Graphic Organizers:
Understanding the Basics

By Carrice Cummins, Kimberly Kimbell-Lopez, and Elizabeth Manning

• •

Abstract

This article revisits the concept of using graphic organizers to support student learning in the classroom. It can represent students' background knowledge about a topic, provide a framework for the topic concepts to be learned, deepen analysis of the topic, and/or organize newly acquired information about the topic. Helping students recognize these relationships better enables them to independently create and use graphic organizers to map out their learning and/or to demonstrate their understandings as well as to develop cognitive organizing skills.

Key words: graphic organizer, background knowledge, patterns, understandings

You've heard the old saying, "A rose is a rose is a rose". Well a graphic organizer by any other name (i.e., semantic map, web, thinking map, structured overview, etc.) is still a graphic organizer if it is a visual display or representation of information. Regardless of the name, it is a way of arranging information about a topic based on the patterns and relationships that exist and applying a label to identify that relationship. This organization of information can be implemented before, during, and/or after reading. It can represent students' background knowledge about a topic, provide a framework for the topic concepts to be learned, deepen analysis of the topic, and/or organize newly acquired information about the topic. The graphic organizer, by whatever name, is a powerful learning strategy. It is a strategy, however, that too often is presented to students as a predetermined structure to simply be completed rather than one to be created based on patterns and relationships determined by the students (Benson & Cummins, 2000).

The research on graphic organizers as a comprehension strategy has been documented by a variety of experts. Ausubel (1960) introduced the concept of graphic organizers in his work using advance organizers to link prereading information with a reader's prior knowledge. This prereading introduction to a topic was modified to an outline format called a structural overview (Baker, 1977;Barron, 1969; Earle, 1969; Merkley & Jeffries, 2009). The term graphic organizer replaced structured overview in the mid 1980's and began being used, as appropriate, before, during, and/or after reading

> ## Graphic organizers have been used to structure information for a long time but have become increasingly complex in design.

as a visual aid to assist students in learning information. Since this time, the term graphic organizers have often been used in a broad sense with more specific names being given to represent their use with both narrative and informational texts (i.e. story map, compare and contrast, Venn diagram).

Graphic organizers have been used to structure information for a long time but have become increasingly complex in design. These sophisticated designs help to more specifically visualize the organizational patterns of texts, as well as the readers' thoughts about the text, but they are often presented to students in isolation and without first building the foundational skills upon which all graphic organizers are based. The result is often students who can "fill in" a graphic organizer when it is presented to them in worksheet style but cannot determine, when left to their own devices, which graphic organizer should be used. In other words, after reading a selection about polar bears, the student may easily complete the concept web or bubble map when distributed by the teacher. After all, it has a circle labeled "polar bears" and five lines around it so undoubtedly all that the student has to do is identify five facts about polar bears from the text. However, when asked to read a selection on polar bears and develop their own graphic organizer to best represent the important information learned from the text,

students are often unable to first determine the most appropriate graphic organizer to use and then to determine how many facts are needed to clearly represent the key ideas.

Teaching students to use graphic organizers to prioritize and to organize their thinking about the text, facilitates the activation of existing schema and helps them chart new knowledge (Benson & Cummins, 2000). The premise of Piaget's child-centered learning theory is that children construct knowledge about their world through interaction with the environment. Children cognitively organize this information through the development of schema, or categories, based on their experiences and intentions. This organization of information is done by cognitively determining the rules for the formation of the categories and the relationship between and among the categories.

INSTRUCTIONAL ASPECTS FOR UNDERSTANDING GRAPHIC ORGANIZERS

This process of establishing cognitive categories, or schema, is the same process students use when working with graphic organizers – they have to establish categories based on the relationships among the information. In order to do this, students must exercise certain foundational skills, including the ability to do the following: (a) see patterns, (b) identify relationships, and

> Prior to engaging students in the development of graphic organizers, they need to be immersed in activities that will strengthen the foundational skills underlying this development.

(c) define categories. So how can we help students obtain these foundational skills and ultimately the ability to independently work out and arrange their thinking about text? We actively engage them in activities that concrete the abstractness of this task. It is also important when teaching students the basics of understanding graphic organizers that talking about their thinking processes be a pivotal point of instruction.

