



EFFECTIVENESS OF MIND MAPS ON CREATIVITY AND ACADEMIC ACHIEVEMENT OF STUDENTS

Kailas Sahebrao Daundkar, Ph.D.

Principal, Dr. M. A. Khan College of Education, Manchar

Abstract

Mind maps have been used for centuries, for learning, brainstorming, visual thinking and problem solving by educators. These mind maps were presented in different colours, using symbols, images and keywords, the latter for the pupils to realize the hierarchy of the subjects taught also uses a combination of text, graphics to enhancing the learning process. An attempt is being made to find the effectiveness of Mind Maps for General Science subject of 8th standard student. The objective of the research to develop Mind Maps and its effectiveness on creativity and academic achievement of students. Multi-method research was adopted, by using survey method creativity measure using Creativity Test by Baqer Mehdi (Hindi Version). Researcher developed Mind Maps for General Science subject of 8th standard student. Researcher also used Experimental Method and Creativity Test by Baqer Mehdi (Hindi Version) & General Science Achievement test as a data collection tool. so researcher developed Mind Map is useful as a teaching method to learn the concepts of general Science very easily and is useful to improve the Achievement and Creativity of primary level students.

Key Words: *Mind Map, Creativity, Academic Achievement.*



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INTRODUCTION

Mind maps have been used for centuries, for learning, brainstorming, visual thinking and problem solving by educators. These mind maps were presented in different colours, using symbols, images and keywords, the latter for the pupils to realize the hierarchy of the subjects taught also uses a combination of text, graphics to enhancing the learning process. The claim of the origin of the mind maps has been made by a British popular psychology author, Tony Buzon. He argues that "traditional" outlines rely on the reader to scan left to right and top to bottom, whilst what actually happens is that the brain will scan the entire page in a non-linear fashion. He also used popular assumptions about the cerebral hemispheres in order to promote the exclusive use of mind mapping over other forms of note taking. The mind maps were presented in different colours, using symbols, images and keywords, the latter for the

students to realize the hierarchy of the subjects taught. By the teaching of mapping techniques the action regulation can be initiated in children with learning impairments which makes it possible on the one hand to structure and categories information and on the other hand to memories information in long-term memory, so the teaching and learning make more effective due of the mind mapping method. The following figure shows the classification or ways of mind maps

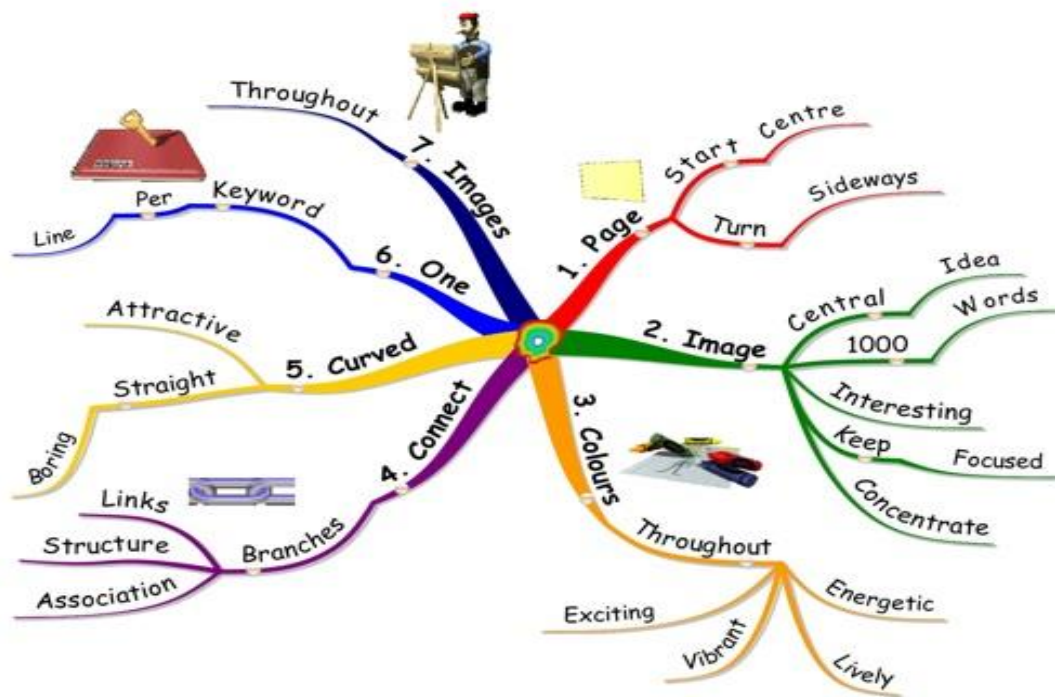


Fig 1:- Classification of Mind Maps (Buzan T & Buzan B., 2001)

Therefore it's necessary to develop the Mind Map Program to increase the creativity and achievement in science today, hence it is essential to conduct various programs based on Mind Map for improve creativity and achievement in science subject.

