

Evidence-Based Strategies for Improving the Reading Comprehension of Secondary Students: Implications for Students with Learning Disabilities

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Reading comprehension is a complex skill that places significant demands on students, beginning with elementary school and continuing through the secondary grades. In this article, we provide an overview of possible factors associated with problems in reading comprehension among secondary students with learning disabilities. Discussion underscores the fact that comprehension problems are evidenced by a heterogeneous group of students. We argue that it is important for teachers to align an intervention with a specific area of difficulty (e.g., teaching prefixes and suffixes to increase reading vocabulary). We highlight research-based interventions advocated by the National Reading Panel and offer ways that teachers can match specific strategies with the individual needs of students with problems in reading comprehension. Finally, we emphasize that whatever strategy is selected, it should be structured, explicit, scaffolded, and intense (Williams et al., 2005).

Reading comprehension has been defined as the process that excerpts and, at the same time, creates meaning by having the student interact and be involved with written language (Shanahan et al., 2010). According to Durkin (1993), it has come to be known as the “essence of reading.” Reading comprehension requires the reader to make connections with the text and, in addition, to the reader’s prior knowledge (van de Broek, Rapp, & Kendeau, 2005). It is a complex task that involves a range of language and cognitive processes and skills that students must master in order to make sense of written text (Fletcher, Lyon, Fuchs, & Barnes, 2007; Oakhill & Cain, 2007; Swanson, Howard, & Sáez, 2006). Not surprisingly, many students identified as having learning disabilities (LD) experience problems in the area of reading comprehension (Klingner, Vaughn, & Boardman, 2007; Swanson, Howard, & Sáez, 2007). These students struggle to construct meaning from written text, connect meaning to words, make inferences, draw conclusions, recall and summarize information, and actively monitor their comprehension (Catts, Adlof, & Weismer, 2006; Jitendra, Hoppes, & Xin, 2000; Rapp et al., 2007; Williams, 2005). These challenges are not necessarily a consequence of problems in decoding; rather, they often are a result of limited working memory (WM) capacity, inhibitory problems, prior knowledge, misconceptions, text structure knowledge, planning, and language difficulties (Adlof, Catts, & Lee, 2010; Borella, Carretti, & Pelegrina, 2010; Kendeau & van den Broek, 2007; Locascio, Mahone, Eason, & Cutting, 2010; Swanson, Kehler, & Jerman, 2010; Taylor & Williams, 1983). In sum, students with reading comprehension problems constitute a diverse group of students who have different profiles across a range of literacy tasks and grade levels (Floyd, Bergeron, & Alfonso, 2006; Gajria, Jitendra, Sood, & Sacks, 2007).

In what follows, we briefly discuss the nature of reading comprehension problems, examine skills that are essential to text comprehension, and highlight the consequences of not being able to understand what is read. We assert that reading comprehension is a multifaceted process and that students need multiple tools to understand what they read. We look at factors essential to reading comprehension and provide evidence-based practices that match the individual needs of students with LD and their specific reading comprehension problems. Finally, we emphasize that, regardless of the strategy, instruction in the area of reading comprehension must be highly structured, directed response/questioning, explicit, systematic, modeled, scaffolded, and intense (Swanson et al., 2007; Williams et al., 2005).

THE NATURE OF READING COMPREHENSION

In recent years, researchers (e.g., Berninger, Abbott, Vermeulen, & Fulton, 2006; Catts et al., 2006) have investigated various aspects of reading, including the relationship between word identification and reading comprehension. Among their findings was that there is strong correlation between reading decoding and reading comprehension, mostly in the early grades. Others have documented the fact that skilled readers comprehend textual material better than less skilled readers (Berninger et al., 2006; Perfetti, 1985, 2007; Wayman, Wallace, Wiley, Ticha, & Espin, 2007). However, studies also have shown that a number of students with comprehension problems possess normal phonological processing skills and perform at a level comparable to children without reading problems; whereas, students with dyslexia or specific word decoding problems evidence difficulties in phonological processing skills (Cain & Oakhill, 2006; Catts et al., 2006; Nation & Norbury, 2005). This suggests that

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difficulty in reading decoding, although critical to reading comprehension (Petscher & Kim, 2011), is not the only cause of reading comprehension problems. Students who possess the ability to decode accurately, but cannot understand what they read, have specific reading comprehension problems. These are the students who often are described in the literature as poor comprehenders. One example of students who can decode but not comprehend are hyperlexic children (usually children with autism spectrum disorder), who have problems integrating information and making sense of what is read (Nation, Clarke, Wright, & Williams, 2006; Nation & Norbury, 2005).