TALK

Vygotsky (1978) helps us understand how the construction of meaning increases with social interaction. Learning is social in that talk facilitates critical thinking as students share perspectives and challenge their own and others' thinking. Students' use of language when developing the foundational skills for graphic organizers as well as the understanding of the various types of graphic organizers assists them in grappling with what they know in order to make sense of the new information. This collaborative learning coupled with a systematic process of immersing students in understanding basic patterns of organizational thought will enhance students' conceptual development and appropriate use of graphic organizers.

SORTING

"Categorizing is the fundamental way that humans make sense of the world. It allows us to find order and similarities among various objects, events, ideas, and words we encounter" (Bear, Invernizzi, Templeton, and Johnston, 2004, p.61). Prior to engaging students in the development of graphic organizers, they need to be immersed in activities that will strengthen the foundational skills underlying this development. Sorting is an excellent way to facilitate the understanding behind graphic organizers as it requires the student to look for patterns and relationships in order to categorize the information. Sorting activities vary in design and sophistication, but all should scaffold students' ability to classify and sort by progressing from seeing patterns, to identifying relationships, to making categories.

Making lists is a good place to start. Students brainstorm a list from which the teacher develops sorting activities. The list can be connected to a text or topic being studied or any common experience in which students have a well-developed schema. It is important that the list be student-generated as they cannot see

> When children become adept at "following the rule", it is time to move to the next level of looking for patterns and relationships.

patterns and relationships among items that are not part of their own experiences. For example, how can a student classify a flamingo in the same group as a chicken or a bird (category – animals with feathers) if they have never seen or heard of a flamingo? The fact that flamingo is not an existing part of the student's schema makes is impossible for a connection to be made between the word and the category being developed. The words/items on the list should be transferred to index cards, post-it notes, etc., so they may physically be manipulated during the sort. Students then sort the cards looking for patterns and relationships. One way to scaffold this activity is by designing sorting activities that move students from following a given rule, to guessing a given rule, to finally making their own rule (Benson & Cummins, 2000).

"Following the rule" activities require the teacher to give the rule, then students search their word/picture cards looking for items that follow that rule. For example, after students have brainstormed a list of foods, the teacher makes a set of cards for each group. The teacher gives the rule "foods that are sweet," and the students look for relationships as they sort the cards looking for foods that fit that category (e.g. cake, fudge,

cookies, pie) and foods that do not (e.g. macaroni, peas, chicken, lemon). Sorting activities other than word card play can be used here as well. These activities could involve any sort that requires students to identify and follow the rule behind the category, such as lining up for lunch by color of students' shirts, those wearing shoes with laces, those wearing glasses and long sleeves. Initially "follow the rule" categories should be very concrete and objective in nature (i.e. foods that are salty, foods that are sold in cans) but should slowly progress to categories that require more thinking (i.e., foods that taste good, foods that you like). When children become adept at "following the rule", it is time to move to the next level of looking for patterns and relationships.

"Guess the rule" sorting requires the teacher to provide a set of items that are related in some way and the students guess what rule the teacher used to sort the items. For example, the teacher might place the word/picture cards kitten, bird, and worm on the pocket chart and students guess possible rules based on observed relationships among the words. The teacher continues to add words to the pocket chart (i.e. snail, flea) until the students guess her/his rule "small animals". This level of sort may also be completed with materials

and objects other than word card play, such as calling students to the circle based on a "hidden" rule and having students try to guess the rule behind the selection (i.e. those wearing a red shirt). Once students have had ample opportunities to practice following and guessing the rule, then they are ready to "make the rule".

"Making the rule" is the most abstract level of sorting. It requires students to search the word cards or items for patterns and relationships and establish their own categories for the sort. When students can readily establish their own categories for information based on observed patterns and relationships, they are ready to begin creating their own graphic organizers.

The development of the foundational skills for conceptual thinking may take time. As with any new learning, it may require skillful transfer of responsibility as students are immersed in sorting activities. Each level of sort requires modeling by the teacher and gradual guided practice prior to progressing to a higher level of sorting. Introduction to the four basic structures of knowledge organization (Bromley, Irwin-De Vitis, and Modlo, 1995) should be conducted in the same manner as the teacher models how to represent categories and relationships with graphic organizers.