REVIEW OF RELATED LITERATURE

A study entitled Dane, H.G. (2011). *A study of effectiveness of specially designed teaching strategy on general creativity and mathematical creativity on middle school children*. In present research objectives are to design special design teaching strategy of teaching mathematics to middle school children and to ascertain comparative effectiveness of special design and traditional strategy of mathematics. In present research experimental method was used the sample of research was 59 student. T- Test and ANNOVA was used as statistical tool. And it found that the strategy was not found to be effective for developing mathematical creativity for boys but there is significant difference was found for girls.

Paul, Hussain & Hennessy (2002) Conducted research on *The efficacy of the mind map study technique*. The main objective was to examine the effectiveness of using the mind maps to improve the factual recall from written information. It is found that mind maps provide an effective study technique when applied to written material.

Sharma R.C (1991) conducted research on *Comparison of the Effect of Various Modes of Classroom Teaching*. Compared the effect of various modes of classroom teaching involving video-based instruction, teacher discussion, demonstration, self-experimentation, etc., on the achievement in science of the secondary level learners. It is found that most of the video-based instruction while self-experimentation under the guidance of the teacher was more effective.

STATEMENT OF THE PROBLEM:

To assess an existing status regarding the creativity and academic achievement of students as to develop the program on Mind Maps and find out the effectiveness on the academic achievement in science subject and creativity of 8th Standard students.

DEFINITION OF KEY TERMS:

✓ **Effectiveness**

Conceptual Definition:

“Producing result that is wanted or invented, producing a successful result.” (Hornby, 2000).

Operational Definition:

Effectiveness means a significant difference in the scores of Achievement Test and Test of creativity (Post-test) of students of the Control and Experimental Group in Science subject of 8th standard after implementation of the Program of Mind Map.

✓ **Mind Map:**

Operational Definition:

Mind Map mean an action plan based on uses a combination of text, graphics, pictures, diagrams, Images, colours, symbols, keywords, by using learning materials of topic Biodiversity, Light and Microorganism for 8th standard students of science subject

OBJECTIVE OF THE STUDY:-

1. To assess the existing status regarding the creativity and academic achievement of science subject of 8th standard students.
2. To develop Mind Maps for 8th standard General science subject.
3. To find out the effectiveness of Mind Maps on academic achievement in science subject and creativity of students.

HYPOTHESIS:-

H₁: There is a significant difference between the mean scores of academic achievement in general science subject of Experimental and Control Group on the post test.

H₂: There is a significant difference between the mean scores of creativity of Experimental and Control Group on the post test.

NULL HYPOTHESIS

H₀₁: There is no significant difference between the mean scores of academic achievement in general science subject of Experimental and Control Group on the post test.

H₀₂: There is no significant difference between the mean scores of creativity of Experimental and Control Group on the post test.

ASSUMPTION

The mind maps provide an effective study technique when applied to written material.(Paul,et.al.2002)

SCOPE, LIMITATION AND DELIMITATION

SCOPE: -

1. The research is conducted in Maharashtra State.
2. This study is related to 8th standard of General Science subject students.

LIMITATION:

1. The attitude, interest and fatigue of Teacher and students are beyond the control of researcher.
2. The Teacher and students who were present at the time of data collection are included in the study.

DELIMITATIONS

1. This survey is delimited to the Primary level Teacher of Tal; khed.
2. Only two schools from Pune district are included in the Experiment.
3. This experiment is delimited to the 8th standard students only.
4. The research study includes only Marathi Medium School.
5. This study is delimited to the use of Mind Map program.
6. Only three (Biodiversity, Light & Microorganism) units from syllabus are taken into account to frame the program.

