

Comprehension Instruction

Research-Based Best Practices

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Improving the Reading Comprehension of At-Risk Adolescents

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THE CHALLENGE

Students with high-incidence disabilities (e.g., learning disabilities) have fared poorly in secondary schools. Compared with their peers without disabilities, these students experience a broad array of performance and adjustment problems, including: (1) higher rates of absenteeism, (2) lower grade point averages, (3) higher course failure rates (Wagner, Blackorby, & Hebbeler, 1993); (4) lower levels of self-confidence, and (5) higher rates of inappropriate social behaviors (Schumaker, 1992). Predictably, more than one third (38%) of these students drop out of high school each year, and only one fourth (25%) pursue postsecondary education (Wagner et al., 1993). In short, many students with high-incidence disabilities are not being prepared to succeed in high school, and they are not likely to succeed when they face the demanding expectations of the global economy or the expected dramatic transformation of work and the workplace (Martin, 1999; Oliver, 1999; Rifkin, 1995).

As discouraging as the present state of circumstances is, a number of current educational trends may exacerbate the situation even further. Foremost among these trends are the expectations that: (1) students with high-incidence disabilities be included in general education classrooms for most if not all of the school day (Kauffman, 1994); (2) all students, including those with disabilities, meet the curriculum standards adopted by states and professional organizations (Erickson, Ysseldyke, Thurlow, & Elliot, 1998; National Research Council, 1997); (3) all students not merely acquire skills and knowledge but apply what they have learned to solve authentic problems (Kameenui & Carnine, 1998).

In order for students with disabilities to succeed within the larger context of these trends, they must be able to learn and apply the challenging content taught in today's secondary schools. Central to this challenge is the expectation that students with high-incidence disabilities will comprehend large amounts of complex content presented in written formats in subject-area classes. Much of this written information is found in students' textbooks. These textbooks not only seem to get thicker each year but also can contain complex information written several readability levels above the students' grade level.

Meeting the expectations associated with comprehending and learning this written information requires students to use a broad array of higher order information-processing skills. Students with such skills (1) plan for their own comprehension; (2) know a large number of comprehension strategies; (3) understand when, where, why, and how to apply these strategies; and (4) monitor their own comprehension (Pressley, Borkowski, & Schneider, 1990). For example, when faced with the task of comprehending a passage from a textbook, good information processors (Pressley & Woloshyn, 1995) first survey it to determine what information is important to learn. During reading, they process important information more deeply than less relevant information. They might paraphrase it, make mental pictures of it, and ask and answer questions about it. They also might relate what they are learning to their prior knowledge. After reading, these students revisit sections that contained particularly important information and work to clarify information they may not have fully understood (Pressley & Afflerbach, 1995).

Unfortunately, research has shown that students with high-incidence disabilities often lack the higher order information-processing skills needed to comprehend complex written content. For example, on tests of reading ability, adolescents with learning disabilities typically score below the 10th percentile (Deshler, Schumaker, Alley, Warner, & Clark, 1982). On average, they read at the fourth-grade level throughout junior and senior high. These students also typically lack knowledge of such comprehension strategies as (1) how to survey text (Schumaker, Deshler, Alley, Warner, & Denton, 1982), (2) how to visualize what is read (Clark, Deshler, Schumaker, Alley, & Warner, 1984), (3) how to ask oneself questions to monitor understanding (Clark et al., 1984), and (4) how to summarize what has been learned (Schumaker & Deshler, 1992).

To help such students meet the expectation that they comprehend complex written information, teachers will have to teach them the necessary strategies. In addition, they will have to deliver subject-area instruction in such a way as to compensate for the information-processing deficits of students with disabilities. Teachers who provide such instruction (1) engage students in the learning process; (2) present abstract, complex concepts in concrete forms; (3) make apparent the structure or organization of information; (4) make explicit the relationships among pieces of information; (5) distinguish between important and less important information; and (6) connect new information to previously learned information (Lenz, Bulgren, & Hudson, 1990) and ensure that students understand the meaning of key vocabulary related to the topic that they will encounter in the readings.

