

## Research on Graphic Organizers

Graphic Organizers are visual representations of a text or a topic. Organizers provide templates or frames for students or teachers to identify pertinent facts, to organize information, and to record relationships between facts and ideas within a learning task. Literature supports the use of organizers to facilitate and improve learning outcomes for a wide range of learners. Mentoring Minds offer graphic organizers in a variety of areas: Language Arts, Math, Reading, Science, Social Studies, and Vocabulary. Each independent set for the subject area includes 25 copies of 20 different organizers.

Lovitt (1994) attests to the use of graphic organizers to organize and highlight essential content information and/or vocabulary. Fountas and Pinnell (2001) cite that when content is illustrated with diagrams, the information can be maintained by students over a period of time. Organizers portray knowledge in a meaningful way which helps bring clarity to ideas as connections are made.

Having a way to organize ideas, facts, and concepts graphically facilitates effective student learning. Many students are visual learners, thus, a visual approach to brainstorming or organizing information is essential. Graphic organizers appear to be a valued approach to utilize in teaching and learning. Students are required to think in multiple directions when using graphic organizers which makes learning an active and meaningful process. Organizers help students generate mental images to go along with information and create graphic representations for information. Graphic organizers are called a variety of names, including knowledge maps, story maps, concept maps, mind maps, cognitive organizers, advance organizers, or concept diagrams.

Over the past several years, the No Child Left Behind Act (NCLB, 2001) emphasizes the concern for the educational accountability of schools in the achievement of student success. This act leads to increased performance from teachers and administrators related to the learning strategies used in classrooms (U.S. Department of Education, 1987). Research shows that graphic organizers are an example of a proven strategy. Organizers offer an entry point into complex material for visual learners, increase comprehension and retention, and can be used with all students, ranging from gifted and talented to those with mild cognitive disabilities. Research supports the utilization of graphic organizers as a contributing factor in improving performance in classroom and achievement test scores if they are used effectively and become a fundamental part of classroom instruction. The focus centers on the relationship of information as opposed to memorization of isolated facts.

Ausubel (1963) believed that the manner in which knowledge is represented can influence learning. The appropriate organizer can help students form relationships between previously acquired knowledge and new concepts. Learning takes place when the cognitive structure expands with the new

knowledge. Ellis (2001) noted that information is more easily learned and understood with visual organizers. Once students acquire the basic, yet solid foundation of a concept, then future content can be addressed at higher cognitive levels leading students to become more strategic learners.

Research shows that graphic organizers are key to assisting students to improve academic performance. In creating an organizer, pertinent aspects of a concept or topic are arranged into a pattern using labels. This process is one that research suggests aids comprehension for several reasons:

- Graphic organizers match the mind. As researcher David P. Ausubel has shown, the mind arranges and stores information in an orderly fashion. New information about a concept is filed into an existing framework of categories called a schema. A schema already contains preexisting knowledge about that concept. Graphic organizers arrange information in a visual pattern that complements this framework, making information easier to understand and learn.
- Organizers demonstrate how concepts are linked to prior knowledge to aid in comprehension.
- Organizers aid the memory as opposed to recalling key points from an extended text.
- Organizers help retain information readily when higher thought processes are involved.
- Organizers engage the learner with a combination of the spoken word with printed text and diagrams.

Learning to think is an essential skill needed in education today. Often educators use teaching methods where students are passive learners. Difficulty arises when students must make meaning out of information taken from a book, video, or a lecture. When students interact with content, it is important that they actively construct meaning. To do this, students must be active thinkers during the learning process. Researchers have shown that graphic organizers can enhance content comprehension (Alvermann and Boothby, 1986; Darch, Carnine, and Kameenui, 1986; Horton, Lovitt, & Bergerud, 1990). Marzano, Pickering, and Pollock (2001) state that graphic organizers combine the use of both the linguistic and non-linguistic modes of learning. As a result, educators can employ graphic organizers to demonstrate to students the relationships between different content and between new and prior knowledge. Meyen, Vergason, and Whelan (1996) share that graphic organizers depict a visual, organized display that makes “information easier to understand and learn”.