PLAN AND PROCEDURE OF STUDY:-

The present study is based on Applied Research and Multi method was used. In survey research 200 students selected as a sample, sample selected as purposive sample method, Creativity Test by Baqer Mehdi (Hindi Version) and researcher made Questionnaire used as tool of data collection. Mind Maps program developed by Researcher. Developed Mind Maps program implemented on 100 students of 8th standard students. Researcher used equivalent pretest-posttest control group design for Experiment.

DATA ANALYSIS:-

In the present study survey study data analyzed using mean after normality test were conducting using SPSS program. For the experimental study descriptive and inferential analysis used. Mean, median and Standard deviation calculated. T-test' used to determine the difference between pretest and posttest scores in creativity and academic achievement of experimental group.

HYPOTHESIS TESTING:-

H₀₁: There is no significant difference between the mean scores of achievement in general science subject of Experimental and Control Group on the post test.

Table No: 01: Paired T test for posttest of Experimental and control group of Achievement

Group	N	Mean	S.D.	df value	Paired T-value	Effect size
Control	50	24.73	3.62			
Experimental	50	28.30	4.38	49	7.88	0.57

Observations:

The result of the experiment shows the t value of posttest of Experimental group and Control Group is 7.88 which is significant at 0.5 level. Also the calculated size effect is 0.57 (Moderate Effect) indicates that the program was effective. It reflects that there were a significant difference between the achievement of students of Experimental and Control Group after the implementation of the Mind Map Program.

Hence the Null Hypothesis is rejected and therefore the Research Hypothesis is accepted i.e. 'There is a difference between the mean scores of students of Experimental and Control Group on the post test.

H₀₂: There is no significant difference between the mean scores of creativity of Experimental and Control Group on the post test.

Table No: 02: Paired T test for posttest of Experimental and Control Group of Creativity

Group	N	Mean	S.D.	df value	Paired T-value	Effect Size
Control	50	86.98	13.60			
Experimental	50	92.02	13.16	49	3.54	0.63

FINDINGS:

The result of the experiment shows the t value of posttest of Experimental group and Control Group is 3.54 which is significant at 0.5 level. Also the calculated size effect is 0.63 (Moderate Effect) indicates that the program was effective. It reflects that there were a significant difference between the mean score of creativity of Experimental and Control Group on posttest after the implementation of the mind map Program.

Hence the Null Hypothesis is rejected and therefore the Research Hypothesis is accepted i.e. 'There is a difference between the mean scores creativity of students of Experimental and Control Group on the post test.

MAJOR FINDINGS:

From objective: 1

1. Most of the students of the 8th standard were low creativity.
2. Maximum Science Teacher not used the Mind Map at the time of teaching.

From objective: 2

Researcher made Mind map program were useful and positive responses given by the students

From objective: 3

1. The achievement of Science subject of Experimental Group was increased than the achievement of Science subject of Control Group because of the implemented Program of mind map in Science subject.
2. The scientific attitude of Experimental Group was increased than the creativity of Control Group because of implemented Program of mind map in Science subject

DISCUSSION ON FINDINGS:

The present research study was conducted by using the Multi Research Methods such as; Survey Method, Product Development Method and Experimental Method. The survey Method was conducted to assess the existing condition regarding the creativity and achievement of students. The findings regarding the Survey reflected that creativity and achievement of students was low.so Mind map program made by researcher.

The objective number three of the present research study was to find out the effectiveness of the program on creativity and achievement of students. For fulfill this objective Experimental Method was followed. This objective was assessed by conducting Test of Creativity by Baqer Mehdi (Hindi Version) and Test of Achievement made by researcher. The test was administered on Experimental and Control Group. The finding indicates that the Test of creativity and achievement of Experimental Group was increased than Control Group because of the implemented Program of Mind Maps in science. The developed Program was effective. Similar finding regarding the effect of Program were found in the research of Dane, (2011) found that the creativity of students in mathematics can increases and students actively participated in that program also Paul, Husain & Hennessy (2002) found that mind maps provide an effective study technique when applied to written material.

CONCLUSION:

Mind Maps were increased the creativity and academic achievement of students of 8th standard of science subject.

CONTRIBUTION OF THE STUDY TO THE FIELD OF EDUCATION:-

The present study is helpful to the Teacher -

- To understand the theoretical and practical aspects of the Mind Maps.
- To acquaint with various types of mind maps.
- To plan their teaching by including Mind Maps.

The present study is helpful to the students -

1. To get improve the students Scientific attitude and creativity.
2. To learn the things with group or peers with motive and interest.
3. To do self-study by using various Mind Maps.

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