Nevertheless, much of the subject-matter instruction in today's schools is not responsive to the information-processing needs of students with disabilities. For example, research has indicated that lecture and independent seatwork activities are the dominant modes of instruction in secondary-level classrooms (McIntosh, Vaughn, Schumm, Haager, & Lee, 1993; Putnam, Deshler, & Schumaker, 1992). During the teacher-centered instructional method of lecturing, students are provided little opportunity to discuss what

they know about a topic and to relate their prior knowledge to new content (McIntosh et al., 1993); they are required to seek their own clarification of information they are not fully understanding (Skrtic, Clark, & Knowlton, 1980); and they receive little feedback about their learning (McIntosh et al., 1993; Skrtic et al., 1980). Additionally, teachers often do not provide advance organizers (Lenz, Alley, & Schumaker, 1987), do not explicitly describe concepts being taught (Bulgren, Schumaker, & Deshler, 1988), and do not monitor student understanding of the information they are to learn (McIntosh et al., 1993).

Clearly, in order for students with high-incidence disabilities to meet the expectation that they comprehend the complex written content associated with subject-area classes, educational practices must be altered. Specifically, these students must be taught the strategies they need to comprehend written information, and their teachers must learn to present information in such a way as to enhance their students' comprehension. Fortunately, in recent years, much has been learned about how the comprehension of students with disabilities can be improved. Two approaches that have been developed and field tested are the learning strategies approach and the content enhancement approach.

THE LEARNING STRATEGIES APPROACH

The learning strategies approach has been designed so that students who lack higher order information-processing skills can be taught directly the skills they need to succeed in school. This approach focuses on the instruction of learning strategies or sets of behaviors that learners use to approach academic tasks. Over the past 20 years, specific strategies and associated instructional methods have been developed to help students to comprehend narrative and expository text, understand and remember important vocabulary words, and interpret visual aids. (See Table 23.1 for descriptions of the learning strategies associated with reading comprehension.)

Each of these strategies actually constitutes a *strategy system*—a complex set of cognitive and metacognitive strategies and other behaviors used in sequence to complete a comprehension task. For example, the paraphrasing strategy is composed of three steps: (1) read a paragraph; (2) ask yourself, "What are the main idea and details in this paragraph?"; and (3) put the main idea and details in your own words. The first step prompts students to approach the reading task in small chunks. The second step prompts students to use the cognitive strategy of self-questioning. To answer the question, students must look the main idea and details in the paragraph, discriminate the main idea from details, and discriminate important details from unimportant details. The final step prompts students to use the cognitive strategy of summarizing to translate the main ideas and details into their own words.

Instructional Methods

Learning strategies such as the paraphrasing strategy are taught to students using an eight-stage instructional model (Ellis, Deshler, Lenz, Schumaker, & Clark, 1991). In Stage 1, Pretest and Make Commitments, students are tested to determine their current ability to comprehend complex subject-area content or to learn vocabulary. If the pretest shows a need to learn a strategy to respond to a particular setting demand, students are asked to

TABLE 23.1. Learning Strategies Associated with Text Comprehension

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- The paraphrasing strategy (Schumaker, Denton, & Deshler, 1984). Students use this strategy to focus their attention on the main ideas and most important details in each paragraph in a passage to restate that information in their own words.
 - The self-questioning strategy (Schumaker, Deshler, Nolan, & Alley, 1994). Students use this strategy to ask questions about key pieces of the information in the passage, to make predictions, to locate answers to the questions as they read further, and to talk to themselves about those answers in relation to their predictions.
 - The visual imagery strategy (Schumaker, Deshler, Zemitzsch, & Warner, 1993). Students use this strategy to make mental movies of the scenes being described, incorporating actors, action, and details.
 - The multipass strategy (Schumaker, Deshler, Alley, Warner, & Denton, 1982). Students use this strategy to make three passes through a passage of text, such as a textbook chapter. They survey it to get an overview, systematically scan through it to locate important information and note it, and locate answers to specific questions at the end of the passage.
 - The interpreting visual aids strategy (Deshler, Ellis, & Lenz, 1996). Students use this strategy to systematically analyze visual devices such as maps, graphs, pictures, and tables and to talk to themselves about the information.
 - The vocabulary strategy (Ellis, 1992). Students use this strategy to create memory devices and study cards to help them understand and remember key vocabulary.
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make a personal commitment, in the form of a written goal, to learn that strategy. In Stage 2, Describe, a description of the strategy is provided by the teacher, including where, when, how, and why the strategy should be used. In Stage 3, Model, the teacher demonstrates all aspects of the strategy by thinking aloud while using it. As the model stage progresses, the teacher prompts student involvement in the demonstration, checks understanding of the underlying strategic processes, shapes and corrects student responses, and engineers student success.