THE FRAMEWORK

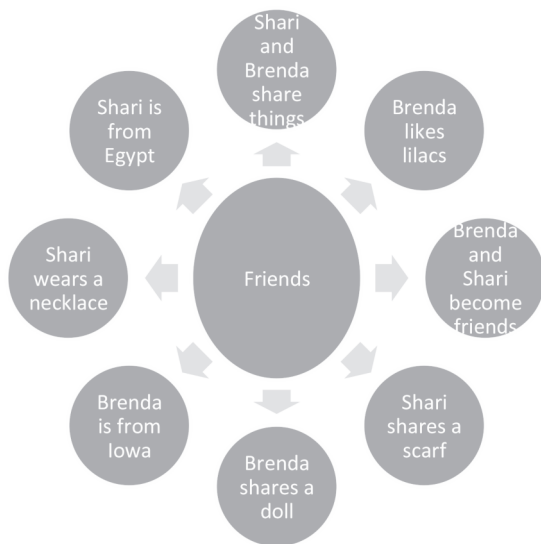When asked how many graphic organizers there are

most people will say "lots". However, the framework for graphic organizers comes down to four basic organizational structures: (a) conceptual, (b) hierarchical, (c) sequential, and (d) cyclical. These structures can then be merged together in numerous ways based on the variety of patterns and relationships the organizer is attempting to represent. Students can benefit greatly, however, from being immersed in the basic four types of graphic organizers prior to being exposed to the "lots" that are often found in educational materials as they more concretely demonstrate the patterns and relationships in the information. Helping students recognize these basic organizational patterns first paves the way to later advanced configurations of information while strengthening their understanding of the need to match the chosen graphic organizer to the topic or text being organized.

The four basic organizational structures are explained based on the way they represent patterns and relationships of information. An example graphic organizer is provided for each structure within the framework. The first three structures are illustrated using the same book, *Lilacs, Lotuses, and Ladybugs* (Nicholas, 1997), to demonstrate how different purposes dictate the best graphic organizer to be used to organize the text information. The pattern being represented in the fourth structure necessitated the use of a different text, *The Monarch Butterfly* (Garland, 1992).

CONCEPTUAL GRAPHIC ORGANIZER

A conceptual structure is the most commonly used graphic organizer as most brainstorming and planning activities utilize this structure. A conceptual graphic organizer basically consists of a central idea and supporting details. The central idea is in the middle of the graphic organizer, often in a circle, with supporting facts or details shooting off of the central idea. This structure reflects the relationship of each supporting fact to the central idea yet does not reflect a relationship between each supporting fact. Figure 1 illustrates this relationship. Each supporting detail is directly related to the central idea or in this case the story (friends); however, there is not necessarily a direct relationship between each supporting detail (i.e. Brenda likes lilacs and Shari wears a necklace).

Figure 1: Conceptual Graphic Organizer – *Lilacs, Lotuses, and Ladybugs* (Nicholas, 1999.)
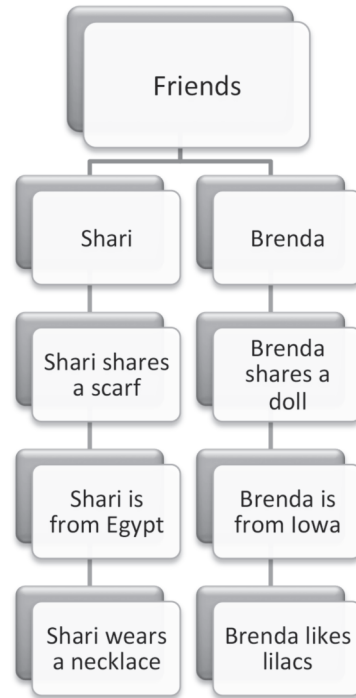

subconcepts. Each subconcept may then have supporting facts listed underneath. This structure allows the charted information to reflect the relationship of the subconcepts to the central idea and of each supporting fact to the appropriate subconcept. The graphic organizer in Figure 2 illustrates this relationship. The subconcepts, Shari and Brenda, represent a relationship of the central idea, friends. These two subconcepts are then supported by details related to that specific category and ultimately to the central idea. There is, however, not necessarily a direct relationship of supporting details across subconcepts (i.e. Shari wears a necklace and Brenda likes lilacs).

Figure 2: Hierarchial Graphic Organizer – *Lilacs, Lotuses, and Ladybugs* (Nicholas, 1997.)

