

S E C O N D E D I T I O N

Reading & Language Arts Worksheets

Don't Grow Dendrites



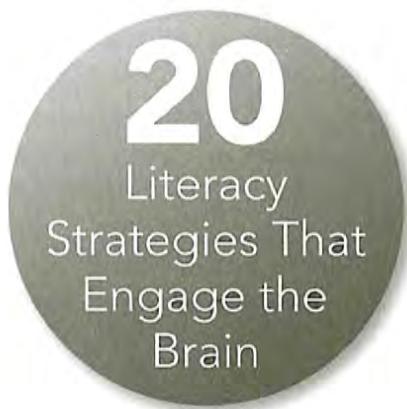
M A R C I A L . T A T E

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Acknowledgments

More than forty years ago I completed a program of study that certified me as a reading specialist. I am happy to say that over an extremely satisfying career, I have taught large numbers of students to read. Even before I knew anything about brain research, I knew that at least 80 percent of my job as a teacher of reading was to give my students the confidence to believe that they could learn to read. The other 20 percent required teaching them to read. Once they had the confidence, however, teaching them was easy. Helping them to gain confidence was much more difficult since many of the students I taught were five, six, or even seven years below their grade level in their reading ability.

This book is dedicated to teachers everywhere who give students the confidence to believe that they can read well. The twenty brain-compatible strategies and more than 200 activities contained in this book are designed to assist these teachers in their noble efforts. May you give your students real-life reasons to read and may you and your students enjoy the process of teaching and learning. With that enjoyment comes increased academic achievement and decreased classroom management concerns.

I thank my mother, Eurica, and my late father, Alvin, for the gift of literacy. Thank you for instilling in me the love of reading and for surrounding me with books. Because all parents are their children's first and best teachers, I am grateful that you did your job well! My husband Tyrone and I have tried to do equally well for our own children—Jennifer, Jessica, and Christopher—and for our grandchildren—Christian, Aidan, Maxwell, and Aaron.

I cannot thank my husband enough for his continued support, which enables me to do what I do to the best of my ability. As CEOs of the company Developing Minds Inc., our gratitude goes to the associates who help us spread the word that all students truly can learn when taught in brain-compatible ways. We especially thank our two administrative assistants, Carol Purviance and Fran Rodrigues, whose exemplary skills ensure that the company runs smoothly on a daily basis.

About the Author



Marcia L. Tate, EdD is the former executive director of professional development for the DeKalb County school system in Decatur, Georgia. During her thirty-year career with the district, she has been a classroom teacher, reading specialist, language arts coordinator, and staff development executive director. She received the Distinguished Staff Development Award for the State of Georgia, and her department was chosen to receive the Exemplary Program Award for the state.

Marcia is currently an educational consultant and has taught more than 400,000 parents, teachers, administrators, and business and community leaders in countries throughout the world, including Australia, Egypt, Greece, Hungary, Oman, Singapore, Thailand, and New Zealand. She is the author of the following six bestsellers: *Worksheets Don't Grow Dendrites: 20 Instructional Strategies That Engage the Brain* (2nd ed.), "Sit & Get" Won't Grow Dendrites: 20 Professional Learning Strategies That Engage the Adult Brain (2nd ed.), *Reading and Language Arts Worksheets Don't Grow Dendrites: 20 Literacy Strategies That Engage the Brain*; *Shouting Won't Grow Dendrites: 20 Techniques for Managing a Brain-Compatible Classroom*; *Mathematics Worksheets Don't Grow Dendrites: 20 Numeracy Strategies That Engage the Brain*; and her book for parents, *Preparing Children for Success in School and in Life: 20 Ways to Increase Your Child's Brain Power*. Her most recent books are *Science Worksheets Don't Grow Dendrites: 20 Instructional Strategies That Engage the Brain*, co-written with Warren Phillips, and *Social Studies Worksheets Don't Grow Dendrites: 20 Instructional Strategies That Engage the Brain*. Participants in her workshops refer to them as some of the best that they have ever experienced since Marcia uses the twenty brain-compatible strategies outlined in her books to actively engage her audiences.

Marcia received her bachelor's degree in psychology and elementary education from Spelman College in Atlanta, Georgia. She earned her master's degree in remedial reading from the University of Michigan, her specialist degree in educational leadership from Georgia State University, and her doctorate in educational leadership from Clark Atlanta University. Spelman College awarded her the Apple Award for excellence in the field of education.

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Introduction

One of my jobs as the language arts coordinator for a major school district was to observe teachers in an effort to assist them in improving their language arts instruction. As I sat in the back of classrooms of *gifted* students, I witnessed them engaged in authentic tasks that provided them with real reasons to read and to write. In the classrooms of many *struggling* students, I saw boys and girls completing worksheet after worksheet after worksheet. In one class they were even called Worksheet Fun Packets (which is, by the way, an oxymoron). There is no such thing as a Worksheet Fun Packet! I asked myself, *What is wrong with this picture?* It appears that the students whose brains needed enriching the most were not the ones being enriched. Follow me as I describe my walk through two very different classrooms, both teaching the same language arts standard.

WORST SCENARIO

Today's lesson at Livingston Middle School, in the sixth-grade class of Marvin Wiley, involves having students determine the central, or main, idea of a text and how that central idea is conveyed in specific details found within the text. As you enter the classroom, you will note that students are not rushing to their seats but are instead milling around in the hall, reluctant to come inside. Mr. Wiley is far from their favorite teacher. The bell rings and Mr. Wiley orders students inside the room. While he is checking the roll, students are talking to one another. The sound becomes so loud that Mr. Wiley is compelled to shout for all students to *be quiet!* The noise subsides temporarily and then resumes, only louder than before. Ten minutes have passed and the lesson has not yet begun.

Mr. Wiley takes a seat at his desk and asks a student to pass out the first round of papers. When every student has a stack, he explains that the first part of the period will be spent reading the poems on the sheets and writing down the main idea of each poem. He reminds them that they will have to refer to the text to figure out the main idea. He demands that they not talk during class. Mr. Wiley then takes a seat at his desk and begins to write. It appears as if he is grading papers. He glances up to reprimand specific students who are talking although he has demanded absolute silence. He tells those students that they will have to see him after school.

Twenty minutes later, the majority of students are still at various points in their packets. Some have given up and laid their heads on their desks because the poems are too difficult to understand. Others are fuming because they will be joining Mr. Wiley after school. The students are asked to stop reading silently and give Mr. Wiley their undivided attention. He begins by having students take turns reading the poems aloud. He then asks the main idea of the first poem. When no one responds, he gives the answer himself. He continues with the remaining poems, but he is the only one doing the talking.

■ BEST SCENARIO

Becky Davis, a sixth-grade teacher at John F. Kennedy Middle School, is teaching the same standard: having students identify the main idea of the text and determining how the details convey that main idea. Mrs. Davis and one student are standing at her classroom door greeting her students as they arrive. This student will greet the class for one week; then it will become another student's turn. As students enter, classical music is playing softly. Students know the ritual: take their seats and look for the sponge activity that will be on the board.

Today's sponge activity necessitates that students illustrate the previously taught vocabulary words from a poem that has been read and discussed. When the bell rings, the music is turned off and the lesson for the day is introduced. Students are told that by the end of the lesson, they will have the answer to the following question: *What is the main idea of this article and what specific details in the article let you know that this is the main idea?* Mrs. Davis begins by telling the students that a main idea is very much like a text or Twitter message. One must give the gist of the message because to say too much becomes too expensive. Today, students will work in groups to write a text message that gives the main idea, or gist, of an article. She tells students that when they get into the world of work, they will be required to do lots of reading of informational text and must be able to determine the gist, or central idea. Therefore, they need to practice that skill now.

Students are then introduced to an article to read silently and given a specific period of time to read it. Following silent reading, Mrs. Davis reads the article aloud to the students while they track the print in their books. During one part she uses the cloze reading procedure, in which she omits a word in the text and the class supplies the omitted word. In other sections she pauses to discuss content-specific vocabulary words with students and poses questions for discussion.

Mrs. Davis has also formulated some additional questions that can only be answered by rereading the text. Students work in cooperative groups to locate the answers. Each group has small Post-it notes that they can place on parts of the text to provide evidence that answers the assigned questions. This part of class ends with a whole-class discussion during which the facilitator of each group provides the group's answers.

The remainder of class time is spent having students work in groups to prepare either the prosecution or defense for T. J. Avery, a major character from Mildred Taylor's *Roll of Thunder, Hear My Cry*. This information will be used in a role play of Avery's trial later in the week.

LANGUAGE ARTS INSTRUCTION ■

I don't remember learning to read. It seems to me that I was born reading because I don't recall a time when I couldn't. I was fortunate to have been born into a family that valued education and the love of books. I was surrounded by books, and from an early age relatives read aloud to me. My family read and reread nursery rhymes and fairy tales until I memorized every line. Eventually, I began to read them for myself. One of my favorite books was *Millions of Cats*. I don't know why I loved that book as a child, because I grew up around dogs, not cats, but I fondly remember that one as one of the many books I treasured.

There are specific foundational skills that are essential to an effective reading program. Many students are fortunate enough to come to school like me, having already acquired these foundational skills. They are already reading. For them, it is not necessary to teach what they already know. Others, however, will either never have been taught these skills or will need additional help in acquiring them.

For these students, the following sections of phonemic awareness and phonics are crucial.

Phonemic Awareness

A phoneme is defined as the smallest unit comprising spoken language. In the English language, there appear to be fifty phonemes. In fact, before excited parents hear their baby say *mama* and *dada*, that baby has already said forty-seven other phonemes. Unfortunately, none of the other phonemes the baby says gains quite the attention of those two magical words that all parents love to hear.

Alphabet recognition and phonemic awareness—the ability of the student to focus on or manipulate phonemes in spoken words—have been identified by correlational studies as the two best predictors of how well students will acquire reading skills during their first two years of school (National Reading Panel, 2000). In a meta-analysis of early literacy studies, the National Early Literacy Panel (2008) concurred that teaching the alphabet or simple phonics tasks enhanced the effects of phonemic awareness training.

Research has shown that in the area of phonemic awareness, focusing on blending and segmenting is probably time well spent. Phonemic blending occurs when students can listen for individual sounds and blend them into a known word. An example of phonemic blending would be the following: *What is the following word: /s/ /p/ /u/ /l/?* (spool). Phonemic segmentation occurs when students are asked to count or mark the individual sounds in a word. An example is as follows: *How many different phonemes do you hear in the word drop?*

Some activities in this book will be instrumental in incorporating brain-compatible strategies to help students acquire phonemic awareness skills. Students do not realize that while they are listening to stories, playing games, working with a partner, or singing a song, they are actually laying the foundation for the acquisition of such pre-reading skills.

Phonics

What we know today is that although effective phonics instruction is but one of the building blocks in a complete reading program, it is a foundational building block. It enables the reader to decode rapidly the pronunciation of unknown words so that comprehension is not negatively affected (Wolfe & Nevills, 2004).

Building that decoding pathway in the brain of a child is the major job of the early years in school. However, if upper elementary and high school students come to school without the necessary automaticity and fluency, the deficit has to be addressed (Nevills, 2011a).

Louisa Moats (1998), an expert in the area of reading, encourages teaching students the differences in sounds first and then teaching them to attach a letter or letters to the sound, rather than vice versa. In this way students can blend and segment onsets (the syllable part before the vowel) and rimes (the syllable part after the vowel) of single-syllable spoken words. For example, if students know the rules governing words such as *mat*, *van*, or *bake*, then they can pronounce words such as *cat*, *man*, and *take*.

Since the brain is a pattern maker, it is better to have students look for and identify patterns such as common letter blends (/bl/, /shr/, /tw/), vowel graphemes (/eigh/, /ou/, and /ai/) and word families (base words such as *believe* and affixes such as *unbelievable*) rather than having them sound out words letter by letter (Wolfe & Nevills, 2004). Longer words should be divided into chunks called syllables.

In summary, exemplary phonics instruction includes the following nine elements:

1. Builds on what a child already knows about how print functions
2. Builds on a child's knowledge of phonemic awareness
3. Is explained in a very clear and direct way
4. Is one part of a total, complete reading program
5. Is applied to reading words, not just learning rules
6. May include the instruction of onsets and rimes
7. Could include practice in invented spelling
8. Develops word recognition strategies that enable a child to examine the patterns in words closely
9. Develops word recognition skills that are automatic so that students can concentrate on comprehension, not decoding (Stahl, 1992).

Fluency

Have you ever listened as a person reads orally in a monotone, laborious fashion? In no time at all, you begin to lose interest in what is being read, and your comprehension is probably nonexistent. This reader lacks fluency and, besides that, probably has little or no understanding of what is being read.

The term *fluency* has been defined in a variety of ways, including as *the freedom from word identification problems that might hinder comprehension* (Harris & Hodges, 1995) or as *the ability to read at a rate appropriate for accuracy, smoothness, phrasing, expressiveness, and intonation* (Anderson, 2004). Fluent readers are capable of concentrating their efforts on comprehension because they are able to make connections between the ideas presented in the text and their own background knowledge. Readers who are not fluent have little time left for comprehending because their efforts go toward decoding separate words (Partnership for Reading, 2001). After all, research tells us that the brain can only pay *conscious* attention to one thing at a time. If that conscious thing is decoding individual words, then little time and effort is left over for understanding what is being read.

Fluency is not a constant for a reader; it changes based not only on familiarity with the words, but also on the complexity of the text itself and the number of repetitions. For example, a student who has no difficulty reading a novel of interest with expression and automaticity may have less ease dealing with the text from a highly technical manual or physics book.

Chapman and King (2003) delineated a number of elements for developing a fluent reader. These include exposing the reader to enthusiastic, expressive models of reading; using meaningful activities before, during, and after reading to develop understanding; engaging the student in high-interest reading materials written on an appropriate level; and using a variety of active engagement strategies such as the ones described in this book.

Vocabulary Development

Vocabulary appears crucial in learning to read. In fact, deficits in the vocabulary of low socioeconomic students seem to be one of the primary causes of academic failure (Anderson, 2004). Mixed results seem to exist, however, when attempting to ascertain exactly how crucial it is to teach vocabulary separate from comprehension. Recent research places more emphasis on the total act of comprehension rather than vocabulary instruction alone (National Reading Panel, 2000).

There are various categories of vocabulary. Receptive vocabulary refers to those words that can be understood by the student when others are speaking or writing. Expressive or productive vocabulary refers to those words the student uses with facility when personally speaking or writing (McEwan, 2009).

A teacher cannot and should not teach all unfamiliar words in a text for the following reasons: (1) the number of unfamiliar words may be too

great or time-consuming to teach, (2) not every unfamiliar word is crucial to a student's comprehension of the text, and (3) students need opportunities to use vocabulary strategies to learn words on their own (Partnership for Reading, 2001). Therefore, there are several factors which determine which categories of words are worth teaching.

- Category 1: These are words that most native English speakers learn in the early grades or prior to coming to school. Children whose parents spend a great deal of time talking to and with them will have learned a lot of vocabulary in this category. My grandchildren know many words simply because their parents talk to them constantly, putting labels on what they see daily in the real world. In fact, according to McEwan (2009), one of the biggest obstacles teachers have to face is the vast differences in language development that exist between various subgroups in the student population. Students who are not native speakers will have to pay particular attention to this category of words.
- Category 2: These words are encountered more frequently when students are reading text than when they are speaking. They tend to constitute academic ways to say more simple things. Examples would be *responded* instead of *said*, *amble* instead of *walk*, or *exuberant* instead of *happy*. Children who read a great deal are naturally exposed to many of these types of words. However, these words are not found in a particular discipline and are probably not defined within the context of the text. Teachers need to decide which of these words will require special attention prior to or during the reading.
- Category 3: This third type of vocabulary is specific to a particular content area or field of study and is closely tied to comprehension. For example, in social studies a word in this category could be *immigration*; in science, *mitosis*; in English, *alliteration*; or in technical subjects, *carburetor*. These words, found predominately in informational texts, are considered difficult by most students and may need to be directly taught either prior to or during the reading. Oftentimes support for these words comes from context clues in the text itself or from a glossary provided within the text.

Once students have had the opportunity to discuss, role-play, or storytell their way to vocabulary acquisition, comprehension and reading achievement increase, regardless of the category in which the vocabulary falls.

Text Comprehension

Have you ever heard someone say, *I read that passage but I don't remember a thing I read?* Without understanding and memory, has any true reading actually occurred?

Prior to the 1970s, reading comprehension was viewed as more of a passive than an active process. Teachers were spending little time on direct instruction in this area. According to Delores Durkin's (1978–1979)

observational studies, of the 4,469 minutes of observed reading instruction in fourth grade, only twenty minutes were spent in direct comprehension instruction. In 2004 Wolfe and Nevills (p. 156) defined comprehension as the active process of attaching meaning to written or spoken language by accessing previously stored experience or knowledge.

For students to be successful in learning, they must actually want to learn! Instinctively we have always known this, but there is actually a physiological reason for whether students choose to comprehend instruction. The basal ganglia acts like a policeman that protects the brain from distracting input. Information that has been selected as worthy of being learned flows through fibers back to the thalamus and on to areas of the brain where the information can be interpreted (Nevills & Wolfe, 2009). Working memory then depends upon whether students' brains rehearse what they are learning and connect it to what they already know. If that is the case, then students are consciously selecting the content on which they wish to focus their efforts, and teachers cannot force them to do differently. All teachers can do is make the information appealing enough so that students will want to learn it.

There is evidence that current standards and objectives, curriculum, and instructional practices have not equipped students to read the complex text independently that will be required for college and career readiness (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). Once a student graduates from high school, at least 70 percent of everything he or she will read will be informational text. An inability to read these complex texts will prevent Americans from meeting the rigorous demands of a democratic republic and competing globally in the marketplace of goods, services, and ideas (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

Students should be reading both literary and informational texts in the lower grades, and that amount should increase in the middle and high school grades. Several aspects of text complexity will impact students' comprehension. Texts with one- and two-syllable words are easier to comprehend than texts with many multisyllabic words. In fact, words with three or more syllables actually occupy more working memory in the brain. Literary texts in which there is only one level of meaning are easier to read than those with multiple levels. Informational text in which the message is explicitly stated is easier to comprehend than that in which the message is implicit or inferential. Texts which have a single level of meaning or an explicitly stated purpose are easier to comprehend than those that have multiple meanings or purposes. Texts with literal, clear, or conversational language are easier to read than those with language that is figurative, academic, or content specific. Texts that do not rely on the reader's life experiences or content knowledge are less complicated than those that assume that students have had rich life experiences and possess vast knowledge of content.

The more one reads, the better one reads! Students, therefore, must read from a wide array of high-quality and increasingly challenging literary and

informational texts. For comprehension not to be compromised, all students will require a great deal of additional support or scaffolding, with some students requiring more than others. When selecting texts, the interest, motivation, knowledge, and experiences of students must be considered.

According to McEwan (2009), there are six strategic cognitive strategies that facilitate comprehension for *all* students:

- *Activating*—Recalling what a student already knows about a subject and connecting it to what is being read not only increases student attention and motivation, but also greatly increases the likelihood that students will comprehend and remember the content.
- *Inferring*—When students are taught to infer, they learn to put together three sources of information: (1) what is actually written in the text, (2) what is not written in the text, and (3) what is already known by the reader that will help him or her get meaning from the text.
- *Monitoring-clarifying*—Students monitor and clarify when they think about what they are reading, both during and after reading, and figure out and fix what is wrong.
- *Questioning*—Specific instruction should be provided for students in how to ask and answer questions by using metacognitive, or *think aloud*, strategies. They learn to self-question, generate questions, and locate answers to questions.
- *Searching-selecting*—This strategy involves locating in the text or resource the information necessary for answering questions, solving problems, or gathering information.
- *Summarizing*—Students should be asked to recognize the major ideas in a text, connect those ideas to the central theme of the text, eliminate unnecessary text, and retain what is read (Partnership for Reading, 2001).

The twenty instructional strategies in the chapters that follow will provide additional activities needed to help all students successfully comprehend the literary and informational texts so crucial for college and career readiness.

Language

When I became a classroom teacher over forty years ago, I taught reading as a separate subject. When we put the reading books away, I would teach English. What the brain research tells us is that the brain learns best when the learning is connected to real-life contexts. That is why interdisciplinary instruction is so brain compatible. Students are best taught language skills within the context of literary and informational texts, which are the medium through which those skills are expected to be applied.

For example, I taught a model lesson to a fifth-grade class. The objective was to introduce the concept of keeping a personal journal while

simultaneously reviewing common and proper nouns. To hook students emotionally into the lesson, I introduced them to one of the most important personal journals of all time, *The Diary of Anne Frank*. I explained how Anne's diary reflected personal feelings and deep emotions. I told them that she was hiding above a warehouse for two and a half years, scarcely able to talk or move for fear of being discovered by the German Gestapo and taken to a concentration camp during World War II. As I read excerpts from the diary, students reflected on how they would feel in the same situation. We also discussed words in the diary that should have been capitalized, such as *German* and *World War II*.

To be college and career ready, students must know and use the conventions of Standard English. They must have developed extensive vocabularies and know how to write for a specific purpose. They must know how to connect a word to its synonyms and antonyms and which specific words would be more appropriate to use within the context of a given situation.

Writing

Whether a person is making a grocery list, answering an e-mail, or completing a composition, communicating in written form is an essential life skill. The Secretary's Commission on Achieving Necessary Skills (SCANS; 1991) report lists writing as one of the basic skills required for success in the real world of work. Brain research has also shown that when a person is writing, particularly in small chunks of information, memory is facilitated. Have you ever written a list of groceries that you would like to buy at the store and then forgot and left the list at home? Isn't it interesting that you could still remember many of the things on the list when you got to the store?

McEwan (2009, p. 155) defines writing as a *toolkit* that enables students to accomplish two major purposes: (1) achieve a number of academic goals, such as writing reports, short stories, and essays and (2) process, comprehend, and retain subject matter. All teachers, regardless of content area, are writing teachers. A student can write the steps to the solution of a math problem, the three causes of the Civil War, or the results observed during a science experiment.

If students are to be ready for college and career, there are three major types of writing with which they should become proficient: argumentative, informational, and narrative. The first, argumentative writing, forces a writer to think critically while evaluating the pros and cons of a topic from many different perspectives. Its purpose can be to change a reader's viewpoint, to call the reader to action, or to ask the reader to accept the writer's viewpoint. Informational writing enables the writer to increase his or her knowledge or comprehension of a particular subject, procedure, or process. Narrative writing is used to persuade, inform, instruct, or entertain. The mnemonic device *PIE* helps us remember the four purposes of narrative writing. Consult Chapter 20: "Writing and Journals" for specific activities in the area of writing.

Speaking and Listening

Of the four communication skills—reading, writing, listening, and speaking—the two that are most commonly used—listening and speaking—are the two that are often least taught. However, a child's proficiency with oral language is very much a predictor of his or her ability to read and write. Two researchers in the field, Hart and Risley (1995), examined young children in their home and school environments and determined that the total number of words children had been exposed to as preschoolers predicted the number of words they understood—as well as the pace at which they would learn new words—in kindergarten. This effect seemed to be maintained even as those same students entered third grade.

To know that this is true, all I have to do is consider my grandchildren, who are constantly being talked to and listened to and who have an extraordinary number of words in their speaking and listening vocabularies. For example, my four-year-old granddaughter, Aidan, once told me that the show we were watching was *extremely inappropriate* for her. Imagine correctly using the words *extremely inappropriate* at age four. By the way, the show wasn't inappropriate, but I am glad to know that Aidan is selective about her television viewing.

For children in the early grades, receptive vocabulary develops before expressive vocabulary. In other words, children need to understand the words they hear before they are expected to produce those words themselves. In fact, students' listening comprehension outpaces their reading comprehension until grades 6 to 8 (Common Core State Standards, 2010). Therefore, time must be spent building the listening skills of students by reading fiction and informational text selections aloud to them while they are learning to decode. This is especially true for ESL students and those with little exposure to literature at home.

■ BRAIN-COMPATIBLE INSTRUCTION

It is an exciting time to be in education! Even though there is so much about the brain that we still do not know, we know more about it today than ever before. For example, we know that every time a person learns something new, he or she grows a new brain cell, called a dendrite. Therefore, teachers are really dendrite growers! It is their job to enable students to grow new brain cells by learning the content that teachers are prepared to teach. By the way, parents are also dendrite growers. In fact they are their child's first and best teachers.

We also know that the left hemisphere of the brain was believed at one time to be characterized as organized, structured, logical, verbal, and mathematical. In other words, qualities valued in school! Look at the SAT and its emphasis on the verbal and mathematical skills of students. Teachers want students who come to class organized and who appear structured. The right hemisphere used to be described as creative, artistic,

musical, intuitive, and global. In other words, qualities valued in life! Consider students who come to school already knowing how to draw or play a musical instrument without any formal instruction. What we know now is that the theory of left and right hemispheres is gone! That ship has sailed! A more updated version of the theory is that teachers must teach to both hemispheres of the brain since they appear to talk to one another over a structure known as the corpus callosum.

In this day and age, when the dropout rates range from 30 to 60 percent annually depending on which school system you are examining, there is one school in the school system I worked for during my thirty-year career that graduates all of its seniors every year. It is not surprising that the school is the DeKalb School of the Performing Arts. You see, these teachers use strategies that address both left and right hemispheres of the brain. They use the artistic to teach the academic and it works! This school has some of the highest test scores and graduation rates of any school in the district.

Learning style theorists (Dewey, 1934; Gardner, 1983; Marzano, 2007; Sternberg & Grigorenko, 2000) and educational consultants (Jensen, 2008; Nevills & Wolfe, 2009; Sousa, 2006, 2011; Willis, 2006, 2007) who research the brain agree that there are some instructional strategies that, by their very nature, take advantage of ways in which brains learn best. They should be used in every classroom, regardless of the content or the grade level because they simply work for all brains—regular education brains, special education brains, gifted brains, ESL brains, attention deficit brains, and autistic brains. These strategies not only enable teachers to address both hemispheres of the brain; they also increase academic achievement for all students, they decrease behavioral problems, and they make teaching and learning so much fun!

These strategies themselves are not new. Most have been used by unforgettable teachers for generations. What is new is that the brain research gives us insight as to why these strategies work better than others, such as long lectures or worksheets.

The twenty strategies are as follows:

1. Brainstorming and discussion
2. Drawing and artwork
3. Field trips
4. Games
5. Graphic organizers, semantic maps, and word webs
6. Humor
7. Manipulatives, experiments, labs, and models
8. Metaphors, analogies, and similes
9. Mnemonic devices

10. Movement
11. Music, rhythm, rhyme, and rap
12. Project-based and problem-based instruction
13. Reciprocal teaching and cooperative learning
14. Role plays, drama, pantomimes, and charades
15. Storytelling
16. Technology
17. Visualization and guided imagery
18. Visuals
19. Work-study and apprenticeships
20. Writing and journals

Refer to Figure 0.1 for a correlation of the twenty brain-compatible strategies to Howard Gardner's theory of multiple intelligences and to the four major modalities: visual, auditory, kinesthetic, and tactile.

■ OVERVIEW OF THE BOOK

This language arts book is the second edition of the original text and a part of the multiple-content-area *growing dendrites* series. The additional books in the series are as follows:

- *Worksheets Don't Grow Dendrites: 20 Instructional Strategies That Engage the Brain*, 2nd ed. (2010)
- *Mathematics Worksheets Don't Grow Dendrites: 20 Numeracy Strategies That Engage the Brain*, PreK–8 (2009)
- *Science Worksheets Don't Grow Dendrites: 20 Instructional Strategies That Engage the Brain* (2011)
- *Social Studies Worksheets Don't Grow Dendrites: 20 Instructional Strategies That Engage the Brain* (2012)

This book attempts to accomplish the following five major objectives:

1. familiarize the reader with twenty brain-compatible strategies for teaching English language arts curriculum;
2. review updated research regarding the twenty brain-compatible strategies and why they are essential for teaching English language arts to all students;
3. supply more than 200 classroom examples of the application of the twenty strategies for teaching the English language arts curriculum;

4. provide time and space at the end of each chapter for the reader to reflect on the application of these strategies as they apply to the English language arts curriculum; and
5. explain how to plan and execute unforgettable language arts lessons by asking and answering the five questions on the lesson plan format in the Resource section of this book.

While there are many separate books on each of these twenty strategies, teachers would find it difficult to read all of them. That is why I chose to put all twenty strategies in one book. There are twenty chapters, one for each strategy. The chapters do not need to be read sequentially. If you want to read about the impact of storytelling for teaching language arts, then start reading at Chapter 15. Each sample activity is correlated to a major English language arts category, a specific grade level range, and a given standard or objective. The sample activities are just that—samples. They can be used exactly as they are stated or adapted to the age and grade level of students. The advantage of having activities ranging from kindergarten through grade 12 in the same book is that you can easily select activities that will meet the needs of students performing below, on, or above grade level. In this way you can easily differentiate instruction. Once you start thinking, you should be able to generate a smorgasbord of additional activities for each strategy.

If you really think about the list of twenty, these strategies are a natural fit for the primary grades. What we now know is that they work for all students, regardless of age, ability level, grade level, or content area. In fact, when teachers decrease their use of these strategies, there is also a decrease in students' academic achievement, grades, appropriate behavior, confidence, and love of school. The reflection page at the end of each chapter enables you to think about ways in which you are already incorporating the given strategy and what new activities you can choose to include. You may find that you are using more of the strategies than you think at first glance. The lesson planning section asks five questions that help synthesize the process of planning a lesson that makes your content unforgettable!

If you teach the standards and objectives using the twenty brain-compatible strategies outlined in the chapters that follow, not only will your students comprehend and remember the information long after your tests have ended, but their grades will improve, their achievement scores will become higher than you ever dreamed, and you will look forward to teaching every day of your long and illustrious career. After all, *if you love your job, you will never work a day in your life!*

Figure 0.1 Comparison of Brain-Compatible Instructional Strategies to Learning Theory

<i>Brain-Compatible Strategies</i>	<i>Multiple Intelligences</i>	<i>VAKT</i>
1. Brainstorming and discussion	Verbal-linguistic	Auditory
2. Drawing and artwork	Spatial	Kinesthetic/tactile
3. Field trips	Naturalist	Kinesthetic/tactile
4. Games	Interpersonal	Kinesthetic/tactile
5. Graphic organizers, semantic maps, and word webs	Logical-mathematical/spatial	Visual/tactile
6. Humor	Verbal-linguistic	Auditory
7. Manipulatives, experiments, labs, and models	Logical-mathematical	Tactile
8. Metaphors, analogies, and similes	Spatial	Visual/auditory
9. Mnemonic devices	Musical-rhythmic	Visual/auditory
10. Movement	Bodily-kinesthetic	Kinesthetic
11. Music, rhythm, rhyme, and rap	Musical-rhythmic	Auditory
12. Project-based and problem-based learning	Logical-mathematical	Visual/tactile
13. Reciprocal teaching and cooperative learning	Verbal-linguistic	Auditory
14. Role plays, drama, pantomimes, charades	Bodily-kinesthetic	Kinesthetic
15. Storytelling	Verbal-linguistic	Auditory
16. Technology	Spatial	Visual/tactile
17. Visualization and guided imagery	Spatial	Visual
18. Visuals	Spatial	Visual
19. Work study and apprenticeships	Interpersonal	Kinesthetic
20. Writing and journals	Interpersonal	Visual/tactile

Strategy 1

Brainstorming and Discussion



WHAT: DEFINING THE STRATEGY



In which order did these three things happen in the story?

What do these vocabulary words mean within the context of the text?

Analyze how what is directly stated in the text differs from what is really meant.

What is the author's point of view? Cite evidence.

These are just a few of the questions that should be asked as students engage in brainstorming and discussing answers in an effort to comprehend text. Yet I challenge you to visit a number of classrooms, particularly middle and high school classrooms, and pay attention to the person who is doing the majority of the talking. I bet you a dinner that it would be the teacher!

I have learned something interesting! Did you know that every time your students learn something new in class, they grow a new brain cell called a dendrite? Brain research is telling us that the person in a classroom who is doing the most talking about the content is actually growing the most dendrites. In fact, according to Ekwall and Shanker (1988), while people only learn 20 percent of what they hear, they learn 70 percent of what they say as they talk and 90 percent of what they say as they are engaged in doing something. This makes the strategy of brainstorming and discussion a necessity if you want students to comprehend and remember your content. When students have opportunities to brainstorm ideas with their peers without the fear of criticism, they begin to naturally increase their comprehension and higher-order thinking skills.

By the way, I have been teaching adults for more than twenty years. Did you know that teachers are some of the chattiest people on the face of the earth and yet many of them do not allow students to engage in that same behavior in their classrooms? How ironic is that?



WHY: THEORETICAL FRAMEWORK

Questions formed and asked during brainstorming and discussion should be divided into two general categories: (1) those that can be reasoned deductively, wherein the correct answer can be deduced from the data provided, and (2) those that can be reasoned inductively, wherein questions have multiple solutions (DeLandtsheer, 2011).

When students engage in literature or discussion circles when reading literary or informational texts, they can have text-based conversations and share meaningful ideas regarding what they have read (McLaughlin, 2010).

One of the most powerful ways that students process new information is to talk about it with their peers (Allen & Currie, 2012).

When used as a formative assessment strategy and students are engaged in collaborative conversations, discussion supports many of the Common Core State Standards, such as speaking and listening (McLaughlin & Overturf, 2013).

