Dyslexia Action
Training and Professional Development

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CHAPTER 4

Connecting to Background Knowledge

* * *

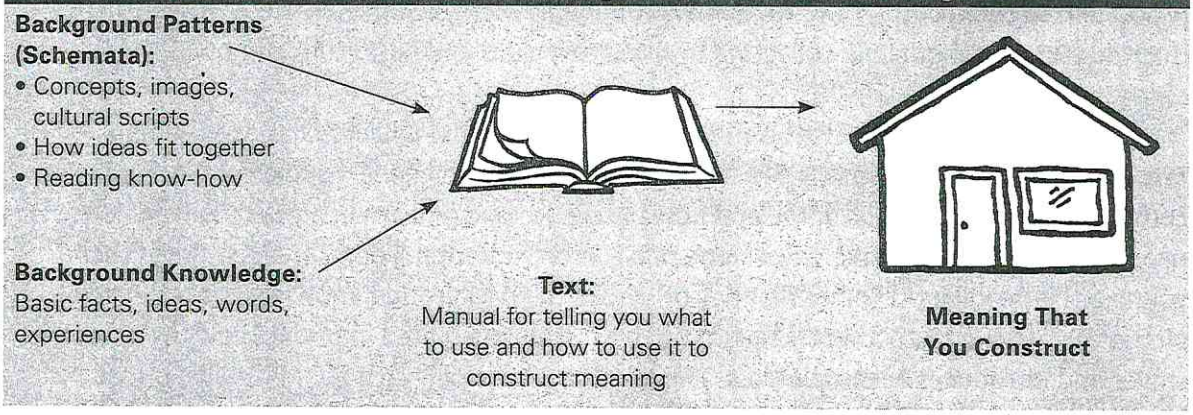
I am a collage of all
that I have heard, seen, wondered,
and dreamed.

Background knowledge is like a backbone for comprehension. For this reason, I sometimes call it *backbone knowledge*. We can't do without it. Why? Because as we read, we must connect the text's information to related knowledge and experience in our brains that we, in a sense, use as raw material to construct meaning as the text dictates. We compare this evolving meaning with each successive piece of text and we modify or discard any inconsistencies (i.e., we "prune away" the less useful information).

Authors expect readers to possess and use certain pieces of background knowledge. This fund of background knowledge often consists of facts, concepts, experiences, values, and ideas (Alvermann & Phelps, 2001). An author will use idioms, analogies, technical words, and descriptions that the readers of the text are supposed to understand already; the author does not take the extra time to elaborate on what he or she considers to be common experience or knowledge shared by most of the prospective readers. For example, an author might omit common details about a typical ocean beach. When the text deviates from this common fund of background knowledge, however, then the author must take the time to describe how it differs from readers' common expectations (e.g., an ocean beach with mounds of red seaweed and pink sand). The problem for many struggling readers and English learners is that their funds of background knowledge and vocabulary are not what the authors of middle school and high school texts expect them to be.

A useful analogy for using background knowledge in reading is that of constructing a house. (Of course, it helps for you to have background knowledge of house building in order to read and understand this analogy.) The builder must bring a variety of materials to the building site. The builder looks at the plans (the text, in our case) and then searches for the materials that the plans require. If the materials are not handy, the builder goes to the store to obtain them (a reader refers to other resources). Perhaps a substitute material can be used (related background knowledge) that is modified to fit the needs of the plan. Sometimes the builder brings prefabricated sections to the job (background knowledge patterns or schemata). These

Figure 10. Using Background Knowledge to Construct Meaning



save time by avoiding the need to put many separate pieces together. For example, if a reader already knows what a typical U.S. wedding ceremony entails, the author does not need to spend pages on common details that the reader can fill in with cultural background knowledge. But when that background knowledge is not there (e.g., for a recent immigrant from Laos), the knowledge needs to be built up in some way or comprehension will suffer. Refer to Figure 10 for a visual representation of how this process works.

Using and Developing Background Knowledge Patterns

Background knowledge patterns, also called *schemata*, are the larger chunks of information that a person uses to make sense of text. Background knowledge patterns tend to be complex concepts of culture, beliefs, expectations, values, and past experiences that we use to comprehend the nature of things and events. For example, if you read "I found coal in my stocking, knocked over the tree and started a fire, and smiled at my grandfather who was wearing a red suit," readers with the cultural schema of Christmas morning in the United States would quickly *get the drift of it*. Others might *scratch their heads* in wonder, even though they *grasped* the meaning of each individual word in the sentence. Additional examples of background knowledge patterns include common ideas about restaurant settings, greetings, sports, hobbies, politics, rural and city scenes, human behavior, and emotions in response to certain situations, and idiomatic expressions such as the italicized phrases in this paragraph.

Here is another example of a text that may stump some readers who do not have the matching background knowledge pattern already in mind as they read:

> The process is actually quite simple. First, you separate them into several piles according to shape and color. Then you separate them again according to their age. The oldest ones need the most cleaning. After they are clean, you carefully look for the spot where each one belongs. Then you write down which ones are still missing so you can search for them. You look in drawers, under furniture, and inside the pockets of old clothes.

Some reading teachers probably saw the first line of the text above and immediately skipped the whole passage, thinking it was the same vignette (about laundry) that they have

seen in many literacy trainings. Others read on and realized that this was a different text and proceeded to connect the clues to fit background knowledge. Some eventually figured out that the text was about coin collecting by using text clues and background knowledge. (If you didn't, now you know.)

We have countless background knowledge and cultural patterns that we use to organize how we think and live. These include patterns for hygiene, eating, romance, religion, communication, work, relaxation, and how people behave or learn in a given context. We need these patterns to make quick sense of a current situation. For example, if I read that a young girl is heading off to her first day of school, my background knowledge kicks in and I picture her walking into a sunny classroom, with students seated in perfect rows as a teacher smiles and introduces her to the class. The text may drastically change this image, but at least I have a starting point. Remember that diverse learners who did not have mainstream upbringings in the United States may have background knowledge that is much different than what mainstream American authors envisioned when they were writing their texts (Peregoy & Boyle, 2005). In such cases, it is even more important to predict what kinds of background information diverse students will need in order to comprehend successfully.

Background knowledge significantly influences other comprehension habits such as inferences, predictions, questions, and visualizations. In making inferences and predictions, we mix our knowledge of what we know has happened or what normally happens with what is said in the text in order to create meaning that is not directly stated (Keene & Zimmermann, 2007). In creating questions, we have certain areas of knowledge with holes in them and the text piques our interest to fill those holes with a question. We then use the text to construct an answer.

Visualizing

When we use background knowledge to create mental images and associations that aid us in comprehension, we are visualizing. Proficient readers routinely create a variety of mental pictures during reading. We use the text's information to bring up prior mental images that we obtained from life, photos, movies, television, or other sources. We adapt the images as we read in order to fit what the text says. The more vivid the mental pictures we can create, the more comprehensible and memorable the text tends to be (Hyerle, 2008).

Why is visualizing so important? When we visualize, we use mental energy to create meanings and connections that form the images. It is this mental organizing that helps the images and their information stick in our brains. In reading, as in most learning situations, we are more likely to learn something if we take control of the learning process and are active constructors of meaning, not just passive receivers. Research has shown that when students are taught to visualize text images, they experience better recall and are better able to make helpful inferences and predictions (Gambrell & Bales, 1986; Keene & Zimmermann, 2007). In the case of narrative text, we make a "mental movie" of what is happening in the story. Think about scenes from books you have read and how they are still in your mind even after many years. Sometimes the images stick so well that we think we saw them in a movie or even that we actually experienced them.

