Graphic Organizers: Power Tools for Teaching Students with Learning Disabilities

Edwin Ellis & Pam Howard
The University of Alabama

What Are Graphic Organizers?
Graphic organizers (GOs) are visual devices that depict information in various ways. Most commonly, they employ lines, circles, and boxes to form images which depict four common ways information is typically organized: hierarchic, cause/effect, compare/contrast, and cyclic or linear sequences. These images serve as visual cues designed to facilitate communication and/or understanding of information by showing how essential information about a topic is organized. Some GOs also employ text that serve as semantic cues for thinking about the content in various ways (i.e., “What was this person's positive or negative impact on the world?”) and/or to engaging in specific ways of thinking about a topic (i.e., “What does this person remind you of?”). GOs can effectively facilitate learning for most students by becoming powerful instructional tools in writing, reading comprehension and content-areas subjects across a large range of ages, grades and learning abilities.

For Whom Are Graphic Organizers Intended?
With the exception of students with profound cognitive disabilities, GOs can be effective with all students under the following conditions:

1. The complexity of the GO figure is developmentally appropriate for intended students’ background knowledge and experience with GOs.
2. The level of scaffolded assistance associated with using the GO matches the students’ zone of proximal development.
3. The complexity and density of the information to be communicated on the GO is appropriate in relation to students’ background knowledge of the information or closely related topics.
4. The size of the space for which information is to be noted by students on the GO is sufficient, given students' scripting ability.
5. Students’ reading and scripting skills are sufficiently developed so that they can independently read what they noted on the GO at a later time.

While GOs should always be among accommodation options, consistent and effective use as part of the normal instruction can significantly reduce the need for accommodations in the first place. Thus, GOs might better be viewed as a preventive measure than as a responsive (to the disability) measure.

Since graphic organizers are visual devices, a common misperception is that they are for visual learners, and thus less likely to work with auditory learners, so teachers should differentiate instruction accordingly. In reality, the complexity of the to-be-learned information, the learner’s innate memory capability, the extent and quality of elaboration the learner applies when processing the information and the existing background knowledge of the learner dictates the subsequent success in learning far more than one’s intellectual aptitude for processing information via presentation modes. Likewise, teachers’ knowledge of the subject, ability to facilitate student elaboration and ensure engagement of all students, pedagogical skills associated with using graphic organizers in the classroom, and opportunity to employ them in a quality manner plays a highly significant role in the relative impact of GOs on student learning.

How Do They Work?
For students with cognitive disabilities, GOs work best when instruction is informed, explicit, intentional, and scaffolded.

**Informed** means that the teacher provides a rationale for using a GO, explains what the GO is designed to do, as well as informs students about different ways it can be used and different contexts to increase success.

**Explicit** means that the teacher does not assume that students will independently discover how to use a particular GO, but rather the teacher explicitly tells and shows them how it is used. Once students have developed a basic understanding and functionality in its use, instruction can gradually switch to more implicit forms whereby the teacher creates opportunities for students to learn how to adapt or create their own versions of GOs.

**Intentional** means that the teacher intends for students to learn how to process information using a GO and that students are aware of this intent. That is, students are informed that they are expected to develop this skill and demonstrate competency using it.

**Scaffolded** GO instruction occurs in two primary ways. **Scaffolded assistance** is the mediation or coaching students are provided as they learn how to independently use the GO tool. **Scaffolded GO complexity** is a process whereby a relatively simple version of a GO is introduced to students, and then, as students develop familiarity and skill using it, increasingly more complex versions of the same GO are introduced into lessons and mastered.

How Practical Is Graphic Organizer Instruction?

Appropriately used, GO instruction can significantly reduce the amount of time required to attain instructional objectives for both typical learners and those with cognitive disabilities. The practicality of using GOs is primarily a function of (i) teachers’ knowledge of the subject being taught and knowledge and skills of GO pedagogy and (ii) opportunity to employ GO pedagogy in an effective manner.

How Effective Is It?

There have been many studies on students with and without learning disabilities from all grade levels and a variety of subjects concerning the use of graphic organizers. There is ample research that documents a solid scientific basis for improving reading comprehension, increasing process writing skills, increasing thinking skills, and increasing learning of content-area subjects. This body of work supports the following research-based statements about the use of GOs with students with LD:

**Reading**

- GOs accommodate students’ need for structure, organization and a clear format, as well, as his/her need to related information to personal experience.
- Explicitly teaching text structures such as the story map enhances reading comprehension.
- GO reading instruction increases both literal and relational comprehension, recall, and vocabulary learning.
- GO reading instruction, paired with strategy instruction is more effective in improving students’ reading comprehension than traditional basal instruction.
- Providing students with GO advance organizers prior to text reading improves comprehension and recall of facts.
Writing

- Instruction in the use of GOs as planning tools containing prompts for goal setting, brainstorming, and organization of ideas improves writing performance.
- Instruction in GOs for writing that depict various text structures (i.e., hierarchic, compare/contrast, cause/effect, sequence) and prompts to plan, organize, write, edit and revise written products improves writing performance.
- Instruction in GOs for writing can produce significant changes in adolescents’ perception of themselves as empowered writers.
- GOs coupled with writing strategy instruction, can dramatically impact writing fluency.

