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## EFFECTIVENESS OF GUIDED DISCOVERY METHOD ON CREATIVITY IN MATHEMATICS AMONG SECONDARY SCHOOL STUDENTS

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### ABSTRACT

**C**reativity as a natural talent is needed to be nurtured so that creative individuals can assist their societies solving many problems differently (Sternberg & Lubart, 1995). Creativity was initially believed as a talent possessed by exceptional individuals, creativity can be developed by using array of approaches and techniques in mathematics. Here the investigator has tried on the sample of 60 students by teaching them with guided discovery method and convention method of teaching. Pre-test and post test design is used. The findings of the study shows that the students who belonged to the experimental group, which is taught by guided discovery method significantly have better creativity in mathematics than those students who belonged to the control group. Consequently, the guided discovery proved to be an effective intervention to help the students become active



learners and enhance their creative thinking.

**KEYWORDS:** Guided Discovery Method, Creativity in Mathematics, societies solving.

### INTRODUCTION:

Guided discovery learning is a constructivist instructional design model that combines principles from discovery learning and sometimes radical constructivism with principles from cognitive instructional design theory. "Students discover knowledge without guidance, developing their own understanding. The role of instruction is merely to provide a suitable environment, which in software might be a micro world or simulation. Discovery

learning, or instruction less learning, involves hypothesis formulation and testing.

The role of the teacher is to facilitate the learning than teaching. Guided discovery method is characterized by convergent thinking. The teacher prepares the lessons and guides the students, step by step making the series of discoveries and leads to pre-determined goal. This learning develops thinking skills in particular critical and creativity among the students.

### NEED AND SIGNIFICANCE OF THE STUDY

Guided Discovery learning takes place most notably in problem solving situations where the learner draws on his own experience and prior

knowledge to discover the truths that are to be learned. It is a personal, internal, constructivist learning environment. In the words of Bruner, "Emphasis on discovery in learning has precisely the effect on the learner of leading him to be a constructionist, to organize what he is encountering in a manner not only designed to discover regularity and relatedness, but also to avoid the kind of information drift that fails to keep account of the uses to which information might have to be put." Guided Discovery Learning is an inquiry-based learning method. The concept of discovery learning has appeared numerous times throughout history as a part of the educational philosophy of many great philosophers particularly Rousseau, Pestalozzi and Dewey. "There is an intimate and necessary relation between the processes of actual experience and education" wrote Dewey. It also enjoys the support of learning theorists and

psychologists, such as Piaget, Bruner, and Papert. This method of learning places the students in the place of discoverers and enhances their thinking skills and creativity in mathematics.

### OBJECTIVES

- To prepare lessons transcripts based on guided discovery method on selected topics of mathematics of standard IX state board syllabus.
- To find out the effectiveness of lessons transcripts based on guided discovery method with respect to creativity in mathematics of IX standard students.
- To study the difference between pre-test scores of creativity in mathematics of control and experimental group.
- To study the difference between post-test scores of creativity in mathematics of control and experimental group.

### HYPOTHESES

1. There is no significant difference in the pre test scores of creativity in mathematics of control and experimental group.
2. There is no significant difference in the post test scores of creativity in mathematics of control and experimental group.

### PROCEDURE OF THE STUDY

Experimental design was adopted. Before starting experimentation, the investigator conducted creativity in mathematics test to the both the experiment group and control group and found that there is no significant difference in their mean scores. The students of the experimental group were taught using lesson transcripts based of guided discovery method and the other group using traditional method of teaching. After the treatment the post test was too administered to both the groups. The collected data was subjected to the statistical analysis and the results obtained were interpreted.

**Sample:** The sample of the study consisted of 60 students studying in ninth standard under the State board syllabus in Bangalore city. The sample included both boys and girls.

**Tool:** The tool on mathematical creativity is developed, validated and reliability is established by the researchers. The reliability is found to be 0.73.

### Analysis and Interpretation

**Hypothesis 1:** There is no significant difference in the pre test scores of creativity in mathematics of control and experimental group.

**Table 1: Comparative Mean Scores of Pre-Test Scores of Experimental Group and Control Group**

Group	N	Mean	SD	t-value	Remark
Experimental Group	30	15.62	7.56	1.013	Not Significant
Control group	30	14.05	4.26		

From Table-1, it is found that obtained t-value of experimental group and control group with respect to their creativity in mathematics is less than the table value. Hence the hypothesis -1 is accepted and there is no significant difference between the experimental group and the control group in their creativity in mathematics in the pre-test. Therefore it may be concluded that, the experimental and control group were alike and equal with reference to creativity in mathematics in before subjected to experimentation.

**Hypothesis 2:** There is no significant difference in the post test scores of creativity in mathematics of control and experimental group.

**Table 2: Comparative Mean Scores of Post Test Scores of Experimental Group and Control Group**

Group	N	Mean	SD	t-value	Remark
Experimental Group	30	20.98	4.62	7.16*	Significant at 0.01 level
Control group	30	15.01	2.11		

From Table-2, It is found that obtained 't' value of experimental group and control group with respect to their creativity in mathematics is greater than the table value. Hence the hypothesis-2 is rejected and alternative hypothesis is accepted that there is significant difference between the experimental group and the control group in their creativity in mathematics in the post- test. Therefore it may be concluded that, the experimental group shows better thinking with respect to creativity than the control group after subjected to experimentation.

### SUMMARY OF THE FINDINGS

The students who belonged to the experimental group which is taught by guided discovery method significantly have better creativity in mathematics than those students who belonged to the control group. Consequently, the guided discovery proved to be an effective intervention to help the students become active learners and enhance their creative thinking.

### CONCLUSION

**Based on the findings of the research, the following conclusions were reached:**

- The group taught using guided discovery approach had better mathematical creativity than the group taught using the traditional lecture method.
- The use of group guided discovery approach significantly and positively affects the creativity of the students in Geometry.
- Students are more interested and motivated to do the activities in group guided discovery.

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