As we discussed, students who usually struggle with reading comprehension benefit from explicit instruction in paraphrasing, inferencing, story mapping, and other evidence-based reading comprehension strategies. Some researchers (e.g., Borella et al., 2010; Swanson et al., 2010) have linked reading comprehension problems to deficits in cognitive skills such as: WM, planning, inhibition, verbal IQ, and language skills (e.g., grammar and vocabulary). Problems in these areas negatively affect a student's ability to summarize text and pose challenges to students with LD in constructing and remembering main ideas of text.

Reading comprehension is the most critical skill students need to be successful in school. Not surprisingly, deficiencies in comprehension, oral and written, can have a negative effect on a student's classroom performance (e.g., written and oral communication) (Mason, 2004; Pape, 2004). Reading comprehension is closely related to listening comprehension and a broad range of language skills (e.g., morphosyntax, semantic, and ability to tell or retell stories) (Duke, 2000; Nation & Snowling, 2004; Wise, Sevcik, Morris, Lovett, & Wolf, 2007). Furthermore, some experts have argued that listening and reading comprehension are based on similar cognitive processes (e.g., WM) (Cain, Oakhill, & Bryant, 2004; Linderholm & van den Broek, 2002; Perfetti, Marron, & Foltz, 1996). With regard to the latter assertion, Swanson et al. (2006) and Swanson et al. (2010) contended that WM is critical to reading comprehension. Swanson and colleagues explained that WM holds new information that is to be connected to prior knowledge and retains that information to construct meaning between the overall representation of the text and the specific content of that text. Thus, WM is essential to successful comprehension of textual material.

To comprehend written language, students must be able to make inferences and to build "mental models" to represent the content of texts (van den Broek, 1988, 1997; van den Broek, Young, Tzeng, & Linderholm, 1999). Students must be able to monitor their reading, to make causal connections, to have some knowledge of text structure, to summarize text, and to possess other language (e.g., semantics) and cognitive skills (e.g., self-regulation) (Cain & Oakhill, 2007; van den Broek & Lorch, 1993; van den Broek, Rapp, & Kendeau, 2005; Tapiero, van den Broek, & Quintana, 2002). For some students, these skills may not develop naturally and can result in reading comprehension problems. Indeed, a significant number of students with LD manifest deficits in these areas. Contrary to conventional wisdom, research has shown that reading comprehension does not improve simply by having students read more (Pressley, Wharton-McDonald,

Mistretta-Hampston, & Echevarria, 1998). Instead, students need highly structured and explicit instruction on strategy use. Strategy use may help to reduce WM load, a factor that would be helpful for poor comprehenders who have low WM capacity (Swanson et al., 2006).

Too often teachers of reading in primary grades emphasize phonological awareness, decoding, and fluency skills. This emphasis mirrors the research on beginning reading instruction, which has focused primarily on decoding and fluency skills (Williams, 2005). However, this rather narrow focus can contribute to the performance gap evidenced by students with and without disabilities because it limits their ability to develop comprehension skills. Basic and higher-order level skills develop simultaneously and not sequentially (Whitehurst & Lonigan, 1998). When only basic skills are reinforced, students are less likely to acquire strategies and skills to enable them to comprehend more complex texts used in the higher grades. For that reason, secondary-level teachers may need to provide instruction in reading comprehension.

In all, students who struggle to comprehend the textual material used in classroom instruction may experience a number of deleterious outcomes. These outcomes range from not learning the subject matter (resulting in failing grades and potential grade retention) to peer rejection and social isolation (e.g., Landrum, Tankersley, & Kauffman, 2003; Mastropieri, Scruggs, & Graetz, 2003). Repeated frustration and failure often leads to escape-motivated classroom behavior—students act-out to distance themselves from a highly aversive classroom situation. At the secondary level, truancy and high dropout rates also are common among students with LD (e.g., Hall, 2004).

FACTORS ESSENTIAL TO COMPREHENSION

Factors essential to reading comprehension that we will discuss include (i) WM capacity and other executive processes, (ii) prior knowledge, (iii) motivation, (iv) vocabulary, (v) text coherence, and (vi) text structure. The accumulated literature documents that problems in one or more of these areas can adversely affect the reading comprehension of students with LD.

