Chapter 10

Effective Practices for Developing Reading Comprehension

Nell K. Duke and P. David Pearson

Reading comprehension research has a long and rich history. There is much that we can say about both the nature of reading comprehension as a process and about effective reading comprehension instruction. Most of what we know has been learned since 1975. Why have we been able to make so much progress so fast? We believe that part of the reason behind this steep learning curve has been the lack of controversy about teaching comprehension. Unlike decoding, oral reading, and reading readiness, those who study reading comprehension instruction have avoided much of the acrimony characteristic of work in other aspects of reading.

As it should be, much work on the process of reading comprehension has been grounded in studies of good readers. We know a great deal about what good readers do when they read:

- Good readers are *active* readers.
- From the outset they have clear *goals* in mind for their reading. They constantly *evaluate* whether the text, and their reading of it, is meeting their goals.
- Good readers typically *look over* the text before they read, noting such things as the *structure* of the text and text sections that might be most relevant to their reading goals.
- As they read, good readers frequently *make predictions* about what is to come.
- They read *selectively*, continually making decisions about their reading—what to read carefully, what to read quickly, what not to read, what to reread, and so on.
- Good readers *construct, revise, and question* the meanings they make as they read.

- Good readers try to determine the meaning of *unfamiliar words and concepts* in the text, and they deal with inconsistencies or gaps as needed.
- They draw from, compare, and *integrate their prior knowledge* with material in the text.
- They think about the *authors* of the text, their style, beliefs, intentions, historical milieu, and so on.
- They *monitor their understanding* of the text, making adjustments in their reading as necessary.
- They *evaluate the text's quality and value*, and react to the text in a range of ways, both intellectually and emotionally.
- Good readers *read different kinds of text differently*.
- When reading narrative, good readers attend closely to the setting and characters.
- When reading expository text, these readers frequently construct and revise summaries of what they have read.
- For good readers, text processing occurs not only during "reading" as we have traditionally defined it, but also during short breaks taken during reading, even after the "reading" itself has commenced, even after the "reading" has ceased.
- Comprehension is a consuming, continuous, and complex activity, but one that, for good readers, is both *satisfying and productive*.

(See Pressley and Afflerbach [1995] and Block and Pressley [2001] for reviews of much of the research on good readers' comprehension. The intellectual ancestor to this chapter is "Developing Expertise in Reading Comprehension" [Pearson, Roehler, Dole, & Duffy, 1992] in the second edition of *What Research Has to Say About Reading Instruction*; this piece also provides a good overview of the work upon which this characterization of good reading is based.)

Given knowledge about what good readers do when they read, researchers and educators have addressed the following question: Can we teach students to engage in these productive behaviors? The answer is a resounding yes. A large volume of work indicates that we can help students acquire the strategies and processes used by good readers—and that this improves their overall comprehension of text, both the texts used to teach the strategies and texts they read on their own in the future.

In this chapter, we will describe some proven instructional techniques for helping students acquire productive comprehension skills and strategies. As you will see, there is a large if not overwhelming number and range of techniques that work, yet the use of even one technique alone has been shown to improve students' comprehension. Teaching what we call *collections* or *packages* of comprehension strategies can help students become truly solid comprehenders of many kinds of text.

Balanced Comprehension Instruction

To borrow a term from the decoding debate, comprehension instruction should be *balanced*. By this we mean that good comprehension instruction includes both explicit instruction in specific comprehension strategies and a great deal of time and opportunity for actual reading, writing, and discussion of text. The components in our approach to balanced comprehension instruction are a supportive classroom context and a model of comprehension instruction.

A Supportive Classroom Context

It is not enough just to offer good instruction. Several important features of good reading instruction also need to be present. Otherwise, the comprehension instruction will not take hold and flourish. These features include the following:

- *A great deal of time spent actually reading.* As with decoding, all the explicit instruction in the world will not make students strong readers unless it is accompanied by lots of experience applying their knowledge, skills, and strategies during actual reading.
- *Experience reading real texts for real reasons.* To become strong, flexible, and devoted comprehenders of text, students need experience reading texts beyond those designed solely for reading instruction, as well as experience reading text with a clear and compelling purpose in mind.
- *Experience reading the range of text genres that we wish students to comprehend.* Students will not learn to become excellent comprehenders of any given type of text without substantial experience reading and writing it. For example, experience reading storybooks will not, by itself, enable a student to read, understand, and critique procedural forms of text of the sort found in how-to books, instruction manuals, and the like.

- *An environment rich in vocabulary and concept development through reading, experience, and, above all, discussion of words and their meanings.* Any text comprehension depends on some relevant prior knowledge. To some degree, well-chosen texts can, in themselves, build readers' knowledge base. At the same time, hands-on activities, excursions, conversations, and other experiences are also needed to develop vocabulary and concept knowledge required to understand a given text.
- *Substantial facility in the accurate and automatic decoding of words.* In a recent review of the literature, Pressley (2000) argues compellingly that skilled decoding is necessary, although by no means sufficient, for skilled comprehension.
- *Lots of time spent writing texts for others to comprehend.* Again, students should experience writing the range of genres we wish them to be able to comprehend. Their instruction should emphasize connections between reading and writing, developing students' abilities to write like a reader and read like a writer.
- *An environment rich in high-quality talk about text.* This should involve both teacher-to-student and student-to-student talk. It should include discussions of text processing at a number of levels, from clarifying basic material stated in the text to drawing interpretations of text material to relating the text to other texts, experiences, and reading goals.

A Model of Comprehension Instruction

The model of comprehension instruction we believe is best supported by research does more than simply include instruction in specific comprehension strategies and opportunities to read, write, and discuss texts—it connects and integrates these different learning opportunities. Specifically, we suggest an instructional model including the following five components:

1. *An explicit description of the strategy and when and how it should be used.* "Predicting is making guesses about what will come next in the text you are reading. You should make predictions a lot when you read. For now, you should stop every two pages that you read and make some predictions."
2. *Teacher and/or student modeling of the strategy in action.* "I am going to make predictions while I read this book. I will start with just the

cover here. Hmm...I see a picture of an owl. It looks like he—I think it is a he—is wearing pajamas, and he is carrying a candle. I *predict* that this is going to be a make-believe story because owls do not really wear pajamas and carry candles. I predict it is going to be about this owl, and it is going to take place at nighttime.

"The title will give me more clues about the book; the title is *Owl at Home*. So this makes me think even more that this book is going to be about the owl. He will probably be the main character. And it will take place in his house.

"Okay, I have made some predictions about the book based on the cover. Now I am going to open up the book and begin reading."

3. *Collaborative use of the strategy in action.* "I have made some good predictions so far in the book. From this part on I want you to make predictions with me. Each of us should stop and think about what might happen next.... Okay, now let's hear what you think and why...."
4. *Guided practice using the strategy with gradual release of responsibility.*

   Early on...

   "I have called the three of you together to work on making predictions while you read this and other books. After every few pages I will ask each of you to stop and make a prediction. We will talk about your predictions and then read on to see if they come true."

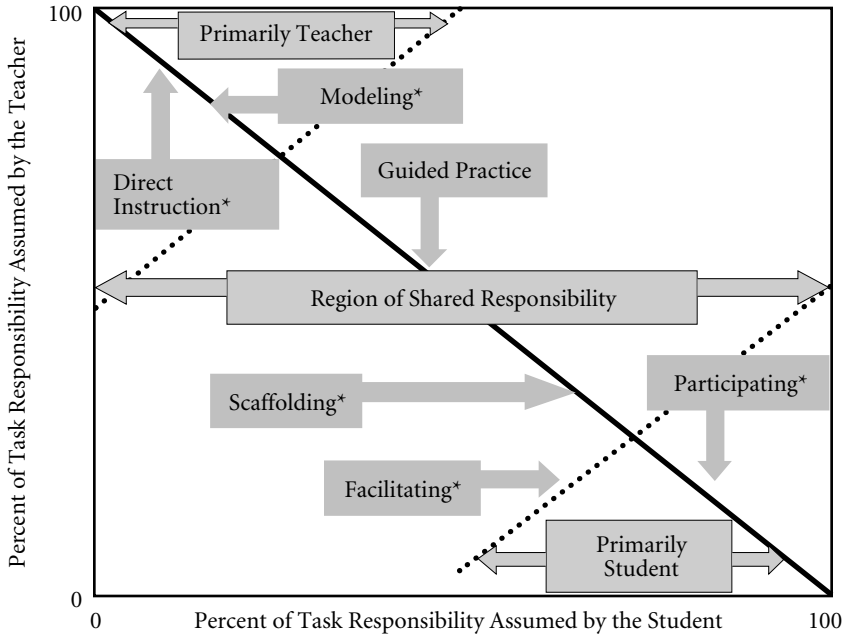
   Later on...

   "Each of you has a chart that lists different pages in your book. When you finish reading a page on the list, stop and make a prediction. Write the prediction in the column that says 'Prediction.' When you get to the next page on the list, check off whether your prediction 'Happened,' 'Will not happen,' or 'Still might happen.' Then make another prediction and write it down." (This is based on the Reading Forecaster Technique from Mason and Au [1986] described and cited in Lipson and Wixson [1991].)
5. *Independent use of the strategy.* "It is time for silent reading. As you read today, remember what we have been working on—making predictions while we read. Be sure to make predictions every two or three pages. Ask yourself why you made the prediction you did—what made you think that. Check as you read to see whether

your prediction came true. Jamal is passing out Predictions! bookmarks to remind you."

