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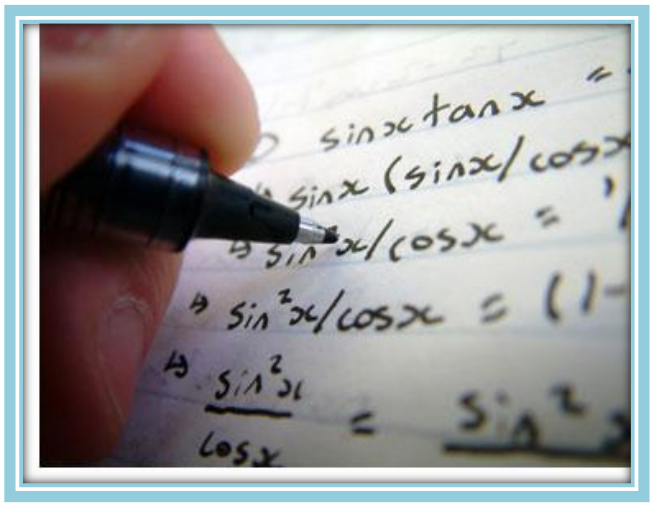
'A Study of the effectiveness of concept attainment model in the teaching of mathematics at secondary school level'



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ABSTRACT

Mathematics has been a challenging subject, since long back, for the teachers to teach and for the students to learn. It is considered as a difficult subject for majority of the students. In most of the cases it is found that mathematics goes difficultfor the students in their advance studies because of poor understanding of the concepts of mathematics at initial stage.Due to lack of understanding of the concepts, students fail to apply them for solving complicated problems of mathematics.

As per the views of various experienced and expert teachers, the conventional method of teaching mathematics has not been so effective for the teaching of concepts of mathematics. It leaves doubts in the mind of the learner. In the teaching of concepts of mathematics through conventional method, all the attributes of the concept are not exposed to the studentsand the way of presenting them is also ineffective because of which doubts and difficulties remain in the mind of the students.

Most of the studies reveal that teaching of mathematics using concept attainment model has resulted in the enhancement of understanding level of the students in mathematics subject. It is an effective technique of presenting attributes of a concept before the students so as to enable them to grasp the concept with all the attributes of the conceptand apply it to solve various complicated problems of mathematics.

Concept Attainment Model (CAM)

The Concept Attainment Model has been developed by Jerome S.Bruner. According to him, a concept can be better developed in the mind of the leaner using the technique of categorization. He was of the opinion that any concept can be identified by its attributes and leaning of a concept implies categorization of such attributes.

The researcher, in this study, has tried to bring out the truth about the myth that teaching of mathematics using concept attainment model may cause effective teaching of concepts of mathematics to the students of Urdu medium secondary schools.

Statement of the problem:

'A Study of the effectiveness of concept attainment model in the teaching of mathematics at secondary school level'

Scope and limitations:

1. This study is limited to the students of VIIIthstandard of Malegaon city.
2. This study is limited to the teaching of the concepts triangle and quadrilateral only.
3. The study is limited to the students of Urdu medium secondary schools only.
4. The study is limited to the comparison of conventional method of teaching mathematics and the use of concept attainment model in the teaching of mathematics.
5. This study is limited to the investigation of the effect of concept attainment model on the attainment of instructional objectives knowledge, comprehension and application.

Objectives of the study:

1. To prepare instructional material to teach the conceptstriangle and quadrilateral using concept attainment model.
2. To compare the achievement of the students when they are taught the concepts of mathematics through conventional method and using concept attainment model.

Hypotheses:

Null hypothesis: There is no significant difference between the achievement of the students, when they are taught concepts of mathematicsby conventional method and using concept attainment model.

1. There is no significant difference between the achievement of the students in relation to knowledge objective, when they are taught concepts of mathematics by conventional method and by using concept attainment model.
2. There is no significant difference between the achievement of the students in relation to comprehension objective, when they are taught concepts of mathematics by conventional method and by using concept attainment model.
3. There is no significant difference between the achievement of the students in relation to application objective, when they are taught concepts of mathematics by conventional method and by using concept attainment model.

Population:

All VIIIth standard students of Urdu medium secondary schools of Malegaon were taken as the population for the study.

Sample:

A sample comprising of 70 randomly selected students was taken for the study.

Experimental design:

Pre-test, post-test equivalent group design was used for the study. Using the scores of pre-test, two equivalent groups were formed viz. Control group and Experimental group. The Control group was taught by conventional method whereas the Experimental group was taught by using concept attainment model. Post test was conducted to measure the achievement of both the groups in relation to knowledge, comprehension and application objectives. Results obtained were analyzed using t-test.

Tools and techniques:

For pre- test and post-test, teacher made achievement tests were used. There face validity and content validity were found to be satisfactory by the experts.

Analysis and interpretation of data:

Scores on post test

Objectives	Control group			Experimental group			t value	Interpretation
	M	SD	N	M	SD	N		
knowledge	50	3.2	35	54	3.4	35	3.02	Significant at .01 level
comprehension	42	2.4	35	50	3.2	35	6.57	Significant at .01 level
Application	40	3.3	35	49	3.1	35	6.91	Significant at .01 level
Overall performance	44	2.8	35	51	3.2	35	5.55	Significant at .01 level

Interpretations:

1. The value of t for knowledge objective is 3.02 which indicate that the difference between the mean scores of students of control group and experimental group is significant at .01 level of significance.
2. The value of t for comprehension objective is 6.57 which indicate that the difference between the mean scores of students of control group and experimental group is significant at .01 level of significance.
3. The value of t pertaining to application objective is 6.91which indicate that the difference between the mean scores of students of control group and experimental group, pertaining to application objective, is significant at .01 level of significance.
4. The value of t for overall performance is5.55showing that the difference between the mean scores of the overall performances of students of control group and experimental groupis significant at .01 level of significance.

Conclusions:

1. The Null hypothesis is rejected. The students achieve significantly better, when they are taught the concepts of mathematics by using concept attainment model instead of conventional method.

2. Hypothesis 1 is rejected. The students achieve significantly better, in relation to knowledge objective, when they are taught concepts of mathematics by using concept attainment model instead of conventional method.
3. Hypothesis 2 is rejected. The students achieve significantly better, pertaining to comprehension objective, when they are taught concepts of mathematics by using concept attainment model instead of conventional method.
4. Hypothesis 3 is rejected. The students achieve significantly better, in relation to application objective, when they are taught concepts of mathematics by using concept attainment model instead of conventional method.

References:

1. LokeshKoul. "Methodology of educational research" Vikas Publishing House, Pvt. Ltd., New Delhi.
2. "Mathematics-standard VIII."Maharashtra State Board of Secondary and Higher Secondary Education, Pune. 2010.
3. Instructional Strategies Online - Concept Attainment
4. Kulbir Singh Sidhu."The Teaching of Mathematics" Sterling Publishers Pvt. Ltd., New Delhi.
5. Sudhir Kumar and D.N. Ratnalikar. "Teaching of Mathematics" Anmol Publications Pvt. Ltd., New Delhi.
6. http://adms706.wikispaces.com/
7. Dr. M.L. Jadhav, "A study of the effectiveness of concept attainment model in teaching of Geography at secondary level." ShodhSamikshaAurMulyankan.