Content

- Elementary and secondary students learn significantly more social studies and science concepts and facts when taught using GOs.
- Use software for creating GOs coupled with extensive support from the teacher increases learning of content-area subjects.
- The results of this study demonstrated the efficacy of GOs for student with LD within the context of intensive instruction.
- Use of GOs in content-area classes increases students’ attitudes about learning.
- Depicting problem solving processes via GOs coupled with strategy instruction increase transfer of problem-solving ability.
- GO instruction in content-area vocabulary is considerably more powerful than instruction that emphasizes definitions.
- GOs facilitate students’ understanding of the relationship between ideas.

What Questions Remain?

Although ample research has demonstrated the positive impact of graphic organizers on relatively short-term academic measures, the long-term affects on students’ strategic learning behaviors, information processing skills, and higher-order learning skills are not known.

To date, studies have investigated the impact of graphic organizers within specific domains of learning (e.g., used for reading comprehension, composition writing or content learning). Little is known about the impact of these tools when they are thoroughly integrated horizontally across the curriculum (used for reading comprehension, composition writing and content learning) and vertically (across grade levels).

Many students with language-based learning disabilities manifests in difficulty processing semantic information. The design of some GOs is language-free whereas others incorporate semantic prompts designed to help students focus on essential understandings about a topic. We need to know more about the relative power that different kinds of semantic prompts play in promoting effective learning.

Likewise, many GOs depict information structures (hierarchic, comparisons, cause/effect, sequence) whereas others do not reflect these, but rather dimensions of essential understanding. Visually depicting these understandings in different sections of the GO results in visually compartmentalizing the information. At this time, we do not know which format is likely to have the greatest impact on students with LD. Likewise, we do not know the relative impact of visually compartmentalizing essential understandings (i.e., showing these in the form of a GO) versus simply providing the same cues in visual, but non-spatial contexts (i.e., providing the prompts in outline form).
How Do I Learn More?

**Websites**

www.GraphicOrganizers.com provides printable graphic organizers, links to numerous PowerPoint presentations about graphic organizers, specific research with students with LD, and an extensive collection of samples developed by teachers.

www.Graphic.org provides an array of sample mind maps and other GOs as well as links to various articles about GOs much of which focus on the use of the commercial software Inspiration. Although the website/software does not specifically address LD, teachers can use the software to generate webs that can then be used in conjunction with explicit and intentional forms of instruction.

www.writedesigonline.com/organizers provides a collection of printable graphic organizers, explanations, and samples of how teachers have used them.

**Print resources** (books containing black-line masters, instructional guides, suggestions, etc.)

**Book 1:** 200 Makes Sense Literacy Think-sheets by Edwin Ellis  
www.GraphicOrganizers.com  (251) 961-2407

**Book 2:** 200 Makes Sense Content Think-sheets by Edwin Ellis  
www.GraphicOrganizers.com  (251) 961-2407

**Graphic Organizers (Grades K-8)** by Karen Bromley, Linda Irwin-Devitis, Drew Hires  
www.Scholastic.com  1-800-SCHOLASTIC

**Graphic Organizers and Planning Outlines for Authentic Instruction and Assessment (Kids' Stuff)** by Imogene Forte  
Incentive Publications  http://www.incentivepublications.com/  (800) 421-2830

**Software resources**

Makes Sense Strategies provides an extensive collection of interactive graphic organizers via word processing designed for K-12 developmentally appropriate instruction in vocabulary, reading, writing, and content-area learning. These GOs are pre-formatted and incorporate semantic prompts for different topic’s essential understandings, critical thinking, and information processing. The software includes an extensive collection of PowerPoint presentations that address various GO instructional techniques.

Inspiration is web-generating software. Educators should note that this and similar web-generating software (Mind Mapper, Decision Explorer, VisiMap and InfoMap ) programs are largely marketed from a constructivists perspective (e.g., students use the software to generate their own webs as they read or plan their writing).

**About the Authors**

This Alerts issue was written by Edwin S. Ellis and Pamela W. Howard and in collaboration with the DLD/DR Current Practice Alerts Editorial Committee. Edwin S. Ellis is a Professor of Special Education at the University of Alabama and has done extensive writing and research in the area of strategy interventions, including graphic organizers, for students with learning disabilities. Pamela W. Howard is currently a doctoral candidate in Special Education at the University of Alabama and has an expansive background as a teacher of students with learning disabilities and as a director of a learning resource center in Northwest Georgia.

**About the Alert Series**
Current Practice Alerts is a joint publication of the Division for Learning Disabilities and the Division for research within the Council for Exceptional Children. The series is intended to provide an authoritative resource concerning the effectiveness of current practices intended for individuals with specific learning disabilities. Each Alerts issue focuses on a single practice or family of practices that is widely used or discussed in the LD field. The Alerts describes the target practice and provides a critical overview of the existing data regarding the effectiveness for individuals with learning disabilities. Practices judged by the Alerts Editorial Committee to be well validated and reliably used are featured under the rubric of Go For It. Those practices judged to have insufficient evidence of effectiveness are featured as Use Caution. For more information about the Alerts series and a cumulative list of past Alerts topics, visit the Alerts page on the CEC/DLD website: www.TeachingLD.org