Throughout these five phases, it is important that neither the teacher nor the students lose sight of the need to coordinate or orchestrate comprehension strategies. Strategies are not to be used singly—good readers do not read a book and *only* make predictions. Rather, good readers use multiple strategies constantly. Although the above model foregrounds a particular strategy at a particular time, other strategies should also be referenced, modeled, and encouraged throughout the process. A way of conceptualizing the orchestration process is captured in a classic visual model from Pearson and Gallagher's (1983) early work on comprehension instruction. In that model (see Figure 10.1), teachers move from a situation in which they assume all the responsibility for performing a task

Figure 10.1. Gradual release of responsibility



As one moves down the diagonal from upper left to lower right, students assume more, and teachers less, responsibility for task completion. There are three regions of responsibility: primarily teacher in the upper left corner, primarily student in the lower right, and shared responsibility in the center. (This figure is adapted with permission from Pearson and Gallagher [1983]; the asterisked terms are borrowed from Au & Raphael [1998].)

while the student assumes none, which we would call modeling or demonstrating a strategy (the upper left corner), to a situation in which the students assume all the responsibility while the teacher assumes none, which we would call independent strategy use (lower right corner), a situation in which teachers can shift to a participation mode, performing tasks in much the same way as any other group member. Instruction in the upper left corner would be labeled teacher centered, whereas instruction in the lower right would be student centered.

Other Teaching Considerations

Choosing well-suited texts. Another important role for the teacher in implementing this model is in choosing the texts to use. At least some of the texts used during these different phases of comprehension instruction should be chosen to be particularly well suited to application of the specific strategy being learned. Just as many have recommended using texts in decoding instruction that emphasizes the particular sound-letter relationships students are learning, we recommend linking closely the comprehension strategy being taught to the texts to which it is initially applied and practiced. For example, a good text for learning about the prediction strategy would be one that students have not read before (hence, they would not already know what happens next), that has a sequence of events, and that provides sufficient clues about upcoming events for the reader to make informed predictions about them. Also, as is recommended for decoding instruction, we recommend careful attention to the level and demands of texts used in different phases of instruction, especially the early phases. When students are first learning a comprehension strategy, they should encounter texts that do not make heavy demands in other respects, such as background knowledge, vocabulary load, or decoding. Later, of course, students must be asked to apply the strategy to the range of texts they will meet during everyday reading—in reading/language arts, in content area classes (i.e., social studies, science, and mathematics), and on their own.

Concern with student motivation. The level of motivation students bring to a task impacts whether and how they will use comprehension strategies (Dole, Brown, & Trathen, 1996; Guthrie et al., 1996). Therefore, the model we suggest, in particular the independent practice portion, should be made as motivating to students as possible. Accompaniments to comprehension instruction we have already noted—such as providing

experience reading real texts for real reasons and creating an environment rich in high-quality talk about text—will undoubtedly help. Other strategies can be found in books, articles, and chapters devoted specifically to the topic of motivation and engagement (e.g., Guthrie & Wigfield, 1997).

Ongoing assessment. Finally, as with any good instruction, comprehension instruction should be accompanied by ongoing assessment. Teachers should monitor students' use of comprehension strategies and their success at understanding what they read. Results of this monitoring should, in turn, inform the teacher's instruction. When a particular strategy continues to be used ineffectively, or not at all, the teacher should respond with additional instruction or a modified instructional approach. At the same time, students should be monitoring their own use of comprehension strategies, aware of their strengths as well as their weaknesses as developing comprehenders.

Building a Comprehension Curriculum

With this overall model for comprehension instruction as a background to be used in teaching any useful strategy, we now turn to specific comprehension strategies that research has shown to be effective in improving students' comprehension of text. These are the strategies we recommend explaining and modeling for students and then emphasizing in shared, guided, and independent reading. The effectiveness of these strategies is not limited to a particular age group. Age groups used in studies consulted for this review range from kindergarten through college level. Certainly not every strategy presented has been tested for this entire range of age groups, but neither is there substantial evidence to indicate that any strategy is inappropriate for any age range. First, we introduce six important strategies, and then we review some "routines" that actually integrate several strategies in a single activity.

Effective Individual Comprehension Strategies

Prediction. We have labeled the first strategy prediction, although it is better conceived as a family of strategies than a single, identifiable strategy. At its core is making predictions and then reading to see how they turned out, but it also entails activities that come with different labels, such as activating prior knowledge, previewing, and overviewing. What

all these variants have in common is encouraging students to use their existing knowledge to facilitate their understanding of new ideas encountered in text. Although these strategies have some earlier roots (e.g., Ausabel, 1968; Stauffer, 1976, 1980), these activities are most clearly the legacy of the 1980s, with its emphasis on schema theory (Anderson & Pearson, 1984) and comprehension as the bridge between the known and the new (Pearson & Johnson, 1978).

Although it might seem reasonable to expect research on prediction and prior knowledge activation to be equally distributed across narrative and expository text genres, it is decidedly biased toward narrative texts (see Pearson & Fielding, 1991). Two activities dominate the work: making predictions and activating prior knowledge about story theme, content, or structure. Hansen's work (Hansen, 1981; Hansen & Pearson, 1983) provides rich examples of prior knowledge activation. In both instances, students were encouraged to generate expectations about what characters might do based on their own experiences in similar situations. This technique led to superior comprehension of the stories in which the activity was embedded and to superior performance for younger and less able older readers on new stories that the students read without any teacher support. Working with fourth-grade students, Neuman (1988) found that when teachers presented students with oral previews of stories, which were then turned into discussions and predictions, story comprehension increased relative to "read only" previews and typical basal background-building lessons. In a creative variation of the preview theme, McGinley and Denner (1987) had students compose very short narratives based on a list of keywords from the upcoming story. For example, terms such as *loose tooth*, *string*, *pain*, *baseball game*, *tie score*, and *home run* might serve as keywords for an upcoming story about a girl who has a loose tooth that will not come out but falls out naturally when she is engrossed in a close ballgame. Interestingly, the accuracy of their "prediction" stories proved relatively unimportant in explaining subsequent comprehension of the real stories; apparently, it was the engagement itself that triggered the deeper story comprehension.

Explicit attempts to get students to engage in prediction behaviors have proved successful in increasing interest in and memory for stories (Anderson, Wilkinson, Mason, & Shirey, 1987). Fielding, Anderson, and Pearson (1990) found that prediction activities promoted overall story understanding only if the predictions were explicitly compared to text ideas during further reading, suggesting that the verification process, in

which knowledge and text are compared explicitly, may be as important as making the prediction.

These studies suggest a variety of productive ways of encouraging students to engage their knowledge and experience prior to reading. They also suggest that in nearly all cases, the impact on story understanding is positive, at least for narrative texts in which themes and topics are likely to be highly familiar. The situation may be quite different in reading expository texts, especially if students' existing knowledge is riddled with misconceptions about matters of science and prejudices in the realm of human experience (see, for example, Guzzetti, Snyder, Glass, & Gamas, 1993).

Think-aloud. Another proven instructional technique for improving comprehension is think-aloud. As its name implies, think-aloud involves making one's thoughts audible and, usually, public—saying what you are thinking while you are performing a task, in this case, reading. Think-aloud has been shown to improve students' comprehension both when students themselves engage in the practice during reading and also when teachers routinely think aloud while reading to students.

Teacher think-aloud. Teacher think-aloud is typically conceived of as a form of teacher modeling. By thinking aloud, teachers demonstrate effective comprehension strategies and, at least as importantly, when and when not to apply them. For example, in the following teacher think-aloud, the teacher demonstrates the use of visualization and prediction strategies:

> That night Max wore his wolf suit and made mischief of one kind and another.... Boy, I can really visualize Max. He's in this monster suit and he is chasing after his dog with a fork in his hand. I think he is really starting to act crazy. I wonder what made Max act like that...Hm-m-m...I bet he was getting a little bored and wanted to go on an adventure. I think that is my prediction. (Pressley et al., 1992, p. 518)

Studies typically have not examined the effect of teacher think-aloud by itself, but rather as part of a package of reading comprehension strategies. Therefore, although we cannot infer directly that teacher think-aloud is effective, it is clear that as part of a package, teacher think-aloud has been proven effective in a number of studies. For example, teacher think-aloud is part of the Informed Strategies for Learning (ISL) program (Paris, Cross, & Lipson, 1984), the reciprocal teaching approach (see later

discussion), and the SAIL program (see later discussion), all of which have been shown to be effective at improving student comprehension. It is also an important part of the early modeling stages of instruction in many comprehension training routines, for example, the QAR work of Raphael and her colleagues (Raphael, Wonnacott, & Pearson, 1983) and the inference training work of Gordon and Pearson (1983). These studies suggest that teacher modeling is most effective when it is explicit, leaving the student to intuit or infer little about the strategy and its application, and flexible, adjusting strategy use to the text rather than presenting it as governed by rigid rules. Teacher think-aloud with these attributes is most likely to improve students' comprehension of text.

Student think-aloud. Instruction that entails students thinking aloud themselves also has proven effective at improving comprehension (see Kucan & Beck, 1997, for a review). A classic study by Bereiter and Bird (1985) showed that students who were asked to think aloud while reading had better comprehension than students who were not taught to think aloud, according to a question-and-answer comprehension test. A compelling study by Silven and Vauras (1992) demonstrated that students who were prompted to think aloud as part of their comprehension training were better at summarizing information in a text than students whose training did not include think-aloud.