For expository materials, such as those in science or economics, we can make mini-"movies in the head" (e.g., of the water cycle or cell division) or concept posters (e.g., of a supply–demand chart or a Venn diagram) in our minds. In science, I might visualize a scene of two atoms sharing an electron or a graph of cell division rates. The quality of these images, of course, depends on my prior experience with texts and images containing atoms and graphs. In social studies, I might visualize ships setting sail for Africa or a Mayan woman grinding maize for the next meal. For math, I might picture the accelerating vehicles described in a word problem before I begin working the problem.

We often begin to create mental pictures from the very start of a reading session. We use the title or first sentences of the text, create rough mental images, and continually revise them according to each new sentence. Table 7 shows how this process works. Read the passages in the left column of the table and notice how the reader's mental pictures on the right change with each sentence.

A reader who makes similar visualizations while reading the sentences in Table 7 will better remember the main idea that being an astronaut is very demanding. In my observations of many struggling readers, I have noticed positive comprehension results when teachers (a) used images to provide background knowledge, (b) trained students to actively process images already in the text (they sometimes skip them without this training), and (c) trained students to create their own mental images as they read. Activities in this chapter that are particularly helpful for visualization include Background Knowledge Backpack, Closed Eyes Visualize, Concept Poster Preview, Sticky Note Snapshots, and Text Structure Graphic Organizers.

Drawing while reading also helps students to actively and visually comprehend, provided that the drawing is accurate enough and does not use too much time. If we train students to create symbols or doodles while reading, they will tend to better remember the information they read. This should not surprise us because the process of visualizing and then drawing

Table 7. Visualization Example

Science Paragraph Sample	Images Visualized by Me
Astronauts do much more than just float around in space and smile for cameras.	A smiling astronaut in a spacesuit, with the Earth in the background
They learn how to eat, sleep, and exercise while being weightless.	Several astronauts in gray shirts, inside a cramped ship, one using a rowing machine
For example, you can't just set your sandwich down and expect it to stay on the table!	Bread, cheese, meat, and tomatoes floating around inside a space shuttle
Astronauts also perform a large number of work tasks, such as spacecraft maintenance, testing, and experimentation.	An astronaut outside with a big wrench; other astronauts inside looking at computers
They even study the effects of life in space on the human body, in order to see how we might do on trips to other planets.	Someone taking a blood sample from an astronaut to see any changes
So if you sign up to be an astronaut, remember that it is more work than any job you may ever have on Earth.	Me in a spacesuit taking in the view of the Earth, and the boss astronaut yelling, "Get back to work!"

what we see requires active thinking. We must, of course, extensively model for students how to make quick and accurate drawings and doodles. One suggestion is to use a piece of paper with four television screens drawn on it (see the Visualization Stations form at the end of this chapter on page 98). Students can be given a short amount of time to make sketches on the four screens to depict what is happening in the text while they read or listen to someone read aloud (Hibbing & Rankin-Erickson, 2003). Activities such as this also can give you a quick view into what is happening in a student's brain while he or she is reading. If the student is way off the mark, you can provide feedback.

Movement, or kinesthetics, also can help students develop their background knowledge and visualization habits. When students see you act out an idea (character, scene, or process) or, even better, when students also do the movements, these actions become imprinted in the brain as background knowledge. The ideas are easier to visualize and recall when a text refers to them.

How Students Use Background Knowledge

Every student has stores of background knowledge and experience just waiting to be tapped in order to improve his or her comprehension of school texts. Every day, students connect experiences to their background knowledge in order to communicate, learn, and carry out life tasks. Our task is to build on the ways in which students already connect to and use their background knowledge outside of school and our classroom in order to meet the academic comprehension needs in our classroom setting. For example, a student may draw from his or her experience working on a farm when describing hard work to a friend, but may not yet connect to this experience when the topic of feudal systems is introduced in social studies or when learning about animal adaptations in science. It is our job to see that this "extra" connecting happens—and then becomes a habit.

We are not teaching a new habit here. We are developing in our students the existing habit of using background knowledge in more academic ways. In each activity found in this chapter, I recommend starting with the ways in which students use the habit in nonacademic contexts. Start with the concrete and familiar and then move to the more abstract and academic. For example, in the Pro–Con Improv activity, you can start with common topics such as soccer, school, music, friendship, food, cities, or cars. Point out to students how easily they categorize and classify the pieces of their background knowledge. Then, transfer this activity to the topic of the upcoming text or lesson.

Tools Chart for Background Knowledge

Table 8 will help you figure out when to use this chapter's activities in which content areas. On the left side of the table, a √ in a column indicates that the activity is useful in that stage of reading. On the right side of the table, a √ in a column indicates that the activity is helpful for comprehension of common texts used in that content area. A √√ on the right side of the table means that the activity is especially helpful for that type of text and that you should try it as soon as possible.

Table 8. When and Where to Use the Activities in Chapter 4						
Before Reading	During Reading	After Reading	Activity Name	Social Studies	Science	English/ EL
✓		✓	Anticipation Guides (+ Why)	✓✓	✓✓	✓
✓		✓	Background Knowledge Backpack	✓	✓	✓✓
✓			CATAPULT Into Literature			✓✓
✓	✓		Closed Eyes Visualize	✓✓	✓✓	✓✓
✓			Concept Poster Preview	✓✓	✓✓	✓✓
✓	✓	✓	Critique Chart	✓✓	✓	✓✓
✓		✓	Give One–Get One	✓	✓✓	✓
✓	✓	✓	K-W-L	✓✓	✓✓	✓
✓	✓	✓	K-W-L Plus	✓✓	✓✓	✓
✓		✓	Pro–Con Improv	✓✓	✓✓	✓
✓	✓	✓	Quickwrites	✓✓	✓✓	✓✓
	✓		Sticky Note Snapshots	✓✓	✓✓	✓✓
✓	✓	✓	Text Structure Graphic Organizers	✓✓	✓✓	✓
✓			THIEVES	✓✓	✓✓	
✓	✓	✓	Think-Pair-Share	✓✓	✓✓	✓✓

