



# Effect of Concept Attainment Model on Mathematics Achievement of 8<sup>th</sup> Graders in the Unit of Square and Square Root

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## Abstract:

*The present study was designed to investigate the effect of concept attainment model on mathematics achievement of VIII<sup>th</sup> graders in the unit of square and square root. The sample was consisted of 79 VIII<sup>th</sup> graders selected randomly into two groups. In the study, counter balance experimental design was applied. The tools used in the present investigation was self-made concept attainment model for teaching square and square-root and a criterion referenced test to measure the achievement. The mean, S.D. and T-ratio were calculated. The result of present investigation shows that the concept attainment model was more effective than traditional method, but the achievement of the students belonging to the high academic achievement group did not differ significantly either they have learnt by concept attainment model method or traditional method.*

## 1. Rationale

The Education Commission (1964-66) recommended mathematics as a compulsory subject for students at school levels. In mathematics curriculum, content and presentation of content are the two most important and inseparable components. Research evidence is inadequate to say anything definite about which method is going to be the most effective for presentation of a particular type of mathematics content. To teach mathematics content we assume that a model of teaching is a fixed, inadaptive formula for teaching which should be employed rigidly for best results. Fortunately, it leads us into an impossible dilemma. It is important to know which teaching method is most effective for presentation of a particular type of mathematics content. Joyce and Weil (1976) have described different models of teaching based on different theories of teaching. Studies conducted in India and abroad on models of teaching by Hutton (1980), Elefant (1980), Voss (1982) Sanchez (1985) Misra (1988) Bhveja (1989) Choudhury (1989) Naih (1997) Das (1998) almost all such studies indicate at the higher or comparable achievement when models of teaching are used then when they are not used. In the Indian context the most important question is the right selection of models of teaching from the available repertoire, which would be applicable, functional and workable in Indian situation. In this study concept attainment model (CAM) is developed and tried out to teach square and square root to the VIII<sup>th</sup> standard students.

## 2. Title of the study

Effect of Concept attainment model on mathematics achievement of VIII<sup>th</sup> graders in the unit of square and square root

## 3. Objectives of the study

1. To draw a lesson plan using concept attainment model for teaching square and square root to the VIII<sup>th</sup> standard students.
2. To compare the achievement with respect to CAM method and the traditional method(T-method).
3. To construct achievement test on the basis of criterion reference test.

#### 4. Hypotheses

- Ho<sub>1</sub>:** There will be no significant difference between the mean achievement scores of students learnt by CAM method and T-method.
- Ho<sub>2</sub>:** There will be no significant difference between the mean achievement scores of the boys learnt by CAM method and T-method.
- Ho<sub>3</sub>:** There will be no significant difference between the mean achievement scores of the girls learnt by CAM method and T-method.
- Ho<sub>4</sub>:** There will be no significant difference between the mean achievement scores of the students belonging to the high academic achievement group learnt by CAM method and T-method.
- Ho<sub>5</sub>:** There will be no significant difference between the mean achievement scores of the students belonging to the low academic achievement group learnt by CAM method and T-method.

#### 5. Research Design and methodology

##### 5.1 Method

Counter Balance design of experimental method was applied hence experimental treatment was applied on both the groups turn-by-turn.

##### 5.2 Sample

The sample of 79 students was chosen from VIII<sup>th</sup> class from two secondary schools of Bhavnagar city. The total sample was consisted of 49 boys and 30 girls out of them 29 were belonging to high academic achievement and 50 were belonging to the low academic achievement. High and low academic achievement were decided with the help of previous years academic achievement.

**Table 1: Mean, SD and t-ratio between CAM method and T-method**

Groups	All students			Boys			Girls			High Academic Achievement group			Low Academic Achievement group		
	Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio	Mean	SD	t-ratio
CAM method	34.47	2.93	4.41	35.73	3.58	2.40	33.20	3.93	3.28	36.22	3.47	0.92	33.30	2.66	4.65
T-method	32.29	3.28		34.04	3.40		30.57	3.28		35.31	4.04		30.32	3.07	

#### 6. Type of variables involved in the study

In the experiment teaching method was an independent variable. CAM method and T-method were two levels of independent variable. Achievement of post-test was a dependent variable. Gender, academic achievement was a moderate variable. The syllabus, the teacher, number of periods was a controlled variable.

#### 7. Tools

1. Concept attainment model was developed in three phase 1. Presentation of labeled positive negative examples and identification of concept 2. Students identify unlabelled examples and generate examples 3. Students discuss their thoughts and hypotheses.
2. Achievement test was developed on the basis of criterion referenced test with respect of four well defined domains.

#### 8. Analysis and interpretation of data

1. It is observed from table-1 that P value for all students was 4.41 which is significant at 0.01 level so the difference between the mean achievement was significant. This result leads to reject the null hypothesis No. 1 and so it is concluded that the mean scores of achievement test of CAM method learners were found much higher than mean achievement scores of T-method learners.
2. The t-value of boys group found 2.40 which is significant at 0.05 level this result reject the null hypothesis No. 2 at 0.05 level and not at 0.01 level so it is concluded that achievement of boys learnt by CAM method was found partially more than T-method learner.

3. Achievement of girls was found 3.28 which is significant at 0.01 level. This result rejects the null hypothesis No. 3 so it is concluded that achievement of girls learnt using CAM method were found more than 3 method learners.
4. The calculated t-value for high academic achievement group was found 0.90 which is not significant at 0.05 level so null hypothesis No. 4 was retained. This implies that mean achievement scores of high academic achievement group student does not differ significantly either they learnt by CAM method or T-method.
5. The t-value for low academic achievement group was found 4.65 which is significant at 0.01 level so null hypothesis No. 5 was rejected so it is concluded that achievement of low academic achievement group learn by CAM method were found more than T-method.

## 9. Conclusion

The result of present study shows that the CAM method was better than T-method with respect to student achievement. This result is consistent with the findings of DAS (1998) but the achievement of students belonging to the high academic achievement group did not differ significantly either they learnt by CAM method or T-method.

## References

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