Several scholars have theorized about why student think-aloud is effective at improving comprehension. One popular theory is that getting students to think aloud decreases their impulsiveness (Meichebaum & Asnarow, 1979). Rather than jumping to conclusions about text meaning or moving ahead in the text without having sufficiently understood what had already been read, think-aloud may lead to more thoughtful, strategic reading. A study conducted with third-grade students provides some empirical support for this theory. Baumann and his colleagues found that training in think-aloud improved children's ability to monitor their comprehension while reading (Baumann, Seifert-Kessel, & Jones, 1992). Third-grade children trained to think aloud as they used several comprehension strategies were better than a comparison group at detecting errors in passages, responding to a questionnaire about comprehension monitoring, and completing cloze items. One student trained in think-aloud explained, "When I read I think, is this making sense? I might...ask questions about the story and reread or retell the story" (Baumann et al., p. 159). This and other student comments suggested a thoughtful, strategic approach to reading through think-aloud.

Text structure. Beginning in the late 1970s and extending throughout the 1980s into the early 1990s, we witnessed an explosion of research about the efficacy of teaching children to use the structure of texts, both narrative and expository, to organize their understanding and recall of important ideas. Most of the research emphasized the structural aspects of text organization rather than the substance of the ideas, the logic being that it was structure, not content, that would transfer to new texts that students would meet on their own.

Story structure. The research on story structure uses a few consistent heuristics to help students organize their story understanding and recall. Usually, these are organized into a story grammar (see Mandler, 1978; Stein & Glenn, 1979), or as it is commonly called in instructional parlance, a story map (see Pearson, 1981), which includes categories such as setting, problem, goal, action, outcome, resolution, and theme. Instruction typically consists of modeling, guided practice, and independent practice in recognizing parts of the stories under discussion that instantiate, or "fill," each category. Although there are situations, texts, and populations in which this sort of instruction does not appear helpful, in the main, story structure instruction shows positive effects for a wide range of students, from kindergarten (Morrow, 1984a, 1984b) to the intermediate grades (Gordon & Pearson, 1983; Nolte & Singer, 1985) to high school (Singer & Donlan, 1982) to special populations (Idol, 1987), and to students identified as struggling readers (Fitzgerald & Spiegel, 1983). Regarding transfer, although the effects are complex and sometimes subtle, it appears the effects are most stable for the texts in which the instruction has been embedded (Singer & Donlan, 1982), and they do transfer to new, independently read texts (Gordon & Pearson, 1983; Greenewald & Rossing, 1986).

Informational text structure. Most of the research establishing the positive impact of helping students learn to use the structural features of informational texts as aides to understanding and recall has been conducted since the appearance of elaborate text analysis schemes in the late 1970s (e.g., Kintsch & Van Dijk, 1978; Meyer, 1975; see also Meyer & Rice, 1984, for a complete review of this early work). The early work documented the significance of attention to text structure, pointing out that students—for whatever reasons, including the fact that they are simply better readers—who are more knowledgeable about text structure recall more textual information than those who are less knowledgeable (Bartlett, 1978; Meyer, Brandt, & Bluth, 1980). The work also suggested that knowledge is

not enough. Students must actually follow the text's structure in building their recall for the effect to be realized; not surprisingly, more good than poor readers are inclined to do so (Bartlett, 1978; Taylor, 1980).

The approaches to teaching text structure have exhibited substantial variability, beginning with general attempts to sensitize students to structural elements (e.g., Bartlett, 1978; Davis, Lange, & Samuels, 1988; Slater, Graves, & Piche, 1985) and extending to hierarchical summaries of key ideas (e.g., Taylor & Beach, 1984) and to visual representations of key ideas, such as conceptual maps, semantic networks, charts, and graphs (e.g., Armbruster & Anderson, 1980; Armbruster, Anderson, & Ostertag, 1987; Gallagher & Pearson, 1989; Geva, 1983; Holley & Dansereau, 1984). In general, the research suggests that almost any approach to teaching the structure of informational text improves both comprehension and recall of key text information. One plausible explanation is that systematic attention to the underlying organization, whether intended by the authors of texts or not, helps students relate ideas to one another in ways that make them more understandable and more memorable. Another plausible explanation is that it is actually knowledge of the content, not facility with text structure, that children acquire when they attend to the structural features of text. In other words, text structure is nothing more than an alias for the underlying structure of knowledge in that domain.

Only a few of the studies in this area have evaluated these competing hypotheses. The results of the Gallagher and Pearson (1989) work suggest that both content and structural features contribute to the salutary effects of "text structure" instruction. Over a series of several weeks, Gallagher and Pearson taught fourth-grade students, mainly poor readers, to apply a consistent structural framework, instantiated as a set of matrix charts and flowcharts, to their reading and discussion of short books about different social insects (ants, bees, and termites). The outcome measures included several independently read passages, each passage successively more distant from the original social insect books. They read, in order, a passage about a fourth social insect, the paper wasp, a passage about a human society, and a passage about geographic formations such as gulfs, capes, peninsulas, and the like. As the conceptual distance between the original set of books and the testing passages increased, the effect of the intervention (compared with a group who read the same texts and answered questions and with a group that only read the texts) decreased in magnitude, but was still statistically significant, suggesting that students

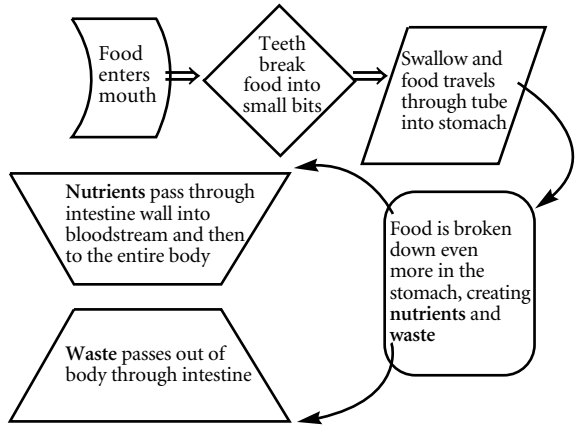
were learning something about (a) insect societies, (b) social organization in general, and (c) how to unearth the structure of an informational text. From a classroom teacher's perspective, there is some comfort in knowing that content knowledge and text structure are naturally intertwined; after all, either or both represent legitimate curricular goals.

Visual representations of text. There is an old saying that a picture is worth a thousand words. When it comes to comprehension, this saying might be paraphrased, "a visual display helps readers understand, organize, and remember some of those thousand words." Compare the short text on digestion to the flow chart in Figure 10.2. The text is verbal, abstract, and eminently forgettable; by contrast, the flowchart is visual, concrete, and arguably more memorable.

Figure 10.2. Text versus visual representation

Text describing the digestive process:
When you eat, you use your teeth to break food apart into tiny particles. These pieces mix with saliva to become a kind of mush. When you swallow, the food goes through a tube into your stomach, where it is digested. During digestion, your body breaks down the food into smaller and smaller bits. The food contains things your body needs, which we call nutrients. As the food passes from the stomach into the intestine, the nutrients pass through the walls of intestine into your bloodstream. Your bloodstream carries these nutrients to all parts of your body. The part of the food that is not digested, which we call waste, passes out of the body through the intestine.

Flowchart of the digestive process:

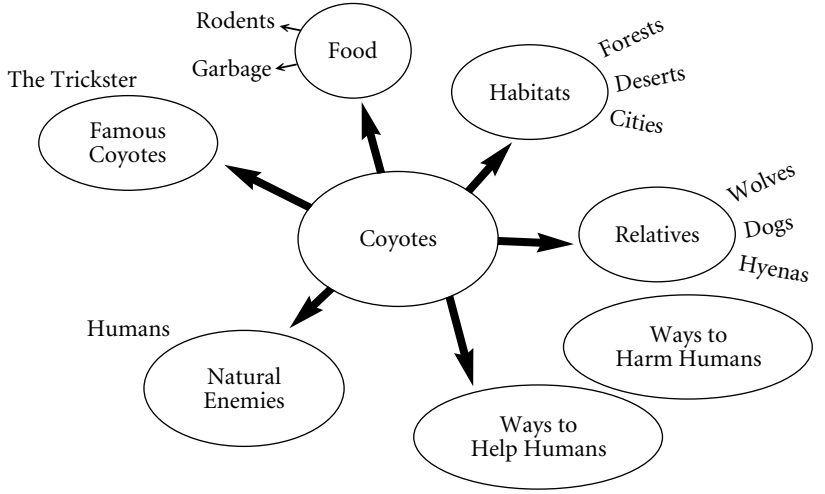


That said, we readily admit that when it comes to the use of visual representations of text, it is difficult, perhaps impossible, to specify exactly what it is that students attend to and learn when teachers use them as heuristic devices to aid in comprehension and recall. The ubiquitous use of semantic maps and webs reveals this ambiguity. Consider, for example, the web in Figure 10.3.

This could be a graphic summary of an article about coyotes. Or, it could be a map of an individual's (or a whole class's collective) knowledge about coyotes. Or, it could be a heuristic device used by a teacher to teach key vocabulary in a unit on scavenging animals. In a practical sense, as we pointed out in discussing text structure instruction, it does not really matter. To the contrary, we would expect tools and activities that improve comprehension to also enhance knowledge of text structure and vocabulary acquisition. The point about visual representations is that they are *re*-presentations; literally, they allow us to present information *again*. It is through that active, transformative process that knowledge, comprehension, and memory form a synergistic relationship—whatever improves one of these elements also improves the others.