Brainstorming enables all students who have ideas to receive special recognition for their original thoughts (Armstrong, 2009).

When students discuss, they should talk about a topic in a friendly yet constructive manner. They should offer ideas, knowledge, data, information, and rationales for their positions and opinions while simultaneously attempting to convince others to accept their positions (Costa, 2008).

The benefits of effective student-centered question-and-response discussions include increased student participation and engagement and the lowering of students' affective filters (Willis, 2007).

When teachers and students share their thinking aloud when reading, not only is comprehension improved, students' discussion skills and enjoyment of literature are also enhanced (Oster, 2001).

Small-group conversations have the advantage of facilitating higher-order thinking skills, motivating students, and fostering reading comprehension (Berne & Clark, 2008).

Open-ended questions allow students of all ability levels to listen, think, and engage in class discussions without the fear of being incorrect (Willis, 2007).

One of the top fourteen stress producers in adolescent brains is not allowing for any discussion during class time (Feinstein, 2009).

HOW: INSTRUCTIONAL ACTIVITIES



Category: Reading Literature/Informational Text
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Identify unknown words in print

- Ask the following questions to support students' use of self-monitoring behaviors when reading literature or informational text:
 - Were you correct?
 - Where's the word that gave you trouble (following an error)?
 - What's wrong?
 - Why did you stop reading?
 - What letter would you expect to be at the beginning of the word?
 - What letter would you expect to be at the end of the word?
 - Would the word _____ make sense here?
 - What do you think it looks like?
 - It could possibly be _____, but consider _____.
 - Does it look right and sound right to you?

SOURCES: Adapted from Clay (1993); Goodman (1996); Routman (1991); Department of Education (New Zealand, 1985).

Category: Reading Literature/Informational Text;
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Brainstorm a variety of ideas

- Give students a question to which there may be more than one right answer. Have students participate in a brainstorming session, providing multiple ideas while ensuring that all students follow the DOVE guidelines, which are as follows:
 - *Defer* judgment when other students are contributing ideas.
 - *One* idea at a time is presented.
 - A *variety* of ideas are encouraged.
 - *Energy* is directed to the task at hand.

Category: Vocabulary
Grade Level Range: Grades 1–12
Standard/Objective: Use context clues to define vocabulary

- Have students use context clues to identify an unknown word by following the procedure outlined in the following.
 - Place a visual on the document camera containing a passage where you have omitted several key vocabulary words of the author. These words should be able to be figured out contextually.

- Ask students to look at the key word and the words before and after the omitted word. Have them predict a probable meaning and make a decision as to whether the meaning fits the context of the passage.
- Discuss the meaning with the class and whether it fits the context.
- Reveal the original word choice of the author and compare it with students' recommendations (Blachowicz & Fisher, 2002, p. 29).

Category:

Vocabulary

Grade Level Range:

Grades 1–12

Standard/Objective:

Recall content-area vocabulary

- Before, during, or following a unit of study, have students create an alphabet book by brainstorming as many content-area words as they can recall that begin with a designated letter of the alphabet. For example, a math alphabet book could contain the following words:

- A add, algorithm, algebra
- B binomial, binary, bisect
- C calculus, calculator, communicative property
- D divide, denominator, decimal
- E equal sign, equation, estimate
- F figure, fraction, Fibonacci
- G geometry, geoboard, grams
- H height, hexagon, hectometer

And the list continues.

Adaptation: Put some music and movement into this activity by giving each student a copy of the alphabet book on page 18 (Figure 1.1). Have students move around the room and find students who can provide content-area vocabulary words according to the game directions on the page.

Category:

Reading Literature/Informational Text

Grade Level Range:

Kindergarten–Grade 12

Standard/Objective:

Make predictions regarding text

- Have students brainstorm questions to test the comprehension of their classmates. These questions should be written above the knowledge level of Bloom's Taxonomy and require peers to comprehend, apply, analyze, synthesize, or evaluate. Refer to Bloom's Taxonomy Revised (Figure 1.2, page 20) to ensure that students are answering questions at all levels of the revised taxonomy.

Figure 1.1 Alphabet Book

ALPHABET BOOK					
A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	X
Y	Z	Rules of the Game			
		<ol style="list-style-type: none">1. Must have sixty or more words.2. Can provide twenty words yourself.3. Must get remaining words from at least eight people outside your “family.”4. Must complete game with eight minutes.			

Figure 1.2 Bloom's Taxonomy "Revised": Key Words, Model Questions, and Instructional Strategies

Bloom's Taxonomy (1956) has stood the test of time. Recently, Anderson Krathwohl (2001) have proposed some minor changes to include the renaming and reordering of the taxonomy. This reference reflects those recommended changes.

I. REMEMBER (KNOWLEDGE)

(shallow processing: drawing out factual answers, testing recall and recognition)

Verbs for Objectives	Model Questions	Instructional Strategies
Choose	Who?	Highlighting
Describe	Where?	Rehearsal
Define	Which one?	Memorizing
Identify	What?	Mnemonics
Label	How?	
List	What is the best one?	
Locate	Why?	
Match	How much?	
Memorize	When?	
Name	What does it mean?	
Omit		
Recite		
Recognize		
Select		
State		

II. UNDERSTAND (COMPREHENSION)

(translating, interpreting and extrapolating)

Verbs for Objectives	Model Questions	Instructional Strategies
Classify	State in your own words.	Key examples
Defend	Which are facts?	Emphasize connections
Demonstrate	What does this mean?	Elaborate concepts
Distinguish	Is this the same as...?	Summarize
Explain	Give an example.	Paraphrase
Express	Select the best definition.	STUDENTS explain
Extend	Condense this paragraph.	STUDENTS state the rule
Give example	What would happen if...?	"Why does this example...?"
Illustrate	State in one word ...	Create visual representations (concept maps, outlines, flow charts organizers, analogies, pro/con grids)
Indicate	Explain what is happening.	<u>PRO/CON</u>
Interrelate	What part doesn't fit?	
Interpret	Explain what is meant.	
Infer	What expectations are there?	
Judge	Read the graph (table).	NOTE: The faculty member can show them, but <u>they</u> have to do it.
Match	What are they saying?	
Paraphrase	This represents...	
Represent	What seems to be...?	Metaphors, rubrics, heuristics
Restate	Is it valid that...?	
Rewrite	What seems likely?	
Select	Show in a graph, table.	
Show	Which statements support...?	
Summarize	What restrictions would you add?	
Tell		
Translate		

III. APPLY

(Knowing when to apply, why to apply, and recognizing patterns of transfer to situations that are new, unfamiliar, or have a new slant for students)

Verbs for Objectives	Model Questions	Instructional Strategies
Apply	Predict what would happen if...	Modeling
Choose	Choose the best statements that apply.	Cognitive apprenticeships
Dramatize	Judge the effects.	"Mindful" practice—NOT just a "routine" practice
Explain	What would result?	Part and whole sequencing
Generalize	Tell what would happen.	Authentic situations
Judge	Tell how, when, where, why.	"Coached" practice
Organize	Tell how much change there would be.	Case studies
Paint	Identify the results of...	Simulations
Prepare		Algorithms
Produce		
Select		
Show		
Sketch		
Solve		
Use		

IV. ANALYZE (breaking down into parts, forms)

Verbs for Objectives	Model Questions	Instructional Strategies
Analyze	What is the function of . . .?	Models of thinking
Categorize	What's fact? Opinion?	Challenging assumptions
Classify	What assumptions . . .?	Retrospective analysis
Compare	What statement is relevant?	Reflection through journaling
Differentiate	What motive is there?	Debates
Distinguish	Related to, extraneous to, not applicable.	Discussions and other collaborating learning activities
Identify	What conclusions?	
Infer	What does the author believe?	Decision-making situations
Point out	What does the author assume?	
Select	Make a distinction.	
Subdivide	State the point of view of . . .	
Survey	What is the premise?	
	State the point of view of . . .	
	What ideas apply?	
	What ideas justify the conclusion?	
	What's the relationship between?	
	The least essential statements are . . .	
	What's the main idea? Theme?	
	What inconsistencies, fallacies?	
	What literary form is used?	
	What persuasive technique?	
	Implicit in the statement is . . .	

(Continued)

(Continued)

V. EVALUATE (according to some set of criteria, and state why)

Verbs for Objectives	Model Questions	Instructional Strategies
Appraise	What fallacies, consistencies, inconsistencies appear?	Challenging assumptions
Judge		Journaling
Criticize	Which is more important,	Debates
Defend	moral, better, logical, valid,	Discussions and other
Compare	appropriate?	collaborating learning activities
	Find the errors.	Decision-making situations

VI. CREATE (SYNTHESIS)

(combining elements into a pattern not clearly there before)

Verbs for Objectives	Model Questions	Instructional Strategies
Choose	How would you test . . . ?	Modeling
Combine	Propose an alternative.	Challenging assumptions
Compose	Solve the following.	Reflection through journaling
Construct	How else would you . . . ?	Debates
Create	State a rule.	Discussions and other collaborating learning activities
Design		Design
Develop		Decision-making situations
Do		
Formulate		
Hypothesize		
Invent		
Make		
Make up		
Originate		
Organize		
Plan		
Produce		
Role play		
Tell		

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Category: **Reading Literature/Informational Text** ■
Grade Level Range: **Grades 1–12**
Standard/Objective: **Comprehend informational text**

- Have students use Stauffer's (1975) Directed Reading Thinking Activity (DR-TA) with both narrative and informational text by predicting from a picture or from the title of a story or a chapter what the text will be about and then reading a segment of the text to confirm those predictions. Have students then make another prediction from the new text read. The sequence of predicting, validating, and predicting again continues until the end of the passage or text.

Category: **Reading Informational Text**
Grade Level Range: **Grades 3–12**
Standard/Objective: **Comprehend content-area text**

- Teach students the SQ3R technique for generating and answering questions regarding informational text. The steps in the SQ3R technique are as follows:
 - *Survey*—Students preview a chapter in a content-area textbook. They look at bold headings, captions, illustrations, italicized or boldface vocabulary words, and so on.
 - *Question*—Students formulate and write down questions that they would like to have answered based on the information gleaned during the preview. They turn headings into questions.
 - *Read*—Students read for the express purpose of answering the questions generated during the previous question stage of the technique. They write the answers to the questions in their own words rather than copying them from the text.
 - *Recite*—Students read each question and tell the answer in their own words.
 - *Review*—Students review the questions and answers after a twenty-four-hour period and then periodically to facilitate memory.

Category: **Reading Literature/Informational Text**
Grade Level Range: **Kindergarten–Grade 12**
Standard/Objective: **Comprehend content-area text**

- According to the Common Core State Standards, there are seven rigorous proficiencies in the area of thinking that students need to master. Each of the proficiencies has three explicit-thinking skills

that can be taught from kindergarten through grade 12 and across all curricular areas. They are as follows:

- Critical Thinking—Analyze, Evaluate, Problem Solve
- Creative Thinking—Generate, Associate, Hypothesize
- Complex Thinking—Clarify, Interpret, Determine
- Comprehensive Thinking—Understand, Infer, Compare
- Collaborative Thinking—Explain, Develop, Decide
- Communicative Thinking—Reason, Connect, Represent
- Cognitive Transfer of Thinking—Synthesize, Generalize, Apply
(Bellanca, Fogarty, & Pete, 2012)

Refer to these twenty-one explicit-thinking verbs when forming questions from content that students can discuss orally during whole-class or small-group instruction or in writing.

Category:	Reading Literature/Informational Text
Grade Level Range:	Grades 1–12
Standard/Objective:	Comprehend cross-curricular text

Use the following process of *close reading* to help students understand complex texts. These steps can be implemented with the whole class and may take more than one or two days to complete.

1. Following little or no prereading discussion, introduce the text to students.
2. *First reading*—Have students read the whole text by themselves without any assistance.
3. *Second reading*—Provide a fluent model by reading the entire text aloud. Stop periodically to discuss vocabulary, the historical or social context of the passage, or a sentence structure that is more complicated. Do not explain the ideas, characters, or specific events in the text. Have students discuss the text.
4. Formulate questions that students can only answer from the text and pose them to the class. No questions should be able to be answered from the personal experiences of the student.
5. *Third reading*—Have students read the text and locate evidence to answer the text-dependent questions.
6. When appropriate, have students use other brain-compatible strategies, such as music, art, role play, or graphic organizers, to improve their comprehension of the text.

7. Have students develop one concise sentence to answer each of the text-dependent questions.
8. Have students provide orally or in writing an analysis of the text, including text-based evidence to support their analysis (McLaughlin & Overturf, 2013).

Category: Reading Literature/Informational Text

Grade Level Range: Grades 6–12

Standard/Objective: Comprehend content-area text

- Have students form small groups called literature circles. All students read the same story, poem, or book and engage in a discussion of that selection with members of the group assigned specific roles to perform. Some possible roles are as follows:
- *Discussion director*—Formulates the questions to be discussed and makes sure that all group members contribute.
 - *Literary luminary*—Reads orally the most important parts of the text.
 - *Connector*—Assists group in connecting the text read with ideas in the real world.
 - *Illustrator*—Draws pictures for clarification.
 - *Summarizer*—Periodically highlights the main ideas of the discussion.
 - *Vocabulary enricher*—Provides definitions for any unfamiliar words that are crucial for understanding the text.
 - *Investigator*—Supplies any necessary background information that the group needs (Vacca et al., 2003).

Category: Reading Literature/Informational Text;

Speaking

Grade Level Range: Grades 6–12

Standard/Objective: Comprehend cross-curricular text

- Involve students in a Socratic seminar by following the procedures outlined here.
- Determine the main idea from a story, poem, or book previously read.
 - Design a series of questions that encourage students to think at the comprehension, application, analysis, synthesis, or evaluation levels of Bloom's Taxonomy (see Figure 1.2).
 - Have students form two circles, one inside the other. Have students who will be participating in the discussion sit in the

inner circle while students who will be taking notes sit in the outer circle.

- Begin a ten- to fifteen-minute discussion by asking a core question in the series of questions to get the conversation started. Continue to engage students by asking additional questions.
- Have a student in the inner or outer circle summarize the main points made during the discussion.
- Debrief with students by asking for ways in which the seminar could have been improved. Implement any meaningful suggestions during the next seminar (Tanner & Cassados, 1998).

REFLECTION AND APPLICATION

How will I incorporate *brainstorming and discussion* into instruction to engage students' brains?



Which brainstorming and discussion activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 2



Drawing and Artwork



WHAT: DEFINING THE STRATEGY

A high school social studies teacher was having a difficult time getting one student to outline the major points in a social studies chapter on South Asia. The linear outline, with its Roman numerals, alphabets, and numbers, just did not make much sense to his brain. The teacher attended my *Worksheets Don't Grow Dendrites* class, during which we discussed the importance of having students use drawing as a tool for understanding text. After all, walk into any class of students and you are bound to see at least one student, usually a boy, doodling or drawing things that are totally unrelated to the content being taught at that time.

The teacher decided to put this student's creative talent to work and began to have him draw those key concepts in the chapter that needed to be remembered. During a subsequent workshop with me, she shared some of his drawings. To say that I was impressed is an understatement! This student's drawings were in such great detail that they captured more of what the chapter was actually about than any simple outline could. They also made so much more sense to his brain. The teacher related that this student's grades in her class had gone from Ds to Bs simply because he could understand his drawings better than his written notes and had begun reviewing his artwork prior to a test.

Even John Dewey as far back as 1934 knew that the thinking that goes on in the brain when one is engaged in art activities can facilitate improvements in thinking across the curriculum. This is the reason that students should be drawing the main idea of a story in language arts, the steps to a word problem in math, or the stages of mitosis in science. Let them draw! Just be certain that what they draw is related to a curricular objective.



WHY: THEORETICAL FRAMEWORK

After younger students visualize, it may be a necessity for them to draw what they just visualized (Sprenger, 2005).

Drawing pictures that have personal meaning can be very helpful when students are learning new vocabulary words and terms (Dean, Hubbell, Pitler, & Stone, 2012).

Famous historical figures such as Thomas Edison, Charles Darwin, and Henry Ford used simplistic drawings when developing many of their original ideas (Armstrong, 2009).

Drawing a nonlinguistic representation or an image during instruction is a literacy strategy that can assist students in comprehending written sources (National Council for the Social Studies, 2010).

When people draw or add doodles to their notes, they create visuals that assist them in processing or encoding information, thereby facilitating comprehension or the recall of new information (Allen, 2008).

When the arts are incorporated into learning opportunities, all students, with or without disabilities, can experience success, show their intelligence, and use all of their senses (Algozzine, Campbell, & Wang, 2009).

Drawing honors the spatial intelligence and is visual thinking that assists students in articulating their comprehension of the content (Armstrong, 2009).

Students make connections between the new information they are learning and something they already know when they use their senses of sight, smell, touch, taste, hearing, and movement to draw diagrams and create models (Willis, 2006).

Students with visual-spatial intelligence are often able to diagram or represent artistically what they are perceiving (Willis, 2007).

Thinking in art precedes thinking across the curriculum (Dewey, 1934).

HOW: INSTRUCTIONAL ACTIVITIES

Category: Reading Literature/Informational Text

Grade Level Range: Grades 3–12

Standard/Objective: Identify implicit main idea



- Have students design a book jacket that depicts the main idea of a story, novel, or informational text previously read. The cover of the jacket should depict an illustration of the major focus of the text. The back of the jacket should contain several paragraphs summarizing the story itself, written in a way that would entice others to want to read the book's contents.

Category:	Language
Grade Level Range:	Grades 3–5
Standard/Objective:	Demonstrate an understanding of the literal and nonliteral meanings of words

- A wonderful book to read aloud when beginning a lesson on word relationships would be Fred Gwynne's *The King Who Rained* or *A Chocolate Moose for Dinner*. Both contain examples of homophones, homographs, and other types of figurative language. Following the reading of the book, students could illustrate examples of word relationships. For example, *The King Who Rained* has a picture of lambs playing poker or gambling on the lawn. Students could illustrate the homophone gambol which means to play merrily on the lawn. Students could then locate other words that would fit the pattern.

Adaptation: The Amelia Bedelia series also contains many examples of figurative language. Have students illustrate the literal and the figurative meanings of the terms.

Category:	Reading Literature
Grade Level Range:	Grades 3–8
Standard/Objective:	Read and comprehend literary text

- Help students comprehend the following elements of narrative text—characters, setting, problem, and resolution—by using the Draw and Label Retelling activity. Have them draw four boxes similar to the ones below and label them Who? Where? What happened? and How did it end? Have students draw a picture in each box to depict the answer to each of the questions (McLaughlin, 2010).

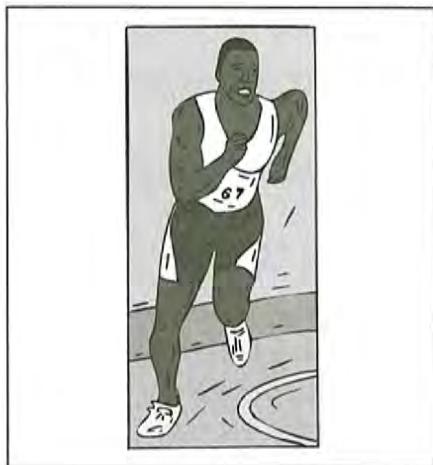
Figure 2.1 Draw and Label Retelling

<p>Who?</p> <p>Draw:</p> <p>Label:</p>	<p>Where?</p> <p>Draw:</p> <p>Label:</p>
<p>What happened?</p> <p>Draw:</p> <p>Label:</p>	<p>How did it end?</p> <p>Draw:</p> <p>Label:</p>

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 5
Standard/Objective: Understand multiple meanings of words

- Have students illustrate the various meanings of a multiple-meaning word. For example, for the word *run*, students could draw the images shown in Figure 2.2.

Figure 2.2 Multiple-meaning Words



run the race



run for re-election



run her mouth



run in your stocking

Category: Vocabulary
Grade Level Range: Grades 3–12
Standard/Objective: Recognize the meanings of words

- Have students remember a word's meaning by drawing a word picture that actually depicts the meaning. A few examples follow in Figure 2.3.

Figure 2.3 Word Pictures

el o n g a t e d

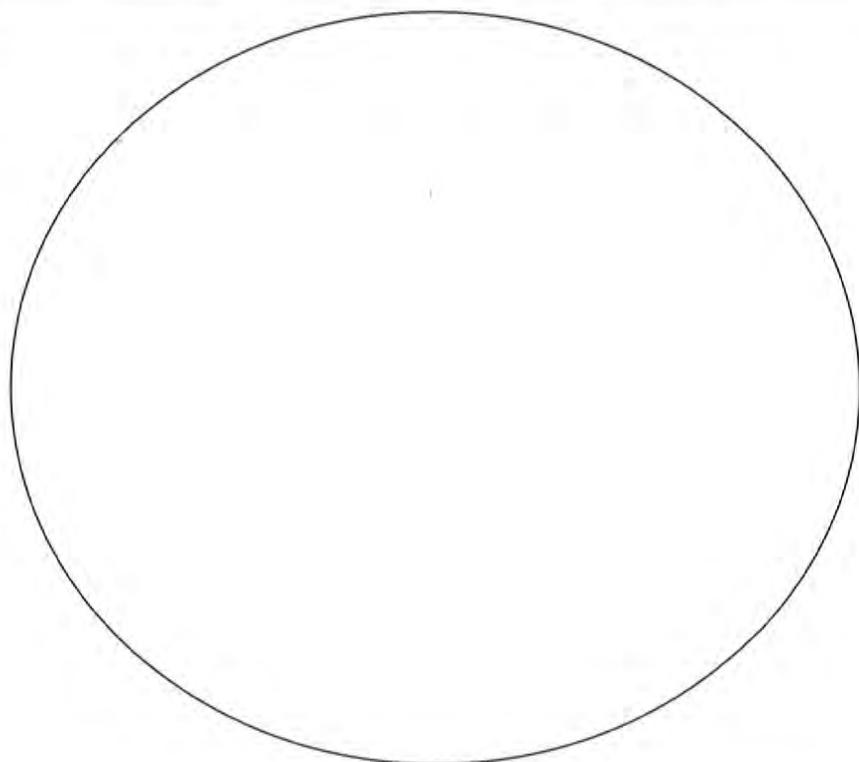
succinct

Category: Reading Literature/Informational Text

Grade Level Range: Grades 3–5

Standard/Objective: Describe the traits of characters/figures

- Have students draw the following outline on their paper. Have them describe the traits and feelings of either a character in a story or a historical figure by drawing in adjectives that outline the facial features of the character. For example, to describe Benjamin Franklin, students could write the word *creative* in the shape of his left eyebrow and the word *questioning* in the shape of his right eyebrow.



Category: **Vocabulary**
Grade Level Range: **Kindergarten–Grade 12**
Standard/Objective: **Determine meanings of content-area words**

- Have students draw the meanings of content-specific words or phrases to assist them in remembering the definitions. For example, based on Seymour Simon's book *Volcanoes*, have students draw and label pictures of the earth's *crust*, *magma*, *mantle*, and *lava*.

Category: **Reading Literature/Informational Text**
Grade Level Range: **Grades 9–10**
Standard/Objective: **Compare treatments of the same topic in primary and secondary sources**

- Have students analyze how a subject or topic is treated in a variety of primary or secondary sources. Students could use artwork to illustrate the differences. For example, students could locate the different artistic representations of Pharaoh Ramses II and draw them. Some possible sources would be images from the British Museum or in Percy Bysshe Shelley's poem *Ozymandias*. The visual images of the pharaoh will change based on what was emphasized or absent in various treatments of the pharaoh in works of art.

Category: **Reading Informational Text**
Grade Level Range: **Grades 6–12**
Standard/Objective: **Comprehend notes taken from textbook or lecture**

- Give students the opportunity to draw any notes taken during a lecture or following the reading of a textbook. Students with visual-spatial intelligence will thank you! Students can study their drawings to recall major concepts to be remembered prior to testing.

Category: **Reading Informational Text; Technical Information**
Grade Level Range: **Grades 6–12**
Standard/Objective: **Comprehend informational/technical text**

- Many technical manuals include pictures to accompany the text so that the reader has a better idea of what to do. While reading a technical manual without pictures, have students draw the visuals that would accompany the text so that the content in the manual becomes easier to comprehend for the reader.



REFLECTION AND APPLICATION

How will I incorporate drawing and artwork into instruction to engage students' brains?

Which drawing and artwork activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 3

Field Trips



WHAT: DEFINING THE STRATEGY



What came first—school or brains? You guessed it! Human beings had brains long before there was a formal place called school. Therefore, the original purpose of the brain was never to make straight As or to score high on a teacher-made or standardized test. The purpose of our brains is survival in the real world. That would make school an artificial place to be. Students are asked to sit on the most uncomfortable piece of furniture known to man—a student desk—and to not talk or move for very long periods of time. In fact, one teacher told me that we spend the first three years of our children’s lives teaching them to walk and talk and the next fifteen years telling them to *sit down and shut up!*

Field trips make use of the brain’s original purpose. Is it any wonder that the places that you travel to in the real world are remembered longer than the things taught to you within the four walls of the classroom? That is why I will always remember a field trip that my husband, Tyrone, and I took to Sydney, Australia. I was presenting in Hobart, Tasmania, and planned a few extra days to do some sightseeing in Sydney. We went to a wildlife park where we communed with kangaroos, koala bears, emus, and Tasmanian devils. A group of elementary students was taking the same field trip. It was raining that day so they were all dressed in matching blue raincoats and wide-brimmed hats. They looked just like the students in the children’s book *Madeline*. Imagine how many different language arts skills could be incorporated into that one field trip. Prior to the trip, students could engage in a class discussion and make predictions about what they would be seeing at the park. They could read informational texts to learn about all the unique animals that might be there. During the field trip, students could look for the animals they studied and observe firsthand the animals’ habitats and behaviors. Following the field

trip, students could write about what they actually saw and compare and contrast what they experienced with what was previously read.

Don't forget the option of virtual field trips in which students can visit places in the world that would be inaccessible or cost prohibitive. They can even visit a place more than once! After all, not all classes in the United States can physically travel to Australia, but that doesn't mean that students can't experience what can be found there.



WHY: THEORETICAL FRAMEWORK

Learners can expand their purview with either actual or virtual field trips, during which students interact with sites that are not in their immediate environment (Melber & Hunter, 2010).

A field trip taps into a student's spatial memory—the time or place that something actually occurred—and is, therefore, an example of an actual experience (Fogarty, 2009).

Seeing the multiple intelligences valued and practiced within the context of the community during a field trip gives students a more accurate picture of their value (Armstrong, 2009).

In order for a field trip to be successful, teachers have to know what is to be achieved by taking the field trip, focus students' attention on those purposes during the field trip, and provide follow-up activities after the field trip (Chapin, 2005).

Since electronic field trips expand the learning outside the four walls of the classroom and can be experienced multiple times, they can be more beneficial than actual field trips (Gregory & Herndon, 2010).

One way to integrate planned movement for learning into classroom content is by taking students on a field trip (Sprenger, 2007).

A field trip can be a very useful teaching tool before starting a teaching unit since students need the real-world, concrete examples that enable them to see, touch, and experience the world (Gregory & Parry, 2006).

Field trips not only increase the confidence level of student; they also enhance higher-level thinking skills and refine observation and questioning skills (Davis, 2002).

Actual field trips and virtual field trips create spatial memories that end up embedded in the brain and need no rehearsal (Fogarty, 2001).

Two of the world's greatest teachers, Aristotle and Socrates, used field trips as tools of instruction thousands of years ago (Krepel & Duvall, 1981).

HOW: INSTRUCTIONAL ACTIVITIES



Category:	Cross-Curricular Instruction
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Create a climate for learning

- Change the scenery of instruction! A field trip does not have to cost money. Convene class outside of the four walls of the classroom. Allow students to experience the positive effects of sunlight and the beauty of nature, which calms students' brains and puts the mind in a good state for learning. Conducting a class discussion while sitting under a tree can add a whole new dimension to instruction. Here is a side benefit: doctors may have to start prescribing doses of Vitamin D to children since they are not playing outside as much as they once did. Add to their dose of Vitamin D by taking them on a free field trip.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Create a climate for learning

- Oftentimes the classroom does not provide enough space for the movement and games so essential to effective memory. Take the class outside and engage them in purposeful movement to reinforce a content objective or standard or to play a game that requires more space than four walls will allow.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Reinforce a content-area objective

- Research the destination of a field trip. Be sure that the destination addresses a cross-curricular standard or objective. Collaborate with colleagues and administration to come up with lists of prospective destinations and then select the one(s) that you deem most appropriate for the standard or objective you are addressing.

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Identify content-area vocabulary words

- Prior to taking a field trip, use appropriate brain-compatible strategies from the list of twenty to teach in advance content-area vocabulary words that will be crucial to students' understanding of what will be experienced on the excursion.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Reinforce a content-area objective

- Prior to taking students on a field trip, have them assist in generating a list of questions covering the major points to be explored during the trip. The questions give the class a purpose for taking the trip. Students will then ask and answer the questions both during and following the trip.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Locate answers to specific questions

- Before taking students on a field trip, visit the site of the trip and create a scavenger hunt with questions to which students should find the answers while on the trip. Students should be motivated to locate as many answers as possible. Small prizes could be awarded to students who find all of the answers to questions.

Category: Cross-Curricular Instruction; Writing; Speaking
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Reinforce content-area objectives

- Turn your classroom into a field trip for other classes. For example, in social studies, the classroom would become a natural history museum where students decide what exhibits would be a part of the museum, gather the artifacts, write the script, and then serve as tour guides to take students through the museum. In a science class, students would follow the sequence to conduct and demonstrate experiments for the visitors. In language arts, students could sponsor a literary night during which they sit in an author's chair and read their original poems, stories, and other compositions.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Reinforce content-area objectives

- Have students experience what it is like to visit locations of interest throughout the world while never leaving the classroom. Thanks to technology and the Internet, students can access virtual field trips that pertain to a concept being taught.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Reinforce content-area objectives

- When students cannot feasibly visit a given place or time, have the place or time come to them. Invite guest speakers to class who can relate their personal experiences of having lived through a particular period of history or in a different time or culture. Parents of students from diverse cultures have much to contribute in this regard. There are also people whose job it is to assume the persona of a famous historical figure and who can come to class and share the personal stories of those figures while fully attired in authentic dress of the period. These actors make a lasting visual impression on students, particularly if the stories they tell are funny or emotional (Tate, 2012).

REFLECTION AND APPLICATION

How will I incorporate *field trips* into instruction
to engage students' brains?



Which field trips am I already incorporating into my reading and language arts curriculum?

What additional field trips will I incorporate?

Strategy 4



Games



WHAT: DEFINING THE STRATEGY

Let's play a word game. You may be familiar with Hinky Pinkys. Hinky Pinkys are two-word rhymes where each word is two syllables. A clue is provided and the class has to guess the Hinky Pinky. For example, here is the clue: *a soiled fowl*. The Hinky Pinky would be *a dirty birdie*. If you are teaching primary students, then you may want to engage them in guessing Hink Pinks. Hink Pinks are two-word rhymes where each word is one syllable. For example, *an angry father* would be *a mad dad*. For older students, use Hinkety Pinketys where each two-word rhyme is three syllables. A clue for a Hinkety Pinkety would be *an evil preacher*, which, of course, would be a *sinister minister*. I can even create a Hinkety Pinkety Plus One, which would be two four-syllable words. Here is the clue: What would you call *an average administrative assistant*? I will not give you the answer until the end of this section of the chapter so that if you want to ponder the answer, you have time.

Games are wonderful vehicles for reviewing content in any curricular area. The minute you say to students *let's play a game*, the stress level diminishes and the excitement level increases. Students have no idea how much they can actually learn disguised under the strategy of a game. They simply consider the amount of fun they are having. However, be certain that the content of the game focuses on the language arts skill being taught or reviewed or it will be a waste of valuable instructional time. By the way, did you guess the Hinkety Pinkety Plus One? If not, here is the answer. An *average administrative assistant* is *an ordinary secretary!*

WHY: THEORETICAL FRAMEWORK

During the preschool and elementary years, children should participate in oral language activities and play games that help them become familiar with the sounds of language and develop a pathway in the brain which will eventually help them decode words (Nevills, 2011).

Most students are highly motivated to take part in a game, and with the increased instructional engagement comes increased student achievement (Bender, 2012).

When students are talking, discussing the rules, and laughing during the playing of a board game, they are not only utilizing intrapersonal intelligence, they are also engaged in learning whatever the instructional focus of the game happens to be (Armstrong, 2009).

A game helps students take risks in front of their peers and can put laughter and fun into the lesson (Udvari-Solner & Kluth, 2008).

Regardless of the age of the student, physically engaging games can greatly improve the brain's ability to learn (Allen, 2008).

When selecting appropriate games for students to play, it is crucial to know whether the purpose of the game is initial instruction or whether it is designed to review previously learned content (Bender, 2012).

When teachers use a game format to review content, they can group advanced students in teams with those who need support (Willis, 2007).

When students develop the content of a game and then play it, the amount of time they are involved with content doubles (Allen, 2008).

Games must focus on academic content if they are going to represent a way to review that content (Marzano, 2007).

The format of a game releases the chemical dopamine in the brain, which adds to a student's ability to focus (Willis, 2007).