Working Memory Capacity and Other Executive Processes

Deficits in reading comprehension, despite average word recognition, have been linked to WM capacity and other executive cognitive processes such as behavioral inhibition and planning/organization (Locascio et al., 2010; Pimper-ton & Nation, 2010; Swanson et al., 2010). In order for a student to have a coherent understanding of a text, it is necessary to hold in WM a mental model of the situation being described while reading about it and, as new knowledge is acquired, revise existing understanding of a particular subject matter (Blanc, Kendeou, van den Broek, & Brouillet, 2008; Tapiero et al., 2002). Many poor comprehenders are not able to monitor their comprehension of textual material without being cued by their classroom teacher (Bos & Filip, 1984);

nor are they able to control the interference of irrelevant verbal information from WM. One or both problems often lead students to incorrectly answer comprehension questions (Pimberton & Nation, 2010). Furthermore, poor verbal WM capacity and deficits in other executive processes (e.g., inhibition) negatively affect the acquisition of language skills (e.g., vocabulary) and retrieval of prior knowledge (Borella et al., 2010; Kalyuga, 2006; Walker & Yekovich, 1987).

Prior Knowledge

Over forty years of research supports the notion that prior knowledge increases students' reading comprehension skills (Bransford & Johnson, 1972; Chiesi, Spilich, & Voss, 1979; Cottrell & McNamara, 2002; McNamara & Kintsch, 1996). Furthermore, prior knowledge of any given topic facilitates the students' learning of new information regarding that topic. When a student reads new information, it triggers prior schemata that relate to the new information contained in the text, thereby strengthening the student's comprehension of the new information and increasing the likelihood that he or she will comprehend the material at a deeper level (Kamalski, Sanders, & Lentz, 2008; Kintsch, 1988; Trabasso & Bouchard, 2002). In addition, prior knowledge enhances a student's ability to remember the content of what has been read (Bransford & Johnson, 1972; Kendeau & van den Broek, 2007). Students with a greater knowledge of a specific topic understand and remember textual information about that topic better than students with less prior knowledge of that area, regardless of their age or reading ability (Chiesi et al., 1979; Kamalski et al., 2008).

Although it is clear from the research that students in the general education curriculum benefit greatly from prior knowledge when it comes to comprehending difficult textual material (Bransford & Johnson, 1972; Chiesi et al., 1979; Cottrell & McNamara, 2002; McNamara & Kintsch, 1996), there is far less evidence regarding the relationship between prior knowledge and comprehension for students with LD. In one of the few available studies, Carr and Thompson (1996) examined the role of prior knowledge for students with LD and students without LD. They found that when explicitly instructed to activate prior knowledge schemata, students with LD could answer inferential comprehension questions, but not as efficiently as their age-level peers without LD. This finding bolsters the argument that students with LD who are poor comprehenders have low WM capacity that interferes with their ability to draw reasonable inferences on the basis of prior knowledge (Dehn, 2008; Swanson et al., 2006).

Learning from textual material within classroom instruction requires students to make connections among ideas from the text and to prior knowledge that they have of the topic. However, poor comprehenders have low WM capacity, and thus experience difficulty making those connections, and drawing upon prior knowledge to make inferences about textual material (Britton, Stimson, Gulgoz, & Stennett, 1998; Kaakinen, Hyona, & Keenan, 2003). Because students with LD are likely to have a deficient prior knowledge base, it is important for secondary level teachers to not only teach spe-

cific reading strategies, but also to teach the content required for knowledge schemata (i.e., information about a topic).

Motivation

Barnett (2000) posited that the level of effort a student puts forth is a contributing factor to reading comprehension and overall academic success. Prior knowledge is related to both reading comprehension and student motivation. Students who have an interest in the textual material are more likely to be motivated to actively process the content (Alexander, Kulikowich, & Schulze, 1994). There also is a relationship between student motivation and the use of reading strategies. For example, Guthrie, Wigfield, and VonSecker (2000) found that students who were taught to use reading strategies were more motivated to read than their counterparts who received traditional instruction. Morgan and Fuchs (2007) conducted a meta-analysis of research on the relationship between reading skills acquisition and motivation and found that a significant correlation existed between reading skill and reading motivation. Further, this relationship was bidirectional, meaning that student's reading achievement and motivation to read predicted each other across time.

