

## CONCEPT MAPPING IN SCIENCE CLASS : A CASE STUDY AMONG STUDENTS OF STANDARD IX

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### ABSTRACT

*Concept maps represent the spatial representations and the inter relationships among concepts that are the basic unit of any subject. The present study is aimed at finding the effectiveness of concept mapping as a teaching compared to the traditional method of teaching, it was conducted in science in standard IX. The results reveal that concept mapping is more effective than the conventional method of teaching. Concept mapping creates 'minds-on' environment in the classroom and fasters constructivism in science learning.*

### INTRODUCTION

Concept maps are spatial representations of concepts and their interrelationship that are intended to represent the knowledge structures that human store in their minds ( Jonassen, Beissner & Yacci, 1993 ). The strategy was born out of the constructivist theory of learning which holds that the learner constructs or builds his own knowledge. Instead of describing all concepts and their relation in text, one may choose to draw a map indicating concepts and relations in a graph or network. Visual representation has several advantages. Visual representation allows the development of a holistic understanding that words alone cannot convey, because the graphical form allows representation of parts and whole in a way that is not available in the sequential structure of a running text (Lawson,1994).

### HYPOTHESES

1. There is no significant difference between pre-test and post- test mean achievement scores in science of experimental group students.
2. There is no significant difference between pre-test and post- test mean achievement scores in science of control group students.
3. There is no significant difference between pre-test mean achievement scores in science of experimental group and control group students.
4. There is no significant difference between post-test mean achievement scores in

science of experimental group and control group students.

### METHODOLOGY

The point of this research project was to determine the relative effectiveness of using concept mapping strategy on student achievement of ninth standard students. The independent variable was the incorporation of concept mapping program into instruction. The dependent variable of the experiment was the level of student achievement on a teacher made post- test. The pre- test, post- test equivalent group design was adopted. The paradigm of the design is as follows:

$RO1 \times O2$

$RO3 \ C \ O4$

Here  $O1$  and  $O2$  = Post- test score.

$O3$  and  $O4$  = Pre- test score.

**R**-Stands for randomization random assignment of subjects for treatment to the experimental group and control group.

**X**-represents exposure of group one to experimental variable ie: the concept mapping strategy.

**C**-represents exposure of group one to control variable ie: the conventional method.

### SAMPLE

70 participants in this study were IX standard students of C.L. Public School, Narnaul.

### TOOLS

The data were collected by using following two instruments;

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1. Concept maps for the following concepts matter in our surrounding : particles in matter, classification of matter, Change of state of matter, Temperature, Evaporation
2. An achievement test was constructed by the researcher.

### METHOD

Experimental procedure is applied in this study.

### STATISTICS

Mean, S.D. and t value is used in this study.

### ANALYSIS OF DATA AND RESULT

**Table-1 Comparison of pre- test and post- test achievement scores of the experimental group**

Test	N	Mean	S.D	t-value
Pre- test	35	2.943	1.39	44.590
Post- test	35	21.657	2.055	

Mean achievement test scores in pre-test and post-test are 2.94 and 21.65 and the t value is 44.59 which is significant at 0.01 level. Hence , null hypothesis 1 is rejected as there is significant difference in the pre-test and post-test mean achievement scores of the experimental group.

**Table-2**

**Comparison of pre-test and post-test achievement scores of the control group**

Test	N	Mean	S.D	t- value
Pre-test	35	3.029	1.38	17.90
Post-test	35	14.286	3.45	

Mean achievement scores in pre-test and post-test are 3.029 and 14.286 and the t value is 17.90 which is significant at 0.01 level. Hence null hypothesis 2 is rejected. There is significant difference in the pre-test and post-test mean achievements scores of the group.

**Table-3 Comparison of achievement scores of the experimental and the control group pre- test**

Group	N	Mean	S.D	t- value
Experimental	35	2.943	1.39	.258
Control	35	3.029	1.38	

Table 3 Indicates that there is no significant

difference in the achievement scores at pre-test level of experimental group and the control group. Thus the hypothesis 3 is accepted and it can be said that there is no significant difference between the experimental and the control group in the pre-test achievement scores.

**Table-4 Comparison of the achievement scores of the experimental and the control group post- test**

Group	N	Mean	S.D	t- value
Experimental	35	21.657	3.45	10.853
Control	35	14.286	2.05	

Mean achievement score of the experimental group is 21.657 and control group is 14.286, and the t-value is 10.583, which is significant at 0.01 level. Hence null hypothesis 4 is rejected. Which suggest that concept mapping strategy is more effective than the conventional method of teaching.

### CONCLUSION

Using concept mapping tools in science classes will help students to develop better understanding of important concepts. Students in this study demonstrated that concept maps helped them to learn and understand the processes of developing interrelationship creating means schemes and constructing knowledge bases. According to research , students better remember information when it is represented and learned both visual and verbally. Concept mapping tools are based on proven visual learning methodologies that help students think, learn and achieve, visual learning is absorbing information from illustration, photos, diagrams, graphs, symbols, icons and other visual models. The use of concept mapping as a learning tool should therefore be more widely encouraged.

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