

RRST-Social Sciences

# Effectiveness of Concept Attainment Model on Mental Process and Science Ability

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| Article Info   | Abstract  |
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| <b>Article History</b><br><i>Received</i> : 01-02-2011<br><i>Revised</i> : 05-03-2011<br><i>Accepted</i> : 01-04-2011                    | Model of teaching is an innovative method of teaching. A variety of teaching approaches have been evolved to design instruction. But which approach/ Model of teaching is most appropriate, having better impact effective, efficient, interesting?.....! can only be answered through research keeping each Model's instructional and nurturant effects in view. A step was needed to prove effect of Concept Attainment Model on mental processes and attitude towards science and the like. Therefore the present investigator undertook the problem of evaluating the effectiveness of Concept Attainment Model on mental process and science ability. Thus the present study can be stated as "Effectiveness of Concept attainment Model in mental process and science Ability". |
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## Introduction

Teaching is often thought as something that comes naturally to people who know their subject. But teaching is an intriguing, important and complex process. It takes place in a complicated social institution which is filled with diverse people.

The teacher must learn to control five processes of teaching.

- i. Making and using of knowledge
- ii. Shaping the school
- iii. Teaching with strategy
- iv. Creating interpersonal climates
- v. controlling a teaching personality

Burner also emphasized four major features of theory of instruction in effective teaching[1].

- (a) Predisposition towards learning
- (b) Structured body of knowledge
- (c) Sequences of material to be learnt
- (d) Nature and paving of reward and punishment

However teacher does broadly remain pivot around which the entire process revolves in the formal system. During the last two decades many new methods of teaching and training have been developed, tested, modified and adopted to different kinds of teaching learning situation. Model of teaching is an innovative method of teaching. There is need to direct efforts towards transformation of teaching methods right upto development of science and technology, curriculum and material research along with teacher orientation to receive attention. The ultimate responsibility of information processing has been enshrined by the society in teachers. Thus a theory of teaching must attempt to set forth the means of maximizing learning on the part of children. For achieving needed learner

behaviour intellectual development and acquisition of knowledge and specific mental process like reasoning, scientific creativity be primary concerns for effective and efficient information processing.

In the concern Joyce has stated, "To provide an all round development we need to design suitable instructional strategies which helps our students grow emotionally, physically, socially and intellectually. There still exists a big gap between theoretical knowledge and actual teaching in classroom or schools. Models of teaching as strategies need to be incorporated in our teaching practice [2]." A variety of teaching approaches have been evolved to design instruction. But which approach/Model of teaching is most appropriate having better impact, effective, efficient, interesting. Can only be answered through research keeping each Model's instructional and nurturant effects in view.

## Objectives

1. To design and develop instructional plans for teaching selected units in science from the prescribed course of study for class IX on Burner's Concept Attainment Model.
2. To study the effectiveness of teaching through Concept Attainment Model on-
  - i. Development of reasoning ability of students
  - ii. Development of scientific ability of students

## Hypothesis

In order to attempt the study, the following hypothesis have been formulated –

1. Concept Attainment Model is an effective teaching Model in developing reasoning ability.

2. Concept Attainment Model is an effective teaching Model in developing general science ability.

**Material and Methods**

**Sample**

The sample consisted of 30 students of IX<sup>th</sup> class from two colleges. These students were selected by lottery system. All the students were in the age group 13 – 15 years. The average age of sample group is 14 years. All the students were persuing the same course of study of U.P. Board, with same official medium of instruction as Hindi.

**Tools**

Following tools are used for the study:

- (i) Reasoning ability Test (RAT) in Hindi by L.N. Dubey was used for the measurement of reasoning ability of the students.
- (ii) General science ability Test in Hindi by Dr. Jai Prakash and Dr. J.S. Gupta for measuring the scientific ability of students.

**Analysis of data**

Table 3.i: Individual Effectiveness : t-ratio for Concept Attainment Model on Reasoning

| Stage     | N  | df | Mean | S.D. | t-ratio | Remarks                            |
|-----------|----|----|------|------|---------|------------------------------------|
| Pre Test  | 30 | 29 | 69.7 | 9.41 | 4.53    | Significant at 0.01 and 0.05 level |
| Post Test | 30 | 29 | 60.5 | 5.56 |         |                                    |

The obtained t-ratio 4.53 is significant at 0.01 and 0.05 level of significance for degree of freedom 29. The difference in means of post-test scores and pre-test scores could therefore, be attributed to treatment effects. This reveals that the group taught by Concept Attainment Model achieved significantly greater mean score on reasoning ability at post-test stage as compared to pre-test. Thus experimental group or subjects

In order to findout the individual effectiveness of Concept Attainment Model, the scores of pupils on criterian measures were obtained before the commencement of the experiment and after the treatment. Pretest scores were obtained on reasoning and attitude towards science for the smaple group where as post-test scores were obtained on reasoning and science attitude for the same sample group.

To study the individual effectiveness of Concept Attainment Model the gained scores were obtained by pre and post treatment testing followed by computation of t-ratios of difference in means of relavant sample group. Levels of significance have been set at 0.01 and 0.05 for these ratios to arrive at inferences.

**i. Effectivenss of teaching model in terms of mental process**

Intra group comparison of pre-test versus post-test means scores was conducted on mental process as under Concept Attainment Model on development of reasoning ability, t-test was employed to study the effectiveness of Concept Attainment Model on development of reasoning ability in treatment.

exposed on Concept Attainment Model of teaching achieved higher scores on reasoning ability at post-test stage. In other words Concept Attainment Model of teaching is effective in developing reasoning ability among students.

**ii. Effectiveness of concept attainment model in terms of general-science ability:**

Table 3.ii: Effectiveness of CAM on Science ability

| Stage     | N  | df | Mean  | S.D.  | t-ratio | Remarks                            |
|-----------|----|----|-------|-------|---------|------------------------------------|
| Pre Test  | 30 | 29 | 58.16 | 10.30 | 8.09    | Significant at 0.01 and 0.05 level |
| Post Test | 30 | 29 | 77.83 | 7.95  |         |                                    |

In the above table it can be clearly noticed that experimental group has achieved higher score at post-test stage as compared to pre-test stage in terms of science ability. It is further found in the table that t-ratio between pre and post test mean score of the students exposed to CAM of teaching is 8.09. This value is most significant at 0.01 and 0.05 level of significance for 29 degree of freedom. The difference in the two means is thus attribute to the teaching by Concept Attainment Model (treatment). This clearly implies that the experiment group, taught through CAM of teaching achieved a significantly higher score on science ability as a result of

treatment. Thus CAM is effective in fostering the ability of students towards science, i.e. it is able to bring about significant development in general science ability.

**Result and Discussion**

The result have been drawn keeping in view the objectives formulated for the study and by the testing of hypothesis framed there after. Major findings of the study drawn-out, presented in accordance with the objectives, are as follows:

- i. Concept Attainment Model of teaching was found effective in developing reasoning ability among students.
- ii. Concept Attainment Model of teaching was found to promote general science ability of students.

#### References

- [1] Burner, J. (1966). *Toward a Theory of Instruction*. Cambridge, MA: Harvard University Press.
- [2] Joyce, Bruce and Weil Marsha (1985). *Models of Teaching*. New Delhi: Prentice Hall of India Pvt. Ltd.