According to the accumulated literature, along with WM and the ability to draw upon prior knowledge, motivation is a driving force in reading comprehension. Students with an interest in the text are more likely to put forth effort to read and comprehend the material. Unfortunately, many students with LD have experienced repeated academic failure. Not surprisingly, they are less likely to actively engage in learning tasks or to be sufficiently motivated to put forth the effort necessary to make sense of the textual material (Logan, Medford, & Hughes, 2010; Sideridis, 2003). The use of contingency contracts combined with explicit instruction regarding the text can decrease motivational problems for many students with LD (e.g., Shea & Bauer, 2012).

Vocabulary

Vocabulary knowledge is important for secondary students to understand not only narrative texts, but also expository texts in various academic disciplines (e.g., science and math) (Taylor, Mraz, Nichols, Rickelman, & Wood, 2009). Narrative texts typically contain vocabulary with an Anglo-Saxon origin (e.g., afford, baker); whereas, expository texts make greater use of vocabulary from Greco-Roman origins (e.g., biology, government; Berninger & Wolf, 2009). With this knowledge in mind, teaching secondary students about prefixes/suffixes is one evidence-based strategy for promoting vocabulary development (Bauman, Edwards, Font, Tereshinski, Kame'enui, & Olenjnik, 2002; Cunningham, 2000; Ebbers & Denton, 2008; Thompson, 1958).

Text Coherence

One reason it is important to improve students' reading comprehension is that the content of many secondary level

textbooks is often difficult to comprehend. Mastropieri et al. (2003) have argued that the text density and complexity of secondary textbooks can pose real challenges to many struggling students. Another major source of problems in the area of reading comprehension relates to coherence. Text coherence is the degree to which a reader can comprehend the relationships between various ideas and thoughts communicated in the text. Problems in coherence stem from the fact that many textbooks contain so-called “conceptual gaps.”

Conceptual gaps occur when concepts are unfamiliar to and not well defined for the reader and when relationships between ideas are not explicitly communicated within the text. Conceptual gaps found in low-coherence texts require the reader to make inferences in order to make connections among the various concepts being discussed (McNamara & Kintsch, 1996). For example, a high-school science text (“Characteristics of a Liquid State”) contains the phrases “Liquids with relatively large intermolecular forces, such as those with polar molecules, tend to have relatively high surface tensions. Polar liquids typically exhibit capillary action, the spontaneous rising of a liquid in a narrow tube” (Zundahl & Zundahl, 2007, p. 429). In this example, the relationship between surface tension and capillary action is not explicitly stated. The reader is forced to infer that capillary action is a result of surface tension. One step teachers can take is to teach students about connectives (e.g., If . . . then). Kamalski et al. (2008) found that linguistic coherence makers (i.e., connectives such as *because* and lexical cue phrases such as *for that reason*) facilitated student comprehension of persuasive texts, but not of informative texts for the low knowledge readers. Teachers of students struggling to understand a persuasive text, who are deficient in prior knowledge, can strategically interject coherent makers (e.g., *because*) to facilitate student comprehension (Kalmaski et al., 2008).

Text Structure

Knowledge of text structure is important for comprehension because it facilitates understanding of text and, consequently, a student’s recall of what has been read improves. Text structure refers to the organization of a text (Saenz & Fuchs, 2002). Students with LD who are poor comprehenders often have limited knowledge and understanding of various text structures. For that reason, many of these students have little understanding of how ideas are organized in either a narrative (story structure) or in an expository text structure (informational texts). They must be explicitly taught how text is structured. Poor comprehenders have more difficulty understanding expository texts than narratives because expository texts have various structures while narratives follow a sequence of events which include characters, settings, and actions (McCormick & Zutell, 2011; Saenz & Fuchs, 2002). Unfortunately, secondary students are routinely required to read expository text materials and inevitably struggle to comprehend the material because of text structure, conceptual density, limited vocabulary knowledge, and deficiencies in prior knowledge (Saenz & Fuchs, 2002).