HIERARCHICAL GRAPHIC ORGANIZER

A hierarchical structure organizes information in a linear fashion with a central concept followed by levels of

SEQUENTIAL GRAPHIC ORGANIZER

A sequential structure is most often used when events are related chronologically and have a definite

beginning and end. This graphic organizer is also generally linear in nature as it shows the relationship of each event to the next. Sequential organizers are used when the reader needs to remember the important details in the order they occurred in the text. This visual depiction can chronologically represent items related to a central idea/concept from the text or information representing major events of the text from beginning to end. Figure 3 illustrates the chronological occurrence of events in the story, *Lilacs, Lotuses, and Ladybugs* as they relate to the central theme of friendship (Nicholas, 1997). However, Figure 4 sequentially displays important details of the text in general.

Figure 3: Sequential Graphic Organizer: Theme Related Information – *Lilacs, Lotuses, and Ladybugs* Nicholas,1997 (theme related information)

Friends ⇨ Brenda is from Iowa ⇨ Shari is from Egypt ⇨ Brenda likes lilacs ⇨ Shari likes lotuses ⇨ Brenda shares a doll ⇨ Shari shares a scarf

Figure 4: Sequential Graphic Organizer: General Story Information – *Lilacs, Lotuses, and Ladybugs* (Nicholas,1997)

Lilacs, Lotuses, and Ladybugs ⇨ Shari is sitting alone under the lilacs ⇨ Brenda meets Shari ⇨ Brenda and Shari try to talk but speak different languages ⇨ Brenda and Shari begin to share things
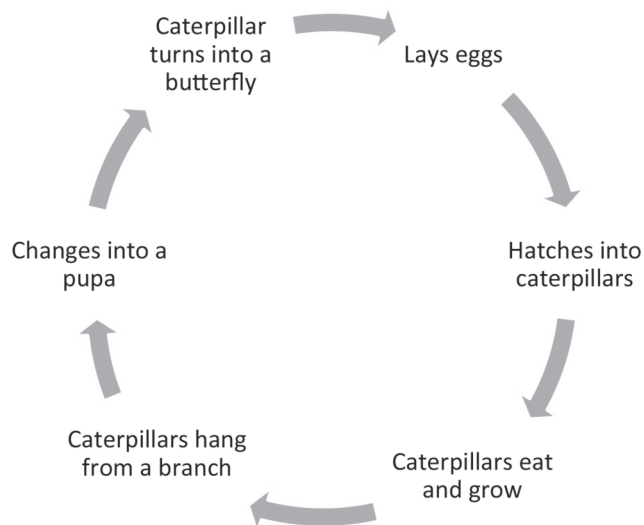
CYCLICAL GRAPHIC ORGANIZER

The cyclical structure is very similar to the sequential structure in that events are related in a chronological order. The main difference in the two structures, however, is that a cyclical structure reflects a sequence of events with no defined beginning or end. In other words, it represents information in a circular pattern.

This form of graphic organizer can be used in narrative text in books such as *If You Give a Mouse a Cookie* by Laura Numeroff but is most often used in explanatory nonfiction (i.e. life cycle). Figure 5 visually displays this organizational pattern demonstrating that the text begins and ends in the same place (e.g. life cycle of a butterfly begins with laying eggs and then the cycle repeats itself).

Figure 5: Cyclical Graphic Organizer – *Monarch Butterfly* (Garland, 1992)

Caterpillar turns into a butterfly → Lays eggs → Hatches into caterpillars → Caterpillars eat and grow → Caterpillars hang from a branch → Changes into a pupa → (back to Caterpillar turns into a butterfly)

FINAL THOUGHTS

Each of the four types of graphic organizer structures provides students with a way to organize information by demonstrating the relationships among events, facts, concepts, etc. These structures may be used to represent and explore literary elements and/or events of story as well as key concepts of informational texts. The choice of structure or combination of structures will depend upon the relationships and/or categories being emphasized. Students need to

> A suggestion would be to immerse students in one organizational pattern at a time until all four have been introduced.

understand the foundational skills on which graphic organizers are based and the purpose behind each of the basic structures, so they may eventually select, create, and apply them independently and appropriately as dictated by the information.