Vocabulary is essential to understanding concepts; thus content vocabulary needs to be addressed. Teachers need to include meaningful vocabulary instruction as it must not be only incidental. The Mentoring Minds' Product Development team, in an effort to determine effective means of teaching

vocabulary, found evidence that graphic organizers help students learn vocabulary in informational text.

All age levels of students benefit from the use of graphic organizers and these visual representations have application in many different content areas (Dye, 2000). Students with learning difficulties need strategies to help them achieve success in academics. Learning disabled students require extra support to guide them to focus on the important information and learn how to organize information (Gagnon & Maccini, 2000). Students must have information presented in a clear, concise, and organized form if they are to make progress in content area classrooms. Graphic organizers have great potential for students with learning disabilities (Gagnon & Maccini, 2000). Graphic organizers offer support when new information is presented and previously learned information is reviewed (Dye, 2000). Difficult concepts can be simplified and arranged so that the representation of content is organized and meaningful. Using a graphic organizer to link newly learned information to an existing knowledge base is a viable strategy for teachers and students. This linkage process seems to be precisely what students need for learning to result (U.S. Department of Education, 1987). This process helps them store and retrieve the knowledge in their long-term memory.

Teachers use graphic organizers to reinforce learning, assess learning at multiple checkpoints, and identify misunderstandings of concepts. Teachers constantly revise their teaching strategies to promote effective learning. Graphic organizers can be used before, during, and after instruction. Learning environment settings for using organizers vary from individual use, to partners, to small groups, to centers, and to whole class environment. Teachers can use organizers to brainstorm ideas, to activate prior knowledge, to develop a story map while reading a book, to remain focused on content material, to present findings from an investigation, to confirm existing knowledge, and to review at the end of the period or week of study. Graphic organizers are valuable in any activity which requires the use of critical thinking. The use of these tools can generate excitement and enthusiasm toward learning. Therefore, graphic organizers appear to be a beneficial instructional strategy to support students to retain learned information longer and to learn more effectively.

Horton, Lovitt, and Bergerud (1990) report the value of graphic organizers to both middle school and high school students with or without disabilities as an organizational tool to promote the memory of content-related information. Other research by Jitendra (2002), indicates that organizers assist this same group of students in how to represent problem situations, such as searching for solutions to word problems.

Frequently, learning disabled students have difficulties recalling key information, making connections between broad concepts and details, and solving mathematical word problems. According to Maccini and Ruhl (2000), students

with learning disabilities might experience fluency difficulties with mathematical facts and with basic mathematical procedures. Teachers must be made aware that the use of graphic organizers is not only a validated instructional practice but a viable strategy that might lessen the difficulties learning disabled students experience in mathematics (Gagnon and Maccini, 2000). Both teacher-directed and student-directed approaches are considered to be best practices when working with graphic organizers in the classroom (Lovitt, 1994). Teachers select the appropriate approach based upon the purpose of the lessons and individual needs of the students.

The rationale for the development of the entire line of graphic organizers is based upon an analysis of research that centered on supporting students' cognitive processing of content. After reviewing pertinent literature and participating in brainstorming sessions with teachers and administrators, the Product Development Team at Mentoring Minds developed subject area graphic organizers: Math, Language Arts, Reading, Science, Social Studies, and Vocabulary. Transparencies of each set are also available. The intent of the Product Development Team for graphic organizer products is to focus on educational tools that allow students to make their thinking visible and assist them in understanding content through a visual representation of relationships and other component connections.

Graphic organizers clarify learning and organize information which leads to students being active in acquisition of conceptual knowledge. Teachers also use this resource to develop lessons and link new concepts with existing knowledge during a lesson leading to meaningful learning. The students' ability to organize and structure content can also be assessed at the conclusion of a lesson. Ultimately, graphic organizers allow for more than just content acquisition. Students learn processing skills, patterns for organizing information, critical thinking skills, and communication skills. Graphic organizers combine the printed word and the spoken word making learning active, which makes it meaningful, and hence leads to the ultimate goal of effective learning for students.

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