HOW: INSTRUCTIONAL ACTIVITIES

Category:

Vocabulary

Grade Level Range:

Kindergarten–Grade 2

Standard/Objective:

Read common high-frequency words by sight



- Write the high-frequency words that you want students to instantly recognize on index cards. You may want to laminate the cards so that they can be used over and over again. Place a number of the cards an equal distance apart so that they form a path on the floor. If you do not have enough space in the classroom, you may want to place the words along a path on the floor in the hall. Have a small group of students take turns playing the game of walking the path. However, before

they can take a step, they must name the sight word on the card. If they cannot name the next word, they must stay on the previous word until it becomes their turn again. Every student in the group who makes it to the end of the path is declared a winner.

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Read common high-frequency words by sight

- Construct or buy a game board (e.g., Candy Land), a number generator (die), and markers to move along the board. Write the high-frequency words to be reviewed on index cards and place them in a stack in the middle of the game board. Have two to four students compete against one another by rolling the number generator. To move the rolled number of spaces, the student must select from the pile and name the same number of sight words. If the student correctly names all of the words, the student moves that number of spaces on the game board. If the student misses a word, the student can only move one space for each word correctly named. The first student to get to the end of the game board wins.

Adaptation: This game can be adapted to any age and grade level by replacing the high-frequency words on the cards with any content-area vocabulary words that need to be reviewed.

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Identify content-area vocabulary words

- Have students play the game Pictionary according to the following directions. Select the vocabulary terms that you want students to remember and place each word on a separate index card. Students take turns coming to the front of the class, selecting a word card, and drawing a picture on the document camera, board, or chart paper. The picture should enable classmates to guess the word selected. The student who guesses the word first earns one point.

Adaptation: Divide the class into two teams and let them compete against one another to guess the largest number of vocabulary words in a designated amount of time.

Category: Vocabulary
Grade Level Range: Grades 1–5
Standard/Objective: Develop fluency with words

- Have students make as many smaller words as possible in a designated time period out of the letters in a word written on the board. For example, students have two minutes to make as many words as

they can out of the word *combustible*. Possible answers might include the following: *combust, comb, come, bus, some, but, let, stile, mob, me, bomb, and must*. The student who makes the most real words in the allotted time wins the game. Students can also work in cooperative groups to complete the task, and the group that makes the most words wins.

Category: Vocabulary
Grade Level Range: Grade 1–5
Standard/Objective: Develop vocabulary

- Put a variety of commercial games that reinforce vocabulary acquisition in a center in the classroom. As students have time, allow them to play these games to acquire more vocabulary words. These games can include Up Words, Scrabble, Tribond, Scattergories, or Pictionary.

Category: Vocabulary
Grade Level Range: Grades 1–8
Standard/Objective: Identify content-area vocabulary words

- Write matching pairs of fifteen vocabulary words to be reviewed on index cards. Write a number one through thirty on the back of each card. Turn the cards with the words face down and spread them out randomly on a desk or table. Have students compete in groups of two to four, turning a pair of cards over and naming the words. When a matching pair of words is made, the student is able to keep the cards and allowed to take another turn. When all pairs have been matched, the student with the most matches wins.

Adaptation: To increase the difficulty level of this game, students must define each word as it is matched or students can match the word to its definition.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: All

- Rather than having students raise their hands in response to a question asked in class, play a ball toss game. In this game, ask a designated question to the whole class. Give students time to think of an answer. Then toss the ball to a student who must answer the question. If the answer is correct, the student can toss the ball to another student of choice who will then answer the next question. If the answer is incorrect, the student must toss the ball back to you so that you can choose the next respondent. Be sure to use a Nerf or another type of soft ball, so that if the ball misses its mark, nothing or no one is damaged.

Category: Fluency
Grade Level Range: Grades 3–5
Standard/Objective: Read with accuracy and fluency to support comprehension

- Play the Fluency Game by setting a timer for one minute. Have one student read a familiar passage until the timer goes off. Have another student count the number of words read correctly by the first student within the one-minute time limit. Set the timer again. Have the first student reread the same passage for the purpose of increasing the number of words read correctly. It is now the second student's turn while the first student counts the words. The student in each pair who increases his or her score by the largest number of words read correctly in a minute is the winner of the game. This game can be placed in a center space where six to eight students can use three or four timers simultaneously.

Category: Vocabulary
Grade Level Range: Grades 1–12
Standard/Objective: Identify content-area vocabulary words

- Play BINGO by having students draw a 3×3 matrix on a piece of paper. This will give them space in which they can randomly write any nine words from a list of twenty to thirty designated vocabulary words to be reviewed. Place the definition of each vocabulary word on a card and put the cards in a bag or another container. Have students take turns pulling a definition from the container and reading it aloud. If any student has written the word that accompanies the definition read, that student draws a circle around the word. When a student has three words in a row (either vertically, horizontally, or diagonally) or when a student has circled words in four corners of the matrix, the student shouts, "BINGO!" The first student to do so could be the winner but must orally give the definitions of the words that constitute the BINGO. If the student cannot provide the definitions in his or her own words, play continues until another student gets BINGO.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 1–12
Standard/Objective: Answer text-dependent questions

- Put students in groups of four to six. Give each group the same passage to read from a textbook or some other source. Have each group generate three to five questions that can be answered only from reading the passage. Provide each group with a piece of copy paper on which one person in the group writes the questions. Someone in each group then volunteers to take the piece of paper with the questions on it and make it into a paper airplane. Another student in each

group then goes to the same designated place in the room from which he or she will fly the plane in an effort to hit a predetermined target. The student whose plane lands closest to the target is the winner. After every group has flown their plane, the student who flew the group's plane gets up and picks up a plane that does not belong to his or her original group. The group then answers the questions generated by another group while referring to the original passage.

Category: Cross-Curricular Instruction

Grade Level Range: Kindergarten–Grade 8

Standard/Objective: Acquire content through games

- Consult the series *Engage the Brain Games* for additional game ideas in the area of language arts. Books for grades K through 5 are cross-curricular and include games in the areas of language arts, math, social studies, and science. There is a separate language arts book for grades 6 through 8. Consult the Corwin Web site at www.corwin.com for information.



REFLECTION AND APPLICATION

How will I incorporate *games* into instruction
to engage students' brains?

Which games am I already incorporating into my reading and language arts curriculum?

What additional games will I incorporate?

Strategy 5

Graphic Organizers, Semantic Maps, and Word Webs



WHAT: DEFINING THE STRATEGY

A principal asked which of the twenty strategies I thought would make the biggest difference in improving the reading comprehension scores of students in the building. In this particular middle school, students were good at calling the words but were not as competent in actually understanding what they were reading. I did not have to think long. I recommended the use of graphic organizers for teaching such explicit and implicit comprehension skills as main idea and details, cause and effect, sequence of ideas, and character traits. The principal took my recommendation seriously, and teachers began to incorporate specific visual organizers as they taught across the curriculum. When last I checked, my suggestion had paid off and comprehension skills were definitely on the increase.



The National Reading Panel (2000) delineates graphic and semantic organizers as one of six strategies for actively engaging students in comprehension instruction. In fact, they are a language arts teacher's best friend. Graphic organizers, also referred to as semantic, mind, thinking, or concept maps, benefit both left and right hemispheres of the brain since they are pictorial representations of linear ideas. They are particularly helpful in assisting students when reading informational texts from all content areas. Even when lecturing, content-area teachers would do well to accompany their lectures with mind maps that they and students draw simultaneously. Organizers can also be used with narrative text or stories. Word webs are also essential for increasing vocabulary recognition because they can connect a key word to its

synonyms or antonyms. Therefore, graphic organizers are one of the best tools for vocabulary development and reading comprehension.



WHY: THEORETICAL FRAMEWORK

Asking students to categorize and make sense of what they are learning through the symbol of a graphic organizer increases their understanding and ability to use content (Dean et al., 2012).

Advanced and participatory organizers present concepts in a way that enable the learner to hook new knowledge to existing knowledge (Bender, 2012).

Mind-mapping, a complex type of graphic organizer, enables students to access prior knowledge, analyze information, think in creative ways, and represent abstract concepts visually (Allen & Currie, 2012).

Thinking maps have the following five critical attributes: (1) a consistent form that reflects the skill that is being taught, (2) flexibility in the way the map can be configured, (3) a developmental form that can become increasingly complex, (4) the ability to integrate thinking processes with content knowledge, and (5) a reflection of the way the learner is thinking (Hyerle & Alper, 2011).

Mind maps are nonlinguistic representations that are very useful for assisting students in visualizing and retaining new or complicated material (Sprenger, 2010).

Concept maps are extremely useful for helping struggling readers locate key concepts from lectures, discussions, and readings, and they also can assist in organizing the knowledge of a particular discipline (McEwan, 2007).

Having students show relationships between words by constructing their own graphic organizers is one of the ways they can master complex content-area vocabulary (Novak, 1998).

Students with naturalist intelligence learn well through the use of Venn diagrams since this type of graphic organizer points out the similarities and differences in concepts (Willis, 2007).

While graphic organizers can aid students in a variety of comprehension tasks during reading and writing, they are also effective instructional strategies for mathematics, science, social studies and Spanish (Institute for the Advancement of Research in Education, 2003).

Having students show relationships between words by constructing their own graphic organizers is one of the ways they can master complex content-area vocabulary (Novak, 1998).

HOW: INSTRUCTIONAL ACTIVITIES



Category:

Reading Literature/Informational Text

Grade Level Range:

Grades 3-12

Standard/Objective:

Determine how details support the main idea

- Have students use the following graphic organizer to show how literature or informational text adds up to the main idea.

Main Idea/Details	
Details	<input type="text"/>
	<input type="text"/>
	<input type="text"/>
+	<input type="text"/>
<hr/>	
Main Idea	<input type="text"/>

Category: Cross-Curricular Instruction

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Comprehend informational text

- When reading informational text, have students complete the following graphic organizer delineating what they already know about a subject that they are getting ready to read about, what they will need to know as they read, and what they have learned following the reading.

The K-N-L Strategy		
Topic: <hr/> <hr/>		
What I Know	What I Need to Know	What I Learned

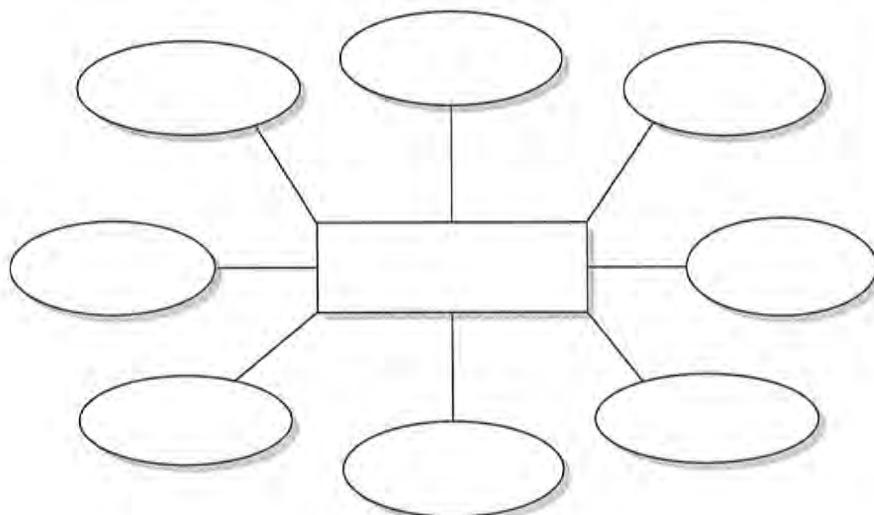
Category: Vocabulary

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Identify content-area vocabulary words

- Use the following word web to increase vocabulary by categorizing or clustering synonyms or antonyms around a given word. Write the key word in the middle and have students brainstorm synonyms or antonyms related to the key word. Have students keep notebooks containing their graphic organizers and add other related words as the year progresses. If students cannot think of additional words with similar or opposite meanings, appoint a resident thesaurian whose purpose is to provide additional words aloud to add to the list from the classroom's thesaurus. All students add these words as well.

**Vocabulary
Word Web**



Category:

Vocabulary

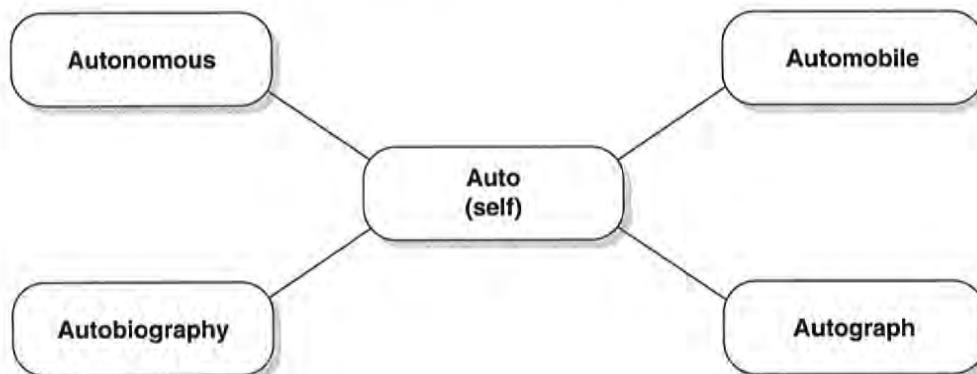
Grade Level Range:

Grades 3–5

Standard/Objective:

Identify root words and affixes

- Have students make their own word web consisting of root words and their affixes to expand their knowledge of word meaning. An example follows.

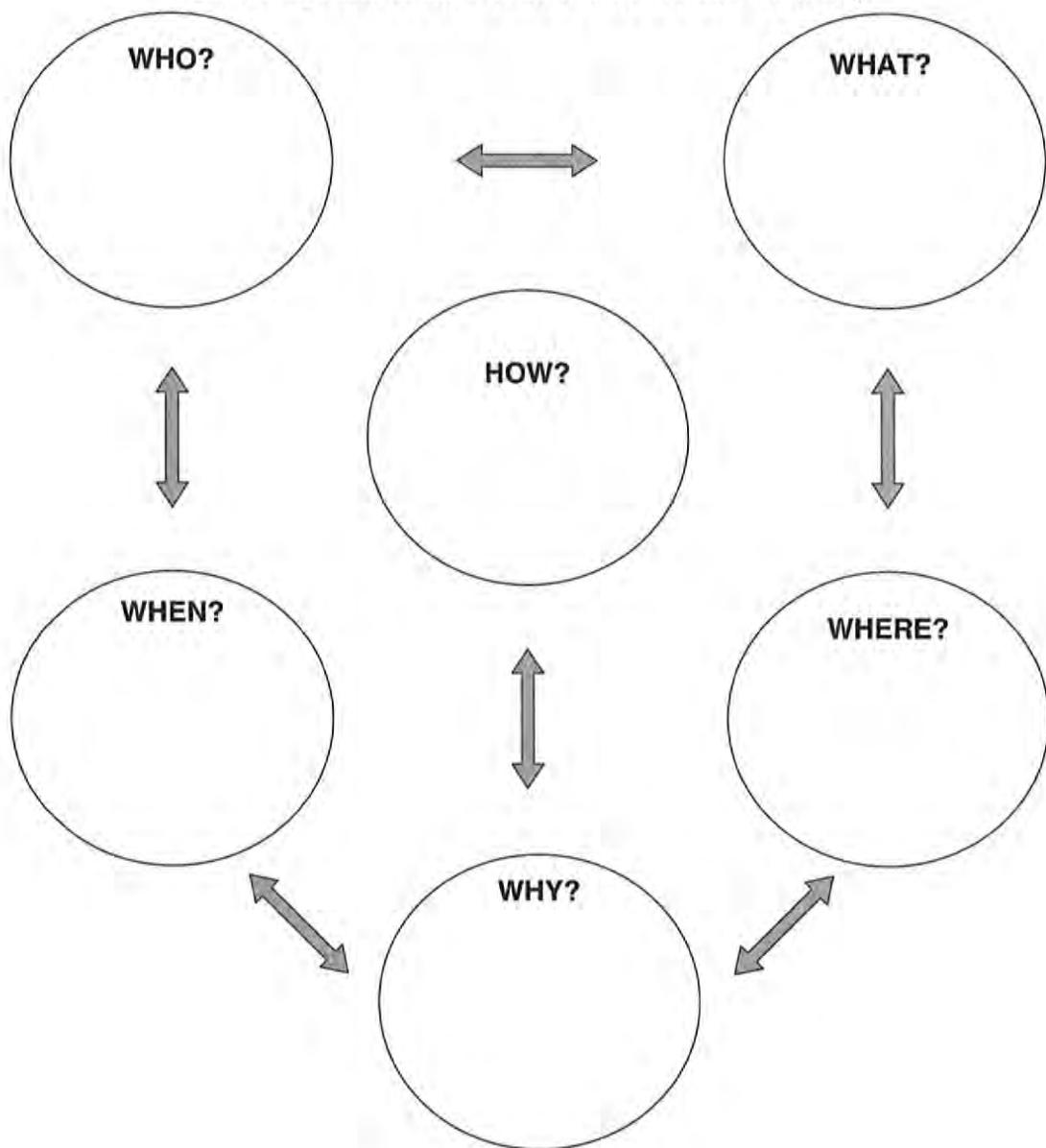


Category: Reading Literature/Informational Text
Grade Level Range: Grades 1–12
Standard/Objective: Answer questions about text

- Using the following graphic organizer, have students complete a 5 Ws and an H chart to ask and answer *who*, *what*, *when*, *where*, *why*, and *how* questions regarding either narrative or informational texts. Students should go into the text and look for specific text-dependent answers. For example, help students understand what goes into creating *A Medieval Feast* in Aliki's informational book by the same name by answering who, what, when, where, why, and how questions. This cross-curricular organizer can be used in all content areas.

5 Ws and an H

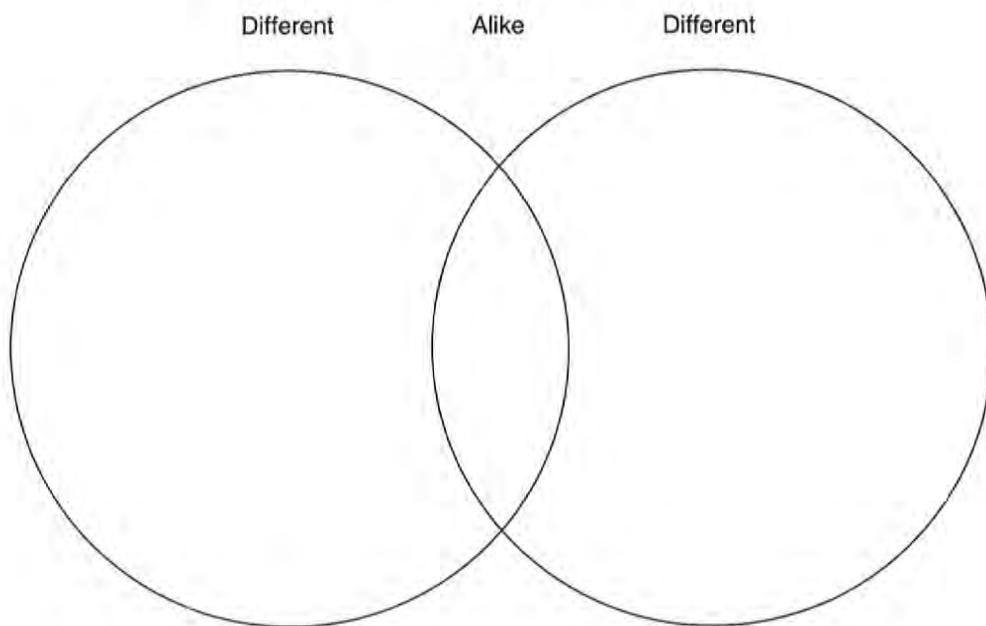
Use the organizer below to create a “5 Ws and an H” summary.



Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Compare/contrast two or more texts on a topic

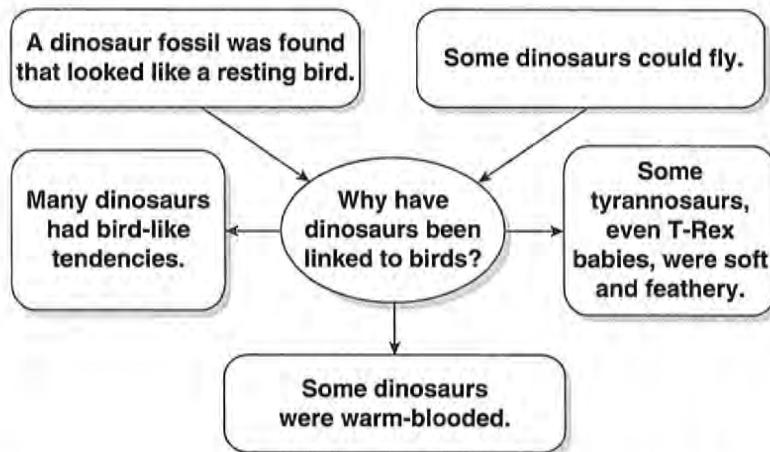
- Use the following Venn diagram to assist students in comparing and contrasting the treatment of a topic from two or more texts. Students can determine how the information is similar and how it is different. This graphic organizer can be used to compare and contrast any number of different topics, such as how two different stories approach a similar theme or how two different cultures treat the same story.

Compare/Contrast



Category: Reading Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Comprehend a variety of text structures

- While studying a content area, have small groups of students generate original questions to place at the center of a question web. A question web is a graphic organizer with a question at its center. Students then read related material (picture books, informational books, magazines, information from Web sites) and place possible information to answer the question on the question web. A sample follows.



Category:

Reading Literature/Informational Text

Grade Level Range:

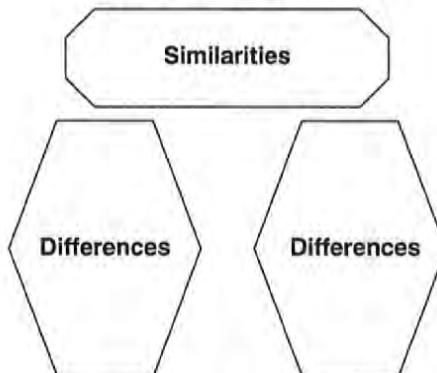
Kindergarten–Grade 12

Standard/Objective:

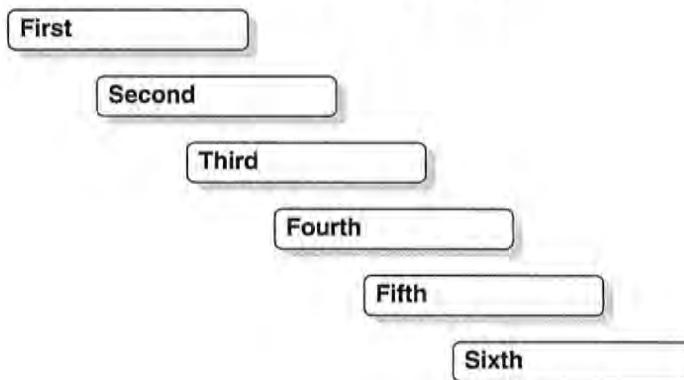
Comprehend a variety of text structures

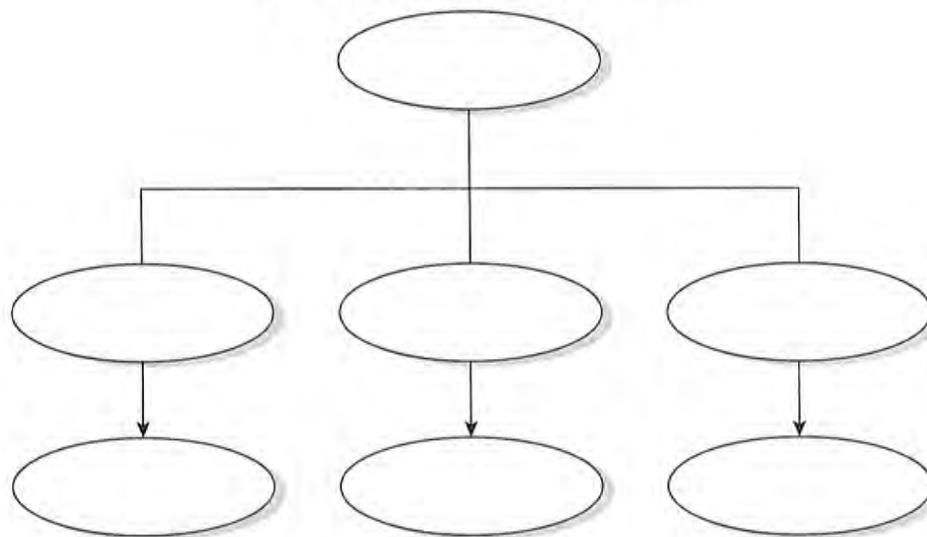
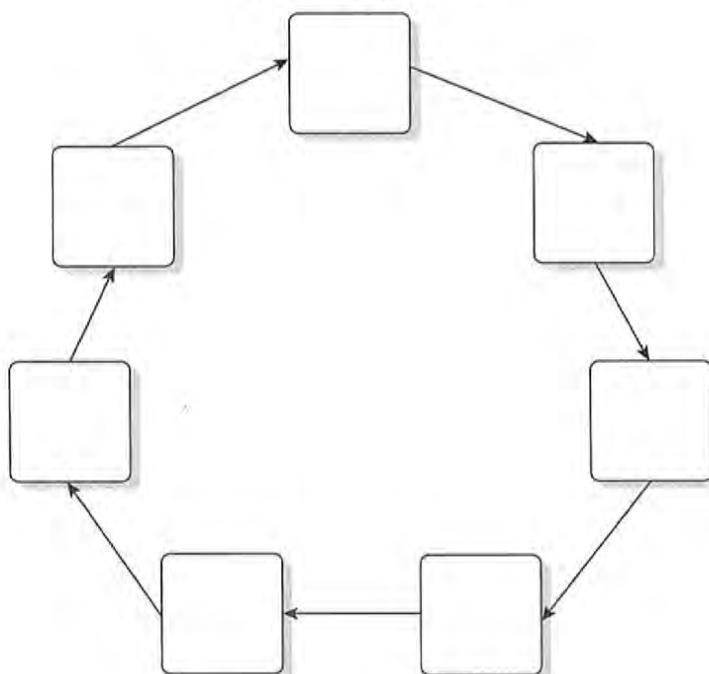
- Have students use one or more of the following visual organizers to assist them in understanding the basic formats of text structure (Strong, Silver, Perini, & Tuculescu, 2002). For example, students could use the *Sequence Organizer* or the *Cause-Effect Organizer* to describe the order of events that led to Ruby Bridges desegregating her school in Robert Cole's book *The Story of Ruby Bridges*.

Comparision Organizer



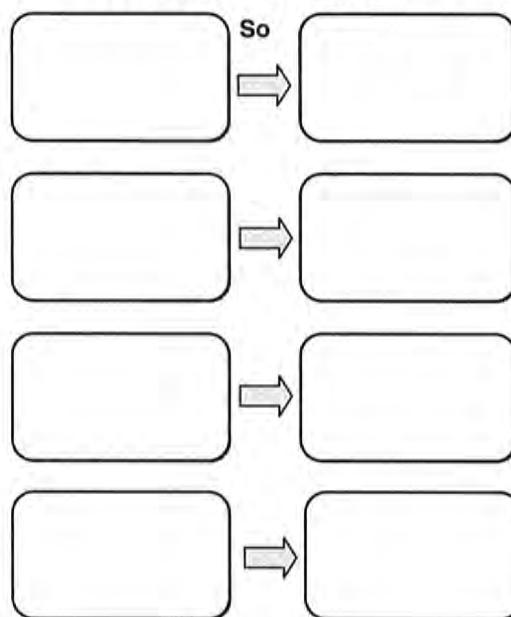
Sequence Organizer



Topic Description Organizer**Cycle Organizer****Problem/Solution Organizer**

Solution	Problem	Effect

Cause/Effect Organizer



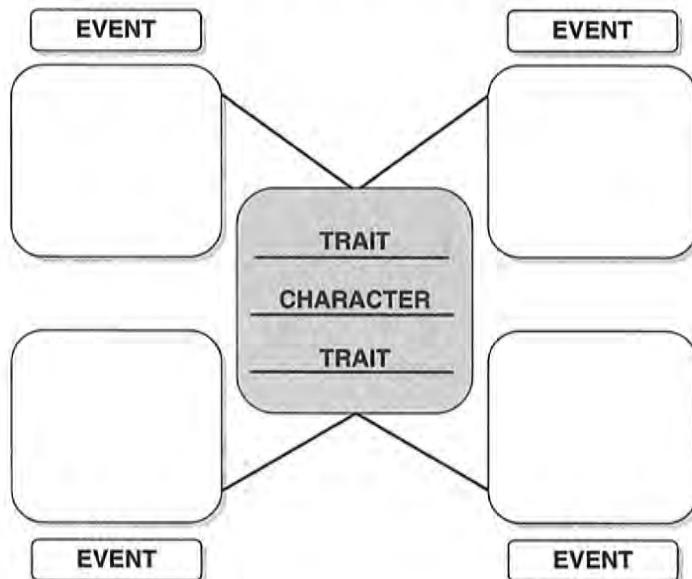
Category: Reading Literature/Informational Text

Grade Level Range: Kindergarten–Grade 5

Standard/Objective: Identify character traits and motives

- Have students complete the following map using two adjectives to describe a fictional character in narrative text or a historical figure in informational text. In the spaces provided, students must cite specific events from the text that exemplify the two traits of the person's character.

Character/Traits



Category: Reading Literature
Grade Level Range: Grades 3–12
Standard/Objective: Identify the structure of narrative text

- Have students complete the following story map to demonstrate their understanding of the structure of a story they have read or heard.

Story Map

Title: _____

Setting:



Characters: _____

Problem:



Event 1: _____

Event 2: _____

Event 3: _____

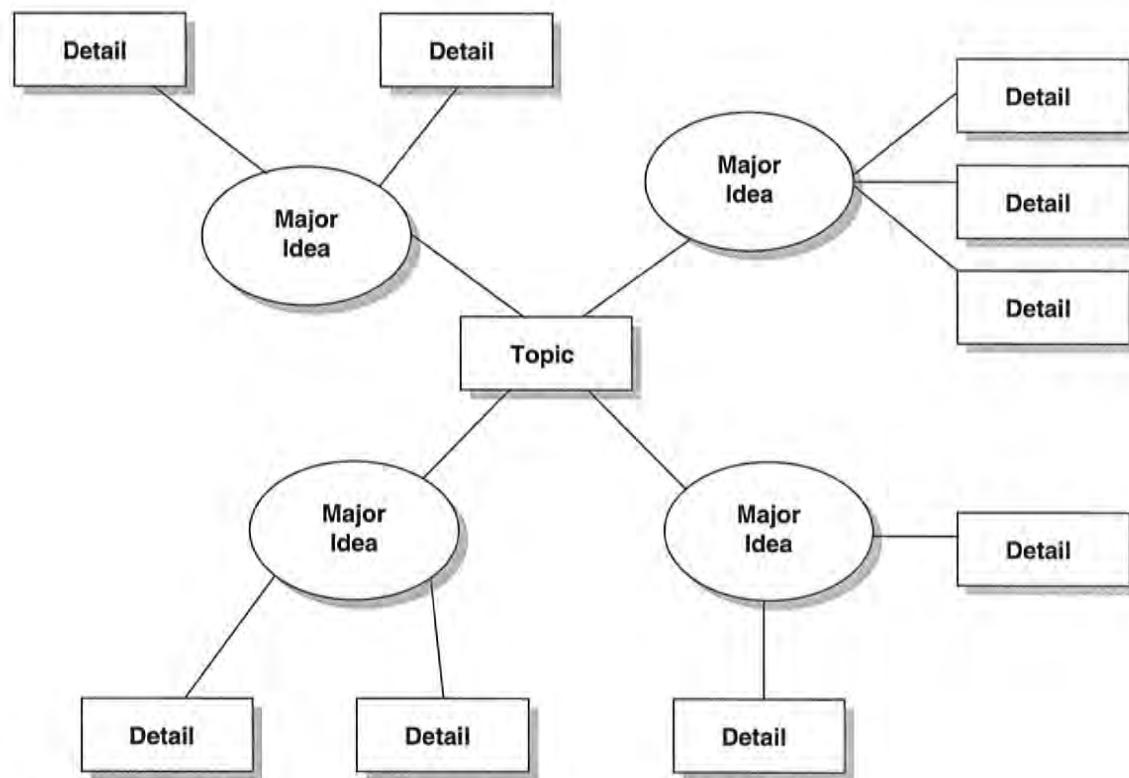
Event 4: _____

Solution:



Category:**Reading Informational Text****Grade Level Range:****Grade 3–12****Standard/Objective:****Summarize main ideas and key supporting details**

- While lecturing or discussing informational text with students, complete a semantic, concept, or mind map on the board as a visual of how the major concepts are related to one another. Have students copy the map in their notes as you explain each part. See the following sample format:

**Category:****Cross-Curricular Instruction****Grade Level Range:****Kindergarten–Grade 8****Standard/Objective:****Increase comprehension across the curriculum**

- Refer to the series *Engage the Brain: Graphic Organizers and Other Visual Strategies* for additional graphic organizer ideas in a variety of content areas. Books for grades K through 5 are cross-curricular and include graphic organizers and visuals in the area of language arts. There is a separate language arts book for grades 6 through 8. Consult the Corwin Web site at www.corwin.com for information.



