Preface

During my author's break (trying to undo writer's block) I walked downstairs into the basement room. Carpenters Garcia and Ian were readying studs for the divider wall. Ian was using the portable power saw while Garcia turned up the pressure on the power drill. Around the perimeter of the ceiling, I noticed a red beam of light.

"Wow," I exclaimed. "Lots of power. What's the red light?"

Garcia looked up. "That's a laser level. It makes sure we have the top of the new walls even all around."

"Yep," added Ian. "My grandfather sure could have used that in our house."

"Do these tools really make a difference?" I asked.

Garcia nodded. "Cuts our work time in half and we are a lot more accurate."

"Power." "Accuracy." "Speed." "The right tools." These words resonated with me. The parallels between the carpenters' up-to-date power tools, their increased efficiency, precision and accuracy seemed apt descriptors for some of the points I wanted to make about graphic organizers. What better way to describe what happens when teachers provide students with tools that make learning easier, thinking sharper and more precise, and results more powerful?
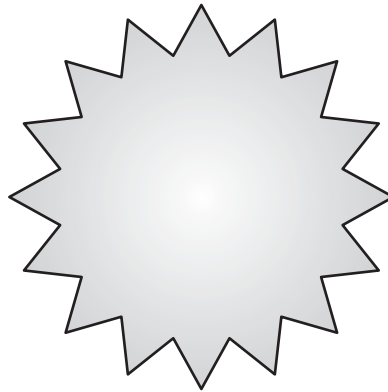
A LITTLE HISTORY

Way back when, actually in the mid-1970s, I met my first graphic organizer. I was participating in a values clarification workshop with Merrill Harmin, Sidney Simon, and Howie Kirschenbaum. Among the many practical strategies they taught, I latched on to the "Sunburst," a visual for brainstorming created (as far as I know) by Robert Hawley. With my Senior English students at New Trier High School (Illinois), the sunburst was an instant success.

Through my years of teaching, creating and directing two alternative schools, leading a regional education service center, and founding SkyLight Professional Development, I developed my interest in best instructional practices. Long before research validated my intuitions about the power of strategic teaching, I had collected an array of graphic organizers. In 1990, I combined graphic organizers with cooperative learning to publish *Cooperative Think Tank I*, soon followed by *Cooperative Think Tank II*.

Since those publications, much has happened in the field of strategic instruction. Robert Marzano and his associates at the Mid-continent Research for Education and Learning Education Laboratory concluded a meta-analysis to identify those research-supported best practices that

Sunburst

produced the largest effect sizes for student achievement. Included among these top-notch strategies were nonlinguistic representations, cooperative learning, questioning and cueing, and hypothesizing. In the strategy labeled "nonlinguistic representations," graphic organizers stand out as one of the most highly effective achievement-producing tactics.

Beyond the achievement research, brain research has validated the value of graphic organizers as a tool that enhances learning, especially among those students who are classified in Howard Gardener's *Theory of Multiple Intelligences* as "visual-spatial learners."
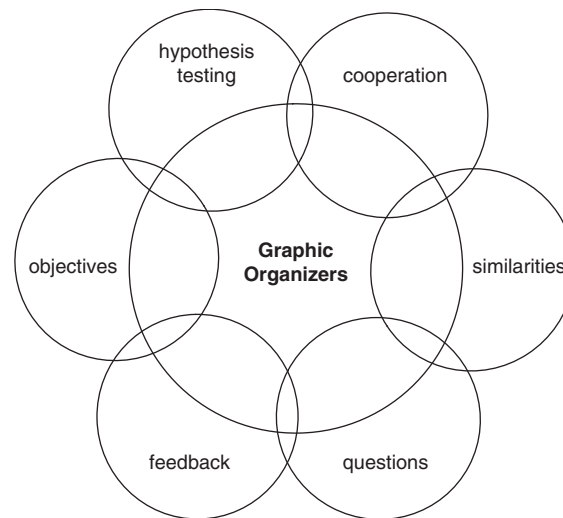
THE CURRENT STATE

Today, most textbook publishers, many professional development consultants, and even some software developers advocate the use of graphic organizers in daily instruction. Teachers from kindergarten to college have listened and learned. For the most part, their use of these tools is well thought out. In some others, misconceptions and inappropriate use foil their benefits.