Activities for Background Knowledge

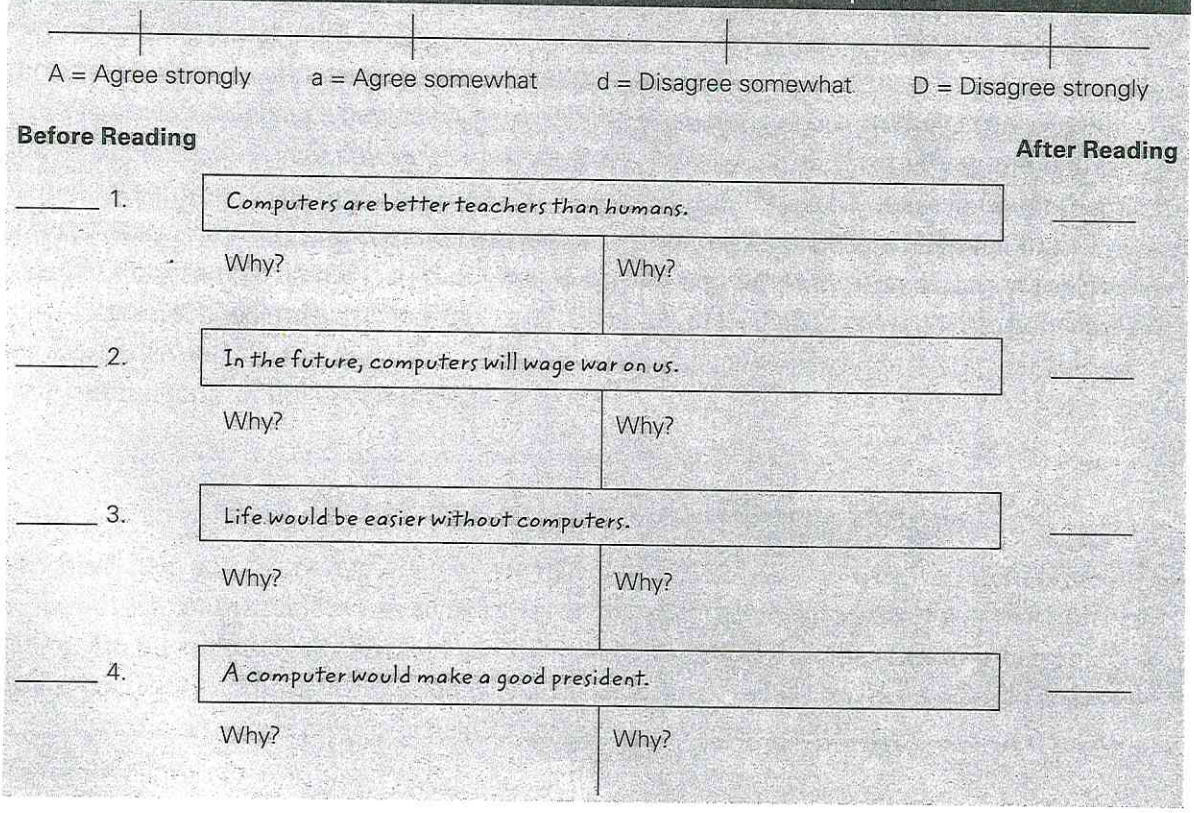
ANTICIPATION GUIDES (+ WHY)

Anticipation guides (Tierney & Readence, 2000), also known as prediction guides, activate a student's prior knowledge and set a purpose or framework for the reading. They are most useful when the text contains controversial issues, problems, or opinions that do not have one easy answer. The guides serve as springboards for modifying beliefs and opinions about a topic (Duffelmeyer, Baum, & Merkley, 1987). They can be used to bring up and examine commonly held assumptions such as "The Earth is round" (actually, it isn't) or "an animal is a bird if it has a bill" (not the platypus). Figure 11 shows a sample anticipation guide for a text on computers.

Procedure

1. Identify major concepts in the reading or lesson.
2. Create statements that question certain notions, beliefs, or opinions or that may challenge what students already know. You can use the reproducible Anticipation Guide at the end of

Figure 11. Sample Anticipation Guide for a Text on Computers



this chapter on page 93 to save time; write your questions or statements in the numbered boxes and then make a copy for each student.

3. Hand out the guide and briefly explain the statements. Have students mark their responses of agreement or disagreement in the "Before Reading" column.
4. Have students give reasons for their opinions by answering the "Why?" question on the left under each statement.
5. Have students read the text. During reading, the students can refer to the guide and take notes.
6. After reading or other follow-up activities, have students mark the "After Reading" column and fill in the "Why?" section on the right under each statement.
7. Conduct a discussion comparing the before and after results. Your discussion should refer to evidence in the text and should cover students' reasons for changes in their before and after answers.

Variation

Anticipation Questions: You also can have students answer several questions before the reading or lesson. Then, they read the text and answer the questions again after reading. For an activity for generating good questions (which can, in turn, be used for this activity), see Chapter 6.

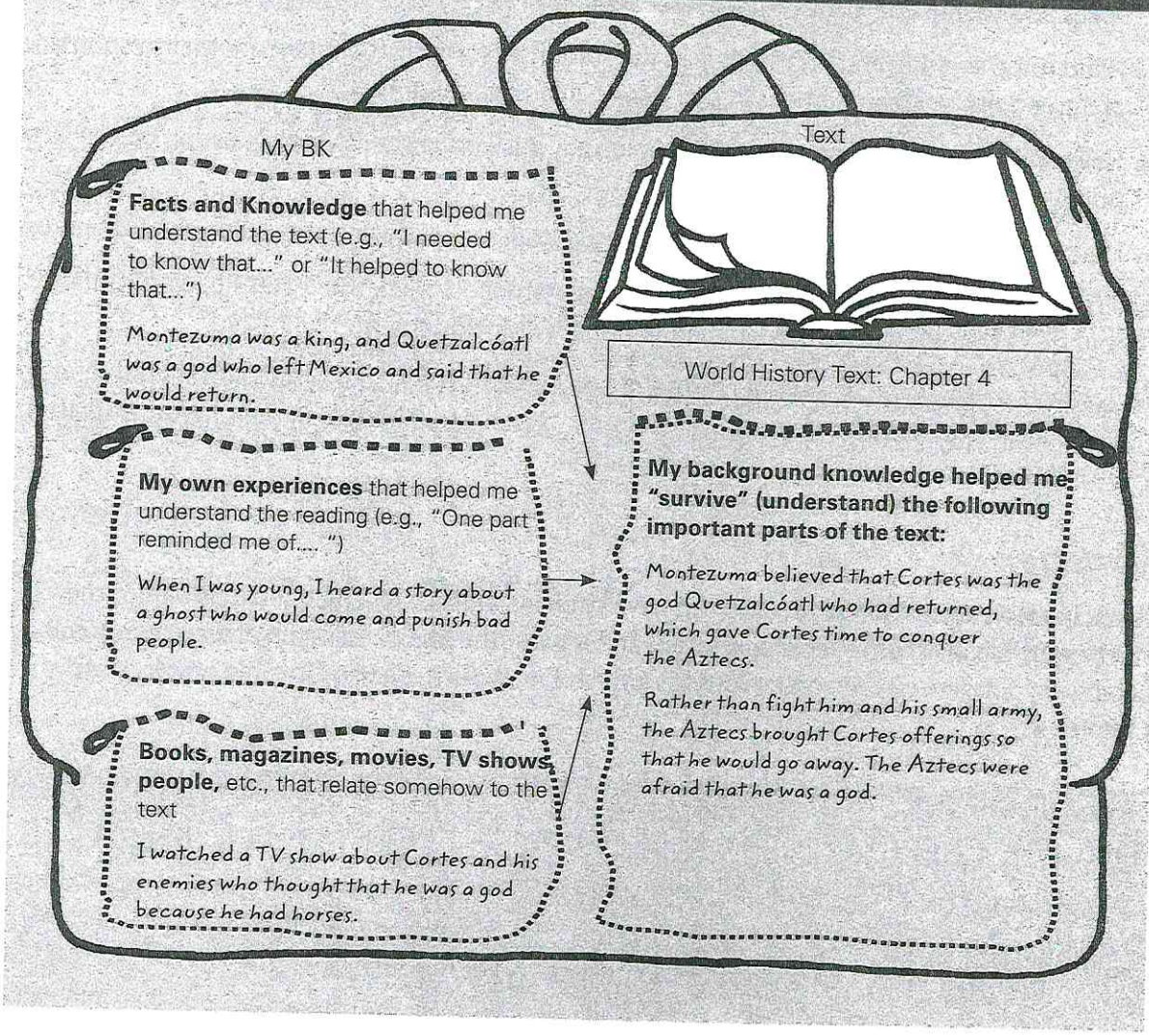
BACKGROUND KNOWLEDGE BACKPACK

The Background Knowledge Backpack is a simple way to help students build the habit of accessing different types of background knowledge for comprehension.

