



EFFECT OF CONCEPT ATTAINMENT MODEL ON ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN PHYSICS

Dr. Rajwinder Kaur

Assistant Professor Dev Samaj College of Education for Women, Ferozepur

ABSTRACT Concept Attainment Model as a teaching strategy to teaching is concerned with the concept formation and concept attainment. Concept attainment is a process of finding out defining attributes of a given category. Concept Attainment Model helps to clarify ideas. This study was conducted to determine the effect of Concept Attainment Model on academic achievement of Secondary School Students in Physics by using experimental method. The sample of the study included 60 Class IX students. Purposive sampling technique was used to collect data. The students were divided into two groups (30 students in each group) i.e. experimental and control group on the basis of scores on intelligence test. The experimental group was taught through concept attainment model and the control group was taught by using traditional method (lecture method). After completion of teaching, a self-developed achievement test was administered on both the groups. For drawing out the result, t-test was used. The result showed that students exposed to concept attainment model possessed higher score than the students taught through traditional method.

KEYWORDS :

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.

- Making and using of knowledge
- Shaping the school
- Teaching with strategy
- Creating interpersonal climates
- controlling a teaching personality

Model of teaching is an innovative method of teaching. There is need to direct efforts towards transformation of teaching methods right up to development of science and technology, curriculum and material research along with teacher orientation to receive attention. Thus a theory of teaching must attempt to set forth the means of maximizing learning on the part of children.

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."

The Concept Attainment Model (CAM) is a teaching strategy to facilitate the learning of concepts. The process of teaching involves presentation of positive and negative examples of the concept to learners. The learners are required to consider the positive and negative examples and identify attributes which are present in all the positive examples and are not present in the negative examples. On the basis of these attributes, they formulate and reformulate hypotheses with regard to the naming of the concept. At this stage, if the learners find it difficult to name the concept, or to state its rule, the teacher helps them. In this model, the responsibility of learning concepts rests on the learners. The teacher extends support at the stage when the learners find it difficult to name the concept and its rule.

There are three variations of the model- the Reception Model, Selection Model and the Unorganized Materials Model. These three forms of the model differ in the mode of presentation of the examples (positive and negative) and the activities which the teacher undertakes to teach the concept. The model is quite appropriate for learners at all the stages-primary to senior secondary. However, the third phase of the model- analysis of thinking strategies is not feasible with very young children.

Importance of Concept Attainment Model

Concept Attainment Model is very useful in teaching the concepts through the inductive reasoning. Different difficult concepts of various

disciplines can be learnt easily by the learner with the help of Concept Attainment Model. The model works wonders in classroom for language teaching and general subjects. The language learner attains the linguistic structure, grammar or the syntactic structure of every language. The concepts formed in minds of the learners can be retained by them in the mind for a long time. Concept Attainment Model helps the students to work together in cooperative groups to present information. This model assists students in paying attention to details when organizing their information. Students may become open-minded to other people's thoughts and ideas through their group work

Gagnrade (1987) in his study compared the achievement in science through concept attainment model and lecture method and reported that combination of concept attainment model and lecture method was significantly superior to the conventional method of teaching science. Sushma (1987) studied the effectiveness of concept attainment model and inquiry models on the students of Class VIII and concluded that the concept attainment was more effective than the biological inquiry model. Baveja (1988) also found that teaching programmes in biology which were based on the concept attainment model were more effective than the traditional programme for concept learning and retention. Zacharia (1989) assessed the effect of concept attainment model on teaching of economics and found that concept attainment model is more effective than the conventional method in teaching of economics. Joshi and Patra (1993) in their study found that Mean scores of the students taught through concept attainment model were significantly higher than those taught through traditional method. Rathod and Verma (2000) reported that integrated teaching strategy improves the inductive reasoning ability of the students. Kalani (2008) in a study found that achievement of students who were taught by concept attainment model was better than those taught by conventional method. Aruna and Smitha (2009) studied the effectiveness of concept attainment model of teaching with constructivist method of teaching on achievement in biology and showed a significant difference between the mean scores for achievement between experimental and control groups.