During Stage 4, Verbal Practice, students learn to name and explain each of the strategy steps. This is required if they are to prompt themselves through the sequence of strategy steps independently. In Stage 5, Controlled Practice and Feedback, students practice applying the new strategy to materials in which the complexity, length, and difficulty have been controlled. For example, even though the social studies textbook might be written at the 10th-grade level, a student reading at the 5th-grade level might learn in Stage 5 to apply the strategy to a passage written at the 5th-grade level. After each practice attempt, students receive positive and corrective feedback from the teacher.

Once students reach a predetermined level of mastery within controlled materials, they proceed to Stage 6, Advanced Practice with Feedback. In this stage, students are given many opportunities to practice using the strategy with materials and in situations that closely approximate the demands placed on them in their subject-area courses. In Stage 7, Posttest and Make Commitments, students are tested to determine if they have mastered the strategy. The teacher and students take time to reflect on progress and to celebrate achievement of the original goal. Also, students are asked to make a commitment to generalize their use of the strategy to other settings and situations.

During the eighth and final stage of the instructional model, Generalization, teachers provide opportunities to generalize the strategy across tasks, situations, and settings. They first orient students to the various contexts in which the strategy can be applied. Next, students are given opportunities to practice the strategy with new materials and in

a variety of settings. Then the teacher prompts students to modify or combine the new strategy with other strategies to comprehend complex content. Finally, teachers periodically administer probes to determine whether students are continuing to use the strategy and whether additional instruction in the strategy is needed.

Research Results

This eight-stage instructional model has been empirically validated through a series of research studies showing that students with disabilities who lack higher order information-processing skills can learn these strategies and can apply them to mediate their own comprehension of subject-area content (Schumaker & Deshler, 1992). For example, when six secondary-level students whose reading comprehension scores ranged between the fourth- and seventh-grade levels were taught the visual imagery strategy in a resource classroom, their reading comprehension scores improved. Prior to mastering the strategy, the students had earned a mean score of 42% correct on reading comprehension tests of passages written at their grade levels when prompted to make visual images of what they read. After learning the strategy, they earned a mean score of 81%. Moreover, on follow-up probes given after students had learned the strategy, students continued to earn, on average, comprehension scores of 77% correct.

This study and others associated with the comprehension strategies (e.g., Lenz & Hughes, 1990; Scanlon, Deshler, & Schumaker, 1996; Schumaker et al., 1982) indicate that students with high-incidence disabilities can learn to mediate their own comprehension of complex subject-area text written at their grade levels through intensive, systematic, and explicit instruction in a learning strategy. Indeed, through strategy instruction, many students have made gains of as many as four to seven grade levels, which have enabled them to meet the reading demands of their general education subject-area classes. These positive results were achieved when students received instruction in one-on-one or small-group formats on a daily basis and had plenty of opportunities to practice the strategy to mastery and to receive individualized feedback on performance.

Because these kinds of conditions are not often present in today's schools, in which resource-room programs have often been eliminated, some researchers have investigated whether these students can be taught learning strategies under the conditions that are typically present in general education classes. For example, Beals (1983) examined whether adolescents could learn the self-questioning strategy and the paraphrasing strategy in a high school English class. The eight-stage instructional model described previously was combined with cooperative group structures (Johnson & Johnson, 1996; Slavin, Stevens, & Madden, 1988) to teach the strategies to a heterogeneous class of students, including those with disabilities. All students mastered the strategies, and their reading comprehension scores increased substantially. Unfortunately, the general education teacher indicated that the time and energy required to deliver the intensive strategy instruction was a significant problem. It was so significant that a part-time assistant was recruited to help the teacher score practice activities. The teacher also indicated that she did not like sacrificing the instruction of other required English content in order to teach the strategies. High-achieving students in the class indicated that they were not satisfied with the instruction (probably because they already comprehended what they were reading before the strategy instruction began) and complained that they did not like having to teach other students in their cooperative groups.