Much of the research cited in the previous section on text structure applies to the use of visual displays. Most notable, because of their

Figure 10.3. A semantic map of the concept, coyotes



consistent use of visual displays over an extended time period, is the work of Armbruster, Anderson, and Ostertag (1987) and Gallagher and Pearson (1989). Armbruster and colleagues (1987) employed the heuristic of a general frame to assist students in learning from expository text. For example, in history, a conflict frame is useful in organizing many historical phenomena: One side wants X, the other wants Y, their desires collide in some sort of conflict (war, debate, political battle), and some sort of resolution, often tentative, is reached. In their approach to teaching frames, Armbruster and her colleagues (Armbruster et al., 1987; Armbruster, Anderson, & Meyer, 1990) have identified and successfully taught students, usually at the middle school level, to use several generic frames as tools for organizing what they are learning from their reading, among them frames for depicting conflicts, cause-effect relations, descriptions, explanations, and procedures. The effects in this work are usually quite dramatic in improving understanding and recall for the texts in which the instruction is embedded; transfer effects to new passages read without assistance or without the requirement that the frames be used is much less impressive.

An exception to the transfer effect finding is the work of Gallagher and Pearson (1989), described earlier in conjunction with text structure instruction. Recall that although transfer decreased as a function of conceptual distance from the original information domain (insect societies), it was nonetheless significant even for passages on unrelated topics. What may be central in this sort of instruction, besides consistent and persistent guidance in how and why to use the visual displays, is direct involvement in constructing the visual display along with compelling feedback to the students in the form of evidence that the arduous effort involved in *re*-presenting information pays off in terms of learning and, in the case of older students, better grades.

Summarization. Teaching students to summarize what they read is another way to improve their overall comprehension of text. Dole, Duffy, Roehler, and Pearson (1991) describe summarizing as follows:

> Often confused with determining importance, summarizing is a broader, more synthetic activity for which determining importance is a necessary, but not sufficient, condition. The ability to summarize information requires readers to sift through large units of text, differentiate important from unimportant ideas, and then synthesize those ideas and create a new coherent text that stands for, by substantive criteria,

> the original. This sounds difficult, and the research demonstrates that, in fact, it is. (p. 244)

Indeed, most people with relevant experience will agree that summarizing is a difficult task for many children. Many children require instruction and practice in summarizing before they are able to produce good oral and written summaries of text. Interestingly, research suggests that instruction and practice in summarizing not only improves students' ability to summarize text, but also their overall comprehension of text content. Thus, instruction in summarization can be considered to meet dual purposes: to improve students' ability to summarize text and to improve their ability to comprehend text and recall.

There are at least two major approaches to the teaching of summarization. In rule-governed approaches, students are taught to follow a set of step-by-step procedures to develop summaries. For example, McNeil and Donant (1982) teach the following rules, which draw from the work of Brown, Campione, and Day (1981) and Kintsch and Van Dijk (1978):

Rule 1: Delete unnecessary material.

Rule 2: Delete redundant material.

Rule 3: Compose a word to replace a list of items.

Rule 4: Compose a word to replace individual parts of an action.

Rule 5: Select a topic sentence.

Rule 6: Invent a topic sentence if one is not available.

Through teacher modeling, group practice, and individual practice, students learn to apply these rules to create brief summaries of text.

Other approaches to summarizing text are more holistic. One that has been the subject of research is the GIST procedure (Cunningham, 1982). In GIST, students create summaries of 15 or fewer words for increasingly large amounts of text, beginning with single sentences and working incrementally to an entire paragraph. As Cunningham describes it, GIST is conducted first as a whole class, then in small groups, and finally on an individual basis.

Working with sixth-grade students, Bean and Steenwyk (1984) studied the effectiveness of McNeil and Donant's set of rules procedure and Cunningham's GIST procedure. They found that versions of both approaches were effective not only in improving students' written summaries of text, but also in improving their comprehension of text as

measured by a standardized test. Despite being markedly different, the two approaches were roughly equal in their effectiveness, and both were superior to a control technique that involved only practice in writing summaries based on the main ideas in text.

Perhaps one of the reasons why both McNeil and Donant's and Cunningham's summary procedures are effective is that they are both consistent with an overall model of text processing that itself has stood the test of validation: Kintsch and Van Dijk's (1978) model of text comprehension posits that text is understood through a series of identifiable mental operations. These operations are necessary for understanding both the local and the more global meaning of text within the constraints of working memory, the reader's goals, and the structure of the text. Although a thorough description of these operations is beyond the scope of this chapter, they essentially involve a series of deletions, inferences, and generalizations, much like those required by the summarizing procedures later used by McNeil and Donant.

Questions/questioning. No comprehension activity has a longer or more pervasive tradition than asking students questions about their reading, whether this occurs before, during, or after the reading (see Durkin, 1978, for compelling evidence of the ubiquity of this practice). We also know much about the effect of asking different types of questions on students' understanding and recall of text, with the overall finding that students' understanding and recall can be readily shaped by the types of questions to which they become accustomed (the classic review is Anderson & Biddle, 1975, but see also Levin & Pressley, 1981; Pressey, 1926; Rickards, 1976). Thus, if students receive a steady diet of factual detail questions, they tend, in future encounters with text, to focus their efforts on factual details. If teachers desire recall of details, this is a clear pathway to shaping that behavior. If, by contrast, more general or more inferential understanding is desired, teachers should emphasize questions that provide that focus. When students often experience questions that require them to connect information in the text to their knowledge base, they will tend to focus on this more integrative behavior in the future (e.g., Hansen, 1981).

Although the impact of questions on comprehension is important, for our purposes, the more interesting questions are (a) whether students can learn to generate their own questions about text and (b) what impact this more generative behavior might have on subsequent comprehension. The research on engaging students in the process of generating

questions about the texts they read, although not definitive, is generally positive and encouraging (see Rosenshine, Meister, & Chapman, 1996, for a review). Raphael and her colleagues (Raphael & McKinney, 1983; Raphael & Pearson, 1985; Raphael & Wonnacott, 1985) carried out perhaps the most elaborate line of work on question generation in the mid-1980s. Using a technique called QARs (Question-Answer-Relationships), Raphael and her colleagues modeled and engaged students in the process of differentiating the types of questions they could ask of text. Students learned to distinguish among three types of questions: (1) *Right There* QARs were those in which the question and the answer were explicitly stated in the text, (2) *Think and Search* QARs had questions and answers in the text, but some searching and inferential text connections were required to make the link, and (3) *On My Own* QARs were those in which the question was motivated by some text element or item of information, but the answer had to be generated from the students' prior knowledge. Through a model of giving students ever-increasing responsibility for the question generation, Raphael and her colleagues were able to help students develop a sense of efficacy and confidence in their ability to differentiate strategies in both responding to and generating their own questions for text.

Later research by Yopp (1988) indicated that when students learn to generate questions for text, their overall comprehension improves. In a variation that wedded the logic of QARs with the work on story schemas (e.g., Singer & Donlan, 1982), Yopp studied three different groups that varied in terms of who was taking the responsibility for question generation. In the first group, the teacher asked the questions; in the second, the students generated their own; in the third, the students generated their own and were provided with a metacognitive routine (in the manner of QAR) for answering their own questions. The second and third groups performed better on posttests given during instruction and after the instruction had ended, suggesting that student control of the questioning process is a desirable instructional goal. Furthermore, although it did not translate into higher performance on the comprehension assessments, the third group, those who received the additional metacognitive routine, were better at explaining the processes they used to answer questions.

Perhaps the most compelling evidence for the efficacy of teaching students to generate their own questions while reading comes from the research cited in the subsequent section in which we move from

individual strategies to comprehension routines. The three routines described—reciprocal teaching, transactional strategies instruction, and Questioning the Author—are all research-based approaches to teaching comprehension that, as a part of their overall approach, teach students how to ask questions about text. That the question-generation strategy works so well as part of a larger and more comprehensive routine suggests that when it is implemented in classrooms, it is probably better to use it not as a steady routine repeated for every text encountered, but as an activity that is regularly but intermittently scheduled into guided or shared reading.

Summary of the six individual comprehension strategies. To summarize, we have identified six individual comprehension strategies that research suggests are beneficial to teach to developing readers: prediction/prior knowledge, think-aloud, text structure, visual representations, summarization, and questions/questioning. Although somewhat different terminology is used, these strategies were also identified by the recent National Reading Panel (NRP) report (2000), commissioned by the U.S. Congress to evaluate research in the area of beginning reading. The NRP report also identified "Comprehension Monitoring" and "Cooperative Learning" as effective comprehension strategies. We address comprehension monitoring to some degree in the section covering think-aloud. We view cooperative learning as an instructional medium rather than a comprehension strategy, and therefore have not included it in our analysis. However, the assumption of collaborative work among students and between the teacher and students is implicit in the overall approach to comprehension we recommend in the first section of this chapter, as well as in the comprehension routines discussed later.

A great deal of research suggests that vocabulary and comprehension are inextricably linked. Thus, strategies related to ascertaining the meaning of unknown words, as well as general vocabulary building, are also essential to a strong program in comprehension instruction.