All these studies convey a message to the teacher that the concept attainment model is more effective than the traditional method of teaching in facilitating acquisition and retention of concepts on the part of pupils.

OBJECTIVES

The objectives of the study were:

- To find out the effectiveness of concept attainment model of teaching on academic achievement of class IX students in physics.
- To find out the effectiveness of traditional method of teaching on academic achievement of class IX students in physics.
- To compare the effectiveness of concept attainment model with traditional method of teaching of physics.

HYPOTHESES

1. Concept attainment model is superior to traditional method of teaching of physics .
2. There exists a significant difference in achievement in biology between the group of students taught through concept attainment model and traditional method.

DESIGN OF THE STUDY

In the present study experimental method was used to collect data. Pretest- Posttest matched group experimental design was used in the study. Purposive sampling technique was used. The study was conducted on the sample of 60 students of class IX.

1. The students were divided into two groups, i.e. experimental group and control group.
2. Students of both experimental and control groups were selected on the basis of their intelligence test scores.
3. Intelligence test, developed by Dr.S.S.Jalota was used for selection of groups.

The experimental group was taught through concept attainment model and the control group was taught through traditional method (lecture method). The effectiveness of concept attainment model on academic achievement in physics was determined by administering the achievement test on both the groups of students. Self-constructed achievement test was used for finding the achievement of students in physics.

RESULT AND DISCUSSION

Results of the study are presented below in three different parts:

- Results of achievement test in physics of the experimental group.
- Results of achievement test in physics of the control group.
- Results relating to comparison between the experimental and control group.

1. Results of achievement test in physics of the experimental group.

Table-1: Achievement Test Scores of the Experimental Group in Physics

Group	No. of Students	Treatment	Mean Score	S.D
Experimental Group	30	Concept Attainment Model	40.17	3.20

Table 1 shows the achievement test scores of the group of students exposed to concept attainment model in physics. It shows that the mean score of the group is 40.17. By referring the norm of the achievement test, it was found that the mean score of the group falls in the high category. This indicates that the group of students taught through concept attainment model shows high achievement in physics.

2. Result of achievement test in physics of the Control Group.

Table-2: Achievement Test Scores of the Control Group in Biology

Group	No. of Students	Treatment	Mean Score	S.D
Control Group	30	Traditional Method	34.52	4.56

Table 2 shows the achievement test scores of the group of students taught through traditional method. The table reflects that the mean score of the group is 34.52. By referring the norm of the achievement test, it was found that the mean scores of the group falls in average category. This indicates that the group of students taught through traditional method shows average achievement in physics.

3. Result relating to comparison between the Experimental And Control Group.

Table-3: Difference between the Experimental and Control Groups

Group	Mean	S.D	df	Mean diff.	t-value	Level of significance
Experimental Group	40.17	3.20	58	5.65	6.41	0.01
Control Group	34.52	4.56				

Table 3 shows the data of the experimental and control groups of sec. school students in achievement in physics . The mean score of the experimental group is 40.17 and that of the control group is 34.52. The

S.D of the experimental group is 3.20 and that of the control group is 4.56. The mean difference between the two groups is 5.65. The calculated t-value is 6.41, which is significant at both the 0.05 and 0.01 levels of significance. This shows that there exists significant difference between experimental group and control group in their achievement in physics. It can be said that the achievement of the experimental group in physics is higher than that of the control group. Hence, the Hypothesis 1, i.e. “Concept Attainment Model is superior to traditional method of teaching of physics ” is accepted. Hypothesis 2, i.e. “There exists a significant difference in achievement in physics between the group of students taught through concept attainment model and traditional method” is also accepted.

CONCLUSION

In the study an attempt has been made to explore the effectiveness of concept attainment model on achievement of secondary school students in physics. Concept attainment model was found to be effective in influencing the achievement level of class IX students in physics. It helps to clarify ideas and to introduce aspects of content. Achievement level of the students in physics taught through concept attainment model was found to be higher than the achievement level of students taught through the traditional method. The students of experimental group were looking well motivated and ready to learn through the concept attainment model.

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