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MIND MAPPING AN EFFECTIVE METHOD TO TEACH MATHEMATICS

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Abstract

Mathematics is the Queen of science. Mathematics is highly abstract. It is concerned with ideas rather than objects; with the manipulation of symbols rather than the manipulation of object Teaching Mathematics requires highly talented stuffs from the Teacher. This situation can be balanced by using Innovative methods in Teaching Mathematics. These Innovative methods increase the Self Confidence of the Teacher thereby maintains the Teaching standards of Teacher. Innovative methods include the usage of new techniques in Teaching Mathematics. The students of this generation have a special empathy to this Innovation. Mind mapping is a visual form of note taking that offers an overview of a topic and its complex information, allowing students to comprehend, create new ideas and build connections. Through the use of colours, images and words, mind mapping encourages students to begin with a central idea and expand outward to more in-depth sub-topics. By applying this method to primary students it has its maximum effects by creating vast evolution in the field of Education. It makes them function more efficient. Practising this method is economically beneficial. It also helps the students to reach the Zenith. This research aims at finding the effectiveness of using Innovative method Mind Map in Teaching Mathematics.

Keywords: *Mind Map, Effective method, Teaching Mathematics.*

Introduction

The Teaching and learning of Mathematics is a difficult activity and many factors involve in the success of this activity. Teaching of Mathematics is not only concerned with the computational knowhow of the subject but is also concerned with the selection of the Mathematical content and communication leading to its understanding and application. Mathematics as a unique subject has its own unique learning problems ranging from simple to complex ones. It therefore requires a high level of creative thinking. The Mathematics teacher must know what concept to teach, when and why students are having difficulties, how to make these concepts

meaningful, along with practicing the skills and how to stimulate active participation and innovative thinking. So while Teaching Mathematics, Teacher should change the Teaching methods and strategies that are much more fruitful in gaining adequate responses from the students that we have ever had in the past. For Effective Teaching to take place, a good method must be adopted by a teacher. A Teacher has many options when choosing a style by which to teach. When deciding what Teaching method to use, a Teacher needs to consider students' background, knowledge, environment, and learning goals. Teachers are aware that students learn in different ways, but almost all children will respond well to praise. Students learn in different ways, of absorbing information and of demonstrating their knowledge. Teachers often use techniques which cater to multiple learning styles to help students retain information and strengthen understanding.

Mind Map

Mind maps were developed in the late 60s by Tony Buzan as a way of helping students make notes that used only key words and images, but mind map can be used by teachers to explain concepts in an innovative way. They are much quicker to make and much easier to remember and review because of their visual quality. The nonlinear nature of mind maps makes it easy to link and cross-reference different elements of the map. Mind mapping is a powerful graphic technique which provides a universal key to unlocking the potential of the brain. They allow for greater creativity when recording ideas and information with visual representations. It trains the brain to see the whole picture and details to integrate logic and imagination. It allows for greater creativity when the ideas and information are recorded with visual representations. Images are more potent than words in triggering a wide range of associations and hence enhancing creative thinking and memory.

Mind mapping is a beneficial learning tool to help students brainstorm any topic and think creatively. Mind maps are particularly helpful in the writing process and provide students with a natural way of thinking and building thoughts on a story plot or theme. Mind maps also provide teachers with insight into their students' thought process regarding a specific topic. By asking students to create mind maps demonstrating their comprehension of a concept, teachers are able to understand what a student's prior knowledge was and how well the student understands the assignment or the material being taught. This is a very effective way of evaluating students' understanding.

A Mind Map is a visual representation of hierarchical information that includes a central idea surrounded by connected branches of associated topics. Mind mapping is a visual form of note taking that offers an overview of a topic and its complex information, allowing students to comprehend, create new ideas and build connections. Through the use of colours, images and words, Mind mapping

encourages students to begin with a central idea and expand outward to more in-depth sub-topics.

Mind Maps in Mathematics Teaching

A Mind Map is very useful in Teaching-learning process. Especially in Teaching of Mathematics. The technique of using Mind maps can create wonders in the output

- Mind maps help to gather and hold large amount of data.
- Develop problem solving by seeing new creative pathways
- Enable to increase one's retention
- Achieve higher level of creativity increased concentration and clear organization of thoughts
- Improve mental abilities
- Make easy to remember names, facts, figures, formulae, etc. using memory technique
- Recall the learnt facts already during revision and summarization.

How to develop Mind Map

- All mind maps begin with a main concept or idea that the rest of the map revolves around, so choosing that idea or topic is the first step. Begin by creating an image or writing a word that represents that first main idea.
- From that main idea, create branches (as many as needed), that each represent a single word that relates to the main topic. It's helpful to use different colours and images to differentiate the branches and sub-topics.
- Then, create sub-branches that stem from the main branches to further expand on ideas and concepts. These sub-branches will also contain words that elaborate on the topic of the branch it stems from. This helps to develop and elaborate on the overall theme of the mind map. Including images and sketches can also be helpful in brainstorming and creating the sub-branch topics.
- Mind maps can be created on paper but are more easily and fluidly created on a computer with mind mapping software such as Inspiration Software's Inspiration® 9.

Development of Mind Maps

The investigator prepared the Mind maps by using the following steps.

