Graphic Organizers: An Effective Brain Based Learning Strategy for Learning Social Science among Students at Secondary Level.

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ABSTRACT

Brain engagement of strategies based on principles derived from solid scientific research based learning is also known as Brain-compatible learning. It is simply the engagement of strategies based on body/mind/brain research. It is the purposeful explicit acknowledgement that learning is fundamentally linked to the biological and chemical functioning of the brain. Knowledge gained about how the brain processes information has been instrumental in the development of teaching techniques and learning strategies. The present study focussed on Graphic Organizers which is one of the important strategies for teaching learning process. Graphic organizers come in many different forms, each one best suited to organizing a particular type of information. The study was intended to test the effectiveness of graphic organizers in teaching Social Science at Secondary Level. The findings of study would useful for teachers and students as a method of teaching and learning their academic excellence.

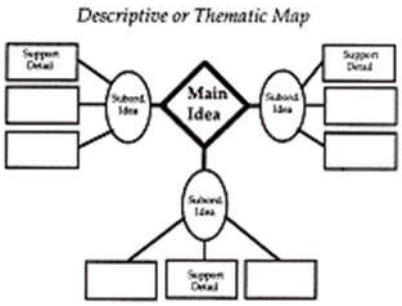
INTRODUCTION

Brain-Based Education is the purposeful engagement of strategies that apply to how our brain works in the context of education. This theory is based on what we currently know about the actual structure and function of the human brain at varying stages of development. This type of education provides a biologically driven framework for teaching and learning, and helps explain recurring learning behaviour. Brain Based learning refers to teaching methods, lesson designs and school programs that are based on the latest scientific methodology about how the brain learns. It is the duty of teachers to shake up and shock learners into a new state of consciousness by creating an environment that is brain friendly and learner centric an environment that will cause learners to sit up pay attention and become actively involved to their own learning, while taking ownership and responsibility for their learning outcomes. In conclusion, understanding how the brain learns by actually capturing, scoring, sorting and holding information enables teachers to implement the kinds of classrooms that capitalize on the brains natural abilities and thus promote student learning.

TYPES OF GRAPHIC ORGANIZERS.

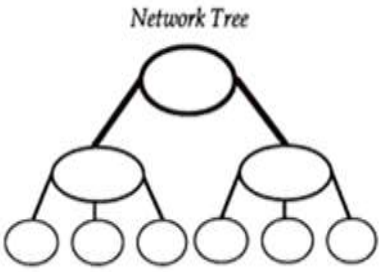
A graphic organizer is a visual and graphic display that depicts the relationships between facts, terms, and or ideas within learning task. Graphic organizers are also sometimes referred to as knowledge maps, concept maps, story maps, cognitive organizers, advance organizers, or concept diagrams. There are several types of graphic organizers. The following are the important types of graphic organizers.

1. Descriptive or Thematic Map



A Descriptive or Thematic Map works well for mapping generic information, but particularly well for mapping hierarchical relationships.

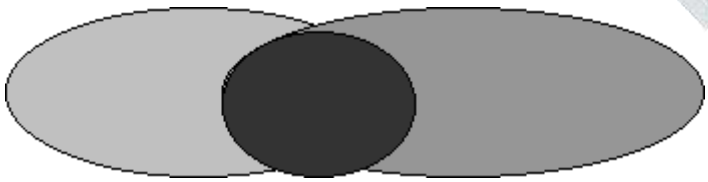
2. Network Tree



Organizing a hierarchical set of information, reflecting superordinate or subordinate elements, is made easier by constructing a Network Tree.

3. Venn Diagramm

Venn diagrams, familiar constructs for portraying set theory in mathematics, can be applied to other disciplines as well. They can be used in the same way as in mathematics - for demonstrating the ways in which two or more sets of data coincide.



4. Spider Map

Spider maps, and the similar fishbone maps, are well suited to diagramming a central concept surrounded by related information. This may consist of an object and its attributes, or a primary concept with arms and legs for each major supporting idea.