Procedure

1. Use the reproducible Background Knowledge Backpack form at the end of the chapter on page 94. Read aloud a text to the students and stop several times to fill in the "pockets" in the backpack. Model this activity many times so students can see the different types of useful background knowledge that can be used. Figure 12 shows a sample of the completed form.
2. Have students read the text from where you left off and pause at times to fill in the pockets. (They can do this in pairs as well.) Let students know that there is no set order and that all three types of background knowledge listed on the sheet can be used for the "My BK" pockets.
3. Have students (either in pairs or in groups) explain their "Text" pocket responses and how their background knowledge helped them to understand the material.
4. Have students share with the entire class as you write a similar diagram on the board or overhead.

Figure 12. Sample Background Knowledge Backpack



5. As a slight variation, students can create a similar diagram that has "What I didn't understand" on the right and "What I needed to know" on the left side.

CATAPULT INTO LITERATURE

A prereading activity, CATAPULT (covers, author, title, audience, page 1, underlying message or purpose, visuals, and time) Into Literature is useful for getting students to survey and "launch" into works of literature. CATAPULT and THIEVES (this chapter, p. 87) give struggling readers some tricks of the book reading trade. If we can get students to mentally prepare as many ideas about the content and theme as possible before they read a text, they will have a much better framework on which to attach the details and ideas of the text. Students will be less likely to get lost in what they are reading.

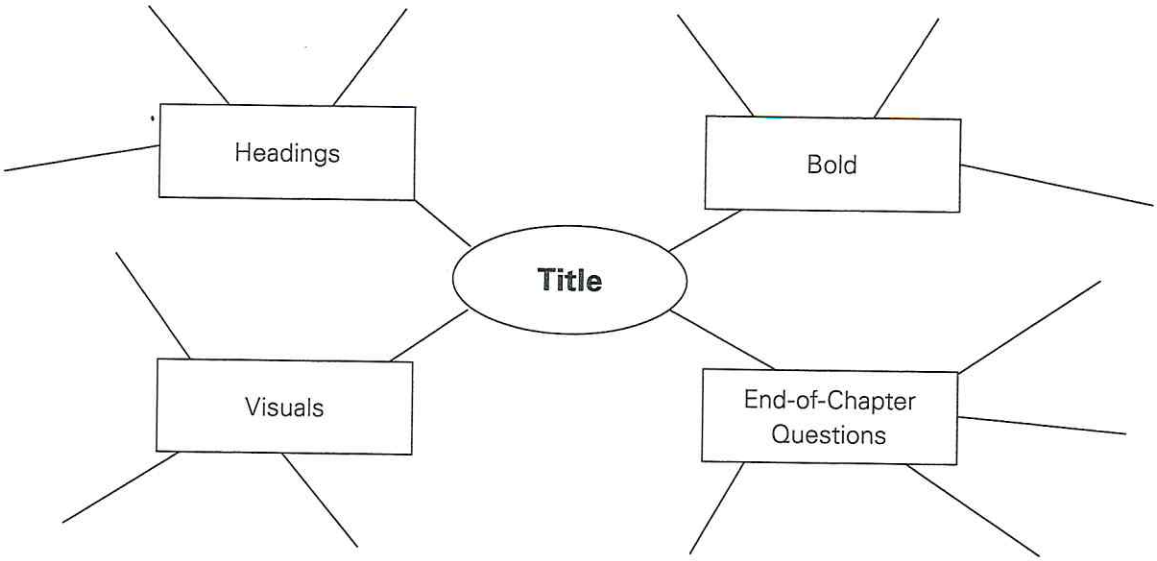
Table 9. CATAPULT Process Steps	
Covers (front and back)	What does the front cover show us about what we might visualize in the story? What does the back cover tell us about the story (the words, pictures, or both)?
Author	What is the author's background? Has he or she written any other stories that might be like this? What were they about? Are the same characters in this story as in the others?
Title	What does the title lead us to predict about the story? Let's hear some possible predictions.
Audience	For whom was this story written? Old, young; male, female; city-dwelling, country-dwelling; past, present, or future readers?
Page 1	Read page 1 and think about what the story might be about.
Underlying message or purpose	With what we have thought about so far, what message or purpose might the author have for the readers?
Look at visuals, maps, or sketches in the text	As we look through the story, what do the pictures, sketches, diagrams, or maps tell us? How will they add to our ability to visualize events and characters?
Time, place, characters	From clues so far, what can we say about when the story takes place, where it takes place, and the characters? What can we guess might happen to the characters?

Procedure

1. Model and scaffold the use of the steps shown in Table 9. Tell students to take notes during this discussion.
2. Create a half-sheet worksheet to remind students of the CATAPULT steps as they read (a reproducible CATAPULT Into Literature Practice form is provided at the end of this chapter on page 95).
3. If there is time, have students share their CATAPULT notes in pairs, groups, or with the whole class.

Variation

CATAPULT Prereading Web: This is a modification of the CATAPULT acronym-based activity, done in the form of a semantic web in order to give more visual emphasis to prereading. In the boxes around the text's title, put whatever prereading elements from CATAPULT that you want to emphasize, as shown on page 76.



Have students use the web to fill in information that connects to each box. Students can then compare notes or you can have a whole-class share time to discuss the results. (Note that this modification is also effective for the THIEVES activity that appears later in this chapter.)

CLOSED EYES VISUALIZE

Visualizing is vital for comprehension. It is similar to painting a picture or making a movie in your mind. Readers need to use mental pictures from television, books, movies, and their own experiences to create the pictures that the author expects a reader to create while reading (Hibbing & Rankin-Erickson, 2003). For example, the book I am reading might be about a desert in Texas, and although I have never been to Texas or even to a desert, I have seen deserts on television and I have a rough mental image of dry sand, cacti, and lizards. So, as I read, I modify this mental image into what the author intends for me to picture and to know.

Procedure

1. Explain to students that picturing text in their minds is vital for understanding it.
2. Show students a series of three or four pictures (or show short video clips).
3. After each picture, have students close their eyes and visualize what was in the picture. They also can write down words to describe the images if they want.
4. Tell students to visualize a variation of each picture. For example, if you showed them a picture of mountains, have them modify this mental image to have several mountain climbers on the cliffs in a snowstorm.
5. Tell the students that this is what happens during reading: We start with a rough image, and the text makes us modify it with other details.

6. Have students visualize and imagine that they are in situations similar to those that will be encountered in the text they are about to study. (You can have them put their heads down if they do not like closing their eyes.)
7. Next, move to written text. Read aloud a text and stop after the initial clues are given. Allow students to form an initial picture. Then read on and stop at appropriate times to allow students to modify their mental images. You also should model and describe your visualizing processes while reading aloud.
8. As an option, play sound effects or music if appropriate.
9. Finally, have students visualize while they read their own texts. During and after reading, they can keep a "visualizing log" by writing how the text caused them to modify their initial images and scenes. The following sample should give you an idea.

