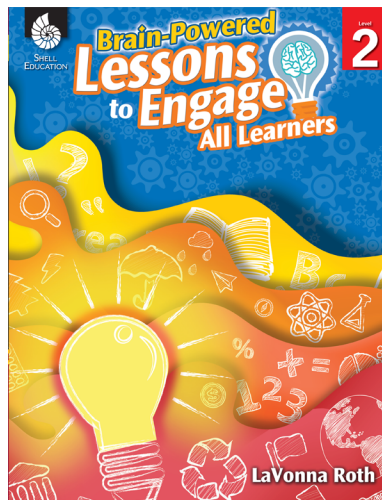


Sample Pages from

Brain Powered Lessons to Engage All Learners

Level 2



The following sample pages are included in this download:

- Table of Contents
- Introduction excerpt
- Lesson plan

For correlations to Common Core and State Standards, please visit <http://www.teachercreatedmaterials.com/correlations>



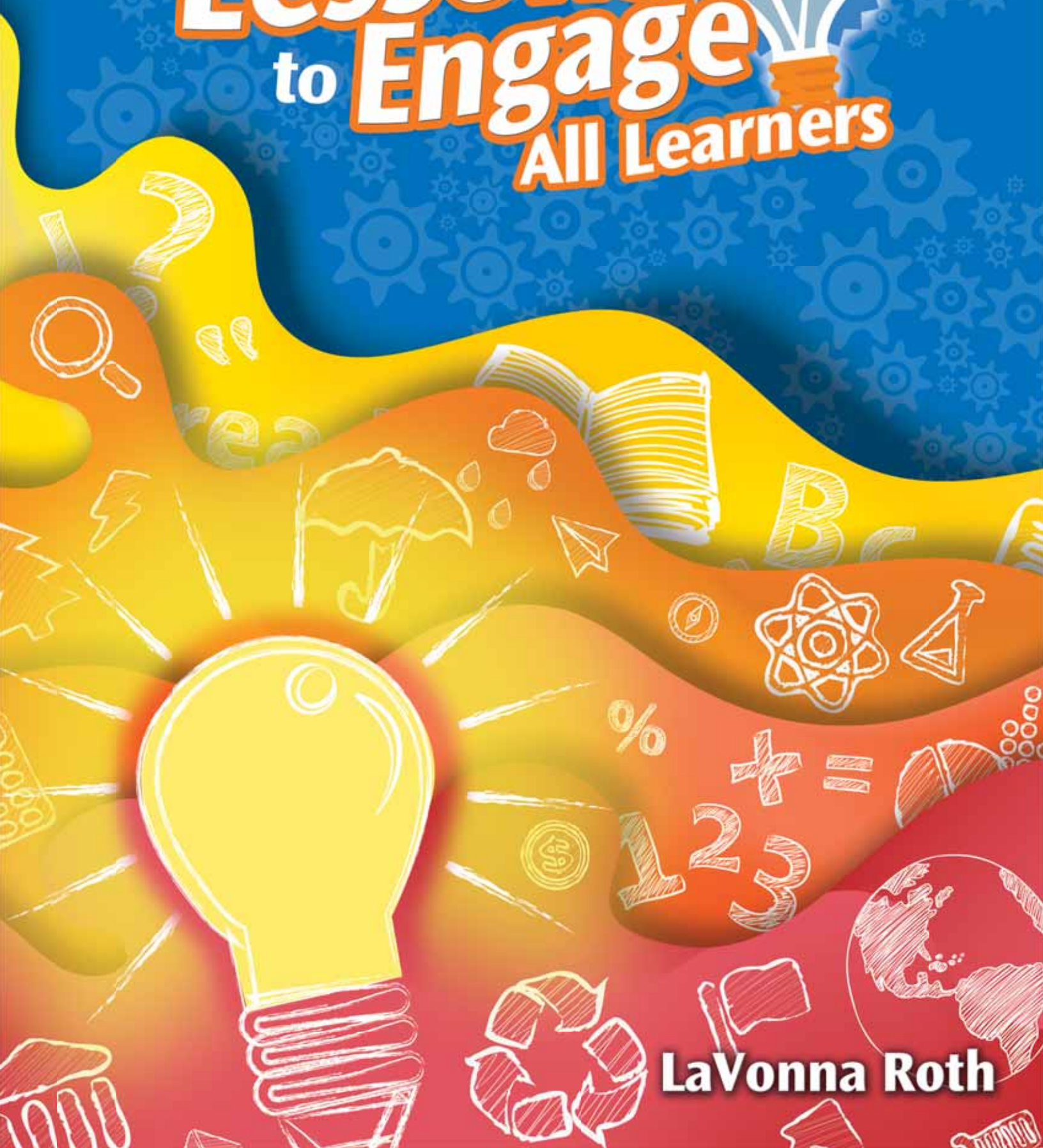
SHELL
EDUCATION

Brain-Powered Lessons to Engage All Learners



Level

2



LaVonna Roth

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The Power of the Brain

“What actually changes in the brain are the strengths of the connections of neurons that are engaged together, moment by moment, in time.”

—Dr. Michael Merzenich

The brain is a very powerful organ, one we do not completely understand or know everything about. Yet science reveals more and more to us each day.

As educators, we have a duty to understand how the brain learns so that we can best teach our students. If we do not have an understanding of some of the powerful tools that can help facilitate our teaching and allow us to better target the brain and learning, we lose a lot of time with our students that could be used to serve them better. Plus, the likelihood of doing as much reteaching will lessen.

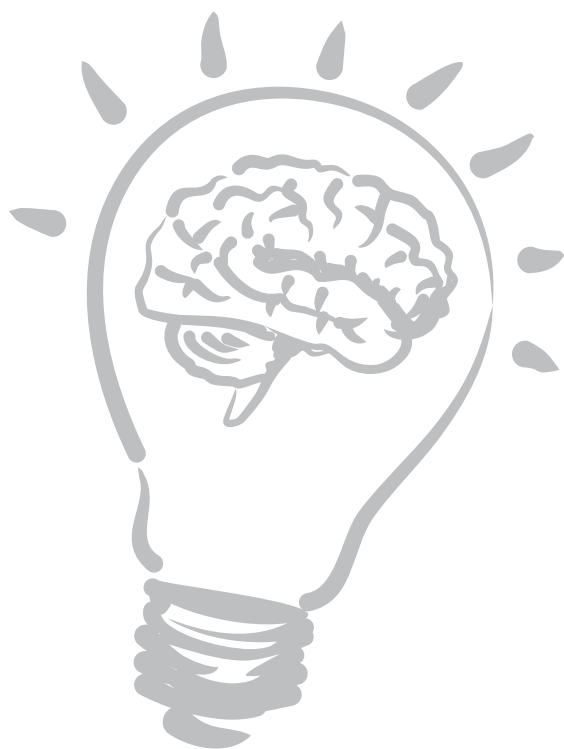
This is where *Brain-Powered Lessons to Engage All Learners* comes in! The eight strategies included within the lessons are designed around how the brain learns as a foundation. In addition, they are meant to be used as a formative assessment, include higher-order thinking, increase the level of engagement in learning, and support differentiation. For detailed information on each strategy, see pages 12–19.

What Makes the Brain Learn Best