Evidence-Based Instruction to Foster Reading Comprehension

Because the content of many secondary textbooks is difficult for students to comprehend—including students with LD, it is important for teachers to make use of rigorously tested reading strategies that can improve students’ comprehension skills. Indeed, there is a substantial body of evidence to support the notion that reading strategies enhance student comprehension of text material (Bereiter & Bird, 1985; National Reading Panel, 2000; Pressley & Woloshyn, 1995; Williams, 2005). That same literature shows that academically successful students tend to rely on reading strategies more than their less successful counterparts (Chi & Bassok, 1989; Trabasso & Bouchard, 2002). For instance, Nelson and Manset-Williamson (2006) compared a reading intervention that incorporated explicit, self-regulatory strategy instruction to a less explicit intervention. They found that students with reading disabilities who were explicitly taught the self-regulatory strategy were better able to attribute incorrect strategy use to reading failure.

Strategy-based instruction can facilitate student use of WM, understanding of text structure, and provide the motivation to be more involved with the text. In what follows, we discuss more fully the growing body of literature on the use of strategy-based instruction to promote reading comprehension. We incorporate five empirically supported strategies in discussion on text structure, prior knowledge, finding the main idea, etc.

Comprehension requires students to detect the meaning of the written text as a connected whole “rather than as a series of individual words and sentences” (Rapp et al., 2007, p. 292). To do so, students must possess multiple skills, including knowledge of text structure, the ability to find the main idea of a text, and to summarize what they read.

In selecting strategies for building secondary students’ reading comprehension skills, it is important that teachers identify the type of problem the student is evidencing in order to match an intervention to that particular problem. One student may have difficulty with vocabulary, another difficulty making inferences, and a third may have difficulty finding the main idea. Each of these students has a different problem that may require a different intervention. In choosing a particular strategy, selection should be based on the best research-based strategy or strategies should be based on the individual needs of their students. The growing number of evidence-based strategies includes: (i) direct instruction on background knowledge, (ii) graphic organizers, (iii) text structure, (iv) paraphrasing, and (v) summarization.

Direct Instruction on Background Knowledge

There is ample evidence that knowledge of a topic facilitates student understanding and recall of information on that topic (Anderson & Pearson, 1984; Carr & Thompson, 1996). In fact, Dochy, Segers, and Buehl (1999) have reported that 81 percent of students’ test scores are related to prior knowledge. The National Center on Assessing the General Curriculum (NCAC, n.d.) indicated that the best instructional

approaches to support students' background knowledge are direct instruction on background knowledge (e.g., Stevens, 1982), student reflection on and recording of background knowledge (e.g., Carr & Thompson, 1996), and activation of background knowledge through questioning (Rowe & Rayford, 1987).

Several researchers (e.g., Dole, Valencia, Greer, & Wardrop, 1991; Graves, Cooke, & Laberge, 1983) have shown that direct instruction on background knowledge can significantly improve students' comprehension of text. This evidence-based approach includes instruction on definitions of unknown vocabulary, translations of foreign phrases, and clarification of difficult concepts. Other ways to support students' background knowledge are providing a summary of the text to be read and immersing students in experiences followed by Language Experience activities (Graves et al., 1983; Stevens, 1982). McKeown, Beck, Sinatra, and Loxterman (1992) have asserted that the comprehension problems students often encounter when faced with an incoherent or poorly disorganized text can be resolved by building students' background knowledge. Because many students with LD lack the background knowledge needed to understand certain kinds of texts (e.g., science text) (Carr & Thompson, 1996; Ehren, 2005), teachers can provide that knowledge by introducing advance organizers, previewing the text by providing a summary of the text, describing characters, and by having students answering questions about the material (Graves et al., 1983; King, 1994; Pressley et al., 1992).

Although prior knowledge is an important part of comprehension, other factors—cognitive and motivational—affect understanding of text as well. Comprehension of text requires more than the activation of students' prior knowledge; students must be able to monitor their own knowledge (Joseph & Eveleigh, 2011; Schunk & Zimmerman, 2007). Students need to be actively engaged in their learning to be able to connect prior knowledge with new knowledge. Furthermore, successful readers are able to regulate and monitor their own attention, feelings, and behaviors (Zito, Adkins, Gavins, Harris, & Graham, 2007) and to facilitate understanding of what they read. These are areas of deficiency evidenced by many students with LD that secondary teachers may need to address by providing instruction on strategies (Bos, Anders, Filip, & Jaffe, 1989; Gersten, Fuchs, Williams, & Baker, 2001).