THE PURPOSES FOR THIS REVISED EDITION

First, the time is right! It is time to update information about the many new and useful organizers that have emerged since 1990. It is time to identify the strong and consistent research behind this very sensible, practical, and easy-to-use teaching tool. It is time to put this tool into the context of those other high-effects instructional strategies that truly make a difference in student learning, promote teacher wisdom, and communicate the joy in learning. Like carpenters, surgeons, and others who have benefited from new tools that increase the quality of their work, so too can teachers.

Second, the needs are great. What are these needs? Novice teachers and seasoned veterans need to have ready at hand a single source that they can rely on as they make instructional choices for their daily power lessons. Such lessons will provide teachers with the best means to promote improvements in how and what students learn.

There is also a need to provide teachers with the research, the theory base, and sensible advice that have emerged in the last decade that allow them to use their new tools well. Such advice indicates which strategies and tactics have the most impact on student achievement as well as the "how to." These are the supports teachers need when they are challenged by narrow interpretations of *No Child Left Behind*, low expectations of teaching ability by those who wish to reduce all teachers into script readers, and increased pressure to "cover" more material more quickly as the preface to the next standardized test.

In a time when funding is short for elaborate professional development, new programs, and text materials, no-frills instruction is needed. No-frills tools anchor no-frills instruction with tools that are easy to use but that provide power-packed results. Graphic organizers, usable on many levels, meet these criteria. There is no need for reams of paper to make multiple student copies, elaborate projection technology, or other tools that sap limited funds. At the very least, teachers can draw the organizer on the board and ask students to replicate it in their notes or copy it onto a large sheet of newsprint for group work. Once the students hear the simple procedures, they can use their textbooks to gather and make sense of the concepts they are studying. Not fancy. Not frilly.

THE VARIED USES OF GRAPHIC ORGANIZERS

Graphic Organizers are tools with many uses. They work in many situations.

In the Classroom

1. Used by teachers to organize classroom discussions. (e.g., As students talk, teachers collect the information in an organized pattern such as the Web or Sunburst.)

2. Used by students to complete a task within a single lesson. (e.g., Students use a comparison Venn to understand the relationships between two characters in a story.)

3. Used by students as a learning tool. (e.g., Students learn to use the organizer with homework and in multiple classroom tasks throughout the school year.)

4. Used by students as a cooperative learning tool that promotes "positive interdependence." (e.g., In each group, students create a PMI to assess a completed math assignment. They make a single chart that captures each student's ideas and feelings.)

5. Used by students to develop their thinking, problem solving, and metacognition. (e.g., Students work in cooperative groups with the Fishbone organizer and a variety of cause-effect problems. They reflect on ways to improve their causal thinking via this graphic organizer.)

In Professional Development

1. Teacher trainers "walk the talk." They include graphic organizers in their workshop designs to model and encourage active engagement. (e.g., Math teachers work in subject groups with a Tri-Pie to identify applications of new research on best math instruction practices.)

2. Teacher study groups review prior knowledge and update applications of graphic organizers. (e.g., Teacher grade-level teams select one organizer to add to students' repertoires of "learning-to-learn" tools.)

3. Teachers update their use of graphic organizers for studying in classes that are information based. (e.g., Mrs. Gonzalez is completing her certification on special education law, which is presented in lecture fashion. She reorganizes her notes using different organizers.)

In School Meetings

1. Principals present key information via a PowerPoint slide organized with a graphic. (e.g., To show the year's priorities, the principal uses a Ranking Ladder.)

2. Principals use organizers to foster a learning community. (e.g., The principal facilitates learning groups that use a Decision Maker's flow chart to promote agreement on new discipline rules.)