Initial Visualization	Modified Visualization After Further Reading
A small town with old cars and poor people	A village with no cars, dirt streets, brightly colored houses, and no people
An army with tanks, green uniforms, and missile trucks	An army with cannons and soldiers in red uniforms, all mounted on horses

Variation

Have students read a text section silently, or even aloud, and then give them time to visualize what happened or what was described in the text. They should close their eyes to do this. Next, have students draw the scenes they visualize. They should modify these scenes as they read the text. They can verbalize their mental scenes to other students. This process will show on paper how they modify scenes in their minds, which strengthens the mental flexibility needed for learning new concepts.

CONCEPT POSTER PREVIEW

Based on research that has shown positive effects from using advance organizers and building background knowledge before reading (Marzano et al., 2001; Stone, 1983), a Concept Poster Preview is a short teacher presentation that uses a large poster that you create with markers while you explain the concepts to be learned from the text. It is a powerful way to build background knowledge and vocabulary, and it can be an excellent form of comprehensible input for English learners.

Procedure

1. Decide which key points you want your students to get from the text. Think about how you can draw these points on one or two large posters. Examples include an illustrated timeline,

a diagram, a story map, a character description, a Venn diagram, a cause and effect chart, a map, and a drawing of a scene.

2. Lightly sketch in pencil the main lines, symbols, and words you will cover when you fill in the poster for the class. A little bit of forethought can make a huge difference in learning with this activity.

3. Mount the poster on the wall. In class, draw over the pencil lines with a thick marker as you preview key concepts in the text and draw symbols to illustrate key vocabulary. You can even use props, drama, and physical objects if they fit the discussion. Students can take notes, if needed.

4. The teacher talk time during this activity should not last longer than 10 minutes. Have students do one or two Think-Pair-Shares (about 2–3 minutes each; described later in this chapter in detail) during that time in order to process the information. The whole activity, including the Think-Pair-Shares, should not last longer than 15 minutes.

5. Keep the poster on the wall for reference during the lesson or unit. Refer back to it often.

CRITIQUE CHART

The process of critiquing and evaluating a text uses students' background knowledge of how information should be communicated. Critiquing puts more ownership and engagement into the hands of the students. In this activity, they are not just required to learn what is in the text; they get a chance to evaluate it, improve it, criticize it, and challenge it. As they fill in the chart and discuss it with partners, students use their knowledge of the subject and ways of communicating that work best. This activity overlaps significantly with skills of questioning and monitoring comprehension (see Chapters 6 and 8).

Procedure

1. Model the process of critiquing a text using the chart below. This could be a textbook chapter, an article, a novel, story, advertisement, painting, and so on. Write in your ideas as you think aloud about the different boxes in the chart. Emphasize how the six boxes should support the author's overall purpose. Emphasize how you connect to your experiences and knowledge of what kinds of writing best communicate to you.

2. Go through the chart with students and have them add their input.

3. Have student pairs or groups read a text with the critique chart in mind. They can stop and jot down notes in the boxes if they want. They jot down positive and negative aspects of the text.

4. Students discuss their notes and what they want to put in the final chart to turn in.

5. Encourage them to be critical and not to accept just any text that gets put in front of them.

6. As a whole class, share final thoughts and suggestions for the author.

Overall Purpose(s) of Text

Organization of text	Examples and explanations	Missing voices and points of view
• How could the text have been organized differently?	• Were the examples helpful? • What other examples might have helped? • Were some parts too long?	• Whose voices were missing? • Were any other points of view missing?
Visuals and data	**Importance of topic**	**Other suggestions**
• Were the images and visual aids helpful? • What could have helped? • Did some parts need to be supported by data?	• Was this topic important enough to publish? • Is the topic important for us to read about and learn?	

GIVE ONE–GET ONE

Give One–Get One (Kagan, 1997) is a social way for students to tap into and build background knowledge for a text. It is similar to a brainstorm session but has a more communicative twist.

Procedure

1. Generate a topic idea from the text and put it on the board. Some examples are as follows:

- What I know about whales
- Examples of sacrifice
- Keywords for studying space
- Reasons to exercise
- Favorite idioms, metaphors, or sayings
- What we learned last month about electricity
- What will the text teach us about gravity?

2. Have students fold a piece of paper in half horizontally and number 1 through 4 above the fold and 5 through 8 below, as shown.

3. Have students write down ideas related to the topic.

4. Have students circulate throughout the room and exchange their ideas for at least three different ideas from other

Ideas I will give:	
1. _____	
2. _____	
3. _____	
4. _____	
Ideas I got:	**From**
5. _____	____
6. _____	____
7. _____	____
8. _____	____

students, which go on lines 5 through 8. They need to get the student's name for each corresponding idea and write it in the "From" column.

5. After several minutes, have students regroup and share with the class the ideas they heard from other students.
6. Have students use academic language such as "Julie had a similar thought," "Manuel predicts that...," or "Katia differs in opinion because she...."
7. Discuss all the responses and then introduce the text.

K-W-L

K-W-L (Ogle, 1986) has a long and effective history in the scaffolding of expository texts. Basic K-W-L uses three columns in which to write down information that we Know (background knowledge), Want to know (establishing purpose and asking questions), and have Learned (main idea). In addition to teaching students to connect to background knowledge, this activity also can develop habits of summarizing, questioning, predicting, inferring, and figuring out word meanings.

Procedure

1. Create three columns on the board and head them with "What we know," "What we want to know," and "What we learned."
2. Ask students what they know about the subject or text you are about to study. Prompt the students with pictures, titles, or subjects to fill in the first column (some teachers put "What we *think* we know" in the first column to avoid confusing students with potentially incorrect information).
3. Ask students what they want to know and fill in the second column with their questions.
4. Have students read the text or do research on the topic.
5. In the third column, have students answer their questions from the second column in groups, add any key information that they learned, and share to fill in the third column.

Variations

Many teachers have successfully adapted K-W-L to expand its effectiveness for teaching comprehension. Following are some ideas.

- **Extended K-W-L:** Sampson (2002) creates more accountability for obtaining information in the K-W-L process. Six columns are used in this variation: the three traditional K-W-L columns, a column for checking off whether the text(s) confirmed the information in the "What we think we know" column, and two other columns for noting the sources of the information (see the example).

What We Think We KNOW	Confirmed?	Source	What We WANT to Know	What We LEARNED	Source

When using this activity, remember that not all the items in the first or second columns will be confirmed or answered.

- **K-N-L:** This variation uses content standards in the second column (what students *need* to learn) rather than items students are curious about (see example). You will need to help students with the second column, writing in content standards and taking time to explain them.

What We KNOW and Can Do	What We NEED to Learn	What We LEARNED (and/or What We Can Do)

- **K-W-H-L-S:** In this version, you add two extra columns (see example), one for how students will learn the information and one for how they will show what they learned.

What We Think We KNOW	What We WANT to Learn	HOW We Will Learn It	What We LEARNED	How We Will SHOW That We Learned

- **K-W-L-U-M:** For this version, you can add either or both of the last two columns shown in the example.

What We Think We KNOW	What We WANT (Need) to Learn	What We LEARNED	How We Will USE (Apply) What We Learned	What MORE We Want/Need to Learn

- **W-W-W-W:** You might want to include other columns in K-W-L such as What the Teacher Wants Us to Learn, Why We Should Learn It, Who Needs to Know This in Life, and What Other Points of View There Are.