Graphic Organizers

Graphic organizers are visual and spatial displays that facilitate teaching and learning by organizing key concepts (Darch & Eaves, 1986). Graphic organizers provide students with a cognitive structure, a framework to relate existing knowledge to new information to be learned (Asubel, 1963; Wittrock, 1992). Graphic organizers include semantic and concept maps, semantic feature analysis, Venn diagrams, and story maps. One critical feature of graphic organizers is that they can be used to represent different text structures (e.g., expository vs. narrative text). In addition, a teacher can use graphic organizers to teach any subject (e.g., science, math, literature). In sum, graphic organizers help students to create an organized schema (Asubel, 1968; Wittrock, 1992)

and to connect prior knowledge to the text they are reading (Mayer, 1984). Graphic organizers also help the reader to extract meaning, remember, and retrieve information (Griffin, Malone, & Kameenui, 1995). For these reasons, the use of graphic organizers is a highly effective way to improve the reading comprehension of students with LD (Kim, Vaughn, Wanzak, & Wei, 2004).

One widely researched graphic organizer is the *concept map* (or diagram) which is used to represent concepts or ideas connected by lines showing the semantic relationship of concepts (Darch & Eaves, 1986; Jitendra & Gajria, 2011). As instructional tools, concept maps can motivate students to become actively engaged and to connect prior knowledge with new knowledge (Gurlitt & Renkl, 2010; Nesbit & Adesope, 2006), a skill lacking among many students with LD. Caldwell and Leslie (2005) suggested that teachers use semantic maps to organize ideas and to illustrate to students the connection among ideas and concepts. When teaching about semantic maps, the most important element of instruction is for teachers to “think aloud” or model. The use of semantic maps reduce WM overload and facilitate retrieval of information by representing the relationship among concepts (O'Donnell, Dansereau, & Hall, 2002). Students are given passages that match their reading level to map out. Next, students are taught steps to completing cognitive maps through the use of the mnemonic TRAVEL. In the first step, *Topic* (write down the topic), students identify the topic, write it down, and circle it. During the *Read* a paragraph step, students read (silently) the paragraph and, in the *Ask* step, they look for the main idea and three details and write them down. In the *Verify* step, students verify the main idea by circling and linking it to the three details. During the *Evaluate* the next paragraph, students examine the paragraph, *Ask* and *Verify* again until the end of the text. When finished, students *Link* the main ideas.

Story mapping has been shown to be an effective reading comprehension strategy (Idol, 1987; Gardill & Jitendra, 1999; Stetter & Hughes, 2010). In using story mapping, the teacher presents the student with a graphic organizer that contains story elements. Knowledge of narrative story structure, often called “story grammar,” facilitates comprehension because it helps the reader understand the elements of *who*, *where*, *what*, *when*, and *why* in a story (Stein & Glenn, 1979; Trabasso & Bouchard, 2002). Teachers model for their students how to locate the elements in the text and explicitly provide “self-instruction statements” to the students, such as “As I am reading the text, I am finding what happens next in the story” (Swanson & De La Paz, 1998). After students are taught the story mapping strategy, they usually show increases in basic comprehension. In addition, many students are able to generalize the strategy to a novel passage, continue to use the strategy (Gardill & Jitendra, 1999), and are more likely to exhibit gains in literal and inferential comprehension (Boyle, 1996; Trabasso & Bouchard, 2002). Following are procedures recommended by Idol (1987) to teach story mapping:

1. *Modeling Phase*: During the model phase the teacher demonstrate how to use the story mapping by reading the story aloud and stopping to fill in the story

components. Teachers must involve students by asking them to label the parts and show them how to write the information. When information is implicit, teachers must model how to generate the inference. Students should copy the information in their own graphic organizer, i.e., story map.

2. *Lead Phase*: During this phase of instruction, students should read the story independently and complete their maps and the teacher prompt them during this stage. The teacher should encourage students to review their maps and to add details they might have omitted.
3. *Test Phase*: In this phase, students read a story, draw their own maps, and answer questions such as: Who were the characters? What was the problem of the story?

Text Structure

Knowledge of ways in which text is organized helps students to better comprehend and remember information from the material they have read (Gersten, Fuchs, Williams, & Baker, 2001; Idol, 1987; Trabasso & Bouchard, 2002; Williams, 2005). It is important for secondary-level students to recognize that the structure of narrative text is very different from the several different possible structures of expository texts (e.g., compare-contrast, description, and listing). When strategies such as story mapping, using clue words (e.g., *different*), and visualization that are designed to teach students text structures are explicitly taught, students are better able to comprehend what they read (Dickson, Simmons, & Kame'enui, 1995; Williams, 2005). The work of DiCecco and Gleason (2002), Hall, Sabey, and McClellan (2005), and Lenz, Adams, Bulgren, Pouliot, & Laroux (2007) supports the judicious use of graphic organizers and clue words to teach students text structures. Because instructional strategies should be congruent with the structure of the textual material students will be asked to read, it is important for teachers to know about *story mapping* for narrative text structure and other types of visual illustrations (i.e., graphic organizers), along with the use of clue words to promote student understanding of expository readings (Lenz et al., 2007).