REFLECTION AND APPLICATION

How will I incorporate graphic organizers, semantic maps, and word webs into instruction to engage students' brains?

Which graphic organizers, semantic maps, and word webs am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 6



Humor

WHAT: DEFINING THE STRATEGY



If you customarily read the same bedtime story aloud to your children and/or grandchildren over and over, then you realize that if you skip a part not only do your children know it, but they make you go back and include the part that you skipped. There is a wonderfully funny book about a father who is so fed up with reading the same story every night to his son that he begins to shorten the story so that it can be read in less than one minute. The book is called *Once Upon a Time, the End: Asleep in 60 Seconds* by Geoffrey Kloske and Barry Blitt (2005). The book contains a variety of summarized fairy tales and nursery rhymes that can be read in sixty seconds or less. The book is hilarious and should be enjoyed by all, but it is a wonderful book for introducing the challenging skill of summarization.

Humor can be good for vocabulary development as well. When students play around with language, their enthusiasm and creativity increase. For example, see if your secondary students can complete the following patterns: *Old _____ never die, they just _____.* Here are some creative examples you can share with the class:

- Old teachers never die, they just lose their class.
- Old administrators never die, they just lose their faculties.
- Old science teachers never die, they just recycle.
- Old musicians never die they just decompose.
- Old accountants never die, they just lose their balance.
- Old lawyers never die, they just lose their appeal.

- Old bankers never die, they just lose their figures.
- Old daredevils never die, they just get discouraged.

The strategy of humor can put the brain in a positive state for learning. When the brain is in that state, messages are more easily passed from one neuron to another neuron as they cross a space called the synapse. This simply means that content is more easily remembered. When the brain is under high stress, or threat, messages may not cross at all. Create a language arts classroom environment in which your students are positively connected to the text and to you as well. Memory and retention will be facilitated!



WHY: THEORETICAL FRAMEWORK

Students learn best when their emotions are positive since fear, stress, and anger actually shut down the brain's ability to learn (Sousa & Tomlinson, 2011).

While a low to moderate amount of stress in the classroom is necessary, high stress is a barrier to learning. Stress reduces blood flow to the thalamus, which receives input from all the senses except smell, and the prefrontal cortex, which controls common sense and decision making (Howard, 2000; Jensen, 2006).

People who have a humorous state of mind are capable of laughing at themselves and can recognize absurdities, satire, irony, and incongruity (Costa, 2008).

A smiling teacher increases students' confidence and lets them know that someone is concerned about them (Allen & Currie, 2012).

Humor fosters the higher-level thinking skills of anticipation, creating analogies, visual imagery, and the ability to recognize novel relationships from a variety of vantage points (Costa, 2008).

The brain's and body's response to laughter includes the release of endorphins and adrenaline, increased alertness, increased oxygen, and the attachment of the information learned to the positive emotional experience (Willis, 2006).

A smile can cause students' to straighten their posture, brighten their eyes, quicken their steps, and turn their frowns into smiles (Allen & Currie, 2012).

When humor and laughter abound in a classroom, the result is healthier teachers, less anxious students, enhanced recall of information and

creative thinking, improved student-teacher relationships, and increased receptivity to difficult material (Jensen & Nickelsen, 2008).

Superior learning takes place when stress is lowered, learning experiences are relevant, and lessons are challenging without being intimidating (Willis, 2006).

Consistently stressing the brain can cause damage to the hippocampus, which decreases the brain's ability to create new memories (Sapolsky, 2004).

Stress, boredom, and anxiety, which students often experience, block the transmission of neurons, the connections of the synapses, and the growth of dendrites so essential for learning (Willis, 2006).

HOW: INSTRUCTIONAL ACTIVITIES



Category: Cross-Curricular Instruction

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Create a positive state for learning

- To create an environment conducive to optimal learning, place positive, humorous signs around the room. For example, to address the benefit of student engagement, one sign could say, *The longer you sit, the dumber you get!*

Category: Reading Fluency

Grade Level Range: Kindergarten–Grade 2

Standard/Objective: Read with accuracy and fluency to support comprehension

- Read a portion of a favorite story aloud to the class. As you begin reading, read the story very slowly, in a monotone voice, with no expression, no interest, and no enjoyment. Ask students how they felt listening to you read aloud. Explain to students that reading is the same as talking. It is the words the author would say out loud written down in print. Ask some of the following questions:
 - How did you feel about this story?
 - Were you interested in what I had to say?
 - If I asked you questions about the story, would you be able to answer them.

Tell students that the more they read, the better they will read, but they may have to change their rate of reading and fluency based on the difficulty level of the text.

Category:	Reading Literature
Grade Level Range:	Grades 3–5
Standard/Objective:	Respect diversity in language use, patterns, and dialects

- Young and Ferguson (1998) composed an extensive list of what they call multicultural trickster tales, in which the characters use pranks, lies, and mischief to outwit more powerful characters. Have students enjoy these humorous stories as they learn about various cultures.

Category:	Cross-Curricular Instruction
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Create a positive state for learning

- Locate or create and incorporate cartoons, riddles, and jokes that reinforce concepts to be taught into the delivery of instruction. Remember that the brains of most primary students are not developed sufficiently to understand the punch line of jokes, but they love riddles. Here are a few you can use:
 - Why did the turtle cross the road? (*to get to the Shell station*)
 - Why don't the circus lions eat the circus clowns? (*because they taste funny*)
 - What is the best way to keep a fish from smelling? (*just cut off its nose*)

Be careful not to confuse humor with sarcasm! Any comment that belittles a student can be humiliating and can shut students' brains down to higher-level thinking.

Category:	Cross-Curricular Instruction
Grade Level Range:	Grades 6–12
Standard/Objective:	Create a positive state for learning

- Almost every middle and high school classroom has a class clown. Use that student to your advantage. Have them bring in jokes and/or riddles to tell to the class. Make sure you approve of each joke before it is shared. Either before class, during the last few minutes, or at appropriate times during the period, have the class clown tell a joke. The entire class will laugh, putting everyone's brains in a positive state for learning. The job of the class clown can rotate to other volunteers in the class each week until every student who wants a turn has one. Jim Carrey's high school teacher allowed him

the last two minutes of class each day to tell jokes if he completed his homework and participated during the class period. Smart woman (Tate, 2010)!

Category:	Reading Fluency
Grade Level Range:	Grades 1–8
Standard/Objective:	Read with accuracy and fluency to support comprehension

- To add some uniqueness and humor to a lesson, have students read selected passages of text in a variety of different ways. For example, students could take turns standing and reading aloud in one of the following ways:
 - With fluency and expression
 - While standing on one foot
 - While holding one's nose
 - Without taking a breath
 - In a whisper
 - With a foreign accent

Category:	Cross-Curricular Instruction
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Create a positive state for learning

- Have students support and celebrate appropriate answers and the success of their peers during class. These methods might include, but are not limited to, the following:
 - Rounds of applause
 - Thumbs-up
 - High fives
 - Original cheers
 - Standing ovations

Consult Chapter 17: Celebrations in the book *Shouting Won't Grow Dendrites: 20 Techniques for Managing a Brain-Compatible Classroom* for more than twenty-five additional ways to celebrate success in the classroom (Tate, 2007).

Category:	Reading Informational Text
Grade Level Range:	Grades 6–12
Standard/Objective:	Make inferences from cartoons

- Have students find editorial cartoons in the newspaper or on the Internet and bring them to class. Ask students to share their cartoons with partners who can assist them in determining the deeper meaning inherent in this type of genre. Have the partners discuss

how each cartoon reflects societal issues and what message it is attempting to convey. As students improve in their inferential thinking, have them interpret these cartoons for themselves independent of their partners.

Category: Vocabulary
Grade Level Range: Grades 6–12
Standard/Objective: Identify word meaning

- Engage students in motivational vocabulary activities such as the creation of sniglets. The term *sniglet* was coined by Rich Hall and is a made-up word that probably should be in the dictionary but is not there yet. For example, the word *hozone* is a sniglet. The hozone can be defined as *the place where one sock in every laundry load goes when it disappears in the dryer*. Have students use their higher-level thinking skills to create original sniglets and watch how highly motivated they will be to share them with peers.

Category: Vocabulary
Grade Level Range: Grades 6–12
Standard/Objective: Identify word meaning

- Have students make up Tom Swifties, which are created when a quotation is followed by an adjective or adverb that is in some way related to the quotation. For example, *I wish I could be more like you*, said Nancy *vicariously*. Or *I sure am hungry*, said John *voraciously*. Tom Swifties are named for Tom Swift, a fictional character who used these sayings in several books written by Edward Stratemeyer in the early 1900s.

REFLECTION AND APPLICATION

How will I incorporate humor into instruction
to engage students' brains?



Which humorous activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 7



Manipulatives, Experiments, Labs, and Models



WHAT: DEFINING THE STRATEGY

When my son Christopher was little, I needed a way to occupy his time while I was in the kitchen cooking dinner. Sometimes I would give him pots and pans to bang together, but eventually that began to get on my nerves. One of the most effective ways of occupying his time was the use of manipulatives. I bought soundless magnetic alphabet letters so that while I was cooking, I could have Chris making words by sticking the appropriate letters on the front of our refrigerator. I would say something to this effect: *Chris, what letters would I use to make the word dog?* He would fumble through the array strewn all over the kitchen floor until he found the *d*, then the *o*, and eventually the *g*. The more we did it, the better he got at it! Pretty soon he was making words of more than one syllable and associating the letters with their appropriate sounds. He was inadvertently also learning to spell!

Now that I am intensely studying research on the brain, I am realizing that the brains of many boys, like my son Chris, were designed to be active. Many of them are spatial, *hands-on* learners and were intended to be the builders and hunters of the species. In traditional classrooms, we take this wonderful active male brain and tell it to *sit down and shut up!* I suspect that this is why we have more males than females in remedial reading classes and special education classes, or simply disinterested in and dropping out of school. Why not capitalize on the visual-spatial intelligence that many

students possess by having all students, not just males, use manipulatives across the curriculum? They should be engaged in experiments in science, using unifix cubes and geoboards in mathematics, handling artifacts in social studies, or simply putting words in a sentence in the proper grammatical order by moving cards around the desk in English language arts. The activities that follow will provide suggestions for incorporating students' hands into your language arts classroom.

WHY: THEORETICAL FRAMEWORK

Kinesthetic learners excel when teachers use active, hands-on activities (Allen, 2012).

Manipulatives are most needed in middle and high school classrooms since they make abstract concepts more concrete for those adolescents who do not have the prior knowledge to understand them (Karten, 2009).

Hands-on learning and math manipulatives help students learn and recall concepts (Sprenger, 2005).

The concrete visuals best remembered are the ones that can be touched and manipulated (Jensen, 2008).

Since manipulatives offer students another aid to assist memory, lessons should be designed in which students are moving something, touching something, or becoming something during the lesson (Allen, 2012).

At a higher cognitive level, students can manipulate clay, make wood sculptures, or use other materials to show very complex cross-curricular concepts (Armstrong, 2009).

Students who have highly developed fine motor bodily intelligence should be provided with opportunities to manipulate objects and make things with their hands (Armstrong, 2009).

When people use manipulatives over time, they increase their abilities to discuss ideas, verbalize their thinking, take ownership of the content, and find answers to problems on their own (Sebesta & Martin, 2004).

Children who have a kinesthetic learning style must have hands-on learning (Sprenger, 2003).

No single theory adequately explains the relationship between the hands and activity in the brain since that relationship is so complex (Jensen, 2001).

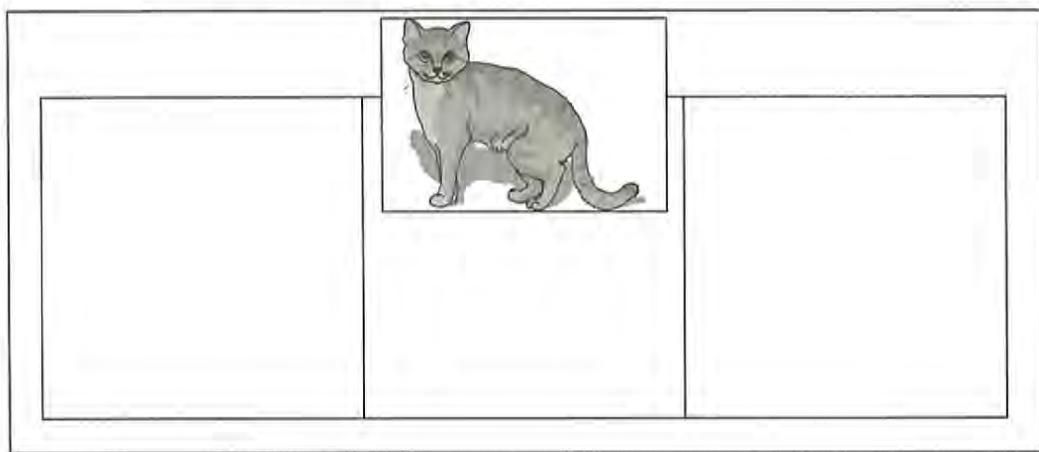


HOW: INSTRUCTIONAL ACTIVITIES

Category:	Phonological Awareness
Grade Level Range:	Kindergarten–Grade 2
Standard/Objective:	Isolate and pronounce phonemes in three-phoneme words



- Draw a word box, which is a rectangle that is divided into sections that correspond to the sounds heard in a key word. Place a picture above the divided sections of the rectangle and counters below them. As the student slowly pronounces each sound in the key word, the student places counters in the respective boxes. For example, give a student a word box divided into three sections. Above the word box is a picture of a cat. As the student pronounces the /c/ sound, the student puts a counter in the first box. The student pronounces the /a/ sound and places the second counter in the second divided section of the rectangle. As the student pronounces the /t/ sound, a counter is placed in the last section. An example follows.



Adaptation: The student can eventually replace the counters with magnetic letters representing the sounds.

Adaptation: The student can spell the word by writing the letters in the sections of the box as he or she hears the sounds in the word (Clay, 1993; Joseph, 1999).

Category:

Phonics and Word Recognition

Grade Level Range:

Kindergarten–Grade 2

Standard/Objective:

Read common high-frequency words by sight

- Have students work in pairs to manipulate magnetic letters so that they spell out designated high-frequency words. Magnetic letters will adhere to certain metal cookie sheets or to a metal file cabinet. Once a student has made a word, he or she can name the word for you or for his or her partner.

Adaptation: Have students spell out high-frequency words in other tactile and memorable ways. For example, they can write the words in shaving cream spread on their desks. The side benefit of this activity is it

results in clean desks. Students can also spell out words in a salt or sand tray, write the words with their fingers in the air, or write them on the back of another student.

Category: **Reading Informational Text**
Grade Level Range: **Grades 3–5**
Standard/Objective: **Compare and contrast information in two or more texts**

- Put students in cooperative groups of four to six. Give each group two informational textbooks. Have each group examine both books and complete a chart where they compare and contrast the books, paying special attention to the following: front and back covers; tables of contents; indexes; glossaries; headings; captions; and structure, including chronology, comparison, cause/effect, and problem/solution. As students brainstorm the similarities and differences, have one student in each group record the findings. Then each group exchanges books with another group and the process is repeated.

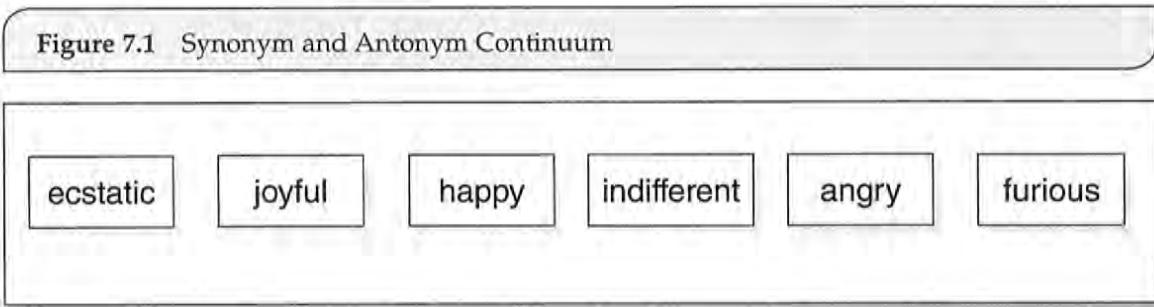
Category: **Language**
Grade Level Range: **Grades 3–5**
Standard/Objective: **Use punctuation appropriately in text**

- Put students in cooperative groups. Give each group a sentence containing a direct quote written on a sentence strip and four pieces of macaroni. Have students work together to use the macaroni as quotation marks and place them in the appropriate places in the sentence. Monitor the placement of the macaroni by walking around and observing. After a designated time, have groups exchange sentences and repeat the process.

Adaptation: Provide each group with a sentence requiring commas. Have students place the macaroni in the place where the commas are needed.

Category: **Vocabulary**
Grade Level Range: **Grades 3–5**
Standard/Objective: **Distinguish shades of meaning among words**

- Have students distinguish shades of meaning among words by forming a continuum. Put words that have similar meanings but differ in intensity on cards. Pass out word cards randomly to students. Have students with cards come to the front of the room and place themselves in the proper order according to the continuum. A synonym/antonym continuum follows.

Figure 7.1 Synonym and Antonym Continuum

ecstatic joyful happy indifferent angry furious

Discuss with students the shades of meaning between the words.

Category:**Language****Grade Level Range:****Grades 3–5****Standard/Objective:** Identify the meaning of a new word when an affix is added

- Compile a list of root words with prefixes and/or suffixes added for your reference. Put students in cooperative groups of four to six. Write several different sets of prefixes, suffixes, and root words from the list on separate cards and place them in a bag. For example, if the word on the list was *unloveable*, *un* would be on one card, *love* on another, and *able* on another. Give each cooperative group a different bag. Have students work with their cooperative group to find affixes or root words from the bag that would make real words when added. Have one person in the group write down the list of real words. Many different combinations may be possible. Once students have made as many words as possible, have them exchange bags with another group and the process is repeated. Help students determine which words would be actual words and which would not and the meanings of those words that are real.

Category:**Vocabulary****Grade Level Range:****Grades 3–12****Standard/Objective:** Categorize vocabulary words

- Have students work in groups of four to six. Give each group a freezer bag containing cards with vocabulary words that have been taught and need to be reviewed. Have students lay the cards out in groups according to student-selected categories. For example, students may want to group all the verbs together, or all the words that describe (adjectives), or all the words that represent a group of people, a place, or a thing (nouns). The categories are numerous and it will be interesting to see if students can use their higher-level thinking skills to create unique groupings. Use informal observation to check accuracy.

Category:**Vocabulary****Grade Level Range:****Grades 3–12****Standard/Objective:** Categorize words according to concepts

- Have students participate in a sort and report activity. The directions are as follows:
 - Pick a content-area topic that students are going to study and list words and phrases connected to the topic.
 - Have students work in pairs or in a cooperative group to cut apart the words and phrases so that they can be used as manipulatives.
 - Have students discuss the words and concepts and categorize and label them in groups.
 - Have students predict what the content-area topic will be about based on the categories made.
 - Have students read the chapter or passage and then revisit their categories based on what they learned while reading.
 - Have each group create a final sort and explain why the words are sorted in this way (Perez, 2008).

Category: Reading Literature/Informational Text

Grade Level Range: Grades 3–12

Standard/Objective: Comprehend text read silently

- As students read independently, have them place a small sticky note on any part of the story they do not understand. Use informal observation to ascertain where most of the confusion may be. Engage students in a class discussion of the parts that appear to be confusing to most of them.

Category: Writing

Grade Level Range: Grades 6–12

Standard/Objective: Recall content-area concepts

- Give your students strips of sticky dots and allow a few minutes for them to examine any personal notes taken following a lesson. Have students highlight the major points to be remembered in the notes by placing a sticky dot next to the important points to be recalled (Gregory & Herndon, 2010).

Category: Reading Literature/Informational Text

Grade Level Range: Grades 6–12

Standard/Objective: Locate text-specific examples to support conclusions

- Give students small sticky notes. As they locate specific details in a text that explain an author's point of view or make inferences, have students put the sticky notes on the specific references in the book so that they can be easily located during small-group or whole-class discussion. For example, have students locate evidence about a drake and a duck in the book *The Tale of the Mandarin Ducks* by Katherine Peterson to support how the author feels about the dangers of being vain.



REFLECTION AND APPLICATION

How will I incorporate manipulatives, experiments, labs, and models into instruction to engage students' brains?

Which manipulatives, experiments, labs, and models am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Metaphors, Analogies, and Similes



WHAT: DEFINING THE STRATEGY



One of the most powerful strategies on the list is that of *metaphors*, *analogies*, and *similes*. When I teach the concept of main idea to elementary students, I use the concept of simile. I tell them that a main idea is like a table and legs. The top of the table is the main idea. The legs are the supporting details. Just like the legs of a table hold it up, the details in a paragraph support or hold up the main idea. Therefore, when we read a story, we draw a table and write the main idea on the top of the table and one supporting detail on each of its legs. Even prior to writing a composition, we begin by drawing the table and legs and using them as a graphic organizer to discern what each paragraph will include. When students write the composition and they do not have enough support in their paragraph for the main idea, I simply tell them that their *table is leaning*. They know exactly what that means!

For middle and high school students, I often use the concept of a text message to help them understand the concept. I tell them that *a main idea is like a text message*. When you send a text, you must give the receiver a gist of the main idea of the message. To send more becomes too expensive. When I was teaching this concept in the Los Angeles County school system, I had one sixth grader comment that sending long text messages was not too expensive since they have the family plan. I had to laugh!

When you take any unfamiliar concept and connect it to another concept that the learner already knows and understands, you are using one of the most brain-friendly strategies available to you—metaphor, analogy, and simile.



WHY: THEORETICAL FRAMEWORK

Readers interpret figurative language such as similes and metaphors to assist them in visualizing the text and determining the intent and message of the author (McLaughlin & Overturf, 2013).

One type of phonics, analogy phonics, teaches students unfamiliar words by using analogies to familiar words. For example, if students can recognize the word *cat*, then they should be able to read other words in the *at* family, such as *bat* (Bender & Larkin, 2009).

Metaphors can be incorporated into all content areas to assist students in making sense of information and to help them focus on how items are similar at an abstract level (Harrison & De Jong, 2005).

Authors use figurative language to make their writing more interesting and to assist the reader in visualizing the text (McLaughlin & Overturf, 2013).

Asking students to represent similarities and differences by comparing, classifying, or creating metaphors and analogies increases their understanding and ability to use content (Dean et al., 2012).

When students are using analogies to compare similarities and differences between two different chunks of information, they are able to conceptualize content and interact with instruction (Willis, 2006).

Creating metaphors and analogies and comparing and classifying are four strategies that some researchers consider to be the core of all learning (Bransford, Brown, & Cocking, 2000; Holyoak, 2005).

When students can ask the question *is this like that?* they increase their existing mental representation or abstract schema for the information and stand a better chance of making connections between the new and the known (Dean et al., 2012).

Students with naturalist intelligence learn well through the strategy of metaphor since it points out the similarities and differences in concepts (Willis, 2007).

When reading in the content area, analogies help all students, but particularly those with learning disabilities, connect difficult or abstract ideas with ideas from their own backgrounds or experiences (McKenna & Robinson, 2002).

According to developmental psychologists, young children are masters of metaphor (Gardner, 1979).



HOW: INSTRUCTIONAL ACTIVITIES

Category:	Language
Grade Level Range:	Kindergarten–Grade 2
Standard/Objective:	Create personal similes

- Audrey Wood's *I'm as Quick as a Cricket* is a good book for teaching younger students the figurative language concept of similes. It can

be read aloud for the lesson and followed by a writing activity where students could use the pattern *I'm as _____ as a _____*. Help students brainstorm a list of ways that they are like something else. Write their responses on the board. Then, using the pattern, write a list of similes about students in the class.

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Identify vocabulary words

- When teaching new vocabulary words, compare the structure or meaning of the new word to words that the students already know. For example, when teaching the word *knout*, which means a *whip*, point out that the spelling of the word begins like other words that students already know, such as *know, knit, knee, knight*, or *knowledge*. By comparing new words to known words, students have a place in the brain to put the new words.

Category: Reading Comprehension
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Comprehend cross-curricular text

- As you teach, compare a difficult and unfamiliar concept that you are introducing to students to another concept that is easier to understand and more familiar to them. By connecting the unknown concept to one that is known, students have places in their brains to put the new information. For example, in a science class, students could be told that the telomeres found at the end of chromosomes that hold the chromosomes together are very much like the aglets at the end of shoestrings that keep the strings from unraveling.

Category: Reading Comprehension
Grade Level Range: Grades 3–5
Standard/Objective: Compare characters in two or more literary works

- Find literary selections where the same story is told from several multicultural perspectives. Have students discuss the similarities and differences in the plots of the respective stories. For example, compare the original story of Cinderella to the African folktale *Mufaro's Beautiful Daughters* by John Steptoe.

Category: Language
Grade Level Range: Grades 2–12
Standard/Objective: Identify nonliteral meanings of words

- Have students read stories and poems to identify the author's use of *nonliteral language* and the meaning this language suggests. For

example, in the poem “Fireflies” by Paul Fleischman, he writes the following:

fireflies
glimmering
glowing
insect calligraphers (Fleischman, 1988).

Have students discuss what Fleischman means when he refers to fireflies as *insect calligraphers*. You may have to discuss what the word *calligrapher* means to comprehend the metaphor.

Category: Reading Comprehension

Grade Level Range: Grades 4–5

Standard/Objective: Identify similar themes in stories

- Select a theme, such as *growing up* or *prejudice*, and have students compare and contrast several different stories, examining their approach to the particular theme. For example, have students explore the treatment of the theme of *growing up* in *Bud, Not Buddy* by Christopher Paul Curtis and *The Birchbark House* by Louise Erdich.

Category: Language

Grade Level Range: Grades 4–5

Standard/Objective: Identify nonliteral meanings of words

- Have students contrast similes or metaphors in more than one literary work. For example, have students contrast the meaning of the metaphor of a cat in Carl Sandburg’s poem “Fog” with the meaning of a simile in William Blake’s “The Echoing Green.”

Category: Reading Literature/Informational Text

Grade Level Range: Grades 6–12

Standard/Objective: Increase conceptual understanding

- To assist students in comprehending the relationship between two concepts in any content area, have them create analogies. Give them the pattern a : b :: c : d (a is to b as c is to d) to show how two sets of ideas or concepts are related. For example, Shakespeare : *Hamlet* :: Charles Dickens : *A Christmas Carol* or Eli Whitney : the cotton gin :: Thomas Edison : the lightbulb. Have students create their own analogies, leaving a blank for other students to fill in (Tate, 2010, p. 62).

Category: Language

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Identify meanings of words

- Have students engage in Glynn's TWA (Teaching with Analogies) approach by following the procedure outlined in the following:
- Introduce the concept to be learned.
 - Review a familiar but similar concept through the use of analogy.
 - Identify the features of both the new and known concepts.
 - Explain what both concepts have in common.
 - Explain how the new concept is different from the known. (At this point the strategy breaks down.)
 - Draw conclusions regarding the major ideas that students need to remember about the new concept (Glynn, 1996).

Category: Writing

Grade Level Range: Grades 3–12

Standard/Objective: Improve the quality of writing

- As students write, have them create metaphors that improve the quality of their writing and symbolize their understanding of the relationship between two concepts that appear totally unrelated. Have each student explain the relationship to a partner. For example, students could write about the following: *Life is a journey. The brain is a computer* (Tate, 2010, p. 63).

Category: Language

Grade Level Range: Grades 3–12

Standard/Objective: Identify metaphors, analogies, and similes in text

- After a discussion on the differences between the three concepts, have students pose as detectives. As they listen to or read stories, poems, or informational text, have them look for examples of metaphors, analogies, and similes. Keep a class list of examples and add to it throughout the school year. People who think metaphorically and can see relationships between two things that are unrelated on the surface are using very high levels of critical thinking.



REFLECTION AND APPLICATION

How will I incorporate metaphor, analogy, and simile into instruction to engage students' brains?

Which metaphor, analogy, and simile activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Mnemonic Devices



WHAT: DEFINING THE STRATEGY



If I want my math students to know the prefixes in the metric system, I teach them this sentence: *Kids have dropped over dead converting metrics*, which stands for *kilo*, *hecto*, *deka*, *ones unit*, *deci*, *centi*, and *milli*. If I want my science students to retain the four elements necessary for life, I teach them *HONC if you are alive!* *HONC* stands for *hydrogen*, *oxygen*, *nitrogen*, and *carbon*. If I want to know if my social studies students can tell me the main causes of World War II, I teach them the word *MAIN*, which stands for *militarism*, *alliances*, *imperialism*, and *nationalism*.

Mnemonic devices are derived from the Greek word *mnema*, which means memory, since their use is simply to help the brain recall disconnected items by connecting them together. Those connections can take the form of acronyms, in which the first letter in the phrase to be remembered is put into a word, such as *HOMES* for *Huron*, *Ontario*, *Michigan*, *Erie*, and *Superior*. They can also take the form of *acrostics* where the first letter in each word of a sentence actually stands for the concept to be recalled, such as *Every Good Boy Does Fine* for the notes on the lines of the treble clef in music. All content areas in school use mnemonic devices, and they are also found in real-world society. While these memory techniques do not necessarily promote higher-level thinking, they can help the brain remember information that may be necessary to recall while studying a broader concept.



WHY: THEORETICAL FRAMEWORK

When adolescents personally create their own mnemonic devices, those devices become more meaningful (Feinstein, 2009).

The original material on which the acrostic is based should be fairly familiar since students will have to use the trigger of the acrostic to recall the original information (Allen, 2008).

Mnemonic devices provide a means by which students can accurately retrieve the knowledge they will need to do the higher-order thinking so essential for today's learner (Materna, 2007).

When appropriately used, mnemonic strategies assist students in remembering and understanding information and can therefore involve higher-level thought processes (Marzano, 2007).

According to research, people who use mnemonics learn two to three times as much as those who rely on their normal learning habits (Markowitz & Jensen, 2007, p. 178).

Mnemonics are beneficial in that they link the unknown to the known, they put information in more than one memory pathway, they make what is being learned interesting, and they store cues that make finding the information easier (Sprenger, 2005).

Mnemonic devices assist people in recalling rules, patterns, or information that is unrelated and can, therefore, help average people greatly increase their ability to remember (Sousa, 2006).

Since the typical human brain can only retain an average of seven chunks of information in short-term memory at the same time, mnemonics assist the brain in increasing the amount of information in each chunk (Materna, 2007).

Mnemonics make an unusual association memorable; therefore, the less prior knowledge one has, the more helpful mnemonics can be (Sprenger, 2005).

Mnemonics are most useful when factual information is being recalled, but they don't actually add to the value of the information (Gordon & Berger, 2003).



HOW: INSTRUCTIONAL ACTIVITIES

Category: Reading Informational Text

Grade Level Range: Grades 3–12

Standard/Objective: Recall content-area concepts

- As you teach, create your own mnemonic devices (acronyms and acrostics) to help students remember major concepts across the curriculum that you need for them to recall. For example, a Los Angeles math teacher named Connie Moore created the acronym MATH to give students the confidence to believe they could do

geometry. You see, in Connie's class *MATH* stands for *Math Ain't That Hard!* By the way, Connie knows that *ain't* is not grammatical, but it makes the point!

Category: Language
Grade Level Range: Grades 3–5
Standard/Objective: Recall coordinating conjunctions

- To recall the coordinating conjunctions, have students remember the acrostic *FAN BOYS*, which stands for *for, and, nor, but, or, yet, and so*.

Category: Language
Grade Level Range: Grades 3–5
Standard/Objective: Recall parts of speech

- To recall the eight parts of speech, have students remember the name *IVAN CAPP*, which stands for *interjection, verb, adjective, noun, conjunction, adverb, pronoun, and preposition*.

Category: Writing
Grade Level Range: Grades 3–5
Standard/Objective: Recall types of narrative writing

- Have students remember the acronym *PIE* to recall the following four purposes for engaging students in narrative writing: *persuade, inform, instruct, and entertain*.

Category: Reading Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Recall cross-curricular concepts

- If students are old enough, it is actually better to let them create their own mnemonic devices than to give them one to remember. For example, in a math class I taught, to remember the order of operations one student changed the acrostic *Please excuse my dear Aunt Sally* to *Please end my day at school!* I bet he will never forget the order of operations!

Category: Reading Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Recall cross-curricular concepts

- Have students use the *Acrostics Topics* activity to recall important information regarding a specific topic. Divide students into groups of four to six. Give each group a large piece of chart paper with a topic written horizontally down the left-hand side. This topic now becomes an acronym that each group will use to list facts about the topic. For example, the following example can be used in a social studies classroom:

- C** Came to America for religious freedom
- O** On long trips in boats
- L** Loyalists agreed with the British King.
- O** Often people farmed and hunted.
- N** No taxation without representation
- I** If you wanted independence, you were a patriot.
- E** Even kids helped out with chores such as cooking or fishing.
- S** Some took the Native Americans' land.

Have groups share their respective finished products with the class. If groups cannot come up with a fact that begins with the designated acronym letter, have them use references such as their textbooks or the Internet. Watch for the creative responses of your students (Green & Casale-Giannola, 2011)!