Effective Comprehension Routines

In this section we move from individual strategies—highly specific processes that might be embedded into essentially any discussion of text and combined with other strategies—to what we have termed *comprehension routines*. By using the term *routine*, we mean to capture the

idea of an integrated set of practices that could be applied regularly to one text after another, and in the process, provide students with two benefits: (1) better understanding of the texts to which the routines are applied, and (2) the development of an infrastructure of processes that will benefit encounters with future text, especially texts that students must negotiate on their own. One of these routines, transactional strategies instruction, borders on being a complete comprehension curriculum. We have chosen to focus on three routines—reciprocal teaching, transactional strategies instruction, and Questioning the Author (QtA)—although there are other research-tested practices that might be characterized also as routines, such as the Directed Reading-Thinking Activity (DR-TA) (e.g., Baumann et al., 1992) and Informed Strategies for Learning (Paris, Cross, & Lipson, 1984).

Reciprocal teaching. Four comprehension strategies—predicting, questioning, seeking clarification, and summarizing—are the focus of the reciprocal teaching approach. Originally developed by Annemarie Palincsar (1982; also Brown & Palincsar, 1985; Palincsar & Brown, 1984), reciprocal teaching involves a gradual release of responsibility from teacher to student for carrying out each part of the routine. In the early stages of the reciprocal teaching, the teacher does much modeling of the target comprehension strategies. In some versions of reciprocal teaching, this includes direct teaching of each individual strategy and the use of worksheets for practice strategies (e.g., Palincsar, Brown, & Martin, 1987). As time goes on, students assume increasing control over strategy use, eventually using the strategies with little or no teacher support.

A typical reciprocal teaching session begins with a review of the main points from the previous session's reading, or if the reading is new, predictions about the text based on the title and perhaps other information. Following this, all students read the first paragraph of the text silently to themselves. A student assigned to act as teacher then (a) asks a question about the paragraph, (b) summarizes the paragraph, (c) asks for clarification if needed, and (d) predicts what might be in the next paragraph. During the process, the teacher prompts the student/teacher as needed, and at the end provides feedback about the student/teacher's work.

Reciprocal teaching sessions are intended to take approximately 30 minutes, and they can include more than one student in the role of teacher each session. Although typically conducted in small groups, reciprocal teaching has been conducted in one-to-one and whole-group formats. The approach has been used with both good and struggling

readers. The following dialogues come from reciprocal teaching sessions with students struggling with the technique:

T: What would be a good question about pit vipers that starts with the word *why*?

S: (No response)

T: How about, "Why are the snakes called pit vipers?"

——

S: How do spinner's mate is smaller than.... How am I going to say that?

T: Take your time with it. You want to ask a question about the spinner's mate and what he does, beginning with the word *how*.

S: How do they spend most of his time sitting?

T: You're very close. The question would be "How does the spinner's mate spend most of his time?" Now you ask it.

——

T: That was a fine job, Ken, but I think there might be something to add to our summary. There is more information that I think we need to include. This paragraph is mostly about what?

S: The third method of artificial evaporation. (Palincsar & Brown, 1984, p. 138)

This next dialogue comes from a first-grade class employing reciprocal teaching.

S1: My question is, what does the aquanaut need when he goes under water?

S2: A watch.

S3: Flippers.

S4: A belt.

S1: Those are all good answers.

T:` Nice job! I have a question too. Why does the aquanaut wear a belt? What is so special about it?

S3: It's a heavy belt and keeps him from floating up to the top again.

T: Good for you.

S1: For my summary now: This paragraph was about what aquanauts need to take when they go under the water.

S5: And also about why they need those things.

S3: I think we need to clarify *gear*.

S6: That's the special things they need.

T: Another word for *gear* in this story might be *equipment*, the equipment that makes it easier for the aquanauts to do their job.

S1: I don't think I have a prediction to make.

T: Well, in the story they tell us that there are "many strange and wonderful creatures" that the aquanauts see as they do their work. My prediction is that they'll describe some of these creatures. What are some of the strange creatures you already know about that live in the ocean?

S6: Octopuses.

S3: Whales?

S5: Sharks!

T: Let's listen and find out. Who'll be our teacher? (Palincsar & Brown, 1986, p. 771)

The important role of the teacher as guide is evident throughout the dialogues. In addition to the modeling and scaffolding represented here, the teacher routinely reminds students of why these strategies are important and how they will help students in their reading.

Many studies have investigated the effectiveness of reciprocal teaching. Rosenshine and Meister (1994) reviewed 16 studies of the technique and concluded that reciprocal teaching is effective at improving comprehension of text. This was evident from both experimenter-developed comprehension tests and, to a lesser extent, from standardized tests of comprehension. In another review of research on the approach, Moore (1988) also found reciprocal teaching to be effective across multiple studies. Reciprocal teaching has been compared with many other approaches to comprehension instruction, including teacher modeling alone, explicit instruction and worksheets alone, daily practice at reading test passages and answering accompanying questions, and training at locating information to address different kinds of comprehension questions. In all cases, reciprocal teaching was found to be a more effective approach. (An innovation on reciprocal teaching known as Collaborative Strategic Reading [CSR] has also been shown to be effective in multiple research studies, including studies of the approach's effectiveness with English Language Learners. For more information about this approach, see Klinger and Vaughn [1999].)

Students Achieving Independent Learning (SAIL) and other transactional strategies approaches. The Students Achieving Independent Learning, or SAIL, program also teaches a package of comprehension strategies. Used in Montgomery County, Maryland, USA, strategies emphasized in SAIL include predicting, visualizing, questioning, clarifying, making associations (e.g., between the text and the students' experiences), and summarizing (Pressley et al., 1994). Use of these strategies is taught through teacher think-aloud and explicit instruction. Students practice the strategies in various settings, with an emphasis on student interpretation of text. Indeed, SAIL and a similar program used at the Benchmark School in Media, Pennsylvania, USA, have been characterized as transactional strategies instruction because of their emphasis on transactions among teacher, student, and text (Pressley et al., 1992).

In SAIL, the emphasis is on helping students learn when to use which comprehension strategies. The program uses a range of different kinds of texts that are often quite challenging for students because they are at or above grade level. Consider this summary of a SAIL lesson from a fourth-grade classroom:

- Teacher asks students to write a prediction about what the book will be about based on its cover.
- Teacher begins reading the book, thinking aloud as she reads (e.g., "I wonder if that is the Georgetown in Washington, D.C."; "August must be the name of a person").
- Students take turns reading aloud. As students read, the teacher cues students to apply strategies as appropriate (e.g., "Tell us what has been going on here").
- Students spontaneously employ strategies they have learned in previous work, including seeking clarification, relating the text to their lives, and visualizing (e.g., "I can see a...").
- Students return to their written predictions to assess their accuracy.

As this summary suggests, there is not a predetermined sequence of strategies to use in SAIL lessons. Rather, strategy use depends on the situation; students must coordinate their repertoire of comprehension strategies. Also, more attention is given to individual interpretation of text than to "right answers." Figure 10.4 lists the menu of strategies that can be used in transactional strategies instruction. Two features of the list are worth noting: First, it incorporates all the strategies within

Figure 10.4. Basic components of transactional strategies instruction

Cognitive Strategies	Interpretive Strategies
Thinking aloud	Character development Imagining how a character might feel Identifying with a character
Constructing images	Creating themes
Summarizing	Reading for multiple meanings
Predicting (prior knowledge activation)	Creating literal/figurative distinctions
Questioning	Looking for a consistent point of view
Clarifying	Relating text to personal experience
Story grammar analysis	Relating one text to another
Text structure analysis	Responding to certain text features such as point of view, tone, or mood

Strategies in *italics* are also a part of reciprocal teaching.

reciprocal teaching (on the cognitive side of the ledger). Second, the list is long enough to guarantee selective application (based on the text and the learning context) to any given text. There is no way that a teacher could ensure that each strategy was applied to every text encountered by a group of students.

Much of the research on SAIL and its intellectual cousin, transactional strategies instruction, has been qualitative, looking in detail at the ways that strategies are taught and learned. These studies suggest that SAIL and similar programs offer a promising approach to comprehension instruction, with rich, motivating interactions around text and increasing sophistication of student strategy use over time. One quasi-experimental study of SAIL has confirmed the effectiveness of the approach at improving student comprehension (Brown, Pressley, Van Meter, & Schuder, 1996). In the study, second-grade students in SAIL classrooms outperformed students in comparable non-SAIL classrooms on standardized measures of both reading comprehension and word attack. Students in SAIL classrooms also remembered more content from their daily lessons than students in non-SAIL classrooms. Additional evidence for the efficacy of this "family" of transactional strategy instruction routines can be found in Pressley's (1998) recent review.

Questioning the Author. Beginning in the early 1990s, Isabel Beck and Margaret McKeown, along with a group of colleagues at the University of Pittsburgh and in the surrounding schools, began work on a comprehension routine called Questioning the Author (QtA). Inspired by their own insights (see Beck, McKeown, Sandora, & Worthy, 1996, p. 386) in revising text to make it more considerate (Beck, McKeown, & Gromoll, 1989), Beck and her colleagues bootstrapped this approach to engaging students with text. The idea was that if they, as knowledgeable adult readers, found the process of trying to figure out what authors had in mind in writing a text in a certain way helpful, perhaps students would benefit from querying the author in a similar spirit. Hence, they developed a set of "generic questions" that could be asked as a teacher and group of students made their way through a text. The essential approach is to query a text collaboratively, section by section, with questions like those listed in Figure 10.5 as a guide.