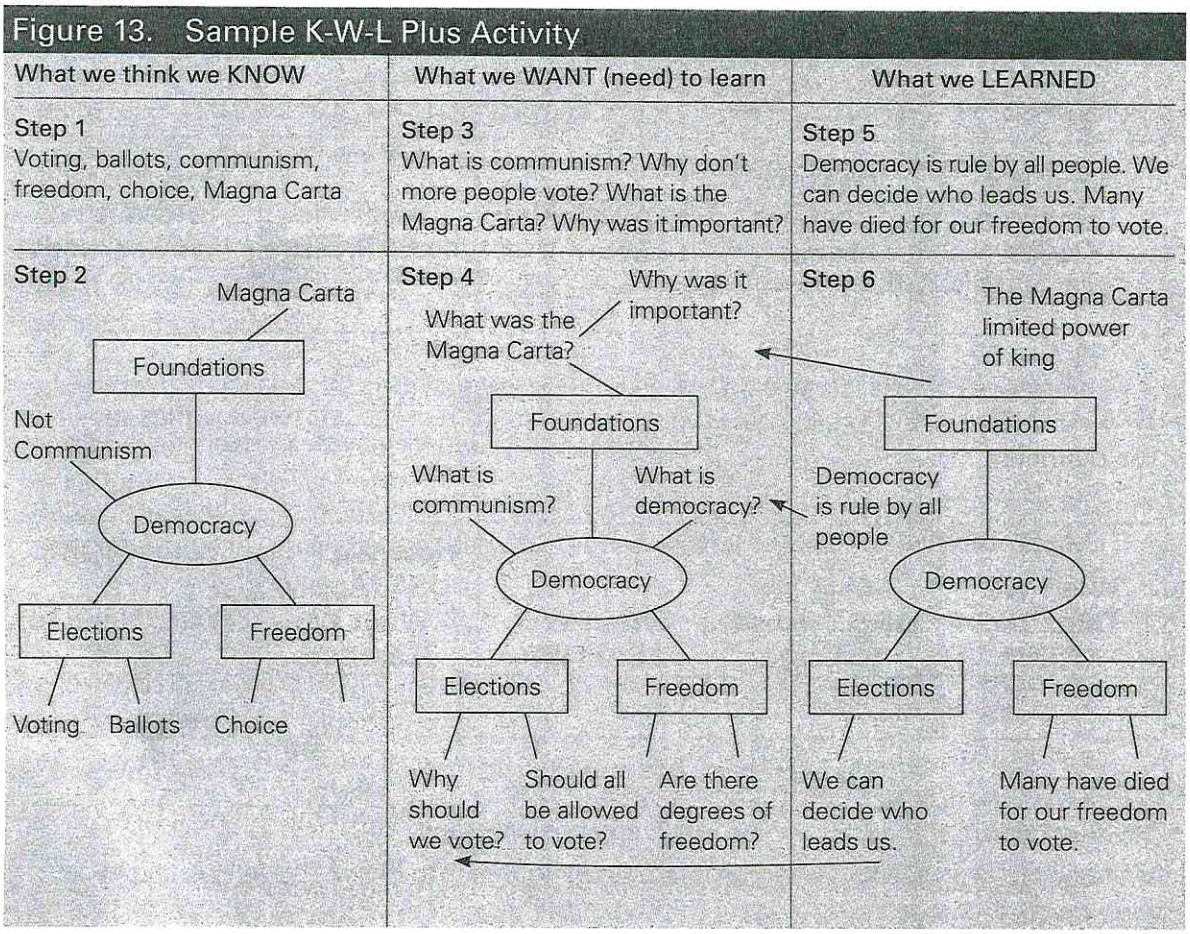
K-W-L PLUS

K-W-L Plus (Carr & Ogle, 1987) uses graphic organizers (within the context of a K-W-L chart) to help students further organize information into additional categories before, during, and after reading.

Procedure

1. Give students an initial topic or some clues, such as a text title or pictures, and ask students to think about what they might know that might relate to the topic. Have students brainstorm in order to fill in the step 1 area of the graphic organizer (see Figure 13 for a sample).
2. Have students generate several categories under which each of their responses can fit. Put these categories into the boxes of a semantic map that they will draw in the step 2 area. The first several times you use this activity with your class, you should think aloud when modeling and scaffolding the process of generating categories, sorting, and creating the graphic organizer.

Figure 13. Sample K-W-L Plus Activity



3. Have students generate questions, with some guidance from you, for the step 3 area in the second column. They can relate their questions to information in the first column; you can even draw arrows across the columns to show how their questions in step 3 relate to their ideas in step 1.

4. Have students create questions that correspond to the boxed categories in step 2. Have them create a new semantic map in the step 4 area that has these questions around it.

5. Now have the students study the text. As they read, have students take notes on what they learn and write them in the step 5 column or on sticky notes. Students also can draw arrows from the answers they found to the questions in steps 3 and 4.

6. Have students use the original semantic map from step 2 as a template that they now change to fit what they learned. Have them write that information in the semantic map in the step 6 area, including any answers to the questions in step 4. They also can generate new categories here, if any should arise.

7. Students can compare their final graphic organizers with those of other students, in pairs or groups, and discuss the information, any differences in categories, and the importance of the information included.

PRO–CON IMPROV

This activity, adapted from Duffala (1987), helps to build oral language skills and abilities to think about the pros and cons of topics. It helps build up background knowledge for texts that deal with different perspectives and problems with multiple solutions. It then helps students to be critical readers, thinking about multiple points of view as they read. Pro–Con Improv can become an effective foundational activity for variations that you can use throughout the year as the complexity in subject matter increases.

Procedure

1. First model this process for the class by making a student your director. The director picks a topic from a list and says "Pro!" while clapping. As the speaker, you say one or two convincing reasons for the topic. Then the director says, "Con!" and you immediately switch to the negative aspects of the topic, using an academic transition such as *but*, *however*, *on the other hand*, *yet*, and so on. Then try Pro–Con Improv two or three more times.

2. Give students a list of possible topics that lend themselves well to this activity. Some good beginning topics include camping, rain, shopping, movies, the beach, watching television, dogs, parents, traveling, exercise, driving, computers, dating, cars, and fast food.

3. Next, put students in pairs and let them decide who will go first and then alternate between director and speaker. Encourage students to show the pro and con not only with their voices but also in body language and movement. The director then begins by saying the topic. The speaker, if uncomfortable, can tell the director to choose another topic, but

just once. When the director claps and says, "Pro!" the speaker begins. The director can respond by nodding his or her head, showing engagement in the monologue.

4. Ask for some volunteers to do a sample in front of the class. It is good to have a director say (after asking if the speaker wants to perform up front), "My speaker did an amazing job! We would like to go!" This validates the speaker's performance.

5. Students perform in front of the class and then discuss what they liked about the performances on a verbal and nonverbal level. What did they like about the communication on the part of the speaker? Did he or she make a smooth transition from pro to con and back? You can also comment on good use of academic language and transitions.

6. Finally, give students topics that pertain to the text they will read, such as the brain, the Vietnam War, Albert Einstein, Thomas Jefferson, laws, technology, democracy, nuclear power, Napoleon, radiation, anger, education, history, or oil. This will allow them to generate ideas and opinions before they read the text and will allow them to connect to such thoughts as they read.

QUICKWRITES

Quickwrites require each student to reach inside his or her mind and pull out something related to a prompt and organize it on paper. They are informal and low-stress ways to jump-start the brain of each student, particularly those who may not share in a whole-class brainstorming session. They are a way for students to connect to what they already know or just learned and to organize their thoughts enough to write them down. They are a great way to get students to focus and to formatively assess ongoing learning.