The multiple and complex structures of expository texts, as opposed to the usual single structure of narrative texts (i.e., story grammar), make comprehension challenging for many students with LD (Fagella-Luby & Deshler, 2008; Westby, Culatta, Lawrence, & Hall-Kenyon, 2010). The research suggests that teachers should use multiple strategies and different types of graphic organizers to help students comprehend expository texts. For example, Hall et al. (2005) used a graphic organizer in the form of a matrix and key words (e.g., *alike*, *similar*, *but*) to teach comprehension of compare-contrast expository texts. Williams et al. (2007) taught cause-effect text structure using multiple strategies such as clue words, graphic organizers, and questioning. As the literature documents explicit instruction of text structure positively contributes to student comprehension of both narrative and expository texts (Gardill & Jitendra, 1999; Gersten et al., 2001; Jitendra, Edwards, Choutka, & Treadway, 2002; Vaughn &

Edmonds, 2006; Williams, Hall, & Lauer, 2004; Williams et al., 2007).

Although knowledge of text structure substantially affects comprehension, especially informational text (e.g., science), many students with LD who are taught about text structure, still have difficulty constructing and remembering the main idea of a text. The identification of the main idea requires certain cognitive processes and skills (e.g., WM) that are problematic for many students with LD. Explicit teacher instruction of cognitive strategies, like paraphrasing and summarization, has been shown to improve student recognition of the main idea (Afflerbach, 1990; Swanson et al., 2006; Westby et al., 2010). However, some students will need to be repeatedly verbally prompted to apply specific processing strategies before they become common practice (Bos et al., 1989).

Finding the Main Idea

Identifying the main idea or “gist” of a text is another essential skill to successful reading comprehension. Williams (1998) recognized the importance of main idea and suggested that the identification of a main idea facilitates students’ ability to draw inferences, to read critically, to summarize large amounts of information, and to remember the important ideas of a text. Among the growing number of evidence-based strategies that relate to identifying the main idea are the Paraphrasing Strategy and the Summarization Strategy. Paraphrasing and summarization are not the same. Paraphrasing requires the reader to use his or her own words to translate the main idea, while summarizing requires the reader to distinguish between important and unimportant information to reduce the overall length of the text. Paraphrasing is the basis of summarizing and should be taught before it. One effective strategy to teach students to paraphrase is the “Paraphrasing Strategy, *RAP*,” developed by Schumaker, Denton, and Deshler (1994) for use with expository text. The *RAP* strategy has been shown to increase student’s ability to identify main ideas and to improve reading comprehension skills (Ellis & Graves, 1990; Hagaman, Luschen, & Reid, 2010; Hagaman & Reid, 2008). By using the acronym *RAP*, students are reminded of the three steps they must take to find the main idea of a paragraph.

Read a paragraph.
Ask yourself

What are the main idea and details of this paragraph?

Put the main idea and details into your own words.

Must be a complete sentence.

Besides teaching students to find the main idea and explain it in their own words, the *RAP* strategy requires students to monitor their comprehension by asking themselves after each paragraph, “What are the main idea and details of this paragraph?” Students are taught to find the main idea of a paragraph by looking at the first sentence of the paragraph and asking themselves, “Does this sentence tell what the paragraph is about?” If the first sentence of the

paragraph is not the main idea, students look for repetition of words in the paragraph. Once they learn to find the main idea, students learn to find the details by asking themselves, “What information in this paragraph tells me more about the main idea?” Paraphrasing as in this case of the RAP strategy has proven to be an effective way to increase comprehension of text across multiple age groups and for students with and without disabilities (Deshler & Schumaker, 2006; Hagaman et al., 2010; Hagaman & Reid, 2008). According to Hagaman et al. (2010), when taught according to the stages of a strategy instruction model, the RAP strategy was effective in promoting the reading comprehension of students with LD. They suggested that the RAP strategy can be easily adapted to different age groups, across many content areas, and customized to students’ individual needs to increase students’ reading comprehension skills. Paraphrasing helps reduce WM overload and increase retrieval of information. Increased academic success provides the students the motivation necessary to make use of strategies such as RAP, graphic organizers, and summarization.