Category: Reading Literature
Grade Level Range: Grades 3–12
Standard/Objective: Retell a story in sequential order

- Have students use the activity *Picture It!* to teach the structure of stories. This activity uses the mnemonic device *STORY* to help students visualize the parts of a story. The acronym is as follows:

S—Story
T—Talking characters
O—Oops, a problem!
R—Attempts to resolve the problem
Y—Yes, the problem is solved (Naughton, 2008, p. 65)

Have students listen to or read a story while visualizing the five elements of story grammar. The elements are *setting*, *characters*, *problem*, *attempts to solve the problem*, and *resolution*. The acronym *STORY* makes the elements memorable and can help students retell the story in appropriate sequence.

Category: Vocabulary
Grade Level Range: Grades 3–12
Standard/Objective: Identify word meaning

- Teach students the steps outlined in the *IT FITS* strategy to master the meanings of new words. The steps are outlined in the following mnemonic device:

Identify the vocabulary word.

Tell the word's definition.

Find a related word for the vocabulary word.

Imagine a picture of the vocabulary word.

Think about the definition as it relates to the vocabulary word.

Study what you imagined until you can easily recall the definition.

Category: Language

Grade Level Range: Grades 1–8

Standard/Objective: Use appropriate language structure when writing

- The English language arts department at Antioch Middle School in Nashville, Tennessee, came up with the original mnemonic device TOPIC to assist its students in writing compositions with appropriate language structure.

Text language not allowed.

Open all sentences with a capital letter.

Proper punctuation, please!

Indent when appropriate.

Complete sentences verbally and in writing.

Category: Writing

Grade Level Range: Grades 6–12

Standard/Objective: Write arguments to support claims

- The acronym DEFENDS provides students with a structure for finishing initial and final drafts of argumentative writing:

Decide on a specific position.

Examine own reasons for this position.

Form list of points explaining each reason.

Expose position in first sentence of written task.

Note each reason and associated points.

Drive home position in last sentence.

Search for and correct any errors (Collier, 2010, p. 207).

Category: Writing
Grade Level Range: Grades 6–12
Standard/Objective: Write a research or theme paper

- When assigning a research or theme paper in which students are doing informational or explanatory writing, teach students the mnemonic device *SCORE A* to assist them in getting organized.

S Select a topic.

C Create categories.

O Obtain resources.

R Read and take notes.

E Evenly organize the information

A Apply the process-writing steps: planning, drafting, and revising (Bender, 2008, p. 93).

REFLECTION AND APPLICATION



How will I incorporate mnemonic devices into instruction to engage students' brains?

Which mnemonic devices am I already incorporating into my reading and language arts curriculum?

What additional devices will I incorporate?

Strategy 10



Movement



WHAT: DEFINING THE STRATEGY

One of the best strategies for helping students of all ages who are having difficulty spelling is called *body spelling*. When students spell words while moving, there is an instant connection in the brain between the letters in the word and the movement of the body. So how does one body spell? Have all students stand up with you since you will serve as their visual. Initially you might also want to write the word on the board so they can see as well as hear how the word is spelled. Now let's spell the word *play*. When writing the lowercase letter *p*, the pencil falls below the line. Any time a letter falls below the line, students bend over and, while keeping their legs straight, attempt to touch their toes. The *l* in *play* extends above the line, therefore students say the letter *l* and extend their arms above their heads. The *a* in *play* sits on the line, so students say the letter *a* and extend their arms out to the sides. The *y* in *play* drops below the line (just like the *p*) so students say the letter *y* and bend over and attempt to touch their toes. Then they put it all together and spell the word *play*. Students in upper grades can spell words across the curriculum, such as *Mississippi* in social studies or *photosynthesis* in science. Challenge students by having them spell the words and do the motions faster and faster. The repetition is great for memory, and the activity is so much fun!

There is a scientific reason why body spelling works. Any learning you acquire while moving the body stands a better chance of being hard wired into the brain. This memory system is called *procedural* or *muscle* memory. It explains why football players, who sometimes have a difficult time remembering their curricular content long enough to pass their respective tests, have no problem recalling the plays they run on the field. You see, the plays are ending up in procedural memory, one of the strongest

memory systems in the brain. This system is the reason people never forget how to drive a car with a standard transmission, ride a bicycle, play the piano, or brush their teeth. Of all the twenty strategies, movement is probably my favorite because of its lasting effect on the brain and the fact that it is just so much fun! Read on and learn how to integrate movement into your English language arts curriculum!

WHY: THEORETICAL FRAMEWORK

Having students working quietly at their desks disadvantages the up to 40 percent of kinesthetic learners who have to be moving to learn (Hattie, 2009).

Understanding and recall are prohibited when students are forced to sit quietly for long periods of time (Allen & Currie, 2012).

Since physical exercise increases levels of serotonin, dopamine, and norepinephrine, children and adolescents are in the best state of mind for learning following exercise (Nevills, 2011a).

When the procedural memory system of the brain is able to actively process words, working memory space is freed up to concentrate on comprehension and analyzing text (Nevills, 2011a).

When students use hand gestures to help them cue their memories of comprehension strategies, they remember how, when, and why to use the strategies during reading (International Reading Association, 2010).

Of the four pathways in the brain to memory—semantic, episodic, procedural, and reflexive—procedural or muscle memory is the strongest, easiest to access, and longest lasting (Marzano, 2007).

When students move while learning, they activate frontal lobe regions where the skills of focusing, analyzing, and organizing occur (Willis, 2007).

In cases where a child has not mastered procedural tasks, explicit, direct, and sequential instruction in reading appears to yield positive results (Nevills, 2011a).

Movement increases access to the brain's memory banks since it links material to be learned with sensory input (Willis, 2007).

Students at Naperville High School significantly improved their test scores, reading ability, and grades when a twenty-five-minute physical education period was added prior to the start of the school day (Ratey, 2008).



HOW: INSTRUCTIONAL ACTIVITIES

Category: Phonemic Awareness

Grade Level Range: Kindergarten–Grade 2

Standard/Objective: Isolate the phonemes in words



- Have students listen to a given word as the teacher pronounces it. Have them clap once or stomp their feet once for each phoneme in the word as it is pronounced. Begin with words that have two phonemes and expand to words that have three or more.

Category: Phonemic Awareness
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Isolate and pronounce the initial, medial vowel, and final sounds in three-phoneme words

- Have students stand and touch the part of their body that corresponds to the initial, medial, and final phoneme in a three-phoneme word. For example, when pronouncing the word *sun*, students would touch their shoulders when saying the initial sound /s/, their waists when saying the medial vowel sound /u/, and their knees when saying the final consonant sound /n/.

Category: Phonics and Word Recognition
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Distinguish initial consonant and vowel sounds in words

- Write one consonant or one vowel on each of seven different index cards large enough for the entire class to see. Pass the index cards out randomly to seven different students in the room and have them come to the front of the room. For example, the letters *p, d, a, e, t, v, n* could be written on the cards. Tell students that these letters will be used to make words. Begin by modeling what you want students to do. Have the students with the *p, a, and n* step forward and form the word *pan*. Tell students that you are thinking of a word that names an item for cooking. Have the class guess the word. Then change one letter to form another word. For example, I want to change the word *pan* to make a word that names a large car. Ask them, *what letter would I change?* The student with the *p* would step back and the student with the *v* would come forward to make the word *van*. Keep substituting either initial or final consonant sounds or vowel sounds and having students name the new words. When students understand the process, have them take turns coming to the front of the room and making additional words. On another day, select different letters and begin the process again.

Category: Concepts of Print
Grade Level Range: Kindergarten–Grade 1
Standard/Objective: Recognize print features

- Teach students the print concepts of capitalization, punctuation, and spaces between words by putting the words of a sentence on separate pieces of construction paper, passing the pieces out randomly to

students in class, and having them get up and arrange themselves in the order of a meaningful sentence. Capitalize the first word and put a period on the card after the last word to teach those print concepts to the class. Space students appropriately to show that between each word in the sentence there should be space, which does not exist between the letters in words. Then repeat the procedure with a new sentence.

Category:

Language

Grade Level Range:

Kindergarten–Grade 1

Standard/Objective:

Use punctuation appropriately

- Place a sample story or informational text paragraph selected from grade-appropriate text on the document camera or SMART board. The paragraph should contain various examples of punctuation (e.g., periods, commas, exclamation points, question marks). Have students stand and participate in a *Punctuation Walk*. As you read the paragraph aloud, stop at each punctuation mark and give them an action which demonstrates that they know what the punctuation mark means. For example, at the period, they could stop and freeze in their tracks. For the comma, they could pause, and then continue walking. For the exclamation point, they could jump once in the air to exude excitement, and for the question mark, they could put out both hands with palms up and shrug their shoulders as if to say *I don't know*. Have students begin walking around the room as you read the paragraph aloud. Every time there is a punctuation mark, pause and have students demonstrate the appropriate action. Then repeat the procedure with a different paragraph until students automatically comprehend the purpose of the punctuation.

Category:

Language

Grade Level Range:

Grades 1–5

Standard/Objective:

Identify compound words

- Create a list of compound words, preferably ones that have been taken from stories or books previously read. The list should be long enough for each student to have half of a compound word, so if there are thirty students in the class, the list would contain fifteen compound words. Put one word of each compound word on a separate index card. Pass them out randomly to students. Each student gets one card. Have students stand. Put on some high-energy music for about two minutes, and have students walk around the room. Students should find a word that, if placed next to their word, would make a compound word. When students have found their match, they should stand together. Then when time is up, go to each pair of students and have them name their words. Ask the class whether the two words would make a compound word. Continue until all words have been named.

Adaptation: Other types of word relationships, such as antonyms, synonyms, homonyms, or homophones, could be substituted for compound words and the same directions followed.

Category: Reading Literature/Informational Text

Grade Level Range: Grades 3–5

Standard/Objective: Distinguish fact from opinion

- Explain the difference between fact and opinion, providing many examples of each. Once students appear to comprehend the difference, give each student a 3×5 index card and have him or her write an example of either a fact or an opinion on the card. Post the word *Fact* on one wall of the classroom and the word *Opinion* on the opposite wall. Collect all of the cards and read them aloud without revealing which student wrote the card. Have all students stand and go to the appropriate side of the room depending on whether the statement read is a fact or an opinion. Then discuss whether students have selected the correct side of the room and why.

Category: Language

Grade Level Range: Grades 3–5

Standard/Objective: Recognize and explain the meanings of proverbs

- Make a list of proverbs taken from the literature. If there are thirty students in the class, you will need a list of fifteen proverbs. Put half of a proverb on one index card, and the other half on another index card. Put on some fast-paced music and have students move around the room until they find the student holding the other half of their proverb. Have each pair read their complete proverb to the class and then discuss the actual meaning of each proverb. Some sample proverbs are as follows:

- *It is always darkest / before the dawn.*
- *A penny saved / is a penny earned.*
- *A bird in the hand / is worth two in the bush.*
- *If you lie down with dogs / you get up with fleas.*
- *A stitch in time / saves nine.*
- *A watched pot / never boils.*

Category: Language

Grade Level Range: Grades 3–8

Standard/Objective: Demonstrate knowledge of conventions of language

- Have students form a *Living Sentence*. Write a sentence containing the conventions of language that have been studied in class. Put

each word of the sentence on a different piece of paper or tagboard. Pass the words out randomly to students in the class. Have those students come to the front of the room and stand. The sentence should be all jumbled up. Have another student come to the front of the room and arrange the students holding the words in order so that the sentence makes sense. For younger students you may want to capitalize the first letter in the first word of the sentence and put a period on the card with the last word so that they have clues to the proper order of the sentence. Students sitting in the class can give feedback as to whether the student is placing the sentence in correct order. Once the sentence is correct, it then comes alive by following your commands as students answer questions about it.

For example, for the sentence "*Brain-compatible instruction addresses the learning styles of all students,*" ask students

- What is the simple subject of the sentence? (*instruction*) Subject please take one step forward.
- What is the complete subject of the sentence? (*brain-compatible instruction*) Complete subject please take one step forward.
- What is the verb of the sentence? (*addresses*) Verb make a 360-degree turn to your right.
- What is the complete predicate of the sentence? (*addresses the learning styles of all students*) Predicate please make a 360-degree turn to your right.
- Is there a prepositional phrase? (*yes, of all students*) Prepositional phrase, please pat your head.
- What is the object of the preposition? (*students*) Object of the preposition please stick out your tongue.

Continue asking questions regarding the sentence or create another sentence and repeat the procedure.

Category: Assessment

Grade Level Range: Grades 3–12

Standard/Objective: Respond to short-answer/essay questions

- When students have to respond to test questions that require an in-depth written answer, rather than putting the questions on a piece of paper, place numbered baskets around the room. Each basket contains several envelopes. In each envelope is a strip of paper containing one of the exam questions. Ask students to get up, go to a basket, retrieve an envelope, take it back to their desks, and respond to the question inside the envelope in writing. Questions can be answered out of order so that all students are busy simultaneously. A time limit, such as three minutes, may be set for answering each

question. When all students have been to each basket or when the total time limit is up, the exam is over and students will have experienced some mobility while testing.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Engage students during the lesson

- Figure out ways to integrate movement into your curriculum. For example, in English language arts, students could stand when a proper noun is named and remain seated when a common noun is named. This physical activity should be cross-curricular instruction. In social studies, you could turn your classroom into a map of the world and have students get up and stand in the part of the room that would indicate where a specific continent would be located. The more you think about it, the easier it is to incorporate movement into each standard.

Category: Cross-Curricular
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Engage students during the lesson

- Having students move at some point during a lesson is essential but often limited due to space constraints. Even having students stand periodically is a way to incorporate movement. For example, have students stand if they agree with the answer of a peer and remain seated if they disagree. Students could also stand when reading selected text or compositions aloud.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Identify sequence of events in text

- Have students learn to put events in literature or informational text in sequential order. Following the reading of a story, a procedure in a technical manual, or any other content that is in sequential order, write the story's most important events on separate index cards. Give out the cards randomly to students in class. Have students with cards get up and stand in a line in front of the class in random order. Have another student arrange the students with cards in sequential order according to the text by reading their cards and physically moving them around. Have each student then read their card aloud to the class and the class decides whether the students in the line are standing in sequential order. If the events are out of sequence, students should make suggestions for changing the order until it is correct.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–8
Standard/Objective: Identify cause–effect relationships

- Have students answer cause–effect questions by forming a cause–effect chain. Have students stand and form a circle. Join the circle and begin by making a statement such as *I had to stay in my room all day*. The next person in the circle to the left repeats the statement and gives an effect that follows, such as *I had to stay in my room all day, so I could not go outside and play*. The next person to the left continues the chain by stating *I could not go outside and play, so I began to cry*. The cause–effect chain continues. Following this activity, remind students that words such as *so* and *because* signal cause–effect relationships.

Adaptation: This chain could be used across the curriculum to show cause–effect relationships in any content area.



REFLECTION AND APPLICATION

*How will I incorporate movement into instruction
to engage students' brains?*

*Which movement activities am I already incorporating into my
reading and language arts curriculum?*

What additional activities will I incorporate?

Strategy 11

Music, Rhythm, Rhyme, and Rap



WHAT: DEFINING THE STRATEGY



A few years ago a teacher at one of my language arts workshops related the following story. A friend of hers, who was also a teacher, wanted her students to remember the difference between a common and a proper noun so she made up the following song called "We Know Nouns"—sung to the tune of "I Feel Good" by the late James Brown. In subsequent workshops, I have sung the verses and had my class sing the *dah dahs*. Here are the lyrics:

Verse One

We know nouns. (dah, dah, dah, dah, dah, dah, dah)

A person, place, or a thing (dah, dah, dah, dah, dah, dah, dah)

We know nouns. (dah, dah, dah, dah, dah, dah, dah)

A chair, a door, or a swing (dah, dah, dah, dah, dah, dah, dah)

We know nouns. (dah, dah)

Common nouns (dah, dah)

We know nouns. (dah, dah, dah, dah, dah)

I always get someone to volunteer to do the scream at the end of the verse.

Verse Two

We know nouns. (dah, dah, dah, dah, dah, dah, dah)

A person, place, or a thing (dah, dah, dah, dah, dah, dah, dah)

We know nouns. (dah, dah, dah, dah, dah, dah, dah)

A state, a country, or team (dah, dah, dah, dah, dah, dah, dah, dah)

We know nouns. (dah, dah)

Proper nouns (dah, dah)

We know nouns. (dah, dah, dah, dah, dah)

Music not only helps the brain remember; it can also create an appropriate mood for a language arts classroom. The right type of music can make the hyperactive student less hyperactive, the angry student less angry, and can even stimulate the brain of an autistic child. Use the beneficial effects of music to your advantage in any classroom.



WHY: THEORETICAL FRAMEWORK

When students are reading silently, background music should be at the low-arousal level, which means it should have little instrumentation, be highly repetitive, and be played at an extremely low volume (Allen & Wood, 2013).

When students take content and put it into a song, they will find it much easier to remember the content. If the lyrics are original, the content is even more memorable (Allen & Currie, 2012).

During the preschool and elementary years, children should sing songs and listen to nursery rhymes that help them become familiar with the sounds of language. This develops a pathway in the brain that will eventually help them decode words (Nevills, 2011b).

Training in music is closely aligned with improvements in reading attainment, reading fluency, and sequential learning (Sprenger, 2010).

Increased academic achievement in reading and math has been positively correlated with music lessons taken either in or out of school (Wiley-Blackwell, 2009).

The tempo (beats per minute) of the music affects the breathing and heartbeat of students — two things that determine their state, mood, or feelings (Jensen, 2009).

Putting facts to be learned to a melody or rhythmic chant enhances memory for reading comprehension since language and music/rhythm are processed in two different areas of the brain (Bender & Larkin, 2009).

Researchers at Northwestern University conducted a study that showed a positive correlation between playing a musical instrument and the brain stem's ability to discern speech sounds (Wong, Skoe, Russo, Dees, & Kraus, 2007).

Students with musical-rhythmic intelligence find instructional strategies that connect what they are learning to rhythmic songs, jingles, raps, or dances to be beneficial (Willis, 2007).

Since music and rhythm are processed in a different area of the brain from language, pairing facts to be learned to a musical melody or a rhythmic chant can enhance learning (Tate, 2005).

HOW: INSTRUCTIONAL ACTIVITIES



Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Create a positive state for learning

- Have calming music playing when students enter your language arts classroom. Music with approximate beats of fifty to seventy per minute can line up with the beats of your students' hearts and literally calm down their brains. Types of music included in this category would be classical, smooth jazz, slow Celtic or Irish music, New Age (such as Enya or Yanni), Native American music, or nature sounds. Students may not appreciate these types of music once you start playing them. Continue! The day will come when you forget to put on the music and your students will ask for it (Tate, 2012)!

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Create a positive state for learning

- High-energy music, or music with approximately 110 to 160 beats per minute, will get your students' brains motivated and energized! Types of music that fall into this category include rock and roll, rhythm and blues, salsa, positive rap, and fast-paced country. This music can be integrated into the lesson or played when students are transitioning from one activity to another (Tate, 2012).

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Create a positive state for learning

- Since the right type of music can make the hyperactive student less hyper or the angry student less angry, consult books that will help you select the appropriate types of music for the state you want to create. Jensen's *Top Tunes for Teaching* (2005) and Allen and Wood's *The Rock and Roll Classroom* (2013) are two of my favorite books for categorizing musical selections according to the states of the brain. In my book *Worksheets Don't Grow Dendrites* (2010), I also have lists of appropriate songs I have downloaded to my iPod.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Create a positive state for learning

- You may not want to play music when you want your students' attention directed at what you are teaching. It may be distracting to some students since the brain can only pay conscious attention to one thing at a time. However, music can be used during transition

times, when students are meeting in cooperative groups, or even made a part of the lesson. Be sure to keep the volume of the music low so that it does not distract from students' ability to concentrate on the task at hand.

Category:	Vocabulary
Grade Level Range:	Kindergarten–Grade 2
Standard/Objective:	Read high-frequency words in print

- Select familiar songs or rhymes that have high-frequency words in the lyrics, such as the ones underlined in the following song:

Twinkle, twinkle, little star

How I wonder what you are.

Put the lyrics up as a visual for the class to see. As students sing the song, point out the high-frequency words. Repeat often enough for students to begin to recognize some of the words out of the context of the song.

Category:	Phonics and Word Recognition
Grade Level Range:	Kindergarten–Grade 2
Standard/Objective:	Identify vowel sounds in words

- Create a song that will help students' brains remember the sounds associated with each vowel letter. For example, a song for the short and long vowels could be as follows:

(To the tune of "Are You Sleeping?" or "Frere Jacques")

Are you acting? Are you acting? Adam Ant, Adam Ant (short /a/)

Morning bells are ringing, Morning bells are ringing

Ding! Dong! Ding!

Are you eating? Are you eating? Eli Eel, Eli Eel (long /e/)

Morning bells are ringing, Morning bells are ringing

Ding! Dong! Ding!

Category:	Phonological Awareness; Phonics and Word Recognition
Grade Level Range:	Kindergarten–Grade 2
Standard/Objective:	Identify phonemes and syllables in words

- Have students use the strategy of rhythm to clap, stomp, or beat out on their desks the phonemes (individual speech sounds) or the syllables in a multisyllabic word. The rhythm and body movement help the brain remember how to segment words.

Category: Phonics and Word Recognition
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Identify consonant and vowel sounds in words

- Purchase prerecorded CDs of songs that teach or reinforce reading and language arts skills. For example, on his CD *Shake, Rattle, and Read*, Jack Hartmann leads children in singing songs that teach skills from ABCs to vowel sounds. Order Jack Hartmann's CDs at his Web site, www.JackHartmann.com. Another person who has produced numerous songs, rhymes, and chants for teaching reading and language arts skills is Dr. Jean Feldman. Order her CDs at www.drjean.org.

Category: Language
Grade Level Range: Grades 3–5
Standard/Objective: Identify prepositions

- Place the following lyrics on the board or document camera. Have students sing the lyrics if they know the tune.

Preposition Song

(to the tune of the "Battle Hymn of the Republic")
About, Above, After, Against, Along, Among, Around
At, Before, Below, Beside, Betwixt, Between, Beyond, By, Down
During, For, From, In, Into, Like, Near, Of, Off, On, Over, Through
To, Toward, Under, Until, With, Within, Without

Category: Language; Vocabulary
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Recall content-area concepts

- The Web site rocknlearn.com and the company Rhythm, Rhyme, and Results, which produces educational rap and pop music, are two other resources where additional songs can be found for helping students remember language arts concepts. Flocabulary, a Web site that offers educational hip-hop songs, can help with recalling definitions of the most frequently used SAT vocabulary words.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Recall content-area concepts

- Download the app Songify to your cell phone or iPad. You can create lyrics for any English or language arts concept that you wish to teach and dictate those lyrics into Songify. Songify will take the lyrics and put them to a beat that students can then sing and

remember. You can even decide which type of music you wish to use (e.g., rock, rap, or country). Older students can create their own lyrics and place them in Songify. This app will work for the content of any curricular area.

- Category:** Cross-Curricular Instruction
Grade Level Range: Grades 3–12
Standard/Objective: Recall content-area concepts
- Have students create original songs, rhymes, or raps to symbolize a concept that you have taught and you want them to remember. Students can work in groups or individually to create these jingles. When they do, they will be using one of the highest proficiencies: the cognitive transfer of thinking—namely, synthesis.

- Category:** Reading Informational Text
Grade Level Range: Grade 3–12
Standard/Objective: Appreciate the connection between music and history
- Locate and bring to class music representative of particular periods of history. Play the music for the class. Have students research and discuss events that may have influenced the music of each period. Have them read literary selections that characterize the designated period.

REFLECTION AND APPLICATION

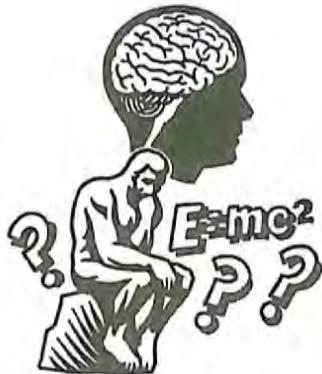
How will I incorporate *music, rhythm, rhyme, and rap* into instruction to engage students' brains?



Which music, rhythm, rhyme, and rap activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 12



Project-Based and Problem-Based Instruction



WHAT: DEFINING THE STRATEGY

Darlene Matthews, special education teacher at Millbrook High School in Raleigh, North Carolina, is very smart. When teaching social studies, she noticed that her high school students were very complacent about over-consumption, energy efficiency, and saving the planet, so she had the bright idea to engage them in the following weeklong project. She allowed a group of students to eat lunch in the classroom rather than the cafeteria for one week and collected the trash from their lunches for that entire week. She then showed the trash to the class as a visual and led them in a discussion regarding the impact on the environment if we multiplied that amount of trash from one meal per day times the number of citizens in a city, state, country, or continent. Just my city of Atlanta, Georgia, is home to more than 6 million residents alone, all eating an average of three meals a day for 365 days a year. Students could then discuss and write about whether the project helped in persuading them to give more consideration to saving the planet and, if so, what personal contributions they could make to that effort. Now you would be combining both language arts and social studies objectives in this one project.

Project-based instruction occurs when students are taught academic content while working cooperatively in groups for the purpose of finding the answer to a motivating and highly engaging question, problem, or task. Teachers should love this strategy since not only can multiple curricular

standards and objectives be addressed simultaneously; it will also simply make sense to the brains of students. Project- and problem-based instruction places brains closer to the reason for which they exist in the first place—to solve problems and complete projects authentically in the real world.

WHY: THEORETICAL FRAMEWORK

Project-based learning is a twenty-first-century approach that encourages high levels of student engagement while simultaneously differentiating instruction (Bender, 2012).

When students are fortunate enough to have teachers who create an environment in which they can solve problems and think deeply, those students always remember the lessons learned (Nevills, 2011a).

When students are solving problems, their brains try to see patterns and connections and to make some sense of the dissonance inherent in the problem (Fogarty, 2009).

Problem-solving to the brain is what aerobic exercise is to the body since solving challenging, novel, complex problems creates a flourish of neural activity. Synapses form, blood flow increases, and neurotransmitters become active (Jensen, 2008).

Projects can serve as ideal assessments since they constitute the packaging that joins newly learned knowledge with related knowledge that has been previously stored (Willis, 2006).

Projects enable students to comprehend how the multiple intelligences and various content areas can be relevant and integrated into their lives (Sprenger, 2010).

One of the reasons that students are attracted to problem-based instruction is that they are more likely to want to engage in studying real-world examples than participate in traditional instruction (Boss & Krauss, 2007).

When students work cooperatively on project-based units, they learn to rise to higher levels of learning and to acknowledge and show appreciation for other students' talents and skills (Willis, 2007).

Since the human brain appears to be designed to solve problems, the greater the need and resources and the sooner the deadline, the more likely the problem will have a solution (Jensen, 2005b).

When students are solving real-world problems posed by the teacher, material is consolidated into long-term memory (Willis, 2006).



HOW: INSTRUCTIONAL ACTIVITIES

Category:	Language Arts Instruction
Grade Level Range:	Kindergarten–Grade 5
Standard/Objective	Establish rituals for ELA instruction

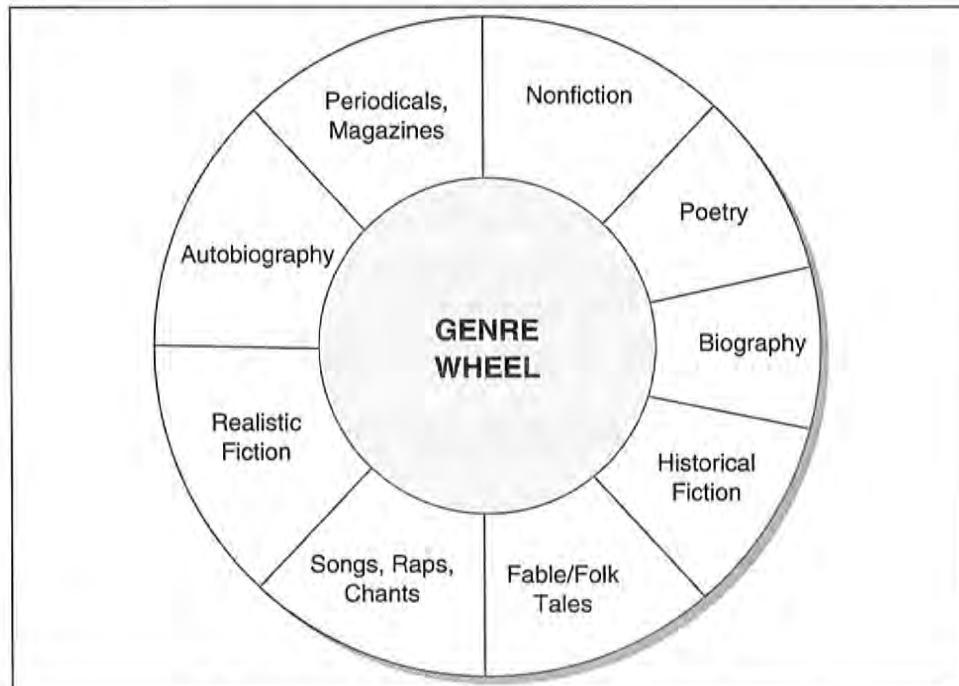


- Have students participate in meaningful literacy lessons through the *four-block* planning model. Divide a sixty- to ninety-minute block of time into the following four blocks: vocabulary development, guided reading, writing, and independent reading. Part of each block is devoted to a teacher-directed lesson. During the remainder of each block, students may participate in total-group activities, work with a partner, or individually participate in literacy activities designed to address specific objectives. For example, in the vocabulary development part of the block, students work in small groups to role play vocabulary words. In the guided reading part of the block, the teacher provides a lesson to a small group on identifying a story's main idea by comparing it to the top of a table and its supporting details to the legs of the table. During the writing part of the block, students write a composition in which every paragraph contains an explicitly stated main idea. Finally, in the independent part of the block, students read books that contain an obvious main idea, such as *The Important Book* by Margaret Wise Brown.

Category: Reading Literature
Grade Level Range: Grades 3–12
Standard/Objective: Read a wide variety of literature

- Have students experience a wide variety of literature by reading around the following genre wheel. Students may start at any place on the wheel but must read one or more selections from each genre. Have students find creative ways to report on at least five of the many books read. Provide students with a list of literary selections from which they may choose a variety of genres.

Figure 12.1 Genre Wheel



Category: **Reading Fluency; Text Comprehension**
Grade Level Range: **Kindergarten–Grade 5**
Standard/Objective: **Increase reading fluency and comprehension**

- Have students participate in a variety of opportunities to read independently. Such programs include *SSR (Self-Sustained Silent Reading)* and *DEAR (Drop Everything and Read)*. These programs enable students to spend quality time reading silently, just as lifelong readers do. Since *one learns to do by doing*, the more time students spend in authentic reading tasks, the better readers they become.

Category: **Reading Informational Text**
Grade Level Range: **Grades 6–12**
Standard/Objective: **Identify problem and solution**

- Have students select a timely topic that represents a societal problem, such as rising gas prices. Have students read several types of informational text and media related to the topic, such as newspapers, magazine articles, Internet articles, and so forth. Have them use the problem-solution text structure (found in Chapter 8) to brainstorm possible answers to the problem, such as carpooling, driving fuel-efficient vehicles, and so forth.

Category: **Reading Literature/Informational Text**
Grade Level Range: **Grades 3–8**
Standard/Objective: **Integrate literature into social studies**

- A social studies or history class is the perfect opportunity for students to read historical fiction books about characters who lived during a particular period of history or autobiographies or biographies about people who played major roles in history. By involving students in a project where they are integrating this literature into actual history units, the literature becomes more meaningful.

Category: **Cross-Curricular Instruction**
Grade Level Range: **Grades 6–8**
Standard/Objective: **Compare and contrast topics in a variety of sources**

- Have students work in cooperative groups of four to six and select a topic of interest. Students must research the topic using a variety of sources. Have them compare and contrast the treatment of the topic from at least four primary and secondary sources.

Category: **Reading Informational Text; Writing; Speaking**
Grade Level Range: **Grades 3–12**
Standard/Objective: **Present information in multiple ways**

- Engage students in a project in which they must present factual information from a content-area chapter or unit of study in the following three ways: in written form, which could include a well-developed

paper or an appropriate graphic organizer; in visual form, which could include a poster, drawing, or PowerPoint presentation; and in spoken form, during which students give an oral presentation to the class. Students should not simply stand and read their papers to the class; they should use their creativity and the strategies outlined in this book to prepare and deliver a memorable presentation that holds the attention of their classmates.

Category:**Writing****Grade Level Range:****Grades 6–12****Standard/Objective:****Research and build to present knowledge**

- Have students use advanced searches to gather information from a variety of print and digital sources that could aid them in solving a problem or completing an assigned project. Students should determine the usefulness of each source in light of the problem or project and the audience. Then they should integrate the information, without plagiarism, into the text so that the ideas flow and they are not overly dependent on any one source.

Category:**Reading Informational Text****Grade Level Range:****Grades 9–12****Standard/Objective:****Research to build and present knowledge**

- Have students conduct short and more involved research projects for the purpose of answering a question or solving a problem. The questions can be generated by the students themselves regarding a topic of interest. Teach students to synthesize a variety of primary and secondary sources on the topic and demonstrate their understanding of the question or problem.