In another study, Wedel, Deshler, and Schumaker (1988) examined the impact of teaching the vocabulary strategy to students in a middle school English class. Students in the experimental class received instruction on the strategy for four to five classes per week, 20 to 30 minutes per class, for 8 weeks. Students in the experimental group understood and remembered definitions of significantly more vocabulary words than did students in the comparison group. Students with mild disabilities, on average, earned a pretest score of 53% correct and a posttest score of 77% correct. However, some of the students with mild disabilities required additional practice time in the resource room in order to reach mastery on the strategy.

In a more recent study in a middle school, Seybert (1998) studied the impact of teaching students the vocabulary strategy and the self-questioning strategy in general education science and social studies classes. Again, although statistically significant differences were achieved on some measures, several students with disabilities had to receive individual instruction in the resource room in order for them to learn the strategies.

In response to general education teachers' complaints that strategy instruction is too time-consuming, Scanlon et al. (1996) worked to streamline strategy instruction. A three-stage instructional model was created. During Stage 1, the teacher introduces students to the concept of strategic learning. During Stage 2, the teacher describes and models a strategy using content-area information. During Stage 3, the teacher provides students opportunities to practice applying the strategy to subject-area information. Thus teachers who use this model simultaneously focus student attention on subject-area content and teach a learning strategy that students can use to mediate their comprehension of that content.

In a study examining the efficacy of this instructional model, students were taught a learning strategy called the Order Strategy (Scanlon et al., 1996). This strategy enables students to identify key information in either written text or notes and to depict graphically how the information is related using one of four major expository structures: sequence, descriptive, compare-contrast, or problem-solution. Recognizing expository structures or organizing content using expository structures aids comprehension (e.g., Darch, Carnine, & Kameenui, 1986; Kinder & Bursuck, 1991; Meyer, Brandt, & Bluth, 1980). Over the course of one semester, social studies teachers introduced, modeled, and had students practice using the strategy to process important content they were to learn.

The teachers' performance of virtually all the teaching behaviors (e.g., describing, modeling, providing opportunities to practice, providing feedback) was limited and decreased over the course of the semester. They provided very few opportunities (i.e., three on average) for students to practice using the strategy after it had been introduced. Student outcomes reflected the low implementation levels by their teachers. At the end of the semester, students on average could name only half of the steps in the strategy. This lack of knowledge inhibited their ability to fully apply the strategy to content. Moreover, though students showed statistically significant gains in achievement after using the strategy, the magnitude of the gains was minimal and could not be considered socially significant (Scanlon et al., 1996).

To summarize, if students with high-incidence disabilities are provided intensive instruction, they can learn higher order information-processing skills for mediating their own comprehension of materials written at their grade levels. However, providing such intensive instruction in general education subject-area courses is very difficult. In order to teach strategies in their general education classes, teachers have had to give up teaching some prescribed content (Beals, 1983). They were not able to deliver strategy instruction

as often as they would like because of other demands, such as covering a certain amount of content by the end of the semester (Scanlon et al., 1996). Even when teachers were willing to make this tradeoff, strategy instruction provided in subject-area classes was not sufficient for some students with mild disabilities to master the strategies. They needed additional intensive practice in a separate setting. Thus, if students with disabilities are to benefit from strategic instruction, it must be intensively delivered by someone who views that instruction as a major responsibility, one that does not conflict with other duties.