Procedure

1. Give the students a question or prompt related to the text about to be read, and have students write down whatever comes to their minds without organizing it too much or worrying about grammar. The topic should relate to the text being studied in some way: connection to background knowledge ("Describe a time when..."); a controversial topic or question that relates to student life; explanation of content concepts or vocabulary; or predictions, summaries, inferences, hypotheses, and so on. Give them a couple minutes of talk time before writing. All students should be able to write something.

2. You may need to offer some students extra support, particularly those with limited experience or knowledge about the topic. There often will be students who say, for example, "I don't have problems with friends," "I don't want to go anywhere," or "I've never seen a...." Be ready to modify the prompt to get all students to participate and to model a response for them with academic language.

3. Quickwrites can become a part of a student's journal and be used for assessment, especially if the student so chooses. They also can be used during Think-Pair-Share activities

(explained later in this chapter) or even as a Ticket Out the Door, in which each student writes a summary of what he or she learned and hands it to you on the way out of class.

Following are some sample Quickwrites:

History: I think wars start because people want to take over people's lands and control them. I'm not sure why people want to take over lands or control people—maybe because of selfishness or greed, maybe because they want to make people convert to their religion. The war in my country hurt many people who were innocent and just wanted to have a normal life.

Math: First, you have to get the similar terms together, but they have to have the exact same variables and exponents. Then you get the variable you want to solve on one side and the numbers on the other. You need to make sure to do the same thing to one side that you do to the other, like two sides of a seesaw. Then I get the variable all by itself by multiplying or dividing and that is the answer.

Science: The Punnett square helps you figure out the chances of a plant being tall or not if two parent plants have a dominant and recessive gene mix. It is a 75% chance that the plant will be tall because it shows in 3 out of 4 boxes. It will be short 25% of the time because the tt is only in one box. I think this works for humans but not sure because we have much more complicated DNAs and genes to mix.

Variation

Pen Go–Pen Stop: In this variation, students are given a prompt and a minute to think, and then they write as much as they can when you say "Pen go." A few minutes later, you say "Pen stop" and the students must stop writing. This variation helps students to challenge themselves to write as much as possible—while also making sense.

STICKY NOTE SNAPSHOTS

This is a visualizing activity for both fiction and nonfiction texts that uses 3" × 3" sticky notes. It is effective because it allows students to move the images while creating them to meet the specific needs of the text. Other habits that are developed with this activity include inferring, predicting, and summarizing.

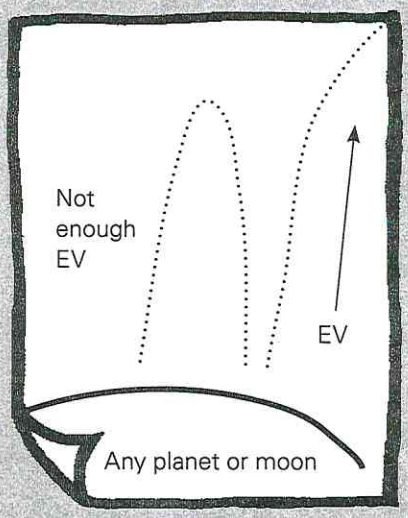
Procedure

1. Tell students that they are to draw either pictures or diagrams that are created in their minds as they read a section of text. For example, you can assign one sticky note snapshot per page of text. You should use this activity to build the habit of choosing the most important information to visualize. Tell students to draw the most important concept that the author tried to teach on each page (or in each section). They should not copy any visuals that are already in the text. (Students who do not like drawing can describe what they see in their minds with written words.) Figure 14 shows a sample sticky note snapshot with a corresponding section of text.

Figure 14. Sample of a Sticky Note Snapshot With a Science Text

Escape Velocity

Suppose you walk outside your space station on Mars. You throw a baseball straight up into the air. If you are not superhuman, the ball will rise for a while and then fall because of the planet's gravity. If your arm were strong enough, however, you could make the ball escape beyond the pull of gravity and it would continue out into space indefinitely.



The speed needed to throw a ball so that it can escape a planet's gravity pull is called "escape velocity." This velocity is related to the mass of the planet. If the planet is very massive, then its escape velocity is high because the gravity is strong. A less massive planet wouldn't require as much force to defeat gravity's pull. For example, you don't need to have a strong arm to throw a ball out into space from an asteroid.

The escape velocity of the Earth is around 25,000 m.p.h., whereas that of the moon is only 5,300 m.p.h. You would need a strong arm on both the Earth and the moon to launch a ball into space. Another factor influencing escape velocity is how far you are from the planet's (or moon's) center. The further away you are from the core, the lower the escape velocity.

2. Students can include a brief written explanation on the front or back of each sticky note snapshot. If there is time, have them share with a partner what they drew and why.
3. When they finish reading, have students place their snapshots in a photo album (or on a poster) dedicated to that text, with captions written below or above the snapshots.
4. Use the snapshots to scaffold writing responses.

TEXT STRUCTURE GRAPHIC ORGANIZERS

This activity trains students to recognize the common forms of text structure. Good readers automatically consider how the text is structured in order to improve comprehension (Alvermann & Phelps, 2001). Even a quick glance at the title and headings of a text often can tell a reader how the author constructed the text. Yet many texts do not give obvious clues, and the reader has to take a closer look at embedded clues to help figure out the structure.

Remind students that a text may contain more than one (or even all) of the types of text structures that follow. The author, for instance, could describe a problem and then its causes with a cause-and-effect paragraph, then compare and contrast possible solutions, and then persuade the reader to lean toward one solution.

Procedure

1. Show students grade-level reading samples that have the text structure you wish to teach.
2. Circle the signal words and phrases that indicate the type of text structure.
3. Model how to fill in the graphic organizer for the text. (See Table 10 for samples and ideas.)
4. Have students help you fill in the boxes and outer details of the chosen graphic organizer. Discuss the hierarchical nature of most texts: overall purpose or main idea, then supporting main points, and finally details to support the main points.
5. Give students another text to read and another organizer that they can fill in while working in groups or pairs.
6. Optional: Have students use the graphic organizers to write their own texts based on the structures. The more familiar students are with the structures in their own writing, the better they can use them for reading (and the better they get at writing, too).
7. Give students a choice as to how they want to organize and visualize their thoughts. It might be one of the graphic organizers in Table 10, a sketch, or even an outline.

THIEVES

Many teachers employ the services of rather intimidating textbooks to provide instructional support in the classroom. These books are difficult for many students to read. THIEVES, CATAPULT Into Literature, and Text Structure Organizing activities give struggling readers some tricks of the textbook reading trade. Eventually, these activities can build prereading habits that will remain with students for as long as they read textbooks.

THIEVES (adapted from Manz, 2002) is an acronym that helps students go through all the necessary prereading steps before diving into a textbook chapter: title, headings, introduction, everything they know, visuals, end-of-chapter materials, and "so what?" It is a way to get students to build extensive knowledge of the text even before they read the first "normal" words of a chapter.

Procedure

1. Tell students something such as "We now get to become information 'thieves.' Let's see how much information we can 'steal' from the chapter before we actually read it."
2. Model how to go through each of the items in Table 11 as you look at the chapter. Use an overhead to write down the information. You can use the reproducible THIEVES Practice form (at the end of this chapter on page 97) with boxes for each letter, and can give students a THIEVES Bookmark (page 96) to fill in as they read.
3. After going through steps 1 and 2, have students use the THIEVES Practice form in pairs with another section of text.