Figure 10.5. Questions to guide the discussion in Questioning the Author

Goal	Candidate Questions
Initiate the discussion	• What is the author trying to say? • What is the author's message? • What is the author talking about?
Help students focus on the author's message	• That is what the author says, but what does it mean?
Help students link information	• How does that connect with what the author already told us? • What information has the author added here that connects to or fits in with...?
Identify difficulties with the way the author has presented information or ideas	• Does that make sense? • Is that said in a clear way? • Did the author explain that clearly? Why or why not? What's missing? What do we need to figure out or find out?
Encourage students to refer to the text either because they've misinterpreted a text statement or to help them recognize that they've made an inference	• Did the author tell us that? • Did the author give us the answer to that?

The expectation is that students who receive this sort of approach to text inquiry will develop improved understanding of the texts to which the routine is applied, improved understanding of texts they meet on their own at a later time, and most important, a critical disposition toward texts in general. Ideally, this approach will help students to entertain the possibility that a comprehension failure may have as much to do with the author's failure to provide a considerate message as it does with the failure of the reader to bring appropriate cognitive and affective resources to bear in trying to understand it.

The data on the efficacy of Questioning the Author (Beck et al., 1996) are encouraging. First, with the support of a professional community, teachers can learn to transform their text discussions from traditional recitations to these more student-centered, interpretive, and decidedly critical discussions. Second, when the routine is implemented, students assume a greater role in the overall text discussions, nearly doubling their piece of the discussion pie (compared with traditional discussions), and they initiate many more interactions. Third, and most important, students become much more successful at higher order comprehension and monitoring their comprehension as a result of participating in Questioning the Author. It is equally empowering to teachers and students. Those who wish to implement this approach should consult the works that Beck and her colleagues have written for classroom teachers (Beck, McKeown, Hamilton, & Kucan, 1997).

Where Will Comprehension Research Go? Some Challenges

There are many who believe that the kind of intense attention that has been aimed at issues of decoding, particularly in recent years, will soon turn to comprehension. Although this is desirable in terms of bringing attention to an often "quiet" literature and increasing the extent to which teachers, parents, and administrators think about how they teach (or fail to teach) comprehension, it is worrisome in light of the character of the decoding debates. Questions that worry us include the following:

- Will comprehension be understood in all of its complexity?

  Even the brief description at the beginning of the chapter of what good readers do when they read makes it clear that comprehension is complex. It has been difficult to convince many that decoding entails more than simply letter-by-letter "sounding out." It

may also be difficult to convince many that comprehension is more than just listening to the words you decode to see if they make sense, and that it involves many different processes, that it entails a multiplicity of different strategies, and that it means different things in different contexts.

- Will we acknowledge that comprehension-learning is different for different people?

  Awareness of individual differences continues to be lacking in much discourse on decoding. Will it be lacking in discourse on comprehension? Will we come to terms with the notion that effective comprehension requires different kinds and amounts of instruction and experiences for different learners?

- Will our definition and fundamental understanding of comprehension keep pace with the changing nature of text?

  We still tend to characterize comprehension of text, and reading in general, as a linear process. This is true even though we know that good readers, whether adults or children, do not read even traditional texts linearly. Readers routinely skip ahead to sections of a text that they believe are most relevant to their reading goals or return to reread sections they first encountered much earlier in the reading. Some texts, such as computer manuals, magazines, and cookbooks, are almost never read from front to back. Even novels, although often read front to back, are sometimes read nonlinearly. A reader recently described to one of us how he usually skips the descriptive parts of each chapter, but returns to them if he gets the feeling he has missed an important detail. With the growing use of hypertext, Web links, and texts that are really webs of many loosely coupled but independently generated texts, increasingly more material will have to be read in a nonlinear style. In the future, text navigation may be linked with text comprehension.

- Will we question long-held or favorite assumptions about effective reading comprehension instruction?

  For example, we are guilty of routinely recommending that students read "real texts for real purposes" in the course of their reading comprehension instruction, although there is little or no research to support this recommendation directly. Research certainly shows that children can develop strong comprehension using authentic texts, but there is little or no research investigating whether, for example, reading comprehension skills develop better

or more quickly when students are reading authentic texts rather than texts written solely for comprehension instruction. There is also little or no research investigating whether reading comprehension abilities develop better when students are reading texts for reasons that go beyond simply learning to read. We suspect (indeed we believe) that both genuine texts and authentic purposes are important aspects of quality comprehension instruction, and in the face of missing evidence, we will continue to recommend both, but neither can be unequivocally recommended with the force of compelling empirical evidence.

- Will we ask questions about the optimal numbers and kinds of comprehension strategies to teach?

  As noted throughout this chapter, we now know of a number of effective strategies, but we also suspect that there is a point of diminishing returns. If two well-taught, well-learned strategies are better than one, are three better than two, four better than three, and so on? Again, the field could continue to focus on developing additional effective strategies, but perhaps our attention is better focused on refining and prioritizing the strategies we already have.

- Will we ask the tough questions about reading comprehension instruction?

  In 1978, Dolores Durkin published her famous (perhaps infamous) study documenting the paucity of comprehension instruction and explicit strategy explanations in elementary classrooms. As our review documents, in the last 20 years we have learned a lot about how to ameliorate the situation Durkin found. Even so, later studies in the 1980s and 1990s have suggested that there is little reading comprehension instruction in schools (e.g., Pressley & Wharton-McDonald, 1998). We need to understand why many teachers do not focus directly on comprehension strategies and routines, and we need to learn more about how to help teachers provide good comprehension instruction. A central question is, How can and should teachers embed all these research-documented practices into a curriculum? It is one thing to demonstrate that if a comprehension strategy is taught systematically over, say, a 10-week period, students will benefit in terms of strategy acquisition, text comprehension, or even standardized test achievement. It is quite another to figure out how to "curricularize" that strategy, along with all the other research-proven strategies that might present themselves to a

teacher or a district curriculum committee for regular inclusion into the reading program. Although each of the individual strategies and routines we have discussed represents an admirable addition to the comprehension curriculum, none could serve as the sole activity students encountered day after day, selection after selection.

Thus, providing some variety both within and among selections makes sense. We have little research, however, on optimal combinations and distributions of various strategies over time. The closest we come to any definitive research on this question is with Transitional Strategies Instruction, which is portrayed by its developers more as a menu of activities from which a teacher could select than as a subset of strategies most appropriate for a particular story, book, or selection. In terms of research, it would be useful to complement our knowledge of the effectiveness of strategies when they are taught in special units with knowledge of their value added to a comprehension curriculum. Without finding better ways of bringing effective comprehension instruction to classrooms, continued research refining particular comprehension instruction techniques will provide little or no real value.

These difficult questions must be addressed by teachers, teacher educators, and reading researchers. The stakes are too high to leave them unanswered and unaddressed. In the meantime, however, we can take some comfort in the knowledge that for the teacher who wants to work directly with students to help them develop a rich repertoire of effective comprehension strategies, the tools are available. We know a great deal about how to help students become more effective, more strategic, more self-reliant readers. It is time that we put that knowledge to work.

Summary

In this chapter, we have described effective individual and collective strategies for teaching comprehension of text and discussed characteristics of a balanced comprehension program into which such strategies could be embedded. In Figure 10.6, we offer a tool for assessing the comprehension instruction environment in your own classroom. We hope that this will aid readers in identifying both strengths and weaknesses in comprehension instruction as well as serving as a summary of the material presented in this chapter. We hope it will not prove overwhelming, even to those who are novices at comprehension instruction. Realize that the use of even one of the techniques described in this chapter has

Figure 10.6. A checklist for assessing the comprehension environment and instruction in the classroom

About the overall reading program

- How much time do students spend actually reading?
- How much reading do students routinely do in texts other than those written solely for reading or content area instruction?
- Do students have clear and compelling purposes in mind when reading?
- How many different genres are available to students within your classroom? How many students read across genres?
- Do students have multiple opportunities to develop vocabulary and concept knowledge through texts?
  Through discussion of new ideas?
  Through direct instruction in vocabulary and concepts?
- Are students given substantial instruction in the accurate and automatic decoding of words?
- How much time do students spend writing texts for others to comprehend?
  With reading-writing connections emphasized?
- Are students afforded an environment rich in high-quality talk about text?

About comprehension strategy instruction

- Are students taught to...
  _ identify their purpose for reading?
  _ preview texts before reading?
  _ make predictions before and during reading?
  _ activate relevant background knowledge for reading?
  _ think aloud while reading?
  _ use text structure to support comprehension?
  _ create visual representations to aid comprehension and recall?
  _ determine the important ideas in what they read?
  _ summarize what they read?
  _ generate questions for text?
  _ handle unfamiliar words during reading?
  _ monitor their comprehension during reading?
- Does instruction about these strategies include
  _ an explicit description of the strategy and when it should be used?
  _ modeling of the strategy in action?
  _ collaborative use of the strategy in action?
  _ guided practice using the strategy, with gradual release of responsibility?
  _ independent practice using the strategy?