Summarization

Summarization, the ability to tell what the text is about in a concise manner, helps students to concentrate on the major points of a text and compact the information to better comprehend and remember what they read. Summarizing requires more than paraphrasing; it requires making inferences and then synthesizing the information. Schumaker, Knight, and Deshler (2007) defined summarization as “Telling a lot of information with just a few words” (p. 29). Furthermore, summarization is more than retelling; it is a cognitive task that involves WM. Summarization requires the reader to understand, analyze, and synthesize information in order to focus on key elements (i.e., main ideas) that need to be remembered (Westby et al., 2010). Based on the work of Brown and Day (1983) and their colleagues, the National Institute for Literacy (2007) lists four components or steps of the rule-governed summarizing strategy:

1. Identify and/or formulate main ideas,
2. Connect the main ideas,
3. Identify and delete redundancies, and
4. Restate the main ideas and connections using different words and phrasings (p. 23).

According to Gajria and Salvia (1992), the summarization strategy should be taught explicitly, with teacher modeling of each step of the strategy, providing guided practice with controlled materials and corrective feedback, and finally independent practice. It is important to teach each rule to criterion. The strategy should be taught through the use of sets of short paragraphs. Each set should highlight one of the different rules suggested by Brown and Day (1983). Strategies that improve summarization skills strengthen WM and facilitate retrieval of relevant information (Westby et al., 2010).

Various authorities have asserted that summarization is one of the most powerful strategies for promoting student reading comprehension skills (Gajria & Salvia, 1992; Shanahan, 2005; Westby et al., 2010). Recently, Rogevich

and Perin (2008) examined the effects of written summarization along with the TWA (*Think before reading, While reading, and After reading*), a technique developed by Mason (2004) that emphasizes self-monitoring. Results showed significant gains on the comprehension skills of students with and without ADHD. As before, teacher modeling of the strategy using a “think aloud” process has proven to be a powerful tool for teaching students reading comprehension strategies including the use of summarization (Casteel, Isom, & Jordan, 2000). Indeed, after reviewing several studies on summarization, Trabasso and Bouchard (2002) concluded that summarization increases a student’s ability to identify the main idea, remember text, and consequently, improve their reading comprehension.

Summary and Implications

Today, secondary level teachers face tremendous pressure to deliver quality instruction and to prepare all students to perform well in class and on high-stakes tests (Mastropieri et al., 2003). With that challenge in mind, we examined problems students might have with reading comprehension and offered evidence-based strategies to address the needs of struggling readers. We began with an overview of possible factors associated with reading comprehension problems among students with LD. We discussed the fact that reading comprehension difficulties are not solely a product of reading decoding skills and that teachers should not assume that a student’s problem with comprehension is caused by poor decoding skills. We argued that teachers of students with LD should identify the reason a student is struggling to comprehend what they read and design instruction according to the exact nature of the comprehension problem.

Because there is strong evidence to include teaching of strategies based on empirical research for reading comprehension in the secondary curriculum, we offered a number of strategies applicable at the secondary level, recommended by the National Reading Panel and experts in the field of reading comprehension. Finally, we underscored the fact that (i) when problem identification and evidence-based interventions are properly aligned with one another and (ii) when students are taught specific reading comprehension strategies, they are more likely to be successful learners. As we discussed, students with LD evidence a range of problems. Students who are poor comprehenders may show problems in one or more of the following areas: vocabulary and other language skills (e.g., syntax), memory (in particular WM and retrieval of information), strategy knowledge, motivation, and prior knowledge, all of which can negatively affect reading comprehension.

Regardless of the particular strategy, the delivery of instruction should follow certain procedures that have been shown to facilitate learning. Williams et al. (2005) recommended that effective comprehension instruction should be highly structured, explicit, scaffolded, and intensive, include multiple opportunities for practice, and incorporate noteworthy assignments. Once the teacher has identified a student’s problem, it is possible to choose from among a growing number of evidence-based strategies. Examples of strategies

for which there is strong empirical support include: activation of prior knowledge; self-monitoring; vocabulary instruction; text structure; and finding the main idea, all of which address deficits of many students with LD.

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