Table 10. Organizing Text Structure

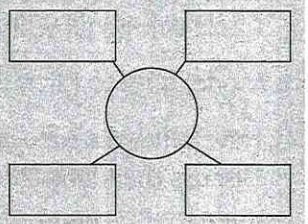
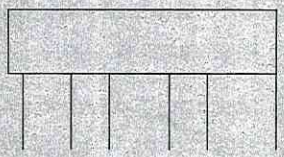
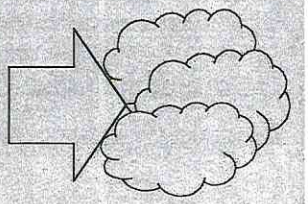
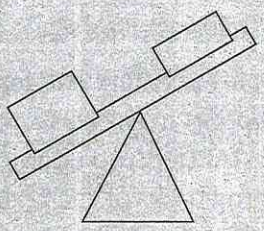
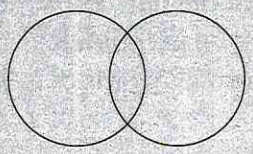
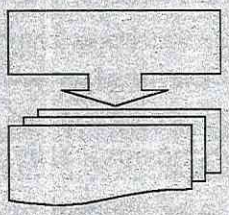
Text Structure	Purpose	Features	Key Terms	Graphic Organizer
Description	To explain an idea, person, place, or thing	Focus on one thing and its components	• is, are • consists of • also • this, that • in fact • for instance • most important	
Sequence	To describe the order of events or how to do or make something	The specific order of events or steps	• first, second • then, before, now • not long after • while • finally	
Cause and Effect	To explain why something happens or exists	Reasons and results	• so • so that • because of • as a result of • since • in order to	
Persuasion	To get the reader to act or to agree with one side of an issue or argument	Both sides presented; one side is favored; counterarguments addressed	• granted, despite • you must admit • then again • we should • it is important • therefore, even though	
Compare and Contrast	To show how subjects are alike and different	Two or more items with similarities and differences	• differs from • similar to • by contrast • unlike • similarly • yet, although, but, however, on the other hand • either...or, not only... but also	
Problem and Solution	Presents a problem situation and possible solutions	A problem, along with pluses and minuses of all solutions	• the main difficulty • one possible solution is • one challenge • therefore, this led to, so that • if...then, thus	

Table 11. THIEVES Sample Session	
Component	What the Teacher Says and Does to Model
Title	What does the title tell us? Let's think of all the possibilities.
Headings	What do the headings tell us? They are the minititles of each section. What questions can we make from them that we think the section will answer? Let's also look at the table of contents, ask some questions, and make some predictions.
Introduction	Read the chapter introduction if there is one and think about it. Read the first paragraph of normal chapter text as well. Why do we think the author wrote the text?
Everything I know	Jot down all the facts and ideas about the topic that you think will be helpful for understanding. Create some questions about your own knowledge that you think the text might answer. Use the back of your paper, if needed.
Visuals	Let's look at all the diagrams, charts, and pictures. Let's read the captions. Why did the author include them? Can we think of any questions about them?
End-of-chapter material	Let's look at the end of the chapter to read any summaries (Don't ever forget to read the summary! It will save a lot of time.) and to see which questions the author thought were important. This can help us focus on what the author's purpose is. Let's try to guess the answers to a few questions using the information we have gathered so far. Write down a couple questions that look important. Also, we should notice every boldface or italicized word, especially if it is a new word or has a new meaning in this subject area. Look at any other text clue that might strengthen your initial idea (i.e., make you a richer thief).
So what?	Now, let's ask why we are reading this text. Why might I be interested in it? How might it connect to my life? Why does the teacher or our state want me to know this? Why did the author take the time to write this? For money? To teach us about the topic? For artistic expression? To improve my life somehow? For future classes?

THINK-PAIR-SHARE

A Think-Pair-Share (TPS) is a quick (2–5 minutes) verbal interaction between two or three students that allows them to quickly process the academic language and content being learned. TPS is not just a background knowledge activity, so also keep it in mind for building other habits and for the during- and postreading stages. TPS can be very effective during teacher presentations for creating "breaks" that push students to organize thoughts well enough to verbalize them. TPS also allows a student to hear how another person is processing the learning, which further builds background knowledge.

You can use TPS in many different areas of instruction, such as vocabulary, content concepts, opinions, compare-and-contrast activities, sharing parts of homework, summaries

of text or visuals, connecting to background knowledge or other classes, making predictions or inferences, and solving problems.

Procedure

1. Create a question or prompt that will get students to use their background knowledge and experience to answer it. Table 12 offers tips for generating Think-Pair-Share questions or prompts.
2. Have students think in silence for 30–60 seconds to mentally prepare what they will say. They can also write down thoughts.
3. Put students into pairs. During the pair work, students should do the following:
   - Face their partner, show interest, and listen actively. They can even take notes.
   - Take turns talking.
   - Stay on the topic.
   - Remember what their partner says in order to share it with the class later.

Table 12. Tips for Generating Think-Pair-Share Questions or Prompts

1. Create questions or prompts that zoom in on key content concepts in the text and relate to previous learning:
   - What was the Magna Carta and why was it important?
   - Why do authors use metaphors to enhance a story? Give examples from our last book.
   - Draw and explain how the circulatory system interacts with the respiratory system.
   - Explain how a certain quotation from the story proves that the character fits your description.
   - Explain how to divide fractions.
2. Create open-ended questions or prompts that connect to students' lives and allow for personalized, divergent responses:
   - If you were a colonist, would you have...? Why?
   - How does our community deal with waste and pollution?
   - Describe how acids and bases are used at your house.
   - If you found a wallet with no ID, what would you do? Why?
3. Create questions or prompts for academic skills and other habits that you want to emphasize while reading and throughout the presentation, lesson, unit, or year. These skills might include generating questions, summarizing, predicting, inferring, classifying, persuading, evaluating, analyzing, comparing, and so on:
   - How might this war be similar to the Civil War?
   - What were the causes and effects of the first Gulf War?
   - Generate two below-the-surface questions about molecular bonds.
   - Summarize how to solve equations by using the substitution method.
   - What can you infer about the character's feelings from her actions?
4. Focus and Connect (FoCo): Create questions or prompts that focus students back on the author's purpose and connect the text to the essential standards for which you are using it:
   - What does this have to do with our goal of learning the many ways in which different people helped in the war?
   - How does this connect to our objective of learning how to persuade others?

- Give reasons for any opinions, such as evidence from the book, class discussions, or one's own life.
- Use the vocabulary and academic language that you have modeled.
- Ask their partner questions that call for clarification and evidence: Do you mean that...? Why do you think that? Where does it say that? (Caution students to be polite and respectful in their questioning of one another.)

4. After pair time, ask students to share with the class what their partners said. This forces them to listen and also publicly validates what each partner has said.

Variations

- **Double Prompt Pair-Share:** Create two different questions for the TPS, one for each student, so they cannot simply say things such as "ditto" or "I agree" or "you said my answer."
- **Think-Pair-Square:** After pairs are done sharing with one another, have them turn to another pair to share. This gives students a chance to share with three people instead of the entire class. It also gives students a chance to compare and synthesize ideas as a group of four.
- Insert various reading and writing components. For example, you could have TWPS (Think-Write [Quickwrite]-Pair-Share), TPWS (Think-Pair-Write-Share), RPS (Read-Pair-Share), RWPS (Read-Write-Pair-Share), and so on.