About other teaching considerations

- Are students helped to orchestrate multiple strategies, rather than using only one at a time?
- Are the texts used for instruction carefully chosen to match the strategy and students being taught?
- Is there concern with student motivation to engage in literacy activities and apply strategies learned?
- Are students' comprehension skills assessed on an ongoing basis?

been shown to improve students' comprehension of text. In fact, in the previous edition of this book, Pearson suggested that comprehension instruction is best when it focuses on a few well-taught, well-learned strategies. Although we can now point to a litany of effective techniques, that does not mean that using a litany of techniques will be effective.

Questions for Discussion

1. In this chapter we have argued that there is considerable research on effective comprehension instruction, but that much of this research is not reflected in classroom practice. Based on your experience in schools and classrooms, do you agree? If so, why do you think that this is the case?
2. Comprehension is addressed in a number of commercial reading programs. With respect to comprehension instruction, what would you be looking for in evaluating these programs?
3. Arrange to observe comprehension instruction in a local school and classroom. What do you see as relative strengths and weaknesses of comprehension curriculum and instruction in this classroom?
4. We suggest several challenges for future research on comprehension. Which of these do you believe is most salient and why?

REFERENCES

Anderson, R.C., & Biddle, W.B. (1975). On asking people questions about what they are reading. In G.H. Bower (Ed.), *The psychology of learning and motivation* (Vol. 9, pp. 9–129). New York: Academic Press.

Anderson, R.C., & Pearson, P.D. (1984). A schema-theoretic view of basic processes in reading comprehension. In P.D. Pearson, R. Barr, M.L. Kamil, & P. Mosenthal (Eds.), *Handbook of reading research* (pp. 255–291). New York: Longman.

Anderson, R.C., Wilkinson, I.A.G., Mason, J.M., & Shirey, L. (1987, December). Prediction versus word-level questions. In R.C. Anderson (Chair), *Experimental investigations of prediction in small-group reading lessons.* Symposium conducted at the 37th annual meeting of the National Reading Conference, St. Petersburg Beach, FL.

Armbruster, B.B., & Anderson, T.H. (1980). *The effect of mapping on the free recall of expository text* (Tech. Rep. No. 160). Urbana, IL: University of Illinois, Center for the Study of Reading.

Armbruster, B.B., Anderson, T.H., & Meyer, J.L. (1990). *The framing project: A collaboration to improve content area reading using instructional graphics* (Tech. Rep.). Urbana, IL: University of Illinois, Center for the Study of Reading.

Armbruster, B.B., Anderson, T.H., & Ostertag, J. (1987). Does text structure/summarization instruction facilitate learning from expository text? *Reading Research Quarterly*, *22*, 331–346.

Au, K.H., & Raphael, T.E. (1998). Curriculum and teaching in literature-based programs. In T.E. Raphael & K.H. Au (Eds.), *Literature-based instruction: Reshaping the curriculum* (pp. 123–148). Norwood, MA: Christopher-Gordon Publishers.

Ausabel, D.P. (1968). *Educational psychology: A cognitive view*. New York: Holt, Rinehart and Winston.

Bartlett, B.J. (1978). *Top-level structure as an organizational strategy for recall of classroom text*. Unpublished doctoral dissertation, Arizona State University, Tempe.

Baumann, J.F., Seifert-Kessel, N., & Jones, L.A. (1992). Effect of think-aloud instruction on elementary students' comprehension monitoring abilities. *Journal of Reading Behavior*, *24*, 143–172.

Bean, T.W., & Steenwyk, F.L. (1984). The effect of three forms of summarization instruction on sixth graders' summary writing and comprehension. *Journal of Reading Behavior*, *16*, 297–306.

Beck, I.L., McKeown, M.G., & Gromoll, E.W. (1989). Learning from social studies texts. *Cognition and Instruction*, *6*, 99–158.

Beck, I.L., McKeown, M.G., Hamilton, R.L., & Kucan, L. (1997). *Questioning the author: An approach for enhancing student engagement with text*. Newark, DE: International Reading Association.

Beck, I.L., McKeown, M.G., Sandora, C., & Worthy, J. (1996). Questioning the author: A yearlong classroom implementation to engage students with text. *The Elementary School Journal*, *96*, 385–414.

Bereiter, C., & Bird, M. (1985). Use of thinking aloud in identification and teaching of reading comprehension strategies. *Cognition and Instruction*, *2*, 131–156.

Block, C.C., & Pressley, M. (2001). *Comprehension instruction: Research-based best practices*. New York: Guilford.

Brown, A.L., Campione, J.C., & Day, J.D. (1981). Learning to learn: On training students to learn from texts. *Educational Researcher*, *10*, 14–21.

Brown, A.L., & Palinscar, A.S. (1985). *Reciprocal teaching of comprehension strategies: A natural history of one programme for enhancing learning*. (Tech. Rep. No. 334). Urbana, IL: University of Illinois, Center for the Study of Reading.

Brown, R., Pressley, M., Van Meter, P., & Schuder, T. (1996). A quasi-experimental validation of transactional strategies instruction with low-achieving second-grade readers. *Journal of Educational Psychology*, *88*, 18–37.

Cunningham, J.W. (1982). Generating interactions between schemata and text. In J.A. Niles & L.A. Harris (Eds.), *New inquiries in reading research and instruction* (pp. 42–47). Rochester, NY: National Reading Conference.

Davis, J.N., Lange, D.L., & Samuels, S.J. (1988). Effects of text structure instruction on foreign language readers' recall of a scientific journal article. *Journal of Reading Behavior*, *20*, 203–214.

Dole, J.A., Brown, K.J., & Trathen, W. (1996). The effects of strategy instruction on the comprehension performance of at-risk students. *Reading Research Quarterly*, *31*, 62–88.

Dole, J.A., Duffy, G.G., Roehler, L.R., & Pearson, P.D. (1991). Moving from the old to the new: Research on reading comprehension instruction. *Review of Educational Research*, *61*, 239–264.

Durkin, D. (1978). What classroom observations reveal about reading comprehension instruction. *Reading Research Quarterly*, *14*, 481–533.

Fielding, L.G., Anderson, R.C., & Pearson, P.D. (1990). *How discussion questions influence children's story understanding* (Tech. Rep. No. 490). Urbana, IL: University of Illinois, Center for the Study of Reading.

Fitzgerald, J., & Spiegel, D.L. (1983). Enhancing children's reading comprehension through instruction in narrative structure. *Journal of Reading Behavior*, *15*, 1–17.

Gallagher, M., & Pearson, P.D. (1989). *Discussion, comprehension, and knowledge acquisition in content area classrooms* (Tech. Rep. No. 480). Urbana, IL: University of Illinois, Center for the Study of Reading.

Geva, E. (1983). Facilitating reading comprehension through flowcharting. *Reading Research Quarterly*, *18*, 384–405.

Gordon, C.J., & Pearson, P.D. (1983). *The effects of instruction in metacomprehension and inferencing on children's comprehension abilities* (Tech. Rep. No. 277). Urbana, IL: University of Illinois, Center for the Study of Reading.

Greenewald, M.J., & Rossing, R.L. (1986). Short-term and long-term effects of story grammar and self-monitoring training on children's story comprehension. In J.A. Niles & R.V. Lalik (Eds.), *Solving problems in literacy: Learners, teachers, and researchers* (35th Yearbook of the National Reading Conference, pp. 210–213). Rochester, NY: National Reading Conference.

Guthrie, J.T., Van Meter, P., McCann, A.D., Wigfield, A., Bennett, L., Poundstone, C.C., et al. (1996). Growth of literacy engagement: Changes in motivations and strategies during concept-oriented reading instruction. *Reading Research Quarterly*, *31*, 306–332.

Guthrie, J.T., & Wigfield, A. (Eds.). (1997). *Reading engagement: Motivating readers through integrated instruction*. Newark, DE: International Reading Association.

Guzzetti, B.J., Snyder, T.E., Glass, G.V., & Gamas, W.S. (1993). Promoting conceptual change in science: A comparative meta-analysis of instructional interventions from reading education and science education. *Reading Research Quarterly*, *28*, 116–159.

Hansen, J. (1981). The effects of inference training and practice on young children's reading comprehension. *Reading Research Quarterly*, *16*, 391–417.

Hansen, J., & Pearson, P.D. (1983). An instructional study: Improving the inferential comprehension of good and poor fourth-grade readers. *Journal of Educational Psychology*, *75*, 821–829.

Holley, C.D., & Dansereau, D.F. (1984). *Spatial learning strategies: Techniques, applications, and related issues*. New York: Academic Press.

Idol, L. (1987). Group story mapping: A comprehension strategy for both skilled and unskilled readers. *Journal of Learning Disabilities*, *20*, 196–205.

Kintsch, W., & Van Dijk, T.A. (1978). Toward a model of text comprehension and production. *Psychological Review*, *85*, 363–394.

Klinger, J.K., & Vaughn, S. (1999). Promoting reading comprehension, content learning, and English acquisition through Collaborative Strategic Reading (CSR). *The Reading Teacher*, *52*, 738–747.

Kucan, L., & Beck, I.L. (1997). Thinking aloud and reading comprehension research: Inquiry, instruction and social interaction. *Review of Educational Research*, *67*, 271–299.

Levin, J.R., & Pressley, M. (1981). Improving children's prose comprehension: Selected strategies that seem to succeed. In C.M. Santa & B.L. Hayes (Eds.), *Children's prose comprehension: Research and practice* (pp. 44–71). Newark, DE: International Reading Association.

Lipson, M.Y., & Wixson, K.K. (1991). *Assessment and instruction of reading disability: An interactive approach.* New York: HarperCollins.