THIS BOOK'S STRUCTURE

This book is divided into two major sections. The first section combines a selection of those graphic organizers from *The Cooperative Think Tank I* and *The Cooperative Think Tank II* plus others developed since the last edition of

these books. Feedback from teachers, professional developers, and teacher educators helped with this selection. The second section provides context for the learning theory, the research, NCLB, and other instructional strategies that deepen and extend students' learning. These include suggestions for best use of graphic organizers with cooperative learning, thinking processes, and assessment tactics.

SECTION I (CHAPTERS 1–24)

Each chapter in the first section is organized in a consistent pattern to illuminate the best use of the highlighted graphic organizer.

Title

Name of the organizer.

Learning Phase

This refers to the three stages of learning postulated by cognitive psychologist Reuven Feuerstein. Graphic organizers are especially important in the first two stages: gathering information and making sense of information (see Chapter 27). The most appropriate stage is provided, although some organizers may serve well in a second stage. Some uses of organizers' stages overlap.

Level of Difficulty

Three levels, based on feedback from teachers, are identified: Easy, Moderate, and Challenging. Use these markers as suggested guides. Save the challenging strategies for very able middle-grade students, or for high school students.

Purpose

What is the reason or benefit gained?

Thinking Process

What is the thinking process that is most facilitated by this organizer?

Organizer

This is a blank sample of the organizer. Frequently, numbers that appear in specific areas of the organizer align with the procedural use instructions that follow.

Appropriate Uses

This is a list of suggestions on specific ways teachers might use this organizer. These instructions apply to individual uses or learning group uses.

Key Vocabulary

These are words associated with the learning of the organizer. These words introduce students to the language of thinking. Teachers may select and adapt these words to the cognitive age of the students. Teachers also may add the words from the content topics they are teaching.

Lesson Design

This design incorporates other instructional tactics shown by research to impact student achievement. The design targets individual instruction. Teachers can add to the lesson's impact by adapting the design for use by learning groups (see Chapter 30) and by teaching for thinking and transfer (see Chapter 26).

Organizer Examples

Three sample organizers are presented: elementary, middle, and secondary. These present a visual picture of what a student-completed organizer might look like.

More Ideas

In this part, teachers can see ideas for using the organizer with topics and concepts in literacy, mathematics, science, social studies, and other areas. Although teachers may select any of these, the primary purpose of these lists is to stimulate teachers' thinking about like ideas from their own curricula.

Make Your Own

This blank provides a space to lay out the components of this organizer with material directly from the curriculum.

Your Ideas

This space allows teachers to select ideas from the above lists that may be best for their students, or to write in their own ideas for the content they can enrich with this organizer.

Graphic Organizer (Blank Master)

This provides teachers with a master to copy and distribute. It is preferable that teachers make an overhead copy to show students on

the board or screen. This enables students to hand draw the pattern and sear it into their memory with habitual, independent use. When learning groups are using the pattern, assign a recorder to draw the pattern on a large sheet of newsprint (see Chapter 30). This encourages positive inter-dependence among group members, a necessary ingredient for building the team spirit in classrooms as learning communities.

SECTION II (CHAPTERS 25–32)

This section provides a discussion on specific elements and classroom uses of graphic organizers. Its intent is to help teachers enrich student learning by amplifying other research-supported concepts and practices that enhance instruction via graphic organizers. Each chapter discusses the theoretical constructs, the research, and the relationship of the practice to instruction by graphic organizers. In this context, each chapter also provides brief descriptions of these best practices.

Chapter 25: Invent Your Own Graphic Organizer

This chapter from the original *Cooperative Think Tank* encourages teachers to construct new organizers that may fit their curriculum more tightly.

Chapter 26: Graphic Organizers: Tools for Lifelong Thinking and Learning

This chapter discusses the importance of teaching students how to transfer use of graphic organizers across the curriculum and into non-school learning opportunities.

Chapter 27: Skillful Thinking Is Not an Accident

This chapter introduces the instructional framework for using graphic organizers as a tool to promote higher achievement through sharper think-ing. It introduces the three phases of learning outlined by cognitive psy-chologist Reuven Feuerstein and shows how graphic organizers can create more efficient learners in each phase.