Implications

These results have certain implications for schools interested in improving students' reading comprehension. First, schools must identify those students whose reading comprehension deficits render them unable to meet the reading demands associated with their general education classes. Second, venues must be provided within which the necessary conditions are present for students to learn comprehension strategies. Third, teachers must be assigned the duties of teaching strategies to students, and they must be held accountable for providing that instruction and for ensuring that students reach mastery. A variety of models can be designed (Hock, Deshler, & Schumaker, 1999). Some schools are currently providing such instruction to students during their regularly scheduled language arts/English periods in small-group settings. Other schools are providing the instruction through specially designed learning strategies courses in which students enroll as an elective. Still other schools are providing the instruction in resource rooms, in summer-school programs, or in before- or after-school programs. Regardless of the model, instruction must be provided in several strategies so that students can comprehend a variety of types of text at their grade levels.

THE CONTENT ENHANCEMENT APPROACH

Another method related to improving the reading comprehension of students with disabilities focuses on the way subject-area teachers present subject-area information in their classes. This method, called the content enhancement approach, enables teachers to compensate for students' information-processing deficits and mediate their comprehension of complex content (Lenz & Bulgren, 1995; Schumaker, Deshler, & McKnight, 1991). Within this approach, teachers can effectively cover important subject-area content and mediate students' comprehension of it simultaneously.

To use this approach, subject-area teachers first examine the outcome standards that students must meet and select the critical content related to those standards that all their students must learn. They then carefully analyze this critical content (including the assigned readings) to determine what information may be difficult for their students to understand. They consider, among other factors, whether the quantity, complexity, abstractness, and/or organization of the content might pose barriers to student comprehension and learning. Once they have identified the critical content and have determined why it may be difficult for students to understand, they then select a content enhancement routine to transform that content into more easily understood formats. They also use the routine to present the content in class in such a way as to prepare students for upcoming reading assignments and lesson activities and to enhance their learning during lessons.

Several content enhancement routines that relate to improving the reading comprehension of students have been developed and field tested over the past 17 years. Two categories of content enhancement routines are organizing routines and understanding routines. Organizing routines are used to create frameworks for understanding the structure of critical course content, whereas understanding routines are used to help students understand important, abstract, and/or complex concepts. (See Table 23.2 for descriptions of specific organizing routines and Table 23.3 for descriptions of specific understanding routines.)

Both types of routines can be used to prepare students for upcoming reading assignments. The organizing routines help students to understand the underlying structures to which all of the pieces of information that they are learning are related. If they understand these structures and relationships, they are more likely to focus on the most important information as they read, and they are more likely to remember it. The understanding routines help students to understand the larger concepts or main ideas to which all the pieces of information are related. Some of them help students to understand and remember key terms (e.g., vocabulary, people, places, events) to which much of the content is related. Thus the routines can be used to prepare students to comprehend their reading assignments because, in essence, they provide a mental "file cabinet" and labeled "file folders" within which students can store the bits of information that they will encounter.

The centerpiece of each routine is its associated teaching device. Most of the devices are graphic depictions of how information is related. Each device has been designed to focus student attention on critical content, to prompt student discussion of that content, to make relationships between pieces of content explicit, and to prompt higher order thinking processes. Figure 23.1 displays an example concept diagram, a graphic device created through use of the concept mastery routine. This diagram displays information related to the target concept "civil war." It was created by a history teacher and her students in an interactive partnership as they analyzed the concept together. Specifically, the concept diagram is used to display: (1) the name of a target concept and the category into which the concept fits, (2) words students associate with the target concept, (3) characteristics that set the examples of the target concept apart from examples of other concepts, (4) examples and nonexamples of the concept, (5) the definition of the concept, and (6) items that

TABLE 23.2. Organizing Routines

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- The course organizer routine (Lenz, Schumaker, Deshler, & Bulgren, 1998). Used by teachers to introduce a course and provide mile markers throughout a course.
 - The unit organizer routine (Lenz, Bulgren, Schumaker, Deshler, & Boudah, 1994). Used to introduce each unit within a course and the relationships among the content within the unit.
 - The lesson organizer routine (Lenz, Marrs, Schumaker, & Deshler, 1993). Used to provide an advance organizer for particularly difficult lessons, including the relationships of information within the lesson and between the current lesson and previous and future lessons and the unit of study.
 - The survey routine (Deshler, Schumaker, & McKnight, 1997). Used to provide an advanced organizer for a reading assignment and includes providing an organization for the passage, identifying the critical content, and specifying the relationships among key pieces of information in the passage.
 - The framing routine (Ellis, 1998). Used to highlight relationships between main ideas and essential details in text and to help students consider the significance of the content.
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TABLE 23.3. Understanding Routines

