# A Study of Effectiveness of Concept Attainment Model in Teaching on Triangle of Mathematics at Secondary Level of Standard VIII

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*Abstract*

*The present study is experimental in nature. The following were the objectives of the study : (1)To prepare the Concept Attainment Model on Triangle of Mathematics of Standard VIII and (2)To study the effectiveness of Concept Attainment Model(CAM)and Traditional Method(TM) on Triangle of Mathematics of Standard VIII. The students of standard VIII of the Gujarati medium high school of Rajkot were considered as the population. For the experimentation 60 students were selected from one school of Rajkot. 60 students were selected from school farming two groups. There 60 students were randomly clarified into two groups. In each group, there were 30 students. Experimental type research method was used. The investigator selected True-experimental design namely "Randomized two groups post-test only experimental design". In the present study the investigator constructed Mathematical Achievement Test (Post-test) on Triangle of Standard VIII was used. To find out significant of difference between Mathematical achievement of two groups, statistical technique t-test was used. For that M and SD of Mathematical achievement scores on post-test of both groups were calculated. The study revealed that Concept Attainment Model of Triangle is more effective than Traditional Method with respect to Mathematical Achievement of the students. So, Concept Attainment Model was found to be effective in terms of achievement of students in Mathematics.*

*Key Words*

*Concept Attainment Model (CAM)*

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## 1 INTRODUCTION

Education is a tri-polar process, in which teacher student and curriculum are the three poles. The process of teaching & learning is complex one. The process of teaching is planned by teacher for the purpose of better learning of the students. Effective teaching is possible only when teacher has the knowledge & skill of using proper instructional modes. At the secondary level teaching of Mathematics is mostly lecture cum narration method without using any kind of instructional material. Teaching of Mathematics at this level mostly becomes 'telling & testing' process, which cause failure of attainment of appropriate teaching- learning goals. For effective teaching & meaningful learning in Mathematics at secondary school level, there is a need of accepting new modes of instructions. It involves various models of instructions useful for teaching learning For better understanding the basic concepts in Mathematics there is a need of acceptance of models of teaching in day today teaching. The investigator felt the need of examining the effectiveness of concept attainment model in teaching Mathematics.

Mathematics today is becoming increasingly complex and abstract. It is therefore important that new methods and techniques of teaching must be introduced in order to make the teaching of Mathematics more effective and efficient. These are the days of knowledge explosion. Hence the learners must be prepared to process information suitably and meaningfully so that the information can be retained for a longer time and can be used in different situations of life. In order to accomplish this objective, the root and fruit of knowledge, that is, the pupils must attain concept.

Mathematics teachers need to stress three kinds of objectives in teaching and Learning .The first kind, Cognitive, does receive major emphasis by teachers. Cognitive goals stress pupils achieving well in acquiring vital facts in ongoing lessons and units of study. There are selected educators in Mathematics who tend to downplay the importance of vital facts that learners are to achieves. Perhaps the problem here is more of what is done with the fact as compared to saying that pupils achieving factual information is evil. Cognition are salient for students to achieve in ongoing lessons and units of study. Thus there is much knowledge that a students' needs to acquire as well as use the knowledge in a practical way in society. Related to cognition processes are affective ends for pupil attainment. In the present study the investigators efforts is to study of an Effectiveness of Concept Attainment Model (CAM) in the Teaching on Triangle of Mathematics of Standard VIII.

## 2 STUDY RELATED LITERATURE

Looking at the review of researches it can be observed that many researchers have studied CAM by taking different objectives. Teaching methods are recurrent instructional processes, applicable to content of various subjects offered in educational institutions and usable by more than one teacher. These instructional processes promote students learning of different kinds in various subjects. The core of teaching process is the arrangement of environment within which the students can interact and study how to learn.

A Model of Teaching as explained by Joyce and Weil (1994) is description of a learning environment. The model provides a way of delivering and classifying concepts and of training students to become more effective at developing concepts. Concept attainment is "the search for and listing of attributes that can be used to distinguish exemplars from non exemplars of various categories". (Bruner, Goodnow and Austin, 1967).

## 3 OVERVIEW OF CONCEPT ATTAINMENT MODEL

Bruner, Jacqueline Goorow and George Austine developed the Concept Attainment Model of Teaching in 1956. The model emerged out of the study of thinking process in human beings; it is based on the assertion that environment is full of tremendously diverse things and would have been impossible to adjust in it if human beings had not been endowed with the capacity to discriminate and to categorize things in groups. This process of classifying things in groups, benefits human beings in three ways. First, it reduces the complexity of the environment, second, it gives the means by which we identify the objects in the world and third, it reduces the necessity of constant learning.

Bruner and associates devoted their major work to the description of a process by which we discriminate the attributes of things, people and events and place them into categories. According to Bruner (1966), the concept formation leads to concept attainment. In concept attainment, there is only one concept and using clues supplied by the teacher, students try to determine and identity the definition of that concept.