4. Star Diagramm

A star diagram is used for organizing the characteristics of a single topic. A central space is used for displaying the topic, with each "point" of the star listing some fact, attribute, or trait about the topic.

NEED AND SIGNIFICANCE OF THE STUDY

. The neurocognitive strategies like graphic organizers can assist the students to interconnect the judgments, thoughts, emotions and intellects. Graphic Organizers are visual or photographic demonstration of knowledge that structure information by arranging important aspects of a concept or topic into a pattern using labels. The main function is to help present material or information in short ways that emphasis the organization and relationship of concepts. In short, graphic organizers are tools that allow students to make their thinking visible and make sense of complex content by exploring and visually representing linkages and relationships, such as similarities, differences and sequence. Teachers use graphic organizers to reinforce learning, assess learning at multiple checkpoints, and identifying misunderstanding of concepts. Teachers constantly revise their teaching strategies to promote effective learning. Therefore graphic organizers appear to be a beneficial instructional strategy to support students to retain learned information longer and to learn effectively.

Several cognitive theories in particular lend support to the use of graphic organizers in helping students process and retain information. Schema theory, dual coding theory, and cognitive load theory provide the basis for explaining the characteristics of graphic organizers that support the learning process. Even though the brain based learning strategies like graphical organizers have been focussed on several experts, review of related studies revealed that very few studies have been conducted in India in this area. Effective thinking strategies like brain based allow students to acquire the necessary knowledge and apply it appropriately. Hence the investigator finds out the effectiveness graphic organizers for enhancing achievements in Social Science. The study of this type will be helpful to teachers in developing effective teaching and learning methods for their students

OBJECTIVES OF THE STUDY.

The objective of the present study is:

1. To prepare lesson transcript based on Graphic organizers strategy in Social Science for standard IX students following state syllabus.
2. To prepare lesson transcript based on Activity Oriented Method in Social Science a for standard IX students following state syllabus.

3. To prepare an achievement test in social science at Standard IX students.
4. To compare effectiveness of Graphic organizers strategy and Activity Oriented Method on achievement in Social Science for total sample.
5. To compare effectiveness of Graphic organizers strategy and Activity Oriented Method on achievement in Social Science on cognitive dimensions:
    1. Remembering
    2. Understanding
    3. Application.

HYPOTHESIS OF THE STUDY.

1. There will be no significant difference in the effectiveness of Graphic organizers strategy and Activity Oriented Method on achievement in Social Science for total sample.
2. There will be no significant difference in the effectiveness of Graphic organizers strategy and Activity Oriented Method on achievement in Social Science among students on cognitive dimensions:
    (1) Remembering
    (2) Understanding
    (3) Application.

METHODOLOGY IN BRIEF

A brief description of the methodology adopted for the study is given below:-

1. Method adopted

The experimental method was found appropriate for the study.

2. Design of the study

The experimental design adopted for the study is the pretest, posttest non-equivalent group design. The experimental group was taught through Graphic Organizers strategy and the control group was taught through Activity Oriented Method of teaching.

3. Sample

The population consisted of secondary school pupils of Kerala following state syllabus. The investigator selected a sample of 88 secondary school students from Standard IX.

4. Tools Used

The following tools were used for the collection of data from higher secondary school students:

a) Lesson transcript based on Graphic Organizers strategy.

b) Lesson transcript based on Activity Oriented Method.

c) Achievement Test in Social Science prepared by investigator.

5. Statistical Techniques Used

The following statistical techniques were used for analyzing the data collected for the study:

1 Arithmetic Mean.

2 Standard Deviation.

3 t- Test

ANALYSIS AND INTERPRETATION.

The result of analysis and interpretation has been presented under the following heads.

1. Comparison of the Pre-test Achievement scores between Experimental and Control group on achievement in Social Science for total sample among secondary school students.

The details regarding the data and results of comparison of Pre-Test scores of Experimental and Control group are given in Table 1

Table 1.

Comparison of Pre-Test Achievement scores of Experimental group and Control group on achievement in Social Science for total sample.