As you explore the strategies in this book, keep the following key ideas in mind.

The content being taught and learned must:

- ⊙ be engaging
- ⊙ be relevant
- ⊙ make sense
- ⊙ make meaning
- ⊙ involve movement
- ⊙ support memory retention



The Power of the Brain *(cont.)*

Be Engaging

In order for students to pay attention, we must engage the brain. This is the overarching theme to the rest of the elements. Too often, students are learning complacently. Just because students are staring at the teacher, with pencil in hand and taking notes, does not mean they are engaged. For example, we know that they are engaged when they answer questions or are interacting with the information independently with a teacher or another student. We don't always know when they are engaged just by looking at them. Sometimes, it's a simple question or observation of what they are doing that helps identify this. Body language can tell us a lot, but do not rely on this as the only point of observation. Many teachers may have not gone into teaching to "entertain," but entertaining is one component of being engaging. As neuroscience research has revealed, it was noted as early as 1762 that the brain does change (neuroplasticity) based on experiences (Doidge 2007). It rewires itself based upon experiences and new situations, creating new neural pathways. "Even simple brain exercises such as presenting oneself with challenging intellectual environments, interacting in social situations, or getting involved in physical activities will boost the general growth of connections" (HOPES 2010, §2). This is fantastic if we are creating an environment and lessons that are positive and planned in a way that fires more neurons that increase accurate learning.