Category:**Cross-Curricular Instruction****Grade Level Range:****Grades 11–12****Standard/Objective:****Integrate knowledge and ideas in science or technical text**

- During a science or technical experiment, have students form a hypothesis. Have them collect or gather data and use corroborating sources to verify the data. Have students then analyze the data to determine if it supports or disproves the hypothesis. Finally, have them draw conclusions and, if possible, use other sources of information to support those conclusions.

Category:**Cross-Curricular Instruction****Grade Level Range:****Kindergarten–Grade 12****Standard/Objective:****Solve math problems**

- Reading comprehension is an integral part of solving math word problems. Select a *problem of the day* in mathematics class.

Instead of the focus being placed on solving the problem to find the correct answer, focus instead on discussing the problem itself. If the problem is made relevant by connecting it to students' lives, the problem becomes more meaningful and easier to solve. Consider the following:

- Characteristics of the problem
- Context of the problem
- Vocabulary in the problem
- Tools (tangible or conceptual) needed to solve the problem
- Type of solution required by the problem
- Possible ways to solve the problem
- How the problem relates to other problems previously solved
(Tate, 2009)



REFLECTION AND APPLICATION

How will I incorporate project-based and problem-based instruction to engage students' brains?

Which project-based and problem-based activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Reciprocal Teaching and Cooperative Learning



WHAT: DEFINING THE STRATEGY



Very little is done in the real world of work by oneself. Most major projects are completed in teams. If you have seen an episode of *Law and Order*, you know that even detectives have partners. In fact, the ability to work with people of diverse cultures is one of the basic competencies required for students to be successful in the workplace following graduation from high school or college (SCANS, 1991). Then why do tasks in so many classrooms require students to work independently? The longer I teach students, the more convinced I am that, thanks to technology, particularly social media, we are losing our ability to talk with one another face-to-face. One businesswoman related to me that she no longer attends staff meetings in her company. Each executive sends his or her avatar to the meeting in Second Life. Sounds great! Not so fast! She also related that avatars argue and are so rude to one another that company morale is eroding. The company has decided to resume weekly face-to-face staff meetings.

Reciprocal teaching and cooperative learning are two engagement strategies that can not only increase academic achievement for all students, but can also enable students to practice the social skills so necessary for success in the workplace. As students read with a partner, explain the answer to a text-dependent question to their family, or jigsaw the chapter of a content-area textbook, they experience the advantages of the following statement: *some of us are more effective than others of us, but none of us is more effective than all of us* (Johnson & Johnson, 1994).



WHY: THEORETICAL FRAMEWORK

"Competition is learned naturally, while cooperation must be taught" (Allen & Currie, 2012, p. 45).

The capability to work with other people is one of the most essential and marketable skills that a teacher can give to students (Tileston, 2011).

There are many times when a student can explain an idea to a fellow student who may be struggling with the idea better than an adult can (Allen & Currie, 2012).

Not allowing students to talk decreases the likelihood that any new material will be processed and embedded into long-term memory (Hattie, 2009).

When students can express their opinions and toss a variety of ideas around, they can increase the amount of paper manipulated and stored into the filing cabinet of the brain, slowly forming a more complex outlook on the topic (Allen & Currie, 2012, p. 41).

Since it is important that students have face-to-face contact with peers, flexible grouping and teams can play a crucial role in educating the total child (Sprenger, 2010).

Paired discussions, partner-based activities, paired timed tests, and so forth can be incorporated into lessons following initial teaching to assist students in mastering concepts (Marzano & Pickering, 2011).

When all students are placed in heterogeneous cooperative groups, they experience control over their own learning, and struggling readers have the added benefit of working with other student role models who excel (McEwan, 2007).

Targeted questioning and reciprocal teaching are both effective for increasing students' comprehension and development of the English language (Calderon, 2007).

Without the cooperative learning structures of individual accountability and positive interdependence, group learning can actually inhibit the learning process of students (Guerin, 1999).



HOW: INSTRUCTIONAL ACTIVITIES

Category:	Cross-Curricular Instruction
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Increase comprehension of content

- If your students are not used to working in groups, the best way for you to implement the strategy of cooperative learning is with close partners working together. Give each partner a name. For example, in a math class they can be X and Y variables. In science, they can be *liquids* and *solids* or they can just generically be called *ducks* and *geese*. By giving each student a name, it tells him or her when to be involved in the lesson, and students don't have to sit there and

argue over who will do the assigned tasks. You could have all the *ducks* stand and read a selected passage from the text or have a *goose* reteach a *duck* a concept you just taught in class. If students need to work in trios, they can be *lions*, *tigers*, and *bears*, *oh my!*

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Identify high-frequency words in print

- Put students in pairs. Have them read and reread books with repetitive texts and high-frequency words aloud to their partner. Students can either take turns reading a page at a time or they can read totally different books aloud as their partner follows along. Some examples of repetitive books would be *Brown Bear, Brown Bear, What Do You See?*; *Do You Want to Be My Friend?*; and *If You Give a Mouse a Cookie*.

Category: Fluency
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Increase reading fluency

- Engage students in the *neurological impress method*, a technique developed by R. G. Heckelman in 1969 but still applicable today. The procedure is as follows: as in paired reading, have two students work together, with the better reader acting as the tutor. The text should be written on the instructional level of the student who is not serving as the tutor. The tutor and the student read the same text, with the tutor reading slightly faster than the student. The tutor's voice should be directed into the student's left ear to imprint a match from sound to symbol. Because of the intense nature of this technique, the initial sessions should last only a few minutes, with the time slowly extended to sessions of no more than fifteen minutes.

Category: Fluency
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Increase reading fluency

- Have students read and reread aloud passages from a familiar book to a parent, guardian, or other adult until the student reads the passages with ease. The adult should also serve as a model of fluent oral reading, helping the student with unfamiliar words and providing feedback related to the student's reading performance.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Comprehend text previously read

- Have students take turns reading selected passages of text aloud to a partner. The student doing the reading should explain in his or

her own words what has just been read. When one student does not comprehend a part of the text, the partner should help to explain those passages in question.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 1–5
Standard/Objective: Increase reading fluency

- One way to have students navigate through narrative or informational text is to have them engage in *partner reading*. Students could take turns participating in the 3 Ps by reading a *page* or *paragraph* of the text to their partner or they could *pass* their turn until the selection is complete. ESL students may elect to pass initially until they have more command of the language. Students could take turns quizzing their partners regarding what was just read (Tate, 2010).

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Increase understanding of content

- Have students work in cooperative groups, or *families*, of four to six students. They may be seated in groups already or taught to pick up their desks and arrange them in groups for a cooperative learning activity and to put them back once the activity is over. It is recommended that the groups be of mixed ability levels or capitalize on the various multiple intelligences or talents of students.

Give each group the same task. Have them discuss the thought processes involved in completing the task and reach consensus as to the group's response. Once the answer is agreed upon, have each person in the group sign the paper on which the response is written, verifying that they agree with the answer, and, if called upon randomly, could explain the response to the entire class. This individual accountability helps to ensure that one student does not do all the work while other students simply watch them (Tate, 2010).

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Function effectively in a cooperative group

- Students do not always come equipped with the social skills necessary for effectively functioning in a cooperative group. It may be necessary to teach these. It is time well spent since these same skills will be essential for effectively performing in the workplace. Construct a T-chart similar to the one below in which each social skill is considered from two perspectives: (1) what it looks like and (2) what it sounds like. Social skills could include the following: encouraging one another, critiquing another student's idea and not the student, or paying undivided attention.

Paying Attention

Looks Like	Sounds Like
Eye contact	One person speaking
Leaning forward	Summarizing what is being said
One person speaking	Asking appropriate questions
Not distracted	Paraphrasing what is being said

Category: Cross-Curricular Instruction

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Function effectively in a cooperative group

- Another way to help ensure positive interdependence is to assign group roles for students to fulfill during the cooperative learning activity. One or more of the following roles can be assigned:
 - **Facilitator**—Ensures that the group stays on task and completes the assigned activity
 - **Scribe**—Writes down anything the group has to submit in writing
 - **Timekeeper**—Tells the group when half the time is over and when there is one minute remaining
 - **Reporter**—Gives an oral presentation to the class regarding the results of the group’s work
 - **Materials manager**—Collects any materials or other resources that the group needs to complete the task
 - **Process observer**—Collects data and provides feedback to the group on how well they practiced their social skills during the cooperative learning activity (Tate, 2010).

Category: Cross-Curricular Instruction

Grade Level Range: Grades 3–12

Standard/Objective: Increase understanding of content

- Put students in cooperative groups. Have them participate in an activity called *jigsaw*. Jigsaw’s name is derived from the fact that each student is assigned only one piece of a puzzle and it takes all students to make the puzzle whole. For example, each student in the cooperative group can be individually accountable for teaching one section of informational text. The procedure is as follows:
 - Give students time to read and prepare to teach their part of the text either in class or for homework.
 - Have them confer in class with students in other groups who have the same part they do for the purpose of comprehending the content and getting and giving ideas for teaching it.
 - Then have students teach their part to their original cooperative group. All students start and stop teaching at the same time, say,

for a span of two minutes. If they finish before time is called, each student can quiz group members for understanding.

- Conduct a whole-class review that outlines the pertinent points that should have been made during each student's instruction. In this way, the entire class gets to hear the content at least twice—once from a group member and once from you (Tate, 2010).

Category: **Reading Literature**
Grade Level Range: **Grades 9–12**
Standard/Objective: **Compare the treatment of a theme across genres**

- Put students in groups of four to six. Assign each group a common theme or character trait (such as honesty, dedication, or integrity). Have each group research and read selected works across genres and historical periods that deal with the assigned trait. Have each group make a presentation to the class outlining the similarities and differences in the treatment of the theme.

Category: **Reading Informational Text**
Grade Level Range: **Grades 9–12**
Standard/Objective: **Summarize content-area text**

- Have each student use the following checklist to evaluate his or her partner's summary of informational text:

- _____ Does the summary tell the main idea of the text?
- _____ Is the main idea the first thing stated?
- _____ Does the summary include all of the most important ideas?
- _____ Does the summary include only the most important ideas?
- _____ Is the summary brief and concise?
- _____ Is the summary clear to the reader? (Gunning, 1996, p. 213)

For example, have students determine the main idea of Colin A. Ronan's book *Telescopes* and create a summary of the different types of telescopes by asking and answering the preceding questions.

REFLECTION AND APPLICATION

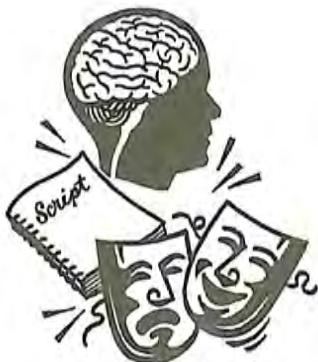


How will I incorporate reciprocal teaching and cooperative learning into instruction to engage students' brains?

Which reciprocal teaching and cooperative learning activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 14



Role Plays, Drama, Pantomimes, and Charades



WHAT: DEFINING THE STRATEGY

I was conducting a model lesson in Texas for a group of teachers during which I had to teach the four causes of World War II to a group of high school students. I could have lectured them through the four causes, but not only would that have been boring; I would have been the one doing the most work. The person doing the most work is growing the most dendrites, or brain cells! I wanted that to be the students. Therefore, I put each cause of World War II on a separate index card and placed it in a bag. I placed the students in cooperative groups of four to six and had each group select one cause of World War II from the bag. Several groups had the same cause. The majority of the period was spent using their textbook, the Internet, and any other available resource to design a role play that would show the class the cause of the war that the group had selected.

We had so much fun while I was facilitating each group and helping the students decide how best to plan and execute their respective role plays. The last part of the period was spent demonstrating their role plays for the class. What actors and actresses these students were! By the time I left, every student in the class could name the four causes of the war and guess who had done all of the work? The students! That's exactly what I wanted!

This is also what you should want! After all, as their teacher, you should be more of a *guide by their side* than you are a sage on the stage. Role play is one of my favorite strategies since it not only accesses one of the strongest memory systems in your students' brains—procedural or muscle memory—but it is also a great deal of fun!

WHY: THEORETICAL FRAMEWORK

Drama or role play totally engages students in the learning process since it forces them to read the material, think about it, make meaning, and create connections (Swartz, 2008).

Drama, theater groups, and role plays are options for helping students manage their own emotional states and those of other students (Jensen, 2010).

Drama provides a very memorable yet fun way for students to show what they know since they can *ham it up in front of their peers* (Allen & Currie, 2012, p. 62).

Role plays assist in making abstract concepts more concrete and will benefit English language learners even if they lack the language skills necessary to participate (Sousa, 2011).

Dramatizing or role-playing content by asking students to enact texts or problems not only addresses the bodily-kinesthetic intelligence; it also brings out the actor in each student (Armstrong, 2009).

When students dramatize, they activate regions in the brain where previous related memories are housed (Willis, 2007).

Strategies such as role play and drama can help students comprehend and appreciate a story (Kelin, 2007).

The conversations and other human interactions that take place during a simulation help students develop a deeper level of understanding of the content being taught (Armstrong, 2009).

Learners with bodily-kinesthetic intelligence constitute at least 35 percent of the total student population (Gardner, 1999).

Improvisational drama helps students apply knowledge, make generalizations, and transfer information from one situation to another (Stanfa & O'Shea, 1998).



HOW: INSTRUCTIONAL ACTIVITIES

Category:	Cross-Curricular Instruction
Grade Level Range:	Grades 6–12
Standard/Objective:	Increase conceptual comprehension



- When engaging students in a role play or simulation, the steps delineated below should be followed:
- Define what a role play or simulation is and present the topic or concept to be role played.
 - Provide students with the procedures, rules, roles, scoring, and goals for the role play.
 - Monitor, facilitate, and provide feedback as students work through the role play.
 - Debrief the activity and lead students in a discussion on how to apply what was learned during the role play (Gregory & Herndon, 2010).

Category: Fluency

Grade Level Range: Kindergarten–Grade 2

Standard/Objective: Read with fluency and expression

- Select books that are already written in script format so that it is easy for students to participate in the repeated readings inherent in Reader's Theater. Consult the list of script books and the list of easy, moderately challenging, and challenging books that can be recast as scripts found on page 164 of the book *From Phonics to Fluency* by Rasinski and Padak (2001).

Category: Vocabulary

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Identify meanings of unknown words

- Review content-area vocabulary words by playing charades. Write the words to be reviewed on 3×5 index cards. Divide the class into two teams. Have one student from each team come to the front of the room, select a card at random, and act out or role play the definition of the word for their team. The student cannot speak but must use gestures to get his or her teammates to name the word in a specified amount of time. The team that has identified the most words when the total time is up is the winner. Students will enjoy the competition of this game, but, more importantly, they will remember the definitions.

Adaptation: A concept called *total physical response* (TPR) is effective for teaching vocabulary concepts to English as a second language (ESL) students. This technique involves the use of body movement by having students act out key concepts that they are trying to learn in English. The use of the body not only provides a visual, but also places the information in procedural or muscle memory, one of the strongest memory systems in the brain.

Category: Reading Literature

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Increase comprehension of story plot

- Have students engage in a Reader's Theater by preparing, rehearsing, and performing a play created from a book with dialogue. Reader's Theater is performed by a narrator who provides the setting of the story and additional background information and major characters from the story who speak the dialogue. I once taught a middle school class in which we did an abbreviated Reader's Theater of the novel *The Outsiders*.

Category: **Reading Informational Text**

Grade Level Range: **Grades 6–8**

Standard/Objective: **Analyze an author's point of view**

- Have students read informational text in which an author develops the points of view of several different characters in the text. To make the points of view more memorable, have students select one of the characters and develop a role play that delineates the author's point of view regarding that character. For example, have students work in pairs. One student in the pair becomes John Adams and designs a role play that shows his point of view about Thomas Jefferson in Adams' *Letter on Thomas Jefferson*. The other student becomes Thomas Jefferson and designs a role play which demonstrates Jefferson's own point of view.

Category: **Reading Literature/Informational Text; Speaking**

Grade Level Range: **Grades 6–12**

Standard/Objective: **Comprehend character/historical figures traits and motives**

- Have students put a storybook character, such as Little Red Riding Hood, or a historical figure, such as Adolf Hitler, on trial. For example, John Wilkes Booth could be put on trial for the assassination of President Abraham Lincoln. Actual story or historical events constitute the evidence. Appoint a prosecuting and a defense attorney. You can even appoint a bailiff. Have students comprise the jury. You can be the judge. Following the role play of the trial, the jury decides the fate of the person on trial based on the evidence presented and the presentation skills of the attorneys.

Category: **Cross-Curricular Instruction; Speaking**

Grade Level Range: **Grades 6–12**

Standard/Objective: **Cite evidence to support point of view**

- Place students in cooperative groups of four to six students. Give each group a controversial issue to debate, such as *Is technology controlling us or are we controlling it?* Half of the group should prepare to argue one point of view while the other group argues the opposing point of view. Have the groups stage a debate in front of the class delineating their points of view. Once the debate is

complete, have the remainder of the class decide which side was more convincing. Students can even develop a rubric ahead of time defining the criteria, a rating scale, and the indicators for judging each debate.

Category:	Reading Informational Text; Speaking
Grade Level Range:	Grades 9–12
Standard/Objective:	Analyze different authors' accounts of the same event

- Have students work in pairs and trios and take on the persona of two or three different authors who wrote about the same event, such as Dee Brown's and Evan Connell's treatments of the Battle of Little Bighorn. Have each student in the group determine which details were included and emphasized in their author's written account of the event and make a presentation to the class where, as the author, the student talks from a first person perspective about the specific event. Once the presentations of one group are completed, lead the class in a discussion comparing the similarities and differences in the authors' points of view. Then proceed to another pair or trio of students who are addressing a different event.

Category:	Reading Informational Text; Speaking
Grade Level Range:	Grades 6–12
Standard/Objective:	Comprehend the steps in a technical manual

- Have students work in cooperative groups and read the steps for assembling a product or following a process in a technical manual. Have them then role play the procedures for the class to visually demonstrate their understanding. If the product can actually be assembled, it should be done. If not, then students should simulate the process during the role play.

Category:	Cross-Curricular Instruction
Grade Level Range:	Grades 3–12
Standard/Objective:	Review content previously taught

- Have students take turns role-playing that they are you, the teacher. Have them volunteer to come to the front of the room and pretend, as the teacher, to reteach the lesson previously taught. Students could retell a story or re-explain a scientific concept or the steps in a multistep word problem. Give each student a maximum of three minutes. This activity will give you an idea of which concepts have been understood by your students and which will need to be taught again. Remember that the brain learns what it teaches and that students need to hear something a minimum of three times before the information actually begins to stick. As a side benefit, you will get to see your teaching through the eyes of your students (Tate, 2010).

REFLECTION AND APPLICATION

How will I incorporate *role plays, drama, pantomimes, and charades* into instruction to engage students' brains?



Which role plays, drama, pantomimes, and charades am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 15



Storytelling



WHAT: DEFINING THE STRATEGY

Before history was passed down from generation to generation in writing, how was it transmitted? If you said *storytelling* you would be absolutely correct. Grandmothers, grandfathers, mothers, and fathers told stories to their grandchildren and children to pass down the history, values, and mores of the culture. Why are stories so effective? It appears that the brain comes primed for remembering a story. When a story is told, everyone listens. A story has a beginning, a middle, and an end. It is connected together and can be followed more easily than disconnected text.

Many years ago, as a reading specialist, I did not know the power of storytelling and literature for teaching skills and strategies. Perhaps you recall the series of books published by Barnell Loft from which you could teach any comprehension skill simply by having students read very short paragraphs and find the main idea, sequence the events, or identify the cause and effect. I used to wonder why students could so easily get the answers correct within the short paragraphs in those books but could not transfer the same skills to the longer context of a story. I now know that if I had started with the enjoyable context of the story, students could revisit that same literature on another day when I could teach any of the following skills or strategies: locate a designated high-frequency word, design a graphic organizer that depicts the main idea and details, or select a complex sentence contained within the context. Stories not only make content more memorable; they just simply make so much sense to the brain.

WHY: THEORETICAL FRAMEWORK



Storytelling helps students' *digital brains* become more attentive and is an effective way to enhance emotional connections to the content and conceptual understanding (Sprenger, 2010).

Storytelling is a vital teaching tool that has been used for thousands of years by cultures throughout the world (Armstrong, 2009).

Students can be engaged in purposeful learning when the story being told relates to both them and the content (Sprenger, 2010).

Stories, which address the verbal-linguistic multiple intelligence, weave cross-curricular instructional goals, ideas, and concepts into a pattern told directly to students (Armstrong, 2009).

A good story can arouse the emotions and hold the attention of the listeners as well as the storyteller (Sylwester, 2010).

Middle- and upper-grade students with learning disabilities increase their comprehension of subject matter when those students are asked to retell the information from a reading passage, story, or lecture (Bender, 2008).

Children love to hear stories, and their favorites involve the challenges faced by protagonists who achieve goals by overcoming adversity (Willis, 2007).

When students form small groups and create original stories, they take ownership of those stories and are able to remember the information on which those stories are based (Allen, 2008).

Information can be tied into our memories with the scripts that stories provide (Markowitz & Jensen, 2007).

Storytelling can serve many purposes, including providing a memory device and increasing literacy and other critical skills (Brand, 2006).

HOW: INSTRUCTIONAL ACTIVITIES



Category:

Fluency

Grade Level Range:

Kindergarten–Grade 12

Standard/Objective:

Read with accuracy and fluency to support comprehension

- Be certain that whenever you are reading aloud to the class, you serve as the best model of oral reading fluency. Read with the appropriate phrasing, expression, fluency, and intonation.

Category:

Vocabulary

Grade Level Range:

Kindergarten–Grade 2

Standard/Objective:

Identify meanings of vocabulary words

- Have students dictate to you a language experience story that incorporates vocabulary words to be learned and remembered. The stories must contain all of the designated words in the appropriate context. Encourage students to create the wildest, weirdest, or funniest story they can. The wilder, the more memorable!

Category: Reading Literature
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Describe the relationship between story events and picture cues

- Have students describe the relationship between major events in a story and the scenes depicted by the illustrator. Provide help as needed by asking leading questions.

Category: Reading Literature
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Retell story events

- Read a story aloud to the class. The first time it is read, have students simply enjoy the literature. Then reread parts of the story for an express purpose. For example, after listening to *The Wonderful Wizard of Oz* by Frank Baum or *Little House in the Big Woods* by Laura Ingalls Wilder, have students describe the characters, the setting, or any of the major events. Some students may need prompting or support from you by rephrasing the question, providing additional information, or giving a clue that leads them to the correct answer.

Category: Fluency
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Read with accuracy and fluency to support comprehension

- To assist students in reading sight words (e.g., *the, of, to, want, is, do, does*) have them read predictable language texts in which these high-frequency words are consistently repeated. These books can be shared in guided reading groups and then placed in learning centers and read independently or with a partner. A list of some appropriate titles are as follows:

- *Goodnight Moon* by Margaret Wise Brown
- *The Important Book* by Margaret Wise Brown
- *The Very Hungry Caterpillar* by Eric Carle
- *Hattie and the Fox* by Mem Fox
- *Rosie's Walk* by Pat Hutchins
- *The Doorbell Rang* by Pat Hutchins

A more complete list of predictable books can be found on pages 17–18 of *From Phonics to Fluency* by Rasinski and Padak (2001).

Category: Phonics and Word Recognition
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Identify initial consonant sounds

- Read the story *A, My Name is Alice* by Jane Bayer (1984) for enjoyment. The story is catchy and the illustrations even better! In the book, animals from around the world are married to other animals that make them a very unique pair. The uncommon animal names will also broaden the vocabulary of students. Following several readings, have students pay particular attention to the beginning sounds in the repetitive text on each page. For example, the consonant /a/ page pattern is as follows:

A, my name is Alice, and my husband's name is Alex.

We come from Alaska and we sell ants.

Alice is an ape. Alex is an anteater (Bayer 1984).

Have students identify the initial consonant sound they hear in each of the verses in the book. Then work with them to write other verses to the rhyme using the names of students in the class. When students go outside they can take turns jumping rope to the verses.

Category: Phonological Awareness
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Demonstrate understanding of spoken words, syllables, and sounds

- Have students read and reread texts that develop phonemic awareness and fluency because they either contain rhyming words or words that play with sounds. Sample texts would include the following:
- *A, My Name is Alice* by Jane Bayer
 - *I Can't, Said the Ant* by Polly Cameron
 - *The Cat in the Hat and Green Eggs and Ham* by Dr. Seuss
 - *Read Aloud Rhymes for the Very Young* by Jack Prelutsky
 - *Best Mother Goose Ever* by Richard Scarry

An extensive list of books that develop phonemic awareness can be found on pages 36–37 of *From Phonics to Fluency* by Rasinski and Padak (2001).

Category: Fluency
Grade Level Range: Kindergarten–Grade 2
Standard/Objective: Read with accuracy and fluency to support comprehension

- Engage a student in *echo reading* by reading aloud one sentence or phrase at a time from literature or an informational textbook to the student. Have the student echo back the same sentence or phrase while following the words with a finger so that you can be sure that the student is seeing the correct word to sound and not just imitating you. As students become more proficient, have them take the lead during echo reading. Eventually have students work in pairs to echo read, which frees you to conduct guided reading groups or perform tasks with other students.

Category: Speaking and Listening
Grade Level Range: Kindergarten–Grade 5
Standard/Objective: Retell a story with accuracy

- Following a story either read independently or shared in class, have students enhance their public speaking skills by preparing a retelling of the story. Students retell the story to a partner, cooperative group, or the entire class and should do it in a convincing and entertaining way. The retold story should be spoken in complete grammatical sentences that include appropriate facts and relevant details from the original story.

Category: Reading Literature/Informational Text
Grade Level Range: Kindergarten–Grade 5
Standard/Objective: Experience skills and strategies through literature

- There are children's books in which comprehension and language arts skills are evident in the plot of the story. While it is crucial that students apply these skills in both narrative and informational text, it may be more motivational to introduce the skill within the context of an enjoyable children's story. Following is a sample list of children's books which can be used for this purpose.

Title	Author	Concepts
<i>The Important Book</i>	Margaret Wise Brown	Main idea and details
<i>The Day Jimmy's Boa Ate the Wash</i>	Trinka Hayes Noble	Cause and effect
<i>Thomas' Snowsuit</i>	Robert Munsch	Sequence of events
<i>The Pain and the Great One</i>	Judy Blume	Point of view
<i>Encounter</i>	Jane Yolen	Point of view
<i>My Brother's Flying Machine</i>	Jane Yolen	Point of view

Title	Author	Concepts
<i>The King Who Rained</i>	Fred Gwynne	Figurative language
<i>Amelia Bedelia series</i>	Judy Blume	Figurative language
<i>The Parts of Speech series</i>	Brian Cleary	Parts of speech
<i>The Parts of Speech series</i>	Ruth Heller	Parts of speech
<i>The Doorbell Rang</i>	Pat Hutchins	Concept of division
<i>Counting on Frank</i>	Rod Clement	Real-world math
<i>Math Curse</i>	John Scieska	Real-world math
<i>Science Alphabet Books series</i>	Jerry Pallotta	Science concepts

SOURCE: Tate (2011a, p. 118.)

Category: Reading Literature/Informational Text
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Recall major cross-curricular concepts

- Create stories in all content areas and at all grade levels to teach important concepts. As you deliver instruction, incorporate your original stories. Since stories have beginnings, middles, and endings and are connected together, they are easier for the brain to recall. When students remember the story, they will remember the concept. The following sample story will teach students the seven continents with ease.

There once was a man named North. His last name was America. He fell in love with a beautiful woman named South. They got married and she took his name so she became South America. They honeymooned in Europe. This couple was blessed to have four daughters whose names all began with the letter A. Their names were Africa, Antarctica, Asia, and Australia (Tate, 2012, p. 119).

By the time you tell this story several times and students retell it to their classmates several times, students will remember the concept.

Category: Reading Literature/Informational Text
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Comprehend cross-curricular skills and strategies through storytelling

- Stories, poems, and informational textbooks should be integrated across the curriculum into every single content area. In social studies,

students should be reading both narrative and informational books about the lives of people who lived throughout history. In mathematics, students can understand many math concepts when those concepts are placed in the context of a story. In my *Mathematics Worksheets Don't Grow Dendrites* (2009) book, there is a list of books on page 147 that integrate math and literature called Have You Read Any Math Lately? When cross-curricular concepts can be connected to the memorable context of a story, comprehension and memory increase for all students.

Category:	Reading Literature
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Comprehend life experiences

- Use bibliotherapy to help students understand and deal with their life experiences. For example, if a student's parents are going through a divorce or if a student has lost a family member or close friend, suggest that the student read a story or book about a person who may be experiencing the same thing. This activity requires that you have some knowledge of books that would be appropriate for the age and grade level of the student. Consult the school's media specialist for recommendations.

REFLECTION AND APPLICATION

How will I incorporate *storytelling* into instruction
to engage students' brains?



Which storytelling activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Strategy 16



Technology



WHAT: DEFINING THE STRATEGY

My grandchildren live in Atlanta, and when they come to my house, they go first to the corner in my office that houses a stack of children's books and select the ones they want me to read aloud to them. It has become a ritual! When the Borders bookstore closed in my neighborhood, I shed some tears since that was the place where all of those books had been purchased. I still prefer to cuddle up close to Christian, Aidan, Max, and Aaron and read a good book aloud, as do their parents. Christian, a second grader, is even reading chapter books now all by herself. However, I am also the grandmother of two digital natives who seem as though they were born knowing what to do with their parents' iPad.

The best classrooms probably have a balance of both old and new learning formats, where students can interact with technology as well as with one another. Students today are bombarded with the effects of technology from birth. They text, use Facebook and Twitter, listen to music on iPods, and access the internet on iPads—and they just seem to do it naturally! Use that natural inclination to your advantage in teaching language arts. According to the Secretary's Commission on Achieving Necessary Skills report (1991), *technology* is one of the eight basic competencies that every high school student needs to be proficient with prior to graduation.

Word of caution! Technology is very important, but the other nineteen brain-compatible strategies are equally as important and should not be neglected lest we produce a generation of students devoid of their ability to talk with one another face-to-face. By the way, having interpersonal skills is also one of the eight basic competencies on that same SCANS report.

WHY: THEORETICAL FRAMEWORK

Some schools are using the digital media of Facebook and Twitter to make curriculum more relevant and interesting to today's students (Bender, 2012).

When students are involved with technology in complex authentic tasks, teacher-student and peer interactions are increased and students develop more positive attitudes toward learning (Sousa, 2011).

Various technologies can be correlated to the learning styles of students. For visual learners—Web sites, movies, videos; for auditory learners—computer group work, iPod music, and audio conferencing; and for kinesthetic learners—any technology with buttons that can be pushed (Sprenger, 2010).

The education of English language learners is extended to higher levels of cognitive engagement when they are allowed to integrate technology (Sousa, 2011).

Students who are ready for college or a career use technology and digital media *strategically and capably* to enhance their reading, writing, speaking, listening, and language skills (Common Core State Standards, 2010, p. 7).

The Internet supplies students with huge amounts of information so that the library doors are expanded and the growth of dendrites and synaptic connections in students' brains are increased (Feinstein, 2009).

Students should be familiar with the strengths and weaknesses of a variety of technological tools and be able to select and utilize those tools most appropriate for communicating their goals (Common Core State Standards, 2010).

The effect of using pictures to represent knowledge can be enhanced by students' use of technology to add animation (Höffler & Leutner, 2007).

Assistive technology can support the participation of students with disabilities in whole class and small group discussion (Udvari-Solher & Kluth, 2008).

The authentic feedback that technology can provide reinforces neural circuits in the brain (Willis, 2006).



HOW: INSTRUCTIONAL ACTIVITIES

Category:	Cross-Curricular Instruction
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Increase comprehension of content-area concepts



- Since your students, as digital natives, are accustomed to looking at computer, phone, and iPad screens, use interactive whiteboards in the classroom to display anything that can be shown on a computer

screen. The added advantage is that these SMART or Promethean boards enable you to use your finger as a special pen or use a remote to manipulate the information being shown via text, pictures, Web pages, and so forth.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–5
Standard/Objective: Experience a story through different media

- Have students compare what they see and hear when reading a story or poem to listening or viewing an audio, video, or live version of the same text. For example, have students read Henry Wadsworth Longfellow's poem "Paul Revere's Ride." Then have them experience a multimedia dramatization of the same event presented through an interactive digital map (www.paulreverehouse.org/ride/). Have students discuss which medium they prefer and why.

Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Increase comprehension of text

- Have students write an acrostics poem about key details in informational or literary text by using the acrostic poems interactive tool on ReadWriteThink's Web site at www.readwritethink.org/classroom-resources/student-interactives/acrostic-poems-30045.html. Students can use the organizer on the site to create and print their poems (McLaughlin & Overturf, 2013).

Category: Reading Literature/Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Experience a story through different media

- Have students use the process of digital storytelling to integrate technology during language arts instruction. Have them create illustrations or take photographs that represent either the main idea and details of informational text or the elements of a narrative story. Import those illustrations or photographs into a digital storytelling tool such as iMovie, Movie Maker, or Photo Story. Add narration. This activity can be very helpful in motivating ESL students or struggling writers (McLaughlin & Overturf, 2013).