Group	Sample size	Mean	SD	t-Test
Experimental Group	44	5.13	2.34	1.85 *
Control Group	44	6.25	2.23	

- Not significant at 0.01 level.

The calculated t- value for the test of significance difference between the mean of Experimental group and Control group is 1.85 which is less than the table value. So there is no significant difference between Pre-Test Achievement scores of students in Experimental group and Control group.

2. Comparison of the Post -test Achievement scores between Experimental and Control group on achievement in Social Science for total sample among secondary school students.

The details regarding the data and results of comparison of Pre-Test scores of Experimental and Control group are given in Table 2

Table 2.

Comparison of Post -Test Achievement scores of Experimental group and Control group on achievement in Social Science for total sample.

Group	Sample size	Mean	SD	t-Test
Experimental Group	44	2.55	3.64	
				5.87 **
Control Group	44	16.40	2.96	

**significant at 0.01 level.

The calculated t- value for the test of significance difference between the mean of Experimental group and Control group is 5.87 which is greater than the table value. So there is a significant difference between Post-Test Achievement scores of students in Experimental group and Control group. Hence it can be concluded that graphic organizers are effective for teaching social science at secondary level.

3. Comparison of post test scores of Experimental and Control group on achievement in Social Science based on cognitive dimension- Remembering.

Group	*Sample size*	*Mean*	*SD*	*t-Test*
Experimental Group	44	2.73	0.59	
				5.27
Control Group	44	1.95	0.78	

The calculated t value for the test of significance difference between the means of Remembering level is 5.27 which is greater than the table value 2.86 (at 0.01 level). This shows that there is a significant difference between the means of the post test scores of the pupils in experimental and control group. . Hence it can be concluded that graphic organizers are effective for teaching social science at secondary level.

4. Comparison of post test scores of Experimental and Control group on achievement in Social Science based on cognitive dimension - Understanding.

Group	Sample size	Mean	SD	t-Test
Experimental Group	44	3.75	1.38	10.22
Control Group	44	6.56	1.19	

The calculated t value for the test of significance difference between the means of Understanding level is 10.22 which is greater than the table value 2.86 (at 0.01 level). This shows that there is a significant difference between the means of the post test scores of the pupils in experimental and control group . Hence it can be concluded that graphic organizers are effective for teaching social science at secondary level.

5. Comparison of post test scores of Experimental and Control group on achievement in Social Science based on cognitive dimension- Application

Group	*Sample size*	*Mean*	*SD*	*t-Test*
Experimental Group	44	4.58	0.72	3.76
Control Group	44	3.94	0.86	

The calculated t value for the test of significance difference between the means of Application level is 3.76 which is greater than the table value 2.86 (at 0.01 level). This shows that there is a significant difference between the means of the post test scores of the pupils in experimental and control group. . Hence it can be concluded that graphic organizers are effective for teaching social science at secondary level.

MAJOR FINDINGS

1. The major findings of the study revealed that Graphic organizers strategy is effective in learning Social Science among Students at Secondary Level over the existing approach. Pupils taught through Graphic organizers strategy were found superior to pupils taught through existing approach of teaching. Hence teachers must be encouraged to apply this method while teaching. Graphic organizers strategy provided higher development in the cognitive domain like remembering, understanding, and application.
2. All round development of the learner is considered as the basic aim of all educational systems.
3. Teachers of Social Science subjects should adopt the Graphic organizers strategy in their teaching to improve students' achievement.
4. Graphic organizers strategy supports the active engagement of the learner in the learning process.

5. The study shows that Graphic organizers strategy provides a sociological driven framework for teaching and learning. If the classrooms are to be the places of learning, the brain must be understood and accommodated.

CONCLUSION

Learning can be made meaningful and interesting if the teachers employ different types of learning strategies. Teachers should realize the importance of Graphic organizers strategy. So that effective teaching of the subject is ensured. Graphic organizers strategy not only helps the learners in the acquiring new knowledge in new contexts but also in the retention of knowledge for a long period of time. Graphic organizers strategy personalizes the learning experiences.

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