Bruner categorizes the concept attainment model in three Phases as follows:

Phase –1: Reception model of concept attainment.

Phase –2: Selection model of concept attainment.

Phase –3: Unorganized material model of concept attainment.

## 3 METHODOLOGY

### 3.1 Objectives of the Study

The present study aims to fulfil the objectives outlined below:

1. To develop the CAM on Triangle of Mathematics of Standard VIII
2. To study the effectiveness of CAM and Traditional Method (TM) on Triangle of Mathematics of Standard VIII.

### 3.2 Variables of the Study

In the present study independent variable was the programme of teaching. There were two levels of programme: (1) Concept Attainment Model and (2) Traditional Method. The dependent variable was the Mathematical achievement.

### 3.3 Operational Definitions

**Concept Attainment Model on Triangle:** The Concept Attainment Model on Triangle is based on Bruner (1966) considering the prescribed three Phases. According to these three phases, worksheets of Triangles were prepared. These worksheets were given for expert's opinion. The expert's opinions were incorporated and were taken in final form.

**Traditional Method (TM):** The teacher teaching the units of Triangle traditionally has been considered as Traditional Method (TM).

**Mathematical Achievement:** The score on Mathematical Achievement Test (Post-test) on Triangle of Standard VIII was said to Mathematical achievement.

### 3.4 Research Design

For present study, experimental type research has been undertaken and therefore, "Randomized Two Groups Post-test Experimental Design" has been used for the study.

### 3.5 Population and Sample of the Study

The students of standard VIII of the Gujarati medium high school of Rajkot were considered as the population. For the study 60 students were selected from one school of Rajkot. These 60 students were randomly classified into two groups one was treated as controlled and another as experimental. In each group, there were 30 students.

### 3.6 Tool and Data Collection for the Study

For the present study, the Mathematical Achievement Test (Post-test) on Triangle of Standard VIII was constructed considering the selected concept. The tests were finalized within criteria of validity. The Mathematical Achievement Test on Triangle was administered at the end of the experiment. The students' scores on the Mathematical Achievement Test were recorded.

### 3.7 Hypothesis of the Study

On the basis of the Objective No.2 following Null Hypothesis was formed and tested.

Null Hypothesis (Ho): There will be not significant difference between the mean achievement scores of post-test of the group taught CAM & TM.

### 3.8 Data Analysis

The collected data were tabulated before the analysis. The statistical techniques used were Mean, Standard Deviation and t-test for testing the null Hypothesis.

## 4 RESULT

To find out significant of difference between Mathematical achievements of two groups, statistical technique t-test was used. For that M and SD of Mathematical achievement scores on post-test of both groups were calculated. Results of the analysis are presented in Table-1.

**Table 1: Significance of Difference Between a Mean Achievement Scores of CAM Group and TM Group**

| Group | Observations | Mean | Standard Deviation | Difference of Mean | t-value |
|---|---|---|---|---|---|
| CAM | 30 | 38.28 | 3.11 | 23.13 | 16.66** |
| TM | 30 | 15.15 | 4.99 | | |

** Significant at 0.01 level.

Observation of Table- 1 reveals that the mean of the CAM group was 38.28 and mean of the TM group was 15.15 and the t-value was 16.66.The t-value for significance of difference between these two levels 0.05 and 0.01. So, the null hypothesis “There will be no significant difference between the mean achievement score of post-test of the group taught through CAM and TM”, was rejected. It means there was difference in achievement scores of CAM group and TM group. The mean scores of CAM group were higher than that of the TM group. So, it can be concluded that the Concept Attainment Model of Triangle was more effective than Traditional Method with respect to instruction for Triangle in Mathematics.

## 5 CONCLUSION

Concept Attainment Model was found to be more effective in terms of achievement of students in Mathematics. The mean scores of achievement in Mathematics of the group taught through the Concept Attainment Model were found to be significantly higher than those of who taught through the Traditional Method.

## 6 EDUCATIONAL IMPLICATIONS

On the basis of the study, following educational implications can be drawn:

1. CAM of Triangle has been proved effective in the case of samples from standard VIII. So, teachers should use these programme for teaching in Mathematics.
2. Where the school text book is prepared should be representing in teaching of concept, problems or examples for some content points by CAM. So the teachers should know this programme to execute in teaching and learning.
3. In this teaching strategy, the environment of the classroom has to be open, free, cooperative and encouraging with a scope for good deal of student's activity.
4. The CAM provides wide opportunity to students for acquiring concepts, interpreting the data and applying the principles in new and differential situations.
5. The nature of the CAM demands greater involvement of students in the teaching-learning situations.
6. In this approach, students get examples presented and also get to differentiate among the hierarchical order of information.
7. It helps in strengthening the cognitive structure of the students.

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