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- The concept anchoring routine (Bulgren, Schumaker, & Deshler, 1994). Used to enhance students' understanding of a new concept by relating it to a concept that they already know and understand.
 - The concept mastery routine (Bulgren, Deshler, & Schumaker, 1993). Used to enhance student understanding of a concept by clarifying its definitive characteristics and exploring examples of the concept.
 - The concept comparison routine (Bulgren, Lenz, Deshler, & Schumaker, 1995). Used to enhance student understanding of two or more concepts by comparing and contrasting their similarities and differences.
 - The clarifying routine (Ellis, 1997). Used to enhance student understanding of important terms (e.g., vocabulary, people, places, events) by listing associated clarifying information and relating that information to prior knowledge.
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have not yet been identified as examples so that they can be analyzed to determine if they fit the concept's definition.

Instructional Methods

To facilitate the construction of a device such as the concept diagram, teachers employ a three-stage instructional sequence. During Stage 1, called "cue," teachers explain to their students that a content enhancement routine is going to be used. They also share with the students why the particular routine was selected and how it will improve their understanding of the content. During Stage 2, called "do," teachers and students work collaboratively to build a teaching device to improve student understanding of the difficult content. The teacher asks a series of questions to prompt students to contribute ideas for inclusion in the device. Finally, during Stage 3, called "review," student understanding of both the critical content and the process used to learn it is checked and reinforced by the teacher.

Research Results

The impact of each content enhancement routine on the performance of students with high-incidence disabilities has been evaluated. In a series of studies, Lenz and his colleagues measured the impact of the course organizer (Lenz, Schumaker, Deshler, & Bulgren, 1998), unit organizer (Lenz, Bulgren, Schumaker, Deshler, & Boudah, 1994), and lesson organizer routines (Lenz et al., 1987) on student understanding and retention of subject-area content. Results of these studies indicate that students with disabilities answered more questions correctly about the content that had been taught using the routines than about content that had been taught using traditional instruction. In fact, students with disabilities scored, on average, 10 to 20 percentage points higher on tests following teacher use of each routine than they did when no routine was used. For example, a student who was earning an average test score of 50% before the unit organizer routine was used earned an average test score of 70% after the routine was used.

In another series of studies, Bulgren and her colleagues examined the effects of the concept mastery (Bulgren et al., 1988), concept anchoring (Bulgren, Schumaker, & Deshler, 1994), and concept comparison routines (Bulgren, Lenz, Deshler, & Schumaker,