Mandler, J.M. (1978). A code in the mode: The use of a story schema in retrieval. *Discourse Processes*, *1*, 14–35.

McGinley, W.J., & Denner, P.R. (1987). Story impressions: A prereading/writing activity. *Journal of Reading*, *31*, 248–253.

McNeil, J., & Donant, L. (1982). Summarization strategy for improving reading comprehension. In J.A. Niles & L.A. Harris (Eds.), *New inquiries in reading research and instruction* (pp. 215–219). Rochester, NY: National Reading Conference.

Meichebaum, D., & Asnarow, J. (1979). Cognitive behavior modification and metacognitive development: Implications for the classroom. In P. Kendall & S. Hollon (Eds.), *Cognitive behavioral interventions: Theory research and procedures* (pp. 11–35). New York: Academic Press.

Meyer, B.J.F. (1975). *The organization of prose and its effect on memory*. Amsterdam, Netherlands: North-Holland Publishing.

Meyer, B.J.F., Brandt, D.M., & Bluth, G.J. (1980). Use of top-level structure in text: Key for reading comprehension of ninth-grade students. *Reading Research Quarterly*, *16*, 72–103.

Meyer, B.J.F., & Rice, G.E. (1984). The structure of text. In P.D. Pearson, R. Barr, M.L. Kamil, & P. Mosenthal (Eds.), *Handbook of reading research* (pp. 319–351). New York: Longman.

Moore, P.J. (1988). Reciprocal teaching and reading comprehension: A review. *Journal of Research in Reading*, *11*, 3–14.

Morrow, L.M. (1984a). Effects of story retelling on young children's comprehension and sense of story structure. In J.A. Niles & L.A. Harris (Eds.), *Changing perspectives on research in reading language processing and instruction* (33rd Yearbook of the National Reading Conference, pp. 95–100). Rochester, NY: National Reading Conference.

Morrow, L.M. (1984b). Reading stories to young children: Effects of story structure and traditional questioning strategies on comprehension. *Journal of Reading Behavior*, *16*, 273–288.

National Reading Panel (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (National Institute of Health Pub. No. 00-4769). Washington, DC: National Institute of Child Health and Human Development.

Neuman, S. (1988). Enhancing children's comprehension through previewing. In J. Readence & R.S. Baldwin (Eds.), *Dialogues in literacy research* (37th Yearbook of the National Reading Conference, pp. 219–224). Chicago: National Reading Conference.

Nolte, R., & Singer, H. (1985). Active comprehension: Teaching a process of reading comprehension and its effects on achievement. *The Reading Teacher*, *39*, 24–31.

Palincsar, A.S. (1982). *Improving the reading comprehension of junior high students through the reciprocal teaching of comprehension-monitoring strategies.* Unpublished doctoral dissertation, University of Illinois at Urbana-Champaign.

Palincsar, A.S., & Brown, A.L. (1984). Reciprocal teaching of comprehension fostering and monitoring activities. *Cognition and Instruction, 1*, 117–175.

Palincsar, A.S., & Brown, A.L. (1986). Interactive teaching to promote independent learning from text. *The Reading Teacher, 39*, 771–777.

Palincsar, A.S., Brown, A.L., & Martin, S.M. (1987). Peer interaction in reading comprehension instruction. *Educational Psychologist, 22*, 231–253.

Paris, S.G., Cross, D.R., & Lipson, M.Y. (1984). Informed strategies for learning: A program to improve children's reading awareness and comprehension. *Journal of Educational Psychology, 76*, 1239–1252.

Pearson, P.D. (1981). Asking questions about stories. In *Ginn Occasional Papers: Writings in reading and language arts* (Monograph No. 15). Lexington, MA: Ginn & Co. Reprinted in A.J. Harris & E.R. Sipay (Eds.), *Readings in reading instruction* (3rd ed.). New York: Longman, 1984.

Pearson P.D., & Fielding, L. (1991). Comprehension instruction. In R. Barr, M.L. Kamil, P. Mosenthal, & P.D. Pearson (Eds.), *Handbook of reading research* (Vol. II, pp. 815–860). White Plains, NY: Longman.

Pearson, P.D., & Gallagher, M.C. (1983). The instruction of reading comprehension. *Contemporary Educational Psychology, 8*, 317–344.

Pearson, P.D., & Johnson, D. (1978). *Teaching reading comprehension.* New York: Holt, Rinehart & Winston.

Pearson, P.D., Roehler, L., Dole, J., & Duffy, G. (1992). Developing expertise in reading comprehension. In S.J. Samuels & A.E. Farstrup (Eds.), *What research has to say about reading instruction* (2nd ed., pp. 145–199). Newark, DE: International Reading Association.

Pressey, S.L.A. (1926). A simple apparatus which gives tests and scores—and teaches. *School and Society, 23*, 373–376.

Pressley, M. (1998). Comprehension strategies instruction. In J. Osborn & F. Lehr (Eds.), *Literacy for all: Issues in teaching and learning* (pp. 113–133). New York: Guilford.

Pressley, M. (2000). What should comprehension instruction be the instruction of? In M.L. Kamil, P. Mosenthal, P.D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. 3, pp. 545–561). Mahwah, NJ: Erlbaum.

Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading.* Hillsdale, NJ: Erlbaum.

Pressley, M., Almasi, J., Schuder, T., Bergman, J., Hite, S., El-Dinary, P.B., et al. (1994). Transactional instruction of comprehension strategies: The Montgomery County, Maryland, SAIL Program. *Reading and Writing Quarterly: Overcoming Learning Difficulties, 10*, 5–19.

Pressley, M., El-Dinary, P.B., Gaskins, I., Schuder, T., Bergman, J.L., Almasi, J., et al. (1992). Beyond direct explanation: Transactional instruction of reading comprehension strategies. *The Elementary School Journal, 92*, 513–555.

Pressley, M., & Wharton-McDonald, R. (1998). The development of literacy, part 4: The need for increased comprehension in upper-elementary grades. In M. Pressley (Ed.),

Reading instruction that works: The case for balanced teaching (pp. 192–227). New York: Guilford.
Raphael, T.E., & McKinney, J. (1983). An examination of fifth- and eighth-grade children's question answering behavior: An instructional study in metacognition. *Journal of Reading Behavior*, *15*, 67–86.
Raphael, T.E., & Pearson, P.D. (1985). Increasing students' awareness of sources of information for answering questions. *American Educational Research Journal*, *22*, 217–236.
Raphael, T.E., & Wonnacott, C.A. (1985). Heightening fourth-grade students' sensitivity to sources of information for answering comprehension questions. *Reading Research Quarterly*, *20*, 282–296.
Raphael, T.E., Wonnacott, C.A., & Pearson, P.D. (1983). *Increasing students' sensitivity to sources of information: An instructional study in question-answer relationships* (Tech. Rep. No. 284). Urbana, IL: University of Illinois, Center for the Study of Reading.
Rickards, J.P. (1976). Type of verbatim question interspersed in text: A new look at the position effect. *Journal of Reading Behavior*, *8*, 37–45.
Rosenshine, B., & Meister, C. (1994). Reciprocal teaching: A review of the research. *Review of Educational Research*, *64*, 479–530.
Rosenshine, B., Meister, C., & Chapman, S. (1996). Teaching students to generate questions: A review of the intervention studies. *Review of Educational Research*, *66*, 181–221.
Silven, M., & Vauras, M. (1992). Improving reading through thinking aloud. *Learning and Instruction*, *2*, 69–88.
Singer, H., & Donlan, D. (1982). Active comprehension: Problem-solving schema with question generation for comprehension of complex short stories. *Reading Research Quarterly*, *17*, 166–186.
Slater, W.H., Graves, M.H., & Piche, G.H. (1985). Effects of structural organizers on ninth-grade students' comprehension and recall of four patterns of expository test. *Reading Research Quarterly*, *20*, 189–202.
Stauffer, R.B. (1976). *Teaching reading as a thinking process.* New York: Harper.
Stauffer, R.B. (1980). *Directing the reading-thinking process.* New York: Harper & Row.
Stein, N.I., & Glenn, C. (1979). An analysis of story comprehension in elementary school children. In R.O. Freedle (Ed.), *New directions in discourse processing* (Vol. 2, pp. 53–120). Norwood, NJ: Ablex.
Taylor, B.M. (1980). Children's memory for expository text after reading. *Reading Research Quarterly*, *15*, 399–411.
Taylor, B.M., & Beach, R.W. (1984). The effects of text structure instruction on middle-grade students' comprehension and production of expository text. *Reading Research Quarterly*, *19*, 134–146.
Yopp, R.E. (1988). Questioning and active comprehension. *Questioning Exchange*, *2*, 231–238.

OTHER RESOURCES

The reference section includes references to many books, chapters, and articles that address specific comprehension strategies and approaches to

teaching them. There are also references to several reviews of research. For more comprehensive discussions of comprehension instruction written specifically for teachers, you might consult any of the following recently published books on the topic:

Blachowicz, C., & Ogle, D. (2001). *Reading comprehension: Strategies for independent learners.* New York: Guilford.

Block, C.C., & Pressley, M. (Eds.) (2001). *Comprehension instruction: Research-based best practices.* New York: Guilford.

Keene, E.O., & Zimmerman, S. (1997). *Mosaic of thought: Teaching comprehension in a readers' workshop.* Portsmouth, NH: Heinemann.