"Even simple brain exercises such as presenting oneself with challenging intellectual environments, interacting in social situations, or getting involved in physical activities will boost the general growth of connections" (HOPES 2010, §2).

The Power of the Brain *(cont.)*

As a reflection for you, think about the following with respect to student engagement:

- ⊙ What are the students doing during the lesson? Are they doing something with the information that shows they are into it? Are they asking questions? Are they answering?
- ⊙ What is their body language showing? Are they slumped, or are they sitting in a more alert position? Are their eyes glazed and half-closed, or are they bright, alert, and paying attention to where their focus should be?
- ⊙ Who is doing most of the talking and thinking? Move away from being the sage on the stage! Let the students be the stars. Share your knowledge with them in increments, but permit them to interact or explore.
- ⊙ What could you turn over to students to have them create a way to remember the content or ask questions they have? What could be done to change up the lessons so they are interacting or standing? Yes, parts of lessons can be taught by having students stand for a minute or so. Before they sit, have them stretch or high-five a few classmates to break up the monotony.

Be Relevant

Why should the brain want to learn and remember something that has no relevance to us? If we want our students to learn information, it is important that we do what we can to make the information relevant. An easy way to achieve this is by bringing in some background knowledge that students have about the topic or making a personal connection. This does not need to take long.

As you will note, the lessons in this book start out with modeling. Modeling allows learners to have an understanding of the strategy and it also takes a moment to bring in what they know and, when possible, to make a personal connection. Consider asking students what they know about a topic and have them offer ideas. Or ask them to reflect on a piece of literature that you read or to ponder a question you have provided. For English language learners, this strategy is particularly effective when they can relate it to something of which they have a foundational concept and can make a connection to what they are learning. The language will come.

Make Sense

Is what you are teaching something that makes sense to students? Do they see the bigger picture or context? If students are making sense of what they are learning, a greater chance of it moving from working memory to long-term memory will increase. Some students can be asked if the idea makes sense and if they clearly understand. If they are able to explain it in their own words, they probably have a good grasp on metacognition and where they are in their learning. Other students may need to be coached to retell you what they just learned.

The Power of the Brain *(cont.)*

Make Meaning

Once students have had an opportunity to make sense of what they are learning, provide an opportunity for them to make meaning. This means that they have a chance to apply what was learned and actually “play” with the skills or concepts. Are they able to complete some tasks or provide questions on their own? Are they ready to take the information to higher levels that demonstrate the depth of understanding? (Refer to Webb’s Depth of Knowledge for some additional insight into various levels of making meaning on pages 22–23.) For some students, simply asking a few questions related to what is being taught or having them write a reflection of what was just explained will allow you to check in on their understanding to see where they are before taking their thinking to a higher or a deeper level.

Involve Movement

This one is particularly important because of the plethora of research on movement. Dr. John Ratey wrote the book *Spark*, which documents how student achievement soars based on some changes made to students’ physical education program in which students achieved their target heart-rate zone during their physical education time. Movement, particularly exercise, increases brain-derived neurotrophic factors (BDNF) that increase learning and memory (Vaynman, Ying, and Gomez-Pinilla 2004).

Knowing that getting students to achieve their target heart rate zone is not always an option, do what you can. Have students take some brain breaks that heighten their heart rate—even if for just a minute.

Movement has strong retention implications in other ways. Students can create a gesture connected to the lesson concept, or they can stand and move while they make meaning from what they learned. Movement is multisensory, thus, various regions of the brain are activated. When multiple brain pathways are stimulated, they are more likely to enter long-term potentiation from activating episodic and semantic memories.

If you come across a model lesson in this book in which not much movement is shared, or you find your students have been sitting longer than you may wish (you will know because their body language will tell you—unfortunately, we should have had them moving before this point), my challenge to you is to think of what movement you can add to the lesson. It could involve a gesture, a manipulative, or physically getting up and moving. If you are concerned about them calming back down, set your expectations and stick to them. Keep in mind that often when students “go crazy” when permitted to move, it’s probably because they *finally* get to move. Try simple techniques to bring students back into focus. “Part of the process of assisting children in developing necessary skills is getting to the root of why they behave as they do” (Harris and Goldberg 2012, xiv).

