

From Table 1.6 it may be observed that the 't' value of 5.06 for the difference in the mean achievement scores, at the post test stage, of the students of Experimental Group - I and Control Group is significant at 0.01 level. This table also reveals that at the post-test stage, the mean score of 31.20 of the students of Experimental Group - I is higher than the mean score of the Control Group which is 26.12. This indicates that Achievement in English Grammar of the students of Experimental Group-I is higher than that of the Control Group after the treatment.

Table: 1.7

Difference in Post - Test Mean Scores of the Students of Experimental Group-II and Control Group on Achievement in English Grammar

| Treatment               | N  | Mean  | S.D. | 't' value | Level of Significance                     |
|-------------------------|----|-------|------|-----------|---|
| Experimental Group - II | 40 | 34.02 | 4.34 | 8.06      | Significant at 0.01 level of significance |
| Control Group           | 40 | 26.12 | 4.42 |           |   |

From Table 1.7 it is clear that at post-test stage, the 't' value of 8.06 for the difference in mean scores of the students of Experimental Group - II and Control Group, on Achievement in English Grammar is significant at 0.01 level of significance . It may also be observed from the table that the mean score of the students of Experimental Group - II is higher than the mean score of 26.12 of the students of Control Group. This indicates that Achievement in English Grammar

of the students of Experimental Group - II is higher than that of the Control Group after the treatment.

Table: 1.8

Difference in Post-Test Mean Scores of the Students of Experimental Group - I and Experimental Group - II on Achievement in English Grammar

| Treatment               | N  | Mean  | S.D. | 't' value | Level of Significance                     |
|-------------------------|----|-------|------|-----------|---|
| Experimental Group - I  | 40 | 31.20 | 4.58 | 2.82      | Significant at 0.01 level of significance |
| Experimental Group - II | 40 | 34.02 | 4.34 |           |   |

Table: 1.8 indicates that at the post-test stage, the 't' value of 2.82 for the difference in mean scores of the students of Experimental Group - I and Experimental Group - II on Achievement in English Grammar is significant at 0.01 level of significance . The mean score of 31.20 of the students of Experimental Group - I is higher than the mean score of the students of Experimental Group - II which is 34.02. This indicates that the Achievement in English Grammar of the students of Experimental Group - I is higher than that of the Experimental Group - II.

Table: 1.9

Summary of ANOVA for the Mean Gain Scores in English Grammar Between Experimental Group - I, Experimental Group-II and Control Group

| Sources of Variance | Degree of freedom (df) | Sum of Squares (S.S.) | Mean Squares (M.S.) | F Value                           | Level of Significance                     |
|---------------------|------------------------|-----------------------|---------------------|-----------------------------------|---|
| Between             | (3 -1) = 2 (a-1)       | 782.4                 | 391.20              | $\frac{391.20}{29.95}$<br>= 13.06 | Significant at 0.01 level of significance |
| Within              | (120-3) = 117 (N-a)    | 3504.6                | 29.95               |                                   |   |

Table: 1.9 exhibit that the F-value 13.06 for df (2,117) for the Experimental Group - I, Experimental Group - II and Control Group is significant at 0.01 level. Thus the application of "t" test becomes necessary to compare the two groups at a time done at post-test stage.

Table: 1.10

Difference in the Mean Gain Scores of the Students of Experimental Group - I and Control Group on Achievement in English Grammar

| Treatment            | N  | Mean  | S.D. | t-value | Level of Significance                     |
|----------------------|----|-------|------|---------|---|
| Experimental Group-I | 40 | 13.20 | 3.84 | 3.54    | Significant at 0.01 level of significance |
| Control Group        | 40 | 09.40 | 5.60 |         |   |

Table: 1.10 indicates that the 't' value of 3.54 for df 78 for the difference in mean gain achievement scores in English Grammar of the students of Experimental Group-I and Control Groups is significant at 0.01 level. The mean, score of 13.20 of the student of Experimental Group-I have gained significantly higher than the students of Control Group on achievement in English Grammar.

**Table: 1.11**  
**Difference in the Mean Gain Scores of the students of Experimental Group - II and Control Group on Achievement in English Grammar**

| Treatment              | N  | Mean  | S.D. | t-value | Level of Significance                     |
|------------------------|----|-------|------|---------|---|
| Experimental Group- II | 40 | 15.60 | 3.62 | 5.88    | Significant at 0.01 level of significance |
| Control Group          | 40 | 9.40  | 5.60 |         |   |

Table: 1.11 indicates that the 't' value of 5.88 for the difference in mean gain scores of the students of Experimental Group - II and Control Group on achievement in English Grammar is significant at 0.01 level, for df 78. Also, the mean gain score of 15.60 of the students of Experimental Group - II is higher than that of Control Group which is 9.40. This indicates that the students of Experimental Group - II have gained significantly higher than the students of Control Group.

**Table: 1.12**  
**Difference in the Mean Gain Scores of the Students of Experimental Group - I and Experimental Group - II on Achievement in English Grammar**

| Treatment               | N  | Mean  | S.D. | 't' value | Level of Significance                     |
|-------------------------|----|-------|------|-----------|---|
| Experimental Group - I  | 40 | 13.20 | 3.84 | 3.44      | Significant at 0.01 level of significance |
| Experimental Group - II | 40 | 15.60 | 3.62 |           |   |

Table: 1.12 indicates that the 't' value of 3.44 for df 78 for the difference in mean gain scores of the students of Experimental Group - I and Experimental Group-II on achievement in English Grammar is significant at 0.01 level. The mean gain score of 15.60 of the students of Experimental Group - II is higher than that of Experimental Group - I which is 13.20. This indicates that the students of Experimental Group - II have been gained higher than the students of Experimental Group - I.