Category: Writing
Grade Level Range: Grades 6–12
Standard/Objective: Write for a variety of purposes and audiences

- Integrate technology into relevant writing assignments for a variety of tasks, purposes, or audiences. These writing assignments can include researching an assigned topic, reflecting on a personal

experience or in-class assignment, or revising a piece of writing previously written.

Category:

Vocabulary

Grade Level Range:

Grades 6–12

Standard/Objective:

Locate pronunciation and meaning of words

- Have students use both print and digital reference materials, such as dictionaries, thesauruses, and glossaries, to locate the pronunciation and precise meanings of words.

Category:

Cross-Curricular Instruction

Grade Level Range:

Grades 6–12

Standard/Objective:

Comprehend content-area text

- Have students use digital programs such as Inspiration or Kidspiration to design mind, semantic, and thinking maps, as well as word webs, thus demonstrating their understanding of how major ideas and details are connected in text previously read.

Category:

Speaking

Grade Level Range:

Grades 6–12

Standard/Objective:

Present knowledge and ideas

- Have students use multiple digital media and visual displays such as PowerPoint to make their oral presentations to the class more interesting and to hold the attention of the audience. These media could include sound, video clips, graphics, and interactive components.

Category:

Reading Literature/Informational Text

Grade Level Range:

Grades 9–12

Standard/Objective:

Determine character traits and motives

- Have students design a Facebook page for a fictional or historical character. The Facebook page should include personal information such as a listing of family members, personal likes and dislikes, and a timeline of important life events and social affiliations—facts that would give the reader a good indication of the personality of the character. Students can then decide what other people living at that time would have been Facebook friends with the original character.

Category:

Writing

Grade Level Range:

Grades 9–12

Standard/Objective:

Produce, publish, and update writing products

- Have students write an essay, composition, or report regarding a topic of interest or as a follow-up response to an assigned reading. Using technology, including the Internet, have students link their writing to other information found via the technology and then produce, publish, and update their writing in dynamic ways.



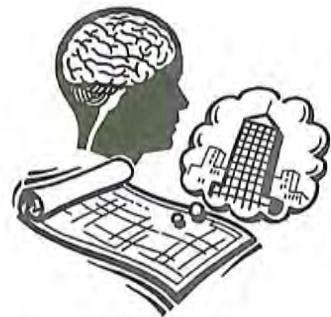
REFLECTION AND APPLICATION

How will I incorporate technology into instruction to engage students' brains?

Which technological activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Visualization and Guided Imagery



WHAT: DEFINING THE STRATEGY



Visuals are things that the eye can see. A picture is truly worth a thousand words! This is why picture cues are so important to a reader, particularly a beginning one. But what if what you are reading has no pictures or visuals? Then you need the strategy of visualization. Comprehension is facilitated when one is capable of visualizing. When I travel I always bring a book along. I can be found in the airport or on a plane reading silently and visualizing the action in my novel. However, not every person visualizes. A few teachers in my workshops have related to me that they simply cannot form those pictures in their minds. But for those people who can, it is a strategy worth knowing.

Visualization is practiced in professions other than education. If you watched the summer Olympics, then you heard athletes talking about visualizing their performances before they ever swam, raced, or walked on the balance beam. Military men and women visualize success on the field of battle. Even the pilots of the Blue Angels fighter squadron sit in a room and visualize their performance in the air prior to getting into their planes. The pilot in the lead plane tells them what to visualize and everyone follows suit. Then the planes take to the air. Doctors even advise patients to visualize the medicine killing cancer cells as they undergo chemotherapy.

Why is this strategy so important? It has been said that when the brain visualizes, it goes through the same process it would undertake as if the event was really happening. Students in Singapore have some of the highest math scores in the world. One of the major strategies that they use

is to visualize each step in a word problem prior to solving it. Science students can also picture each step in an experiment before actually conducting it. Visualization is cross curricular and aids the reader in understanding both narrative and informational text.



WHY: THEORETICAL FRAMEWORK

Readers should be encouraged to create pictures in the brain when they read since there appears to be a direct relationship between making those visual images and comprehending and thinking about what was read (Nevills, 2011b).

Visualization preprograms neuronal circuits to activate, which brings those circuits online in order to initiate the body's movement (Willis, 2006).

Teaching students to visualize results in a recall rate of up to 65 percent after a seventy-two-hour period while recall rate from information presented verbally is only about 10 percent (Medina, 2008).

Students who are capable of creating vivid mental images of a lesson's crucial points are able to make the information personal and increase their engagement (Willis, 2007).

When students are taught to visualize, they can store a great deal of information in working memory (Sprenger, 2005).

When students visualize their own success, they can activate the neural circuits necessary for the activity in which they are about to engage (Eliassen, Souza, & Sanes, 2003).

The very same areas of sight, smell, and hearing in the brain that are stimulated when one visualizes are also stimulated when one actually sees, smells, and hears (Willis, 2007).

Sigmund Freud, Charles Darwin, and Albert Einstein all used visualizations or images to help create the theories they developed (Sprenger, 2005).

Visualization increases students' confidence in their ability to meet challenges and in their sense of well-being (Eliassen, et al., 2003).

One theory espouses that students are no longer raised visualizing the images that go along with stories they read or hear since television, computers, and video games do that for them (Sousa, 2006).

A larger percentage of the brain is engaged when students take their visualizations and put them into words, diagrams, and pictures (Willis, 2006).

HOW: INSTRUCTIONAL ACTIVITIES



Category: Cross-Curricular Instruction

Grade Level Range: Kindergarten–Grade 12

Standard/Objective: Increase confidence in the ability to learn

➤ As a reading specialist myself, I have always said that teaching a student to read begins with giving them the confidence to believe that they can learn. After all, *if you believe you can or you believe you can't, you're right!* That confidence begins with visualization. Students in your classroom should visualize themselves being successful. Do not allow them to make statements such as *I can't read! I'll never understand this! or I give up!* Do what one teacher in my class does at the beginning of every school year. She has students write the word *can't* on a piece of paper and then ball it up and throw it into the trash. Then she teaches them to repeat this motto: *Success comes in cans, not in can'ts!*

Category: **Reading Literature/Informational Text**

Grade Level Range: **Kindergarten–Grade 12**

Standard/Objective: **Make predictions regarding text**

➤ Have students use predictive visualization to imagine what something might look, sound, or feel like before starting a lesson. This technique can help students use their background knowledge to make connections to the topic.

Category: **Reading Literature/Informational Text**

Grade Level Range: **Kindergarten–Grade 12**

Standard/Objective: **Increase listening comprehension**

➤ As you read text aloud, have students visualize, or picture in their mind, what you are reading. Have them incorporate all of their senses and think about what they would see, hear, smell, or taste. For younger students, you may have to model what you are visualizing by telling them what you are seeing in your mind.

Category: **Vocabulary**

Grade Level Range: **Kindergarten–Grade 2**

Standard/Objective: **Identify content-area vocabulary**

➤ When listening to or reading a story independently, have students identify words and phrases that appeal to the senses and visualize the feelings those words suggest. For example, in the story *The Paper Crane* by Molly Bang, students could identify words such as *played, loved, or clapped* that indicate feelings of happiness.

Category: **Reading Literature/Informational Text**

Grade Level Range: **Kindergarten–Grade 12**

Standard/Objective: **Increase text comprehension**

➤ When picture cues are available, have students make use of them. As students get older, however, the number of picture cues may diminish. When reading narrative or informational text, if there are

no picture cues, have students visualize what they are reading. They should be able to picture in their mind the sights, sounds, smells, and tastes that they are experiencing in the text.

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Increase text comprehension

- RIDER is a visual imagery strategy that helps students with learning disabilities comprehend what they are reading. RIDER is an acronym for *read* the sentence, *imagine* a picture in the mind, *describe* how the new image formed is different from any images that have been formed previously, *evaluate* to determine if the image shows everything, and *repeat* as the next sentence is read (Bender, 2008). This technique works for all students, not just those with learning disabilities.

Category: Vocabulary
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Identify content-area vocabulary

- To help students remember the definition of a vocabulary word, have them connect the word to its definition in the most absurd visualization possible. For example, to remember that the *hippocampus* of the brain is the *gateway to long-term memory*, have students visualize a herd of hippopotamus with mortar boards on their heads strolling through a gate on a college campus.

Category: Reading Informational Text (Mathematics)
Level Range: Kindergarten–Grade 12
Standard/Objective: Increase comprehension of word problems

- In order to begin solving a word problem, have students visualize the steps in their head. A student who cannot see each step in the problem has little chance of solving it. Have students see in their mind's eye what is happening and then determine the necessary operations to solve the problem. Visualization is one of the two major strategies that students in Singapore are taught to use when solving word problems. The other strategy is drawing. Singapore students have some of the highest math scores in the world.

Category: Reading Informational Text (Social Studies)
Grade Level Range: Grades 3–12
Standard/Objective: Increase comprehension of historical events

- Have students mentally transport themselves to a particular period of history being studied, such as the French Revolution or the Harlem Renaissance. Take them through a guided imagery

experience during which they visualize what their dress would look like, with whom they would communicate, what their possible profession would be, where and how they would live, how long they would live, and so forth.

Category: **Reading Informational Text (Science)**

Grade Level Range: **Grades 3–12**

Standard/Objective: **Determine sequence of steps in a science lab**

- Have students read through the sequence of steps in a lab they must complete in science. Have them then visualize each step of the procedure as they read about it. You could ask students to provide an illustration of several of the steps to facilitate their understanding of the experiment (Ogle, 2000).

Category: **Cross-Curricular Instruction**

Grade Level Range: **Kindergarten–Grade 12**

Standard/Objective: **Increase confidence on assessments**

- To alleviate anxiety prior to taking a language arts test or a test in any other content area, have students take deep breaths and visualize themselves successfully completing each item on the test. This activity, in addition to lessons well taught using the twenty brain-compatible strategies, gives students the confidence they need to do well! After all, at least 50 percent of success in any task is due to a person's belief in his or her ability to be successful!



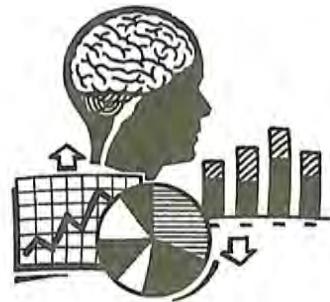
REFLECTION AND APPLICATION

How will I incorporate visualization and guided imagery into instruction to engage students' brains?

Which visualization and guided imagery activities am I already incorporating into my reading and language arts curriculum?

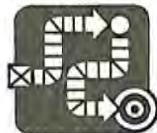
What additional activities will I incorporate?

Strategy 18



Visuals

WHAT: DEFINING THE STRATEGY



According to research (Gardner, 1999; Willis, 2007), approximately 50 percent of the students who are sitting in any classroom will appear to be predominately visual-spatial learners. They need to see what is being taught. Another 35 percent are bodily-kinesthetic learners, so they will need to move at some point during the lesson. That leaves only 15 percent of today's learners who are primarily auditory and learn best through hearing about what we want them to remember. Therefore, if your only method for delivering your content is lecture, then *Houston, we have a problem!* Eighty-five percent of your students are simply not listening!

When people say *a picture is worth a thousand words*, they are not kidding. It is the reason that flight attendants stand in the aisle and show you how the seat belt should be buckled. It is the reason that attorneys bring pictures of the crime scenes and charts and graphs to court to convince the jury that their client is innocent or guilty. It is the reason that the visual cortex in the brain of a child today is actually physically thicker than it is in my brain. Look at all the information children are taking in visually through watching television, using their computers, or experiencing the vivid, colorful, and sometimes graphic images of a video game. Use this strength to your advantage! Provide visuals in your classroom to make the content more meaningful and memorable. Read the following research and you will find out why you will not be disappointed with the results.



WHY: THEORETICAL FRAMEWORK

When students are learning new vocabulary words, having them create pictures that are personally relevant by drawing them or by creating them on the computer can be very helpful (Dean et al., 2012).

It is becoming common knowledge that initially the brain learns words through a visual system and then reverses that system to comprehend the words read (Nevills, 2011b).

Creating a visual representation of nonlinear ideas can help students reach higher levels of thinking and access some seemingly nonrelated chunks of information in their brains (Sprenger, 2010, p. 101).

We think in pictures since 90 percent of the information that comes into our brains is visual information (Ritchhart & Perkins, 2008).

When the visual area of the brain begins to build understanding, it sends a protein called OTX₂ to other areas in the brain. This protein enables those areas to make sense out of what is visually perceived (Hensch, 2008).

The visual cortex of the brain not only enables us to read, it also helps us make assumptions about what we read and see (Sprenger, 2010).

The brain can process 36,000 visual images per hour, according to the University of Michigan Digital Center (n.d.; Sprenger, 2010).

Positron emission topography (PET) scans illustrate that visual information creates a large amount of activity in the right hemisphere of the brain (Burmark, 2002).

Visual processing dominates our perception of the world (Medina, 2008).

The *Net generation* has developed visual systems that are more intuitive and reflexive and, therefore, its members learn better with visuals (Sprenger, 2010).

While visual stimuli can enhance learning for all students, boys respond particularly well to colorful, strong visuals, especially those that move (King & Gurian, 2006).

The number of visual-spatial learners in the United States has increased to approximately 50 percent of the total population while, thanks to exposure to technology, the percentage of verbal-linguistic and auditory learners has decreased to about 15 percent (Gardner, 1999).



HOW: INSTRUCTIONAL ACTIVITIES

Category:	Cross-Curricular Instruction
Grade Level Range:	Kindergarten–Grade 12
Standard/Objective:	Increase attention and memory

- The best visual in any classroom is you, the teacher! Your students are constantly watching you as you teach. That makes you the very

best visual for getting your language arts content across to your class. Don't be a stagnant, boring lecturer! Use gestures, hand movements, and vocal inflections to show your passion and enthusiasm for the content you are teaching. If you are not excited about language arts, don't wonder why your students aren't motivated! Change where you stand in the classroom as well. Remember to *teach on your feet and not in a seat!* (Tate, 2010).

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Increase text comprehension

- Facilitate a lecture or a class discussion by writing key words and phrases or drawing accompanying pictures on a dry-erase, SMART, or Promethean board or a document camera. For example, write the word *noun* and the words *person, place, thing, or idea* as you explain the definition of *noun* or draw and label a picture of the digestive tract as you explain its function (Tate, 2010).

Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Increase attention and memory

- Color has a definite effect on the brain! Color-code key vocabulary words or text features for emphasis. For example, words that you wish to emphasize should be written in the high-energy colors of red or orange. If you wish to point out direct quotes in a sentence, the sentence should probably be written in the calming colors of blue or green with the quotation marks or full quotation in red for emphasis.

Adaptation: Have students use colored pencils, markers, crayons, or highlighters to color-code the most important ideas to be remembered in their notes.

Category: Reading Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Comprehend content-area vocabulary

- Have students survey informational textbooks and look for visual indicators of key vocabulary words, such as words in boldface print or words in italics. Teach students that these words are highlighted for a reason, probably because they are integral to the comprehension of the chapter or unit of study.

Category: Reading Informational Text
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Comprehend content-area vocabulary

- Have students locate key information in informational text by using features found in the text, such as boldface headings and subheadings, the table of contents, and the glossary.

Category: Language
Grade Level Range: Grades 4–5
Standard/Objective: Identify how pictures reflect descriptions in text

- Have students make connections between the visuals presented in a text and how those visuals reflect descriptions of the characters in the text. For example, in Lewis Carroll's *Alice's Adventures in Wonderland*, have students discuss how the pictures of Alice depict how she is described in the text.

Category: Language
Grade Level Range: Grades 3–12
Standard/Objective: Demonstrate command of Standard English grammar and usage

- Create sentences or select them from students' writing that contain errors in Standard English grammar and usage, such as sentence fragments, incorrect subject–verb agreement, or run-ons. Put them on the document camera or the dry-erase board as a visual. If you take sentences from students' writing, do not identify the writer of the original sentence. Lead students in a class discussion on what is wrong and how the sentence should be improved. Make the changes so that the correct sentence serves as a visual for students.

Category: Reading Informational Text
Grade Level Range: Grades 3–12
Standard/Objective: Interpret information presented visually

- Have students explain how the data found in charts, graphs, and other forms of visual data contribute to an understanding of the content. For example, using Steve Otfinoski's book *The Kid's Guide to Money: Earning It, Saving It, Spending It, Growing It, Sharing It*, have students interpret how the visual chart helps them understand the creation of a budget.

Category: Cross-Curricular Instruction
Grade Level Range: Grades 9–10
Standard/Objective: Interpret information presented visually

- Have students view videos for the purpose of comparing and contrasting different treatments of similar plots in different settings or time periods. For example, have students analyze how Japanese

filmmaker Akira Kurosawa's film *Throne of Blood*, which is set in feudal Japan, relates to, yet changes, Shakespeare's play *Macbeth*, or how the star-crossed lovers in the 1950s play and movie *West Side Story* compare to the tragic teenage lovers in Shakespeare's *Romeo and Juliet*.

Category: **Reading Informational Text**

Grade Level Range: **Kindergarten–Grade 12**

Standard/Objective: **Comprehend informational text**

- Since at least 50 percent of any group of students will be visual learners, whenever you have to lecture or talk with your students about a major concept, accompany your lecture with a graphic organizer. This visual will not only show how the major ideas in the lecture are connected together, it will also enhance comprehension. See Strategy 5: Graphic Organizers for numerous examples of mind maps, word webs, and other types of graphic organizers that can be used for this purpose.



REFLECTION AND APPLICATION

How will I incorporate *visuals* into instruction
to engage students' brains?

Which visuals am I already incorporating into my reading and language arts curriculum?

What additional visuals will I incorporate?

Work Study and Apprenticeships



WHAT: DEFINING THE STRATEGY



Aristotle said it best: *One learns to do by doing.* There is no better way to *do* than by using the strategy of work study. Work study includes apprenticeships, internships, and externships. It involves studying while under the guidance of someone who is already in the profession to which one aspires. In the medical profession, work study would be a potential doctor's internship and residency. In the teaching profession, it would be a soon-to-be novice teacher's time engaged in student teaching. If students are to be ready for both college and career, they will need to demonstrate the competencies required when doing work study.

Here is a personal example. My daughter Jessica is a chef. To prepare her for this profession, she earned a degree in culinary arts. This is in addition to the liberal arts degree she had already earned. During her final year at Johnson and Wales, her culinary school, she was placed at the Biltmore estates in North Carolina for six months for her work study. She rotated through the restaurants on the grounds of the Biltmore, learning the role of a chef in a four-star as well as a fast-food restaurant. Jessica learned more in those six months about being a chef than she had learned in all the previous years combined.

Writing, mathematical ability, oral communication, listening capabilities, teamwork skills, the ability to read for information, and a good work ethic are all required for effective entrance into any workplace. I know that they are essential to Jessica's continued success. By looking for ways to integrate these and other skills into a work study experience, students graduate prepared to assume the duties and responsibilities of any occupation in the real world. By the way, Jessica works harder than any person I know as the head chef of the banquet staff at the Ritz Carlton hotel in Atlanta, Georgia. But she has found her passion, and that, she will tell you, is what makes it all worthwhile!



WHY: THEORETICAL FRAMEWORK

Experiential learning works since it leads to higher levels of recall and retention (Sousa & Tomlinson, 2011).

New learning becomes more relevant when students are taught how to connect new learning with the real world (Allen, 2008).

When there is real-world application of content in the classroom, knowledge is connected to authentic situations both inside and outside the classroom (Tileston, 2011).

The five steps inherent in service/community learning are as follows:

1. All stakeholders need to be involved in the project's development.
2. Partnerships should be made with businesses through collaboration.
3. Service learning should be integrated with academic content and skills.
4. The community should be made a better place to live because of the service project.
5. New understandings should be gained through reflecting on and reliving the project.
6. The success of the project should be celebrated and the commitment of those involved honored (National Council for the Social Studies, 2010).

It can be very problematic when high school students are required to cover content within the context of the classroom but not the context of authentic situations (Wiggins & McTighe, 2008).

Oral communication, teamwork/collaboration, and professionalism/work ethic are among the top three applied skills essential for high school or college graduates to have if they are to be successful in the workplace (The Consortium, 2006).

The schoolwork of adolescents must carry them into the *dynamic life of their environments* (Brooks, 2002, p. 72).

Large gaps exist between the performance necessary for success in a business setting and that which is required for success in school. Therefore, schools are graduating educated adults who are not prepared to do what is expected of them in the workplace (Sternberg & Grigorenko, 2000).

The strongest neural networks are created when students are involved in authentic real-life experiences rather than performing tasks that are not authentic (Westwater & Wolfe, 2000).

Students are given full participation in the process of working and learning when they learn while being supervised by an expert in the field (Wonacott, 1993).

HOW: INSTRUCTIONAL ACTIVITIES



Category: Cross-Curricular Instruction
Grade Level Range: Kindergarten–Grade 12
Standard/Objective: Become college and career ready

- Familiarize students with the U.S. Secretary's Commission on Achieving Necessary Skills (1991), which delineates what skills were necessary for high school graduates to be successful in the world of work in the year 2000. Even though this report was first issued in 1991, the same eight competences are just as applicable today. They are as follows:
 - Allocation of resources (time, space, people, money)
 - Basic skills (reading, writing, listening, speaking, math)
 - Information
 - Interpersonal skills
 - Personal characteristics
 - Problem solving
 - Systems thinking
 - Technology

If students know these competencies, then they can recognize the importance of acquiring them during their K–12 school years. Teaching using the twenty brain-compatible strategies will help to ensure that students are prepared not just for college, but for the world of work as well!

Category: Cross-Curricular Instruction
Grade Level Range: Grades 8–12
Standard/Objective: Become college and career ready

- Find an instrument to administer to students to determine their interest in and aptitude for a variety of different professions. Based on the results of the instrument, have them ascertain what college or technical courses would be required and what specific steps it would take to fulfill the position they have chosen. Help students write about those requirements and set short- and long-range goals to accomplish along the way. I knew that I wanted to teach at age six and have not regretted one day of my forty-year career in education.

Category: Cross-Curricular Instruction
Grade Level Range: Grades 8–12
Standard/Objective: Provide community service while mastering curricular objectives

- One of the best vehicles for combining interdisciplinary instruction, real-world skills, and character education is service learning.

Engage students in a service-learning project in which they are providing a service for their school and community while mastering a curricular objective. For example, have them collect clothes for those families affected by tornadoes or hurricanes. Students could plan and journal their entire experience.

Category: Cross-Curricular Instruction
Grade Level Range: Grades 8–12
Standard/Objective: Become college and career ready

- As students complete various curricular objectives, invite professionals who use the given skills or knowledge in their daily jobs to come and address the class. For example, in an English language arts class, have people come to class who must read and comprehend technical manuals, or invite writers who can come and share their creative efforts with students. After these presentations, students may have the answer to the question, *Why do we have to learn this?*

Category: Cross-Curricular Instruction
Grade Level Range: Grades 8–12
Standard/Objective: Become college and career ready

- For students who participate in the annual “Bring Your Child to Work Day,” have them research and write about the experience of shadowing their parent or guardian for a day in that person’s occupation. Plan an alternate assignment for those students who don’t have the opportunity to participate in the day. These students could research and write about a career of interest to them.

Category: Cross-Curricular Instruction
Grade Level Range: Grades 11–12
Standard/Objective: Follow instructions to complete tasks

- Have students use their reading and language arts skills to fulfill job requirements for a practicum, internship, or any other task where literacy skills are integrated into authentic job-related tasks—for example, completing a job application or following the instructions of a technical job manual.

Category: Cross-Curricular Instruction
Grade Level Range: Grades 11–12
Standard/Objective: Become college and career ready

- Partner with local businesses that can make it possible for students to engage in internships, apprenticeships, and/or work study projects either during the school year or during the summer months. This allows the students to experience firsthand the knowledge and skills necessary for the workplace. Many schools have adopters whose businesses can provide these rich experiences.

Category: Cross-Curricular Instruction
Grade Level Range: Grades 11–12
Standard/Objective: Become college and career ready

- Have students adopt a local business and track its success or lack of it over a specified time. Have students interview employees of the business in an effort to ascertain information about what product or service the business provides, what demand exists for the product, how the business supplies the product, and the current state of the business. Have students write about their experiences and make suggestions as to how the business could make changes to increase their revenue.



REFLECTION AND APPLICATION

How will I incorporate *work study and apprenticeships* into instruction to engage students' brains?

Which work study and apprenticeship activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Writing and Journals



WHAT: DEFINING THE STRATEGY



I have been in middle and high school classrooms where teachers are asking students to take copious notes and lecturing to them at the same time. That simply will not work! The human brain can only pay conscious attention to one thing at a time. The key word is *conscious*. I am not saying that one cannot multitask, but only one of those tasks happens to be conscious. Therefore, students are either consciously writing down notes and not listening to the simultaneous lecture, or they are missing notes while consciously listening to the lecture. If the brain can only pay conscious attention to one thing at a time, what is to be said for talking on one's cell phone while driving? One of those actions happens to be unconscious and that's dangerous. Text messaging while driving is even worse.

However, writing involves more than just taking notes. Classrooms should provide many opportunities for students to write, both brief and extensive. Good writers take the task at hand into consideration and write with purpose while deliberately choosing appropriate word structures, formats, and information (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010). Good writers write across the curriculum. When discussing point of view, students could write about an event that actually happened to them from two different perspectives—their own and that of a family member or friend. Math students can write the metacognitive steps in solving a word problem. Science students can write a hypothesis prior to conducting an experiment. Social studies students can write a letter describing life during a specific period of history. Be certain to give students real reasons to write that grow out of the content being discussed. After all, you may know good readers who are not necessarily good writers, but you probably don't know many good writers who are not also excellent readers.



WHY: THEORETICAL FRAMEWORK

Students stand a better chance of recognizing letters and characters, a skill essential for reading, if they write the letters as they are being learned rather than typing them on the computer (Longcamp et al., 2008).

Three formats that students have found useful when taking notes are webbing, combination notes, and informal outlining (Dean et al., 2012).

One of the benefits of having students write is that they can bring clarification to their own thinking and process information more clearly (Reeves, 2004).

Well-designed notes are a powerful way to review content (Kobayashi, 2006).

When students revise and review their notes, they understand that notes are a work in progress and valuable as a tool for memory (Dean et al., 2012).

The type of learning students need to master academic content can come only when students write to process the text they are reading by inferring, summarizing, or responding to questions (McEwan, 2007).

K-12 schools should be sure that students can understand and engage in oral and written arguments so that they are college ready (Graff, 2003).

Write to argue and persuade readers and write to convey information are tied as the most important types of writing required of incoming college students (ACT Inc., 2009).

To be prepared for college or career, writers must know how to assert and defend claims, demonstrate their knowledge on a subject, and convey what they have thought, experienced, imagined, or felt (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

Journal writing should involve reflection and can include writing about observations, questions, and/or insights regarding the lesson, as well as any links to prior knowledge (Sprenger, 2005).

Writing about an experience provides a feeling of control over it (Restak, 2000).



HOW: INSTRUCTIONAL ACTIVITIES

Category:

Writing

Grade Level Range:

Kindergarten–Grade 12

Standard/Objective:

Write a paragraph with a topic sentence and details

- Engage students in a prewriting activity called *four square writing* according to the following directions: Take a piece of 8 × 11 white paper and fold it horizontally and vertically so that when you open it, the paper forms four squares. Draw a rectangle in the middle of the paper and label it with a small 1. Box 1 would contain a topic

sentence for a paragraph to be written. Label the top left square as box 2, the top right square as box 3, the bottom left square as box 4, and the bottom right square as box 5. Boxes 2 through 4 would each contain one detail or reason to support the topic sentence in box 1. Additional sentences can be written in boxes 2 through 4 in support of the details already recorded in each box. Box 5 would contain either a conclusion, summary, or feeling statement in support of the topic sentence. From this prewriting activity, students can then form paragraphs. Students in kindergarten who are not yet writing can draw pictures in each box or dictate their answers to the teacher who can then record them.

Category:**Writing****Grade Level Range:****Grades 1–12****Standard/Objective:****Increase students' writing vocabularies**

- Identify simple vocabulary words that are overused in students' writing, such as *a lot*, *like*, *good*, *saw*, or *said*. These words are called *tired words* since they are tired of appearing in students' writings. Have students brainstorm a list of words that mean almost the same thing as the tired word and can, therefore, replace it. These synonyms will enlarge students' writing vocabularies and give them options for making their writing more interesting. For example, for the word *said*, the list of brainstormed words could include *answered*, *murmured*, *bragged*, *replied*, *muttered*, *stated*, *exclaimed*, *exhorted*, or *retorted*. Students are not allowed to use the overused words but must incorporate the appropriate synonyms into their writing vocabularies.

Category:**Writing****Grade Level Range:****Grades 3–12****Standard/Objective:****Recall content-area information**

- Engage students in *quick writes*—short opportunities for students to write brief answers to designated questions related to course content. Stop periodically throughout a lesson and ask students to take a minute to write things you want them to remember. Some examples follow.
 - Write the definition of the word *dilapidated*.
 - Write four causes of World War II.
 - Write the four atoms most important to life.
 - Write the order of operations in solving algebraic equations.

Category:**Writing****Grade Level Range:****Grades 3–12****Standard/Objective:****Write narratively across the curriculum**

- Have students write narratively across the curriculum. The writing should proceed naturally from the content in which students are

engaged. This writing can take the form of autobiographies, fictional stories, or anecdotes. For example, in social studies, have them write narrative accounts of the lives of historical figures or select only the most relevant information from sources to include in reports. In science, have them write about the step-by-step procedures of their scientific investigations so that those investigations can be replicated. In language arts, have them provide descriptive visual details of scenes or people.

Category:**Writing****Grade Level Range:****Grades 6–12****Standard/Objective:****Write arguments to support claims**

- Have students write an original editorial to a local paper taking a particular stance on an issue of historical significance. Have them cite specific evidence from history in support of their position (National Council for the Social Studies, 2010).

Category:**Writing****Grade Level Range:****Grades 3–8****Standard/Objective:****Write descriptively**

- To prepare students to do informational writing, have them describe the step-by-step procedures to an everyday task, such as brushing one's teeth, starting a car, or assembling an everyday item. Beginning with a real-life procedure will improve students' abilities to write clearly and descriptively. Students can then exchange their descriptions with one another and follow the steps prescribed to ascertain whether the directions are clear enough for the task to be completed.

Category:**Writing****Grade Level Range:****Grades 1–12****Standard/Objective:****Write to reflect relevant feelings and emotions**

- Provide time for students to write in a diary or personal journal about incidents that are personally relevant or important. The personal journals are not graded but allow students opportunities to hone their writing craft as they describe incidents that happened at home, reflect on personal class assignments, or express feelings and emotions related to an event.

Category:**Writing; Speaking****Grade Level Range:****Grades 1–12****Standard/Objective:****Encourage students' creative efforts**

- Provide a chair in the classroom with a canvas back similar to one in which a director sits when directing a movie. Have students sit

in this *author's chair* when reading a piece of original writing to classmates. This simple but meaningful procedure builds confidence in students' brains as they are able to share their best thoughts with peers.

Category: **Writing**
Grade Level Range: **Grades 3–12**
Standard/Objective: **Write descriptively**

- Have students use descriptive writing whenever they want to create distinct visual images of a person, place, thing, or event. To be an effective descriptive writer, students must learn to use verbs, adverbs, and adjectives that paint pictures in the brain. Before writing a descriptive paragraph or essay on an assigned topic, have students work in small groups to brainstorm possible descriptive parts of speech that can be incorporated. For example, have students brainstorm and then write a descriptive character analysis of a storybook or historical figure.

Category: **Writing**
Grade Level Range: **Grades 3–12**
Standard/Objective: **Write persuasively**

- Have students write persuasively in an attempt to change the beliefs, feelings, attitudes, and behaviors of the reader. Students should clearly state their opinion and then give facts that prove or support their opinion. In this regard, students can write across the curriculum as they produce posters, editorials, commercials, letters, and book reviews related to the content being studied.

Category: **Writing**
Grade Level Range: **Grades 6–12**
Standard/Objective: **Develop and strengthen writing**

- Have students carry of piece of writing through the following stages of the writing process:
 - Planning
 - Writing
 - Revising
 - Editing
 - Rewriting
 - Trying a different approach



REFLECTION AND APPLICATION

How will I incorporate *writing and journals* into instruction to engage students' brains?

Which writing and journal activities am I already incorporating into my reading and language arts curriculum?

What additional activities will I incorporate?

Resource A

Brain-Compatible Lesson Design

By now you should have a variety of brain-compatible activities incorporating the twenty strategies written on the Reflection pages at the end of each chapter. I am sure that you are anxious to try these out on your students, and, if the 400-plus e-mails and text messages that I have received from teachers and administrators are any indication, these activities will increase the academic achievement and positive climate in your classroom.

You probably have figured out that some of the activities in this book can be implemented just as they are, while others may need to be adapted to the age and ability level of your own students. You probably also realize that these 200 activities are only a small sample of the possibilities in store for you and your students when you begin to teach in brain-compatible ways. However, let me offer a framework that will not only assist you in developing complete lessons, but will also gain and maintain the attention of your students throughout your lessons. That framework is the English language arts lesson plan found at the end of this section. Each of the major parts of this plan is explained in the paragraphs which follow. Is it absolutely essential that you write or type out the answers to the questions on the form when you are planning a lesson? No! Is it essential that you ask and appropriately answer the five questions on the lesson plan form each time you plan a lesson to ensure that the lesson is brain compatible? Absolutely!