The Power of the Brain *(cont.)*

Support Memory Retention

If we want our students to retain what we teach them, then it is important that we keep in mind what causes our brains to retain that information.

Key Elements to Memory Retention	Why
Emotions	We can create an episodic memory when we connect emotions to our learning.
Repetition	Repetition increases memory as long as there is engagement involved. Worksheets and drill and kill do not serve long-term memory well.
Patterns/Organization	When our brains take in messages, they begin to file the information by organizing it into categories.
Personal connection	Linking learning to one's self is a powerful brain tool for memory. This, too, can be tied to emotion, making an even stronger connection.
Linking new and prior knowledge	Taking in new information automatically results in connecting past knowledge to what is new.

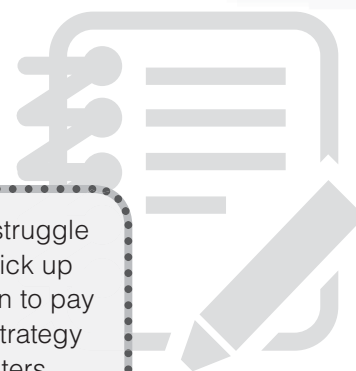
(Roth 2012)

As you explore the strategies and lessons throughout this book, note how many of them incorporate the keys to memory retention and what engages our students' brains. As you begin to explore the use of these strategies on your own, be sure to keep the framework of those important components.

The bottom line—explore, have fun, and ask your students how they feel about lessons taught. They will tell you if they found the lesson interesting, engaging, and relevant. So get in there, dig in, and have some fun with your students while trying out these strategies and lessons!

E-L-A-B-O-R-A-T-E

Strategy Overview



When students write, they often have trouble with elaboration. It may be a struggle for them to add more detail and expand on their thinking. Our brains tend to pick up on the gist of things (a survival instinct), instead of the details. We have to learn to pay attention to details, and that can occur through practice (Jensen 2006). This strategy helps students focus on details as they learn to elaborate simple sentence starters and make them substantial and comprehensive.

How can students elaborate? One way is to show students how to add a kinesthetic (movement) component to understanding the length of a sentence. Movement also adds a visual component—one watches the movement as words are written on the board. Read the words aloud, and an auditory feature is added. Research by David Sousa (2006) has shown that the three senses that contribute the most to our learning are sight, hearing, and touch, including kinesthetic experiences. In this strategy, all three play a part in students' thinking and thus learning.

Strategy Insight

Educators often get the idea in their heads that faster is better. Teachers want students to state their math facts faster, read faster (fluency), and be ready to “regurgitate” a fact from rote memory. This strategy will teach students the skill of adding details through observation, thought, and understanding and will prepare them to elaborate but not create run-on sentences. Students will grasp the idea of building something through elaboration and carrying it over into their writing.

Teacher Notes

- ⊙ During the Evaluate step, students who are ready should begin to formulate their own questions, moving the instruction toward learner centered and away from being teacher centered.
- ⊙ To differentiate, allow students to work with partners who are further along in their writing skills, or to illustrate pictures and add more details to the pictures after using their hands to model elaboration. Students that are ready can write clear, concise, and specific paragraphs that focuses on elaboration.

How to Use This Book

Lesson Overview

The following lesson components are in each lesson and establish the flow and success of the lessons.

Icons state the brain-powered strategy and one of the four content areas addressed in the book: language arts, mathematics, science, or social studies.

Each lesson revolves around one of the eight **brain-powered strategies** in this book. Be sure to review the description of each strategy found on pages 12–19.

Vocabulary that will be addressed in the lesson is called out in case extra support is needed.