Chapter 28: Promoting Students' Thinking About Their Thinking

For advocates of constructivism, metacognition is the *sine qua non* of learning. This chapter outlines the rationale and suggested approaches for making student reflection about their thinking a central element in every lesson that incorporates a graphic organizer.

Chapter 29: Developing the Quality of Student Thinking

This chapter introduces the role of cognitive functions as the quality indicators of highly efficient thinking. The chapter shows how teachers

can identify student thinking with graphic organizers that is inhibited by undeveloped functions and suggests tactics to make the thinking more efficient.

Chapter 30: Using Graphic Organizers With Learning Groups

Building on the original model for using graphic organizers in cooperative learning groups, this chapter presents practical suggestions for imbedding graphic organizers in every lesson.

Chapter 31: The Multiple Uses of Graphic Organizers in Assessment

This chapter presents a matrix model of assessment. It demonstrates how teachers can incorporate graphic organizers into their assessment of content, cooperation, and cognition.

Chapter 32: No Child Left Behind and Research

Myths abound about use of graphic organizers in the context of the No Child Left Behind (NCLB) legislation. This chapter illustrates how and why graphic organizers are an essential component in any classroom lesson with the purpose of increasing student achievement with scientifically researched tools.

APPENDIX

The Appendix provides a list of URLs, directing readers to Web sites with helpful information on graphic organizers, thinking, and brain research.

WHAT'S NEW? A SUMMARY

This new edition combines two books into one and expands the discussion of key components that will enrich the instructional use of graphic organizers. In addition to modifications in the presentation of every organizer, this edition includes five new organizers with full exposition (made possible by "selective abandonment" of five organizers used less often in classrooms). It also provides up-to-date and content-centered suggestions for uses of each graphic organizer in key areas of the curriculum.

Most notable is the addition of the second section. From a brief discussion of cooperative learning in the early editions, this section has grown to include deeper discussions of the cognitive connection, achievement and

brain research, NCLB, and assessment. In the first editions, the research on graphic organizers was just emerging. That was also true of sound studies on other instructional strategies that have since become staples of the best practice literature.

ACKNOWLEDGMENTS

The foundation for this book is built on Reuven Feuerstein's important Theory of Structural Cognitive Modifiability. That theory is the alpha and omega for empowering students to use graphic organizers. From the time that I met Reuven in the mid-1990s, he has proven to be a gracious mentor and dear friend, helping me to understand the "why" that underpins the "what" and "how" of cognitive development.

I must also recall other mentors and friends who have mediated my thinking about thinking over the years. Teaching the value of rigorous knowledge and student-centered instruction to a young English teacher, Bob and Peg Pink, Mary Ida McGuire, Rose Morrow, Arline Paul, and Bob Applebaum helped form my beliefs. Howie Kirschenbaum, Barbara Glaser, Joel and Margie Goodman, Eliot Masie, Sid Simon and Merrill Harmin supported the early steps on my pathway as a professional developer and author. In the ensuing years, Roger and David Johnson, Richard Foster, Howard Gardener, Madeline Hunter, Art Costa, Ron Brandt, and Bernice McCarthy all shared insights that deepened my understanding of teaching and learning practices.

Each time I work with this material, I have to think of colleague and friend Robin Fogarty. Her devotion to thinking and espousal of professional development that empowers teachers to "seek out the skylight" prompted her to encourage the writing of the first editions of this book.

Next, I must thank those who have helped most with this revised edition, beginning with my editor, Cathy Hernandez, whose succinct guidance of the feedback process started with her own sharp-eyed assessment. Close behind came her selection of a reviewers' panel marked most by their in-depth knowledge of instruction and professional development. Their reviews were thorough, precise, and most helpful in guiding the changes for this revision. And they were gentle on my ego!

On the practical side, I must thank Mary Jane Bloethner and Donna Ramirez for their usual attention to detail and their computer skills in preparing the sample organizers for text. In this same category, I thank my youngest, Kate, who polished the form of my citations and bibliography.

Finally, accolades go to the many teachers, colleagues, and friends who have discussed instruction, provided new organizers, and challenged my thinking with their very constructive feedback.

—*Jim Bellanca*