SECTION 1: LESSON OBJECTIVE



What do you want students to know and be able to do?

As a trainer for Stephen Covey's *7 Habits of Highly Effective People*, I know that it is crucial that people practice Habit 2: Begin with the End in Mind. That is also the case with your lessons. By the time you complete a lesson, what knowledge, skills, strategies, or behaviors should students possess to indicate successful completion of the standard or objective? By the way, please tell the students what they are! Students should not have

to guess what your expectations are when it comes to a lesson. They should be told at the beginning of a lesson what they should be able to do by the end. This gives students a purpose for learning what it is you need them to know. That purpose can be in the form of a standard, objective, or an essential question, but it needs to be stated. We all know that when students don't see the purpose in your lesson, they will ask this question: *Why do we have to learn this?*

I have had teachers tell me that they would love to incorporate more of the brain-compatible strategies into their daily lessons, but they feel that they simply cannot. Why? It would take too much time, and they have too much content to cover. A famous educator named Madeline Hunter said it better than I could. She stated that *If all you are doing is covering content, then get a shovel and cover it with dirt, because it is dead to memory!* I am not unsympathetic to the large number of standards and/or objectives that teachers in the United States are being asked to address. In fact, while teaching in Singapore, I noticed that the math textbooks there are about one-third the size of U.S students', and yet Singapore students outscore us on measures of academic achievement. We seem to be teaching horizontally, while Singaporean teachers are teaching vertically. Could it be that *less is more*? The good news is that it seems as if some curriculum frameworks, such as the Common Core State Standards, are attempting to narrow the focus and ensure more continuity from one grade level to the next. Continue to examine your curriculum for those concepts that can be taught together, or chunked, so that students see the connectedness in the content.

In our opening scenarios, Mrs. Davis let students know what would be expected of them by asking an essential question: *What is the main idea of this story, and what are some details in the story that let you know that this is the main idea?*

■ SECTION 2: ASSESSMENT

How will you know students have mastered essential learning?

Now that you know what you want students to know and be able to do, how will you know when they can do it? Assessment should not be a well-kept secret. Will my assessment be more traditional, such as a paper-and-pencil test where students select the correct response? Will I be asking them to respond in writing to short-answer or essay questions at various cognitive levels of thinking? Or will my assessment be more authentic, wherein students are creating a product or performance to demonstrate understanding? When I was a student in school, we spent our time trying to guess what the teacher was going to put on the test. If we guessed correctly, we made an A. However, we may have guessed incorrectly, and failed, even though we studied. We just studied the wrong thing!

In our sample lesson, students will work in groups to write a text message which gives the main idea, or gist, of the story they will be reading. They will also participate in a whole-class discussion where they will share which specific details in the story led them to the main idea.

SECTION 3: WAYS TO GAIN AND MAINTAIN ATTENTION ■

How will you gain and maintain students' attention? (Consider need, novelty, meaning, and emotion.)

I have good news and bad news! The bad news is that there is so much stimuli in today's environment that the human brain cannot pay attention to everything at once. Therefore, people can be very selective about what they choose to pay attention to. If a teacher's lesson is not worthy of attention, then students' attention is going elsewhere. When the lesson is boring, students are conversing with their peers, peering out the window, text messaging while holding the phone under their desktop, paying attention to who is going down the hall, or simply daydreaming. Students can even maintain eye contact with you and not pay a bit of attention to your lesson.

Another bit of bad news! There is a structure in the brain called the hippocampus that helps to determine which parts of what a person learns will end up in long-term memory. If your lesson is not deemed important, it stands a slim to no chance of getting past the hippocampus. In fact, the hippocampus will hit the delete key at night and your lesson will figuratively end up in the trash. How can you tell if your lesson got deleted? When students come back to class twenty-four hours later, it is as if they were not present when you were teaching the initial lesson. Has that ever happened to you? It certainly has to me!

The good news is if you want to grab students' attention, hold it throughout your lesson, and keep your lesson out of the trash, there are four ways to do it. They are *need, novelty, meaning, and emotion*.

■ NEED

Have you ever learned or remembered something simply because you needed to know it? When I was working on my master's degree in remedial reading, I was involved in an internship where my very grade depended on my ability to increase the reading scores of a high school student named Kevin. Kevin was fifteen years old and waiting until he turned sixteen so that he could drop out of school. He was reading approximately on a third-grade level and could not begin to read his content-area textbooks. I kept thinking about how to get through to him so that he saw the need to become a better reader. Then it dawned on me!

In a few months, he would be able to drive and would need to know how to read well enough to navigate his way around the city and pass the driver's test. I went to the motor vehicles bureau and got a copy of the Michigan driver's manual. It is from this manual that I taught Kevin to read. He learned!

In our opening story, Mrs. Davis tells students of the need to know how to take a great deal of information and consolidate it into a central idea. Many careers will require that ability.

Sometimes *need* will not work with students. After all, you may know that they need specific knowledge or a certain skill, but they do not perceive the same need. In fact, just telling them that they will need to know the information for a standardized or teacher-made test is not enough to inspire most students. The good news is that you have three other ways to gain their attention. The second one is *novelty*.

■ NOVELTY

Have you ever noticed that the brain pays attention to things that are new or different in the environment? Things to which we are accustomed become mundane and require little special attention. I pay little attention to the instructions at the beginning of a flight since I have heard those directions over and over again. However, Delta airlines just developed a completely new video that is unlike any of the past ones. It is full of humor and completely caught my attention! I now know that there is actually more than one video, since I have seen several different versions. I have paid attention to each one because it is new and different.

If students can expect that every day in your language arts class the teaching activities, such as the lectures or worksheets, will be the same, they are soon paying very little attention to what you are asking them to do. As the content changes, so should the use of the strategies. Any strategy used the same way and too often becomes mundane.

You may be saying, "*But there are only twenty strategies on the entire list. Where is the novelty in that?*" Well, think about it! Every one of those twenty strategies has inherent in them endless possibilities for novelty. Think of all the different stories you can tell, the music you can incorporate, or even the role plays or projects in which you can engage your students. The possibilities are endless!

In the sample lesson, Mrs. Davis uses a number of the twenty strategies at some point during the class to deliver content in new and different ways.

■ MEANING

Students have often been heard asking this question: *Why do we have to learn this?* This question indicates that students see no relevance in what is

being taught and how it applies to their personal lives. For content to be meaningful, it needs to be connected in some way to students' lives in the real world. After all, the true purpose of the brain is survival in that real world. Give students meaningful reasons to read, write, speak, and listen and those communication skills become real. For example, when one teacher I observed was teaching students about the impact of propaganda, her students did not grasp the concept until she brought in a picture of Rihanna, a popular singer, who was advertising eye makeup. The cosmetics company wanted young women to believe that because Rihanna was wearing their makeup, it was the best on the market. That is propaganda! All of a sudden, the term made sense.

Drawing personal definitions of vocabulary words and working together to plan the prosecution of a major character makes the content much more meaningful.

EMOTION

Of the four ways to gain the brain's attention, emotion is probably the most powerful. Why? Emotion places information in one of the strongest memory systems in the brain: reflexive memory. If something that happens in the world has an emotional impact, you will not soon forget where you were when it occurred. For example, no U.S. citizen who is old enough will forget exactly where he or she was on September 11, 2001. Need I say more?

Yet teachers should not engage students in negative emotional experiences that are not good for learning. While students will never forget the experience of being in a teacher's classroom that they did not like, they will not remember the content acquired during the instruction. Their brains were simply in survival mode!

My definition of an emotional teacher is one who teaches with passion and enthusiasm and gets students excited about learning. My daughter Jessica had a sixth-grade language arts teacher who loved Edgar Allan Poe. Soon Jess was reading everything Poe wrote because Mrs. Allen was emotionally connected to Poe's work. In fact, it has been said that the difference between an ordinary teacher and an extraordinary teacher is the moment at which passion enters the picture. How can we get students excited about great literature if we are not excited ourselves? I have told my husband Tyrone that the day I teach classes to adults and children with no passion and enthusiasm will be the final day I will teach. In the scenario in Mrs. Davis's class, students get emotionally connected to the novel as they plan evidence for the prosecuting or defense attorneys who will be trying the case during the role play.

Please do not feel that you have to use all four ways—*need, novelty, meaning, and emotion*—to gain and maintain the attention of your students. If you can use one effectively, it may make for a memorable lesson.

■ SECTION 4: CONTENT CHUNKS

How will you divide and teach the content to engage students' brains?

Join me in an activity that will help to prove that the brain thinks in connections. Try this with students or even with members of your family. Ask them to spell the word *most* three times (*m-o-s-t, m-o-s-t, m-o-s-t*). Then quickly ask them, “*What do you put in a toaster?*” Nine times out of ten, the answer given will be *toast* when the correct answer is *bread*. The brain connected or associated the word *most* with the rhyming word *toast*.

When you think about connecting content together, remember that even the adult brain can only hold between five and nine, or an average of seven, isolated facts in short-term memory simultaneously. This is why so much in life comes in a series of sevens. For example, there are seven days in a week, numbers in a phone number, notes on the scale, colors in the rainbow, seas, continents, habits of highly effective people, original multiple intelligences, and even dwarfs.

If we are expected to hold more than seven items, then the content needs to be chunked, or connected. This is why a social security number, a telephone number, or a credit card number is divided into chunks: to make it easier to remember. Here's a language arts analogy. Beginning readers often pronounce whole words by looking at each letter in the word and slowly naming each letter. Then, as they become more fluent, those letters become a chunk or a word recognized by sight. Then words turn into chunks called phrases, phrases into chunks called sentences, and sentences into chunks called paragraphs until finally students are reading accurately and fluently and can then concentrate on comprehending what they are reading.

When teaching vocabulary, try to think of ways to chunk, or connect, words together. For example, when you teach about a kitchen cabinet, talk about the president's cabinet as well. When you teach a word, connect that word's synonyms and antonyms to it simultaneously.

Remember to include at least one activity in each chunk that you teach. This is where the strategies enter. It is the engaging activity that gives students' brains time and energy for processing the chunk! After all, how do you eat an elephant? *One bite at a time*. How do you digest an elephant? *You must chew him up*. The *bites* are lessons' chunks. The activities represent how your students will *chew up* those chunks.

Our sample lesson could be divided into the following three chunks: (1) review of previously taught vocabulary words by drawing their definitions, (2) identifying the main idea and related details in a story by discussing the text, and (3) preparing to role play a court case within the context of literature

■ SECTION 5: BRAIN-COMPATIBLE STRATEGIES

Which will you use to deliver content?

All twenty of the brain-compatible strategies are listed at the bottom of the lesson plan. In this way, you will not have to remember them because

they will be listed for ready reference. Even I can't always remember the twenty strategies when I need to do so, and I wrote the book! As you are determining what activities you will include in each chunk of your lesson, you should be incorporating one or more of the twenty brain-compatible strategies. If you get to the end of your plan and you cannot check off any of the strategies (possibly because your entire lesson consisted of long lectures or worksheets, neither of which is brain compatible), go back and plan your lesson again! It is not brain compatible and will not meet the needs of the majority of your students. Much of it may not even be recalled after a twenty-four-hour period.

I have often been asked this question: *How many strategies should I incorporate into one lesson, or one chunk?* There is no magic number. Using too many strategies at one time can be just as detrimental as using too few. A rule of thumb is as follows: make sure that at some point during the lesson you have incorporated at least one visual, one auditory, one tactile, and one kinesthetic strategy, since you will have students with all four modality preferences in your classroom. That doesn't mean one strategy of each modality per chunk, but one strategy of each modality per objective or standard.

Keep this in mind. If you use one strategy—say, graphic organizers—to teach a lesson and the entire class grasps the concept, then by all means, move on to the next concept. You taught it and they got it! However, if you use one strategy to teach a lesson and part of the class understands the concept and the other part does not, use a different strategy from a different modality for the re-teaching. This is how you can best differentiate instruction. Simply doing the same thing over and over in the same way and louder has never worked! Refer to Figure 0.1 on page 18 for a correlation of the twenty strategies to the multiple intelligences and the modalities.

By the time the lesson in our best scenario was completed, students had experienced the following eight brain-compatible strategies: music, visuals, drawing, simile, discussion, cooperative learning, manipulatives, and role play.

SUMMARY ■

Well, we've come to the end of the second edition of another book. My hope is that I have accomplished what I set out to do, which was as follows:

1. introduce you to twenty strategies for teaching English language arts that take advantage of ways in which the brain learns best,
2. supply over 200 research rationales from experts in the field as to why these strategies work better than others,
3. provide more than 200 activities that show how to incorporate the twenty strategies into a K-12 reading and language arts classroom,
4. allow time and space at the end of each chapter for you to reflect on the application of the strategies as they apply directly to your specific objectives and standards, and, finally,
5. ask and answer the five questions that every teacher ought to be asking when planning and teaching a brain-compatible English language arts lesson.

BRAIN-COMPATIBLE ENGLISH LANGUAGE ARTS LESSON PLAN

Lesson Objective(s): *What do you want students to know and be able to do?*

Assessment (Traditional/Authentic): *How will you know students have mastered essential learning?*

Ways to Gain/Maintain Attention (Primacy): *How will you gain and maintain students' attention? Consider need, novelty, meaning, or emotion.*

Content Chunks: *How will you divide and teach the content to engage students' brains?*

Lesson Segment 1:

Activities:

Lesson Segment 2:

Activities:

Lesson Segment 3:

Activities:

Brain-Compatible Strategies: *Which will you use to deliver content?*

- | | |
|---------------------------------------------------------------------|-----------------------------------------------------------------------|
| <input type="checkbox"/> Brainstorming/Discussion | <input type="checkbox"/> Project/Problem-based Instruction |
| <input type="checkbox"/> Drawing/Artwork | <input type="checkbox"/> Reciprocal Teaching/
Cooperative Learning |
| <input type="checkbox"/> Field Trips | <input type="checkbox"/> Role Plays/Drama |
| <input type="checkbox"/> Games | <input type="checkbox"/> Pantomimes/Charades |
| <input type="checkbox"/> Graphic Organizers/Semantic Maps/Word Webs | <input type="checkbox"/> Storytelling |
| <input type="checkbox"/> Humor | <input type="checkbox"/> Technology |
| <input type="checkbox"/> Manipulatives/Experiments | <input type="checkbox"/> Visualization/Guided Imagery |
| Labs/Models | |
| <input type="checkbox"/> Metaphors/Analogies/Similes | <input type="checkbox"/> Visuals |
| <input type="checkbox"/> Mnemonic Devices | <input type="checkbox"/> Work Study/Apprenticeships |
| <input type="checkbox"/> Movement | <input type="checkbox"/> Writing/Journals |
| <input type="checkbox"/> Music/Rhythm/Rhyme/Rap | |

Resource B

Graphic Organizers

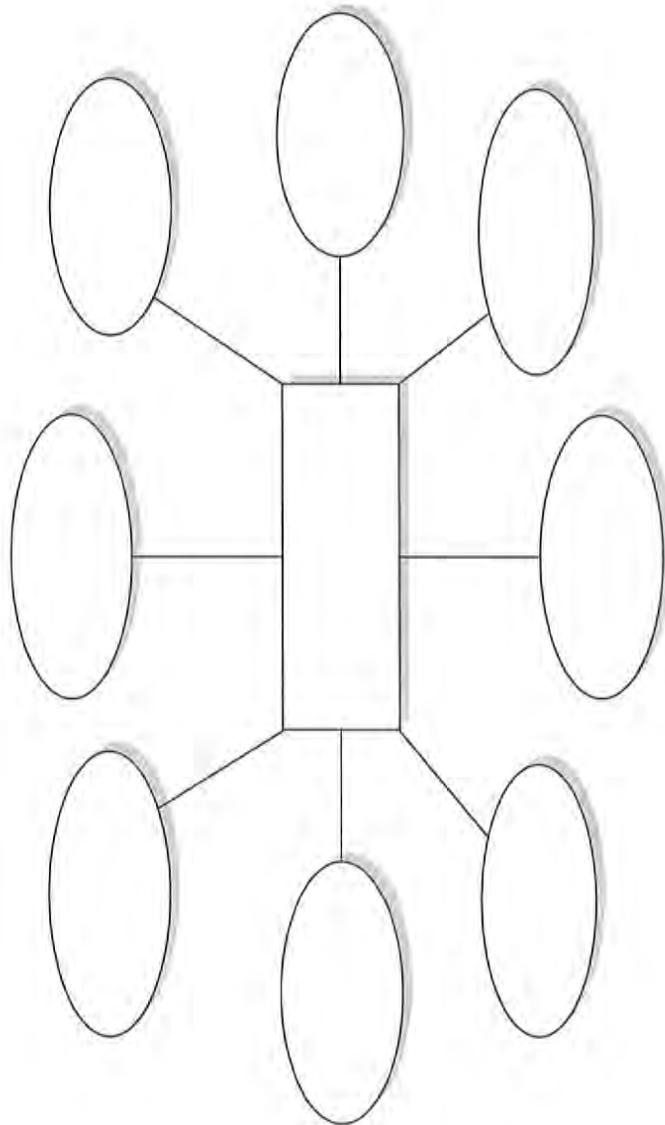
ALPHABET BOOK					
A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P	Q	R
S	T	U	V	W	X
Y	Z	Rules of the Game 1. Must have sixty or more words. 2. Can provide twenty words yourself. 3. Must get remaining words from at least eight people outside your “family.” 4. Must complete game with eight minutes.			

The K-N-L Strategy

Topic:

What I Know	What I Need to Know	What I Learned

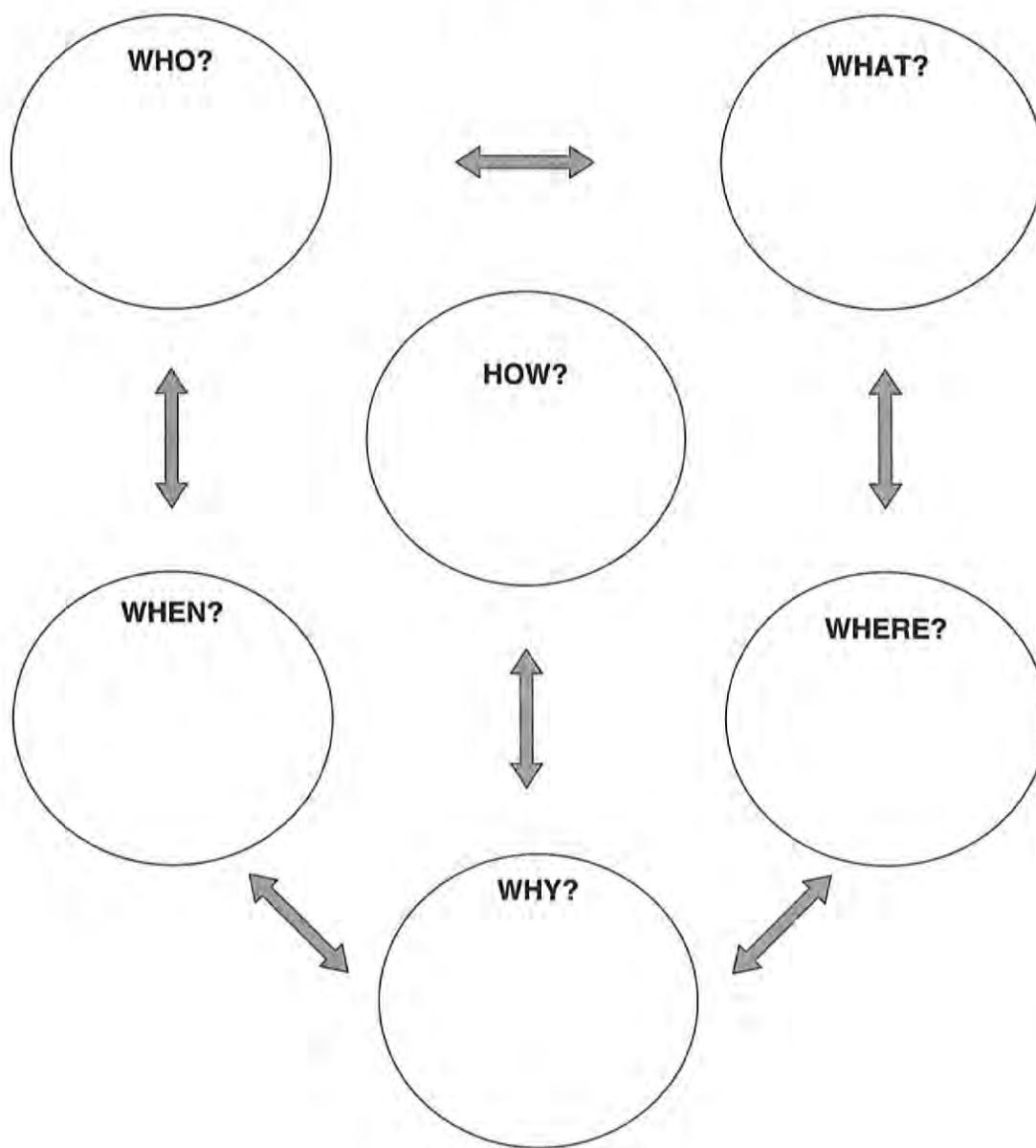
Vocabulary Word Web



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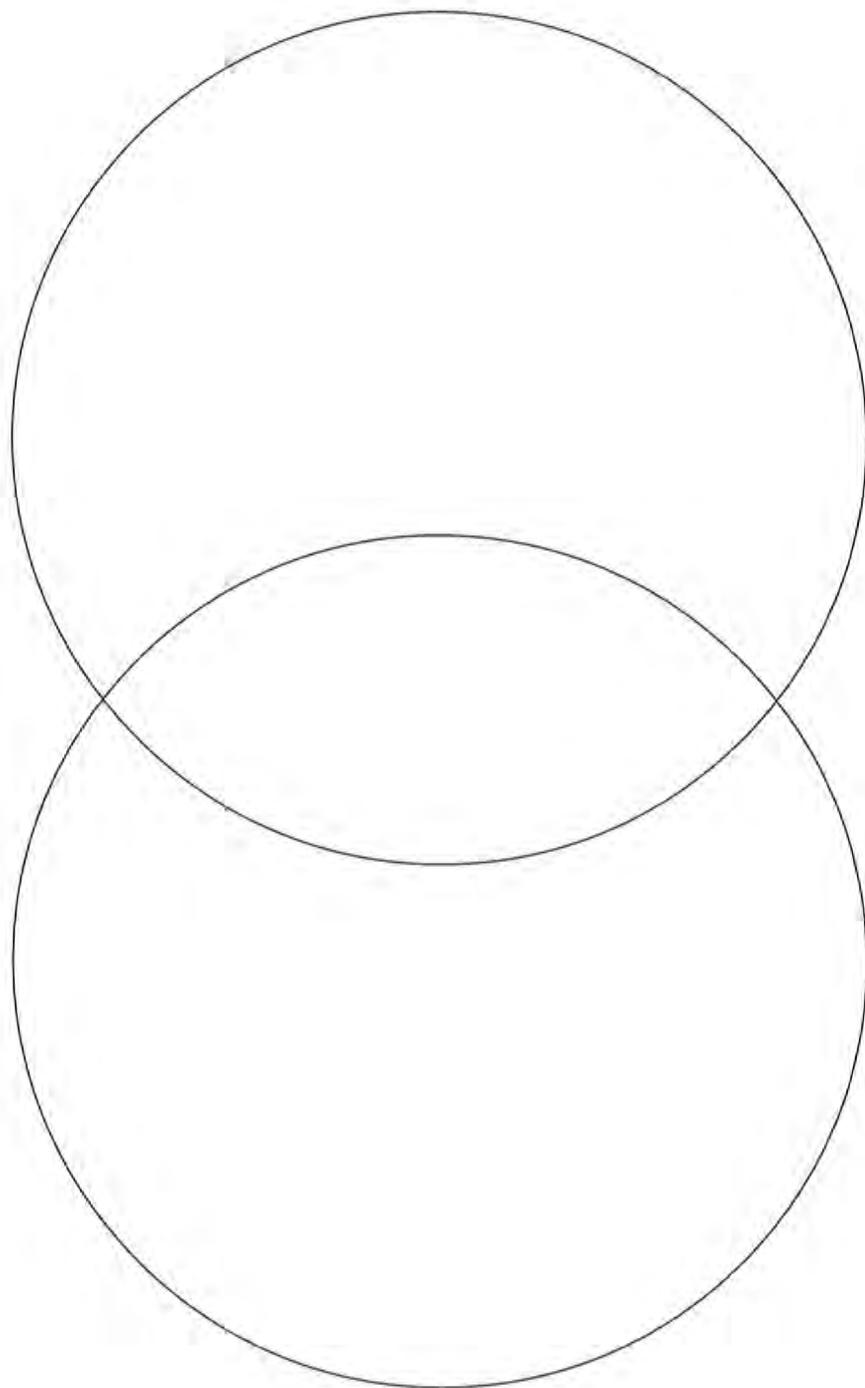
5 Ws and an H

Use the organizer below to create a “5 Ws and an H” summary.

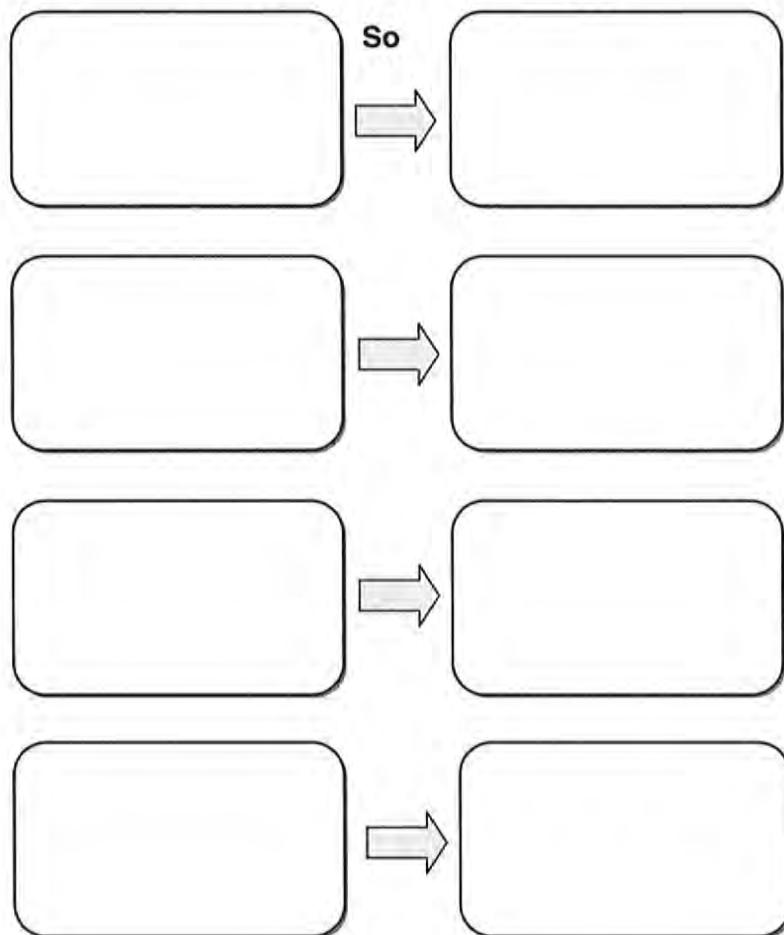


Compare/Contrast

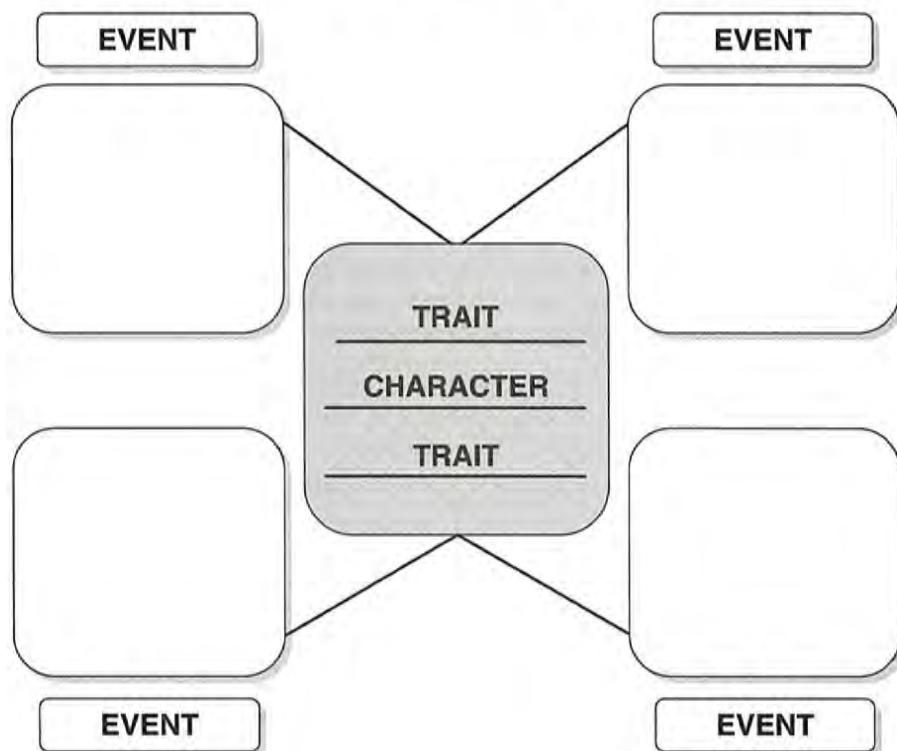
Different Alike Different



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Cause/Effect Organizer

Character Traits



Story Map

Title: _____

Setting:

Characters: _____

Problem:

Event 1: _____

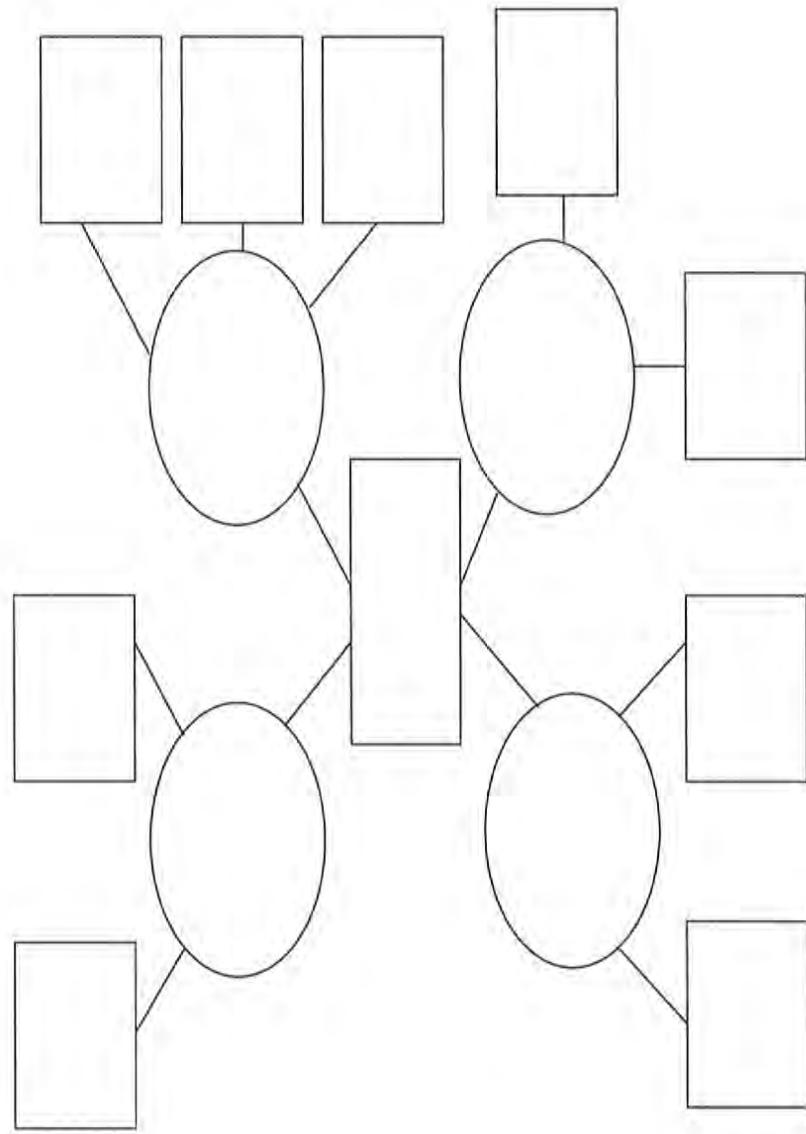
Event 2: _____

Event 3: _____

Event 4: _____

Solution:

Mind Map



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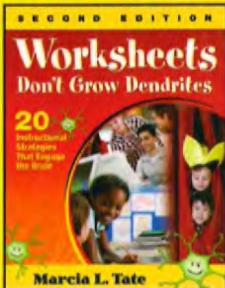
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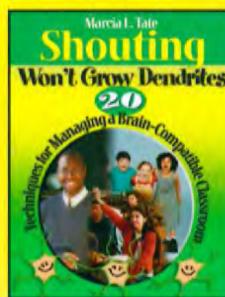
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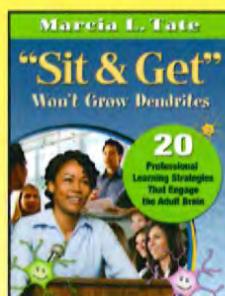
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