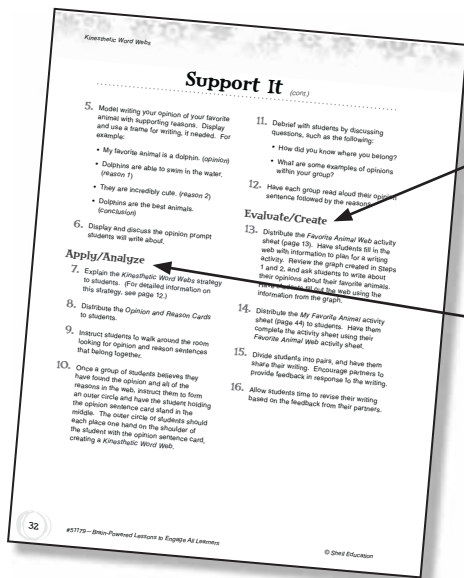
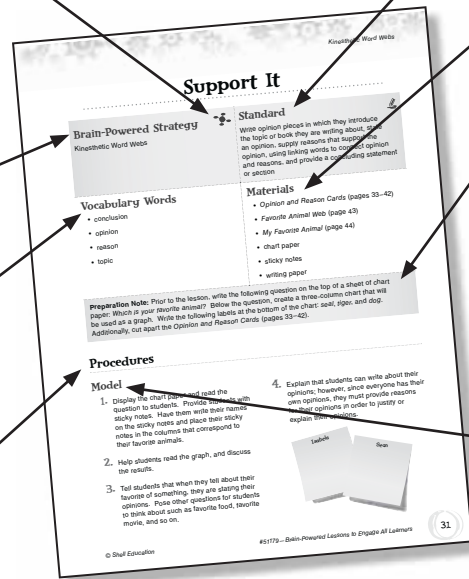
The **procedures** provide step-by-step instructions on how to implement the lessons successfully.

The **standard** indicates the objective for the lesson.

A **materials** list identifies the components of the lesson.

Many lessons contain a **preparation note** that indicates action needed prior to implementing the lessons. Be sure to review these notes to ensure a successful delivery of the lesson.

The **model** section of the lesson provides teachers the opportunity to model what is expected of students and what needs to be accomplished throughout the lesson.



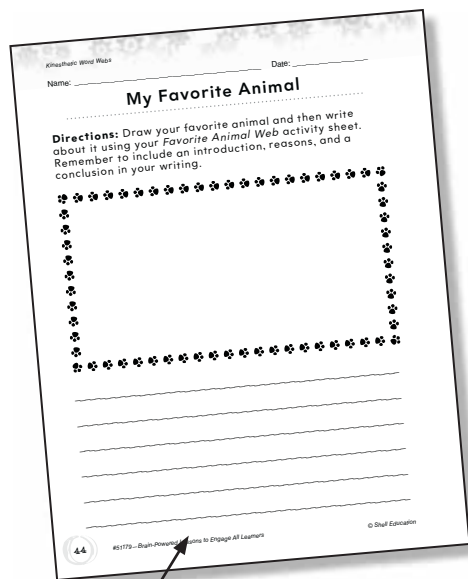
The **evaluate/create** section of the lesson provides students with the opportunity to think critically about the work of others and then to take ownership of their learning by designing the content in a way that makes sense to them.

The **apply/analyze** section of the lesson provides students with the opportunity to apply what they are learning as they analyze the content and work toward creating a personal connection.

