



TO STUDY THE EFFECTIVENESS OF CONCEPT ATTAINMENT MODEL OF TEACHING ON ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN CHEMISTRY

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Abstract

Concept Attainment Model as 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. It engages students in formulating a concept through the use of illustrations, word cards or specimens called examples. Concept Attainment Model is well suited to classroom use. This study was conducted to determine the effect of Concept Attainment Model on academic achievement of Secondary School Students in Chemistry 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. 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.



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Introduction

Education is a process which revolves around teacher, student and curriculum where teacher has to play a very important role. The process of teaching and learning succeeds when it is properly planned and meticulously executed. The content and techniques of teaching depends to a great extent on what we want to achieve. With the changing scenario of education it is supposed to find ways and means to improve the teaching techniques to cope with the need of the times.

Concept attainment is the process of defining concepts by determining the attributes that are absolutely essential to the meaning making and discriminate between what is and what is not an example of the concept. A teacher has to master multiple roles in order to become more professional. The professional competence can be expanded in two ways: first

by increasing the range of teaching strategies that are needed to be employed; second by becoming increasingly skilful in the case of these strategies (Joyce and Weil, 1972).

A theory of teaching must attempt to set forth the means of maximizing learning, needed learner behavior, intellectual development and acquisition of knowledge and specific mental process like reasoning, logical thinking, deductive reasoning and scientific creativity be primary concerns for effective and efficient information processing. Teaching of science is based on abstract ideas and concept. It is therefore important that new methods and techniques of teaching must be introduced in order to make the teaching of science more effective and efficient. 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. Because of the importance of concept attainment model of teaching for youngsters achievement in academics, it is apparently relevant to effectiveness of concept attainment model of teaching on achievement in chemistry among secondary school students.

Concept Attainment Model

Concept attainment is the process of defining concepts by determining the attributes that are absolutely essential to the meaning and discriminate between what is and what is not an example of the concept. The concept attainment model is historically linked with the work of Jerome S. Bruner and his associates. The concept attainment model is designed to teach concepts and help students become more efficient at learning and creating concepts and effective in defining, comprehending, applying, and using concepts.

This model is designed to lead students to a concept by asking them to compare and contrast examples that contain the characteristics or attributes of the concepts with examples that do not contain these attributes. It is based on the assumption that one of the best ways to learn a concept is by observing examples of it. Concept attainment model is a search for “listing of attributes that can be used to distinguish exemplars from non-exemplars” of various categories (Joyce & Weil 2007).

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 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.

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.

OBJECTIVES

The objectives of the study were:

1. To find out the effectiveness of concept attainment model of teaching on academic achievement of class IX students in chemistry.
2. To find out the effectiveness of traditional method of teaching on academic achievement of class IX students in chemistry.
3. To compare the effectiveness of concept attainment model with traditional method of teaching of chemistry.

HYPOTHESES

1. Concept attainment model is superior to traditional method of teaching of chemistry.
2. There exists a significant difference in achievement in chemistry 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 chemistry 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 chemistry.

RESULT AND DISCUSSION

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

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

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

Group	No. of Students	Treatment	Mean Score	S.D
Experimental Group	30	Concept Attainment Model	40.27	3.30

Table 1 shows the achievement test scores of the group of students exposed to concept attainment model in chemistry. It shows that the mean score of the group is 40.27. 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 chemistry.

2. Result of achievement test in chemistry 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	34.55	4.66

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 34.55. 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 chemistry.

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	40.27	3.30	58	5.65	6.41	0.01
Control Group	34.55	4.66				

Table 3 shows the data of the experimental and control groups of sec. school students in achievement in chemistry. The mean score of the experimental group is 40.27 and that of the control group is 34.55. The S.D of the experimental group is 3.30 and that of the control group is 4.66. 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 chemistry. It can be said that the achievement of the experimental group in chemistry 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 biology” is accepted. Hypothesis 2, i.e. “There exists a significant difference in achievement in chemistry 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 chemistry. Concept attainment model was found to be effective in influencing the achievement level of class IX students in chemistry. It helps to clarify ideas and to introduce aspects of content. Achievement level of the students in chemistry 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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