**Major Findings**

On the basis of the results obtained from analysis of the data and the interpretation of the results done numerically, related to a students achievement in English Grammar the following major findings were found.

**H1** There was no significant difference in the mean scores on the criterion Achievement Test in English Grammar, of the three groups of students taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching, before the experimental treatment. It is concluded that the calculated value of F is less than standard table value at .01 level of significance at df

2,117, therefore the hypothesis is rejected and there exists no significant difference between mean achievement of Concept Attainment Model, Memory Model and Conventional Method of Teaching before Experimental Treatment and further there is no need to apply 't' test to compare Concept attainment Model, Memory Model and Conventional Method of teaching to make comparison between two variables.

**H2** There was significant difference in the mean scores on the criterion Achievement Test in English Grammar of the three groups of students taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching, after experimental treatment. In table no. 1.6, the mean achievement in English Grammar taught through Concept Attainment Model is more than Conventional Model after Experimental treatment. In table no. 1.7, the mean achievement in English Grammar taught through Memory Model is more than Conventional Model after Experimental treatment. In table no. 1.8, the mean achievement in English Grammar taught through Memory Model is more than Concept Attainment Model after Experimental treatment. It is finally concluded that the mean achievement of Memory Model in teaching English Grammar is better than Concept Attainment Model and the mean achievement of Concept Attainment Model in teaching English Grammar is better than Conventional Method.

**H3** There was a significant difference in the mean gain scores on the criterion Achievement Test in English Grammar of the three groups of students taught English Grammar with the use of Concept Attainment Model, Memory Model and Conventional Method of teaching after experimental treatment. In table no. 1.9, the gain achievement in English Grammar taught through Concept Attainment Model is more than Conventional Model after Experimental treatment. In table no. 1.10, the gain achievement in English Grammar taught through Memory Model is more than Conventional Model after Experimental treatment. In table no. 1.11, the gain achievement in English Grammar taught through Memory Model is more than Concept Attainment Model after Experimental treatment. It is finally concluded that the gain achievement of Memory Model in teaching English Grammar is better than and the gain achievement of Concept Attainment Model and gain achievement of Concept Attainment Model in teaching English Grammar is better than Conventional Method.

**Conclusions**

On the basis of findings, the following conclusions have been drawn. This study shows that the post-test achievement mean scores of the experimental and control groups, controlling for intelligence and Socio-Economic status, differ significantly in favor of the experimental groups. This implies that the students who were taught English Grammar through concept Attainment Model and Memory Model have shown significant improvement in the Achievement in English Grammar than the students who were taught through Conventional



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Method. This suggests that Concept Attainment Model and Memory Model contributes in raising the achievement of students. The group of students taught English Grammar through Memory Model have shown significantly higher achievement than the group of students taught English Grammar through Concept Attainment Model. The group of students taught English Grammar through Concept Attainment Model have shown significantly higher gain in achievement than the group of students taught English Grammar through Conventional Method. The group of the students taught English Grammar through Memory Model have shown significantly higher gain in achievement than the group of students taught English Grammar through Conventional Method. The group of students taught English Grammar through Memory Model have been shown significantly higher gain in achievement than the group of students taught English Grammar through Concept Attainment Model.

## Educational Implications

The present study has implications for teachers and teacher educators .

## Implications for Teachers

The models of teaching serve as a repertoire of instructional approaches for teachers to tailor the teaching-learning environment to the pre-disposition of the learners to achieve a variety of educational objectives. With the Concept attainment Model, a teacher have the objective to help students to acquire bodies of useful information, and help them develop the thinking skills. By Memory Model in classroom, teacher develops interest to improve the memorization of material by the student that they can recall it when needed. The capacity to take information to integrate it meaningfully and later to retrieve it at will is the final outcome of memory learning. It is agreed by all that the ability to remember is fundamental to intellectual, effectiveness. The teacher should help them at every stage of learning. Today, when there is an exponential increase in knowledge, it is impossible for teachers to teach everything in the classroom. However, if the students are trained in the skill of self learning, they would be able to acquire efficiently more knowledge with lesser dependence on their teacher. Concept Attainment Model and Memory Model help teachers to overcome this problem.

## Implications for Teacher Educators

Concept Attainment Model and Memory Model are effective teaching strategies in enhancing scholastic achievement of learners as shown by results of the present study. Therefore teacher educators should analyze every activity of the models and attain competency in them. They should plan and implement training strategies based on these models of teaching to train teachers.

Teacher educators should provide theory Concept Attainment Model and Memory Model to pre-service teachers, demonstrate lessons through these models and help student teachers to undergo practice in the use of these models. In this way, student-

teachers should be trained in the application of Concept Attainment Model and Memory Model so that they may use these strategies in their classrooms for better teaching.

Not only this, Concept Attainment Model and Memory Model are better transactional approaches for in-service teachers. These teachers need to be oriented time to time through these strategies for improvement of teaching skills.

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