- Selection of the topic
- Preparation of the content
- Formulation of specific instructional objectives
- Preparation of Mind maps

Objective

To find out the effectiveness of the Mind Mapping method over the Traditional Teaching Method in Teaching Mathematics.

Hypothesis

There is no significant difference between the Students of the Control and Experimental Group in their pre-test scores. The post-test performance of the Experimental Group will be significantly greater than the post-test performance of the Control Group Student Teachers.

Experimental Design

The experimental design employed in this study is the pre-test, post-test design equivalent group design. Such a type of experimental design uses two equivalent groups. One group is known as the Experimental Group and the other is the Control Group.

Variables in the Study

Independent variable of the experiment was using Mind map to teach Mathematics for Std V. Dependent variable of the experiment was Academic Achievement in the post-test.

Sampling Design and Sample

Purposive sampling was used for the selection of schools. The investigator selected two primary schools in Tirumangalam, Madurai district. 50 Students of V Std from the selected schools comprised the sample of the study.

Pre/Post- Test

This test was directed to the Control Group and to the Experimental Group Vth Standard Students before executing the Experimental treatment. The Pre- test/Post- Test was confined to the subject area of Vth Standard Mathematics. The Pre-test is to test the students' subject knowledge of Vth Standard Mathematics before the treatment. The Post-test is to test the students' subject knowledge of Vth Std. Mathematics after the treatment. These tests were structured and validated with the sample of 25 Vth Standard students before the beginning of the study.

Procedure of Data Collection

The investigator conducted the experiment between the year 2014 – 2015. The infrastructure support was extended by the headmasters of the schools. The investigator conducted the program. Treatment was given to Experimental group and the Traditional method was followed in Control group. The investigator collected the data of pre-test and post-test. The Experimental group has 25 Students of V std. and the Control group has 25 students of V std. Pre-Test was conducted to both the groups before teaching the topic. These scores were collected. After administering the Pre-Test the Experimental group was given the prepared Mind maps and taught. The Control group was taught the same topic by the Traditional method. Then the Post-Test

was administered to both the groups and the answer sheets were collected and scored.

Analysis and Interpretation

It provides inferences involving determination of statistical significance of difference between groups with reference to the selected variables. In the present study 't' value was calculated to test the significant difference between the mean scores of two groups in research variables. The following analysis describes about the significance of difference in the pre-test, post-test scores based on treatment.

Hypothesis-1

There is no significant difference between the Students of the Control and Experimental Group in their pre-test scores.

Table 1 Comparison between Control and Experimental Group in their pre-test scores

Groups compared	N	Mean	Std. Deviation	Std. Error Mean	t	Level of significance
Control	25	49.40	11.184	2.237	0.248	(0.05) NS
Experimental	25	48.64	10.507	2.101		

Table-1 indicated that 25 Students of the Control Group and 25 Students of the Experimental Group were compared for the pre-test scores by using t test. The mean and standard deviation obtained by the Control Group are 49.40 and 11.184 respectively and the corresponding values obtained by Experimental Group are 48.64 and 10.507 respectively. Here the calculated t-value is 0.248 which is less than the table value (1.99). The t-value is not significant at 0.05 level.

Hypothesis tested

There is no significant difference between the Students of the Control and Experimental Group in their pre-test scores. Based on the analysis of the data concerned it is evident that the above null hypothesis is accepted. It shows that the Students are equal in their pre-test scores.

Hypothesis-2

There is significant difference between the Students of the Control and Experimental Group in their post-test scores.

Table 2 Comparison between Control and Experimental Group in their post-test scores

Groups	N	Mean	Std.	Std. Error	t	Level of
Control	25	40.40	12.073	2.415	3.105	(0.05) S
Experimental	25	49.60	8.583	1.717		

Table-2 indicated that 25 Students of Control Group and 25 Students of Experimental Group were compared for the post-test scores by using t test. The mean

and standard deviation obtained by the Control Group were 40.40 and 12.073 respectively and the corresponding values obtained by the Experimental Group are 49.60 and 1.717 respectively. Here the calculated t-value is 3.105 which is greater than the table value (1.99). The t-value is significant at 0.05 level.

Hypothesis tested

There is significant difference between the Students of the Control and Experimental Group in their post-test scores. Based on the analysis of the data concerned it is evident that the above research hypothesis is accepted. It is interpreted that the Students of the Experimental Group were performed better than the Control Group in their post-test.

Results and Discussions

There is no significant difference between the Students of the Control and Experimental Group in their pre-test scores. It shows that the Students are equal in their pre-test scores. It was observed that the students of the Experimental Group have performed better in their Post-Test than the Control Group. Hence it is interpreted that the Mind maps used in Teaching Mathematics were more effective to the students. This may be due to the reason that the Experimental Group students practiced Mathematics easily, interestingly and interacted well with involvement when they were taught through Mind map. This positive result is purely due to the effectiveness of Mind Map in Teaching Mathematics might have made them to pay more attention in learning Mathematics.

Conclusion

In this study Mind Mapping method was identified to be more effective than the Traditional method. Because Mind maps associates the concepts easily. Mind maps are attractive and increases retentions. Mind maps are a useful Teaching and learning method. They can be used to help students externalise their ideas, organise them and present the relationships between them. Mind maps provoke the interest of the students to learn the Mathematical concepts easily.

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