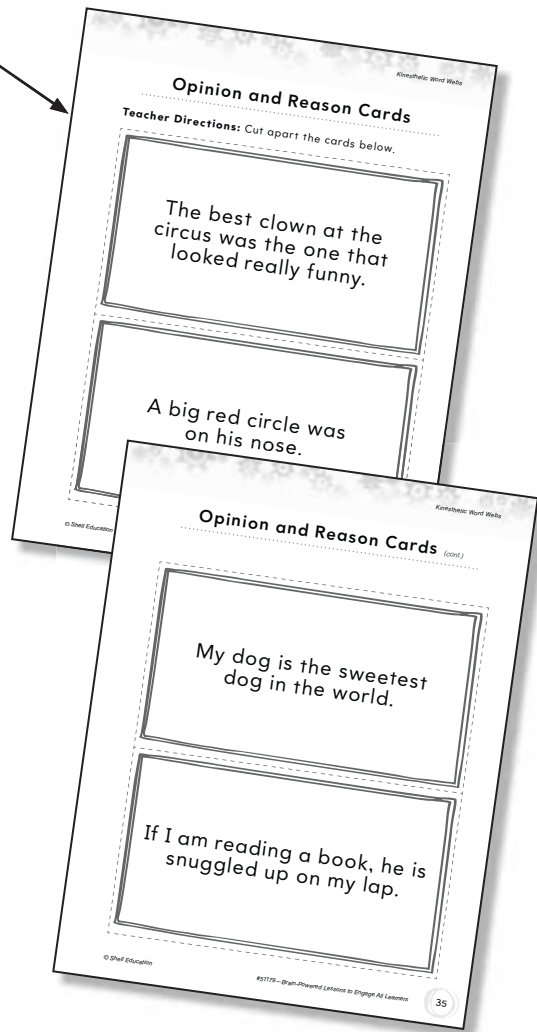
How to Use This Book *(cont.)*

Lesson Overview *(cont.)*

Some lessons require **activity cards** to be used. You may wish to laminate the activity cards for added durability. Be sure to read the preparation note in each lesson to prepare the activity cards, when applicable.



Activity sheets are included for lessons that require them. They are to be used either in groups, individually, or just by the teacher. If students are working in groups, encourage them to create a group name to label the activity sheet.



All of the activity sheets and additional teacher resources can be found on the **Digital Resource CD**.



Add Some Spice

Brain-Powered Strategy

E-L-A-B-O-R-A-T-E



Standard



Produce, expand, and rearrange complete simple and compound sentences

Vocabulary Words

- adjectives
- details
- elaborate

Materials

- *Add Some Spice Picture Cards* (pages 62–65)
- *What Can You Add?* (page 66)
- storybook with vivid language

Preparation Note: Prior to the lesson, cut apart the *Add Some Spice Picture Cards* (pages 62–65).

Procedures

Model

1. Read aloud the selected story with vivid language and interesting sentences.
2. Stop while reading the story and write one of the sentences from the book on the board. Discuss with students which words in the sentence can be removed without taking away the meaning. Discuss how having the words in the sentence adds detail and interest to the meaning of the sentence.
3. Tell students that simple sentences do their job of telling what happened. Display the *Add Some Spice Picture Card* of the dog. Write the following sentence on the board: *The dog eats.*
4. Explain that adding details when writing is like adding spice when cooking—it makes the sentence more interesting, and it explains more.
5. Show students how to elaborate by adding details in order to expand the sentence and make it more interesting. Expand the sentence by adding one detail. Write the new sentence below the first sentence. For example: *The hungry dog eats.* Read the revised sentence to students and have them demonstrate with their hands how the sentence has been elaborated (students should move their palms further apart after hearing each word in the sentence being read).

Add Some Spice (cont.)

6. Continue elaborating on the sentence by adding one detail at a time. Write the expanded sentences underneath each other so students can compare what has been recently added, and they can continue to gesture the elaboration with their hands. The following are some elaborated sentence examples:
 - The dog eats.
 - The hungry dog eats.
 - The hungry dog eats his dinner.
 - The hungry dog eats his delicious dinner.
7. Discuss with students what happens when a sentence has too many details. Model this for students by expanding the sentence to include too many details. Discuss with students why this is ineffective writing.
10. Have one student in the group create a simple sentence with a noun and verb to describe the picture.
11. Have the next student elaborate on the original sentence by adding a detail.
12. Continue to the third student in the group. Have this student elaborate on the second sentence created by adding one more detail.
13. Rotate picture cards and have students practice with other picture cards.

Evaluate/Create

Apply/Analyze

8. Explain the *E-L-A-B-O-R-A-T-E* strategy to students. (For detailed information on this strategy, see page 13.)
9. Divide students into groups of three. Provide each group with an *Add Some Spice Picture Card*.
14. Distribute the *What Can You Add?* activity sheet (page 66) to students. Have them draw a simple picture and write a simple sentence about the picture.
15. Place students into pairs. Have partners switch activity sheets. Allow partners to add some detail to their partners' drawings. Then, instruct them to write a more detailed sentence to describe the new drawing.
16. Have partners return their activity sheets to one another. Have students look over the new details to the drawings and the sentences. Allow time for partners to discuss the added details.

Add Some Spice Picture Cards

Teacher Directions: Cut apart the cards below.



Add Some Spice Picture Cards *(cont.)*

.....



Add Some Spice Picture Cards *(cont.)*

.....



Add Some Spice Picture Cards *(cont.)*

.....



Name: _____ Date: _____

What Can You Add?

.....

Directions: Make a simple sketch. Then, write a simple sentence to describe your sketch. Switch your paper with a partner to add details to the sketch and the sentence.

Simple Sentence

Detailed Sentence