The ability to choose and use the most appropriate graphic organizer takes time to develop. Students will need explicit instruction and multiple opportunities with guided practice of this learning strategy before being able to create their own graphic organizers to map out their thinking about topics or texts. A suggestion would be to immerse students in one organizational pattern at a time until all four have been introduced. This immersion time enables students to develop a deep understanding of the basic graphic organizer structures which later can be used to organize information to demonstrate relationships among categories, facts, events in a variety of interesting ways. In addition to providing time and activities to the process of developing cognitive thinking

related to organizing information, Bromley, Irwin-De Vitis, and Modlo (1995) also identify several key points to guide teachers in their instruction of graphic organizers by the information and purpose of this task:

(1) The graphic organizer is a mental tool to aid comprehension, recall, and learning.

(2) The process of creating, discussing, sharing, and evaluating a graphic organizer is more important than the organizer itself.

(3) A gradual transition from teacher-directed graphic organizer activities to independent use is best.

(4) The discussion that accompanies the creation or interpretation of a graphic organizer is crucial to the learning process.

(5) There are many ways to represent the same information in a graphic organizer. There is no one right answer.

Teachers who integrate these principles and concentrated immersion time in understanding the basic framework of organizational structures into their teaching of graphic organizers are more likely to develop students who can see patterns and relationships among the material being read. These students will then not only be able to complete a predeveloped graphic organizer but will also be able to construct their own graphic organizers, as needed, to facilitate their learning.

A rose is indeed a rose, but it is a flower with distinct characteristics just as a graphic organizer is a visual display of information based on distinct patterns and relationships. Helping students recognize these

relationships better enables them to independently create and use graphic organizers to map out their learning and/or to demonstrate their understandings as well as to develop cognitive organizational skills. After all, the power of the graphic organizer is not as much in the product as in the process of learning to organize information (Benson & Cummins, 2000). Helping students understand the basics behind graphic organizers facilitates this process.

REFERENCES:

Ausubel, D.P. (1960). The use of advanced organizers in the learning and retention of meaningful behavior. *Journal of Educational Psychology,* 51, 267-272.

Baker, R.L. (1977). Meaningful reception learning. In H.L. Herber & R.T. Vacca (Eds). *Research in reading in the content areas: The third report* (pp. 32-50). Syracuse, NY; Syracuse University, Reading and Language Arts Center.

Barron, R. F. (1969). The use of vocabulary as an advance organizer. In H.L. Herber & R.T. Vacca (Eds). *Research in reading in the content areas: The third report* (pp. 32-50). Syracuse, NY; Syracuse University, Reading and Language Arts Center.

Bear, D. R., Invernizzi, M., Templeton, S., and Johnston, F. (2004). *Words their way: Word study for phonics, vocabulary, and spelling instruction.* Upper Saddle River, NJ: Pearson.

Benson, V. & Cmmins, C. (2000). *The power of retelling: Developmental steps tobuilding comprehension.* Bothell, WA; Wright Group.

Bromley, K., Irwin-DeVitis, L., & Modlo, M. (1995). *Graphic organizers: Visual strategies for active learning.* New York, NY: Scholastic, Inc.

Earle, R.A. (1969). Use of the structured overview in mathematics classes. In H.L. Herber & R.T. Vacca (Eds). *Research in reading in the content areas: The third report* (pp. 32-50). Syracuse, NY; Syracuse University, Reading and Language Arts Center.

Garland, P. (1992). *Monarch butterfly.* Bothell, WA: The Wright Group.

Merkley, D. & Jeffries, D. (2009) Guidelines for implementing a graphic organizer. In D. Lapp & D. Fisher (Eds) *Essential reading on comprehension* (pp.68-76). Newark, DE: International Reading Association.

Nicholas, E. (1999). *Lilacs, lotuses, and ladybugs.* Bothell, WA: The Wright Group.

Numeroff, L. J. (1985). *If you give a mouse a cookie.* New York, NY: Scholastic.

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

ABOUT THE AUTHORS

Dr. Carrice Cummins, former President of the International Literacy Association (ILA) 2012-13, is Professor, Louisiana Tech University
carrice@latech.edu

Dr. Kimberly Kimbell-Lopez
Assistant Professor, Louisiana Tech University
kklopez@latech.edu

Dr. Elizabeth Manning
Assistant Professor, Louisiana Tech University
lmanning@latech.edu