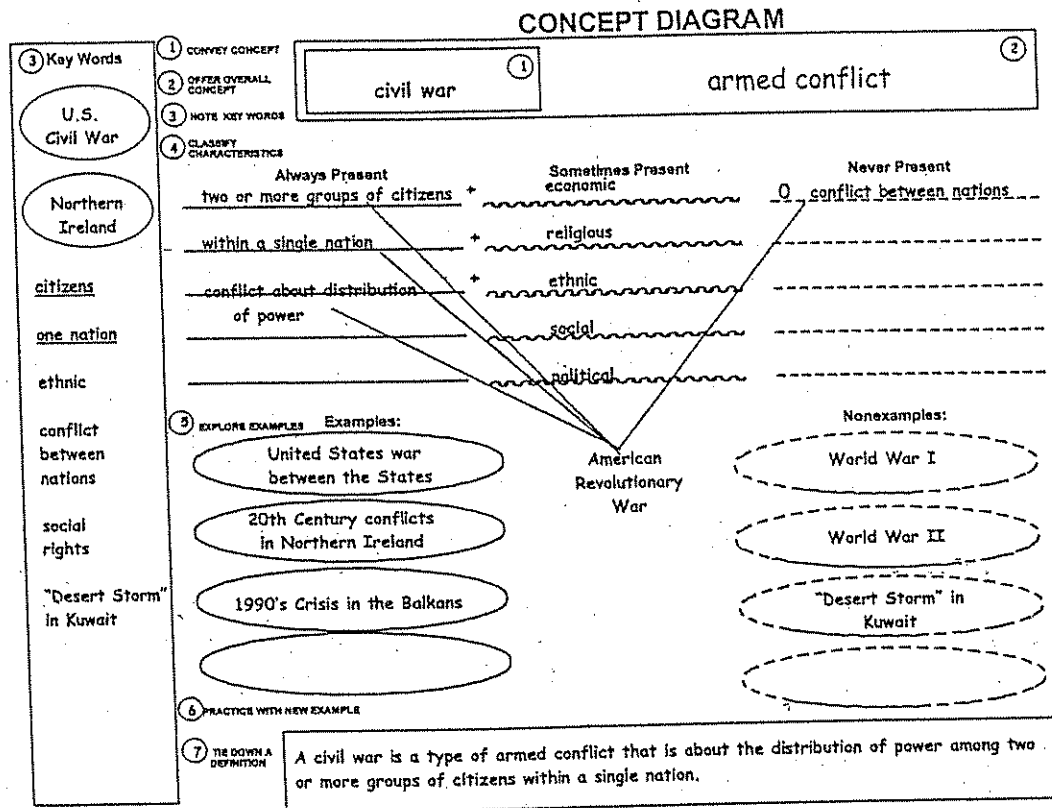


FIGURE 23.1. Concept Diagram.

1995). These routines were designed to enhance student comprehension of complex concepts. Students with mild disabilities answered significantly more questions correctly about the concepts that had been taught using the routines than about concepts that had been taught using traditional instruction. More specifically, on tests measuring student understanding of concepts, the scores of students with mild disabilities improved from a mean of 40% to 62% correct following participation in the concept mastery routine (Bulgren et al., 1988). Students in the experimental group earned a mean score of 63% correct following participation in the concept anchoring routine, in comparison with a mean score of 36% correct earned by the comparison group (Bulgren, Deshler, Schumaker, & Lenz, 2001). Likewise, experimental students earned a mean score of 71% correct following use of the concept comparison routine, whereas comparison students earned a mean score of 57% correct (Bulgren, Lenz, Deshler, & Schumaker, 1995).

To summarize, subject-area teachers can enhance the performance of students with high-incidence disabilities with regard to learning subject-area content by using content enhancement routines. Teachers are able to learn how to implement the routines within a few hours of instruction. They have reported that the routines are easy to use and that they are satisfied with the routines and the devices. Additionally, use of the routines improves the achievement of students with high-incidence disabilities, as well as of other students. Moreover, use of the routines did not require teachers to reduce the integrity of the subject-area content they were required to teach.

Despite these positive findings, there are some limitations associated with the routines. First, although students with high-incidence disabilities score, on average, 10 to 27 percentage points higher on test measures following teacher use of routines, this magnitude of change may not always be large enough for these students to earn satisfactory grades. For example, in the study on the concept anchoring routine (Bulgren et al., 1994), one fourth of the students with disabilities did not earn test scores above 60%. Unfortunately, no data are available on the cumulative impact of a teacher's use of several routines within the same course on the performance of students with disabilities. Perhaps some students need to have information presented through the use of several routines in order to earn passing grades.

Second, whether the amount of time required to prepare a content enhancement routine limits teacher use of the routine is unclear. For example, Bulgren et al. (1988) reported that in the school year following that in which the concept mastery routine study took place, only three of the eight participating teachers reported that they had created new concept diagrams, even though seven of the teachers reported continuing to use the ones they had designed during the study.

Third, no data are available regarding whether students with high-incidence disabilities learn the processes inherent in the routines for organizing and understanding subject-area content and use these processes independently to mediate their own comprehension if they are simply exposed to the routines. Teacher use of the routines may not produce independent learners.

Implications

The positive findings related to the content enhancement approach have important implications for how education is delivered in subject-area classes in which students with high-incidence disabilities and other students with comprehension deficits are enrolled. First, because teachers' use of content enhancement routines can improve student performance, schools need to provide teachers with professional development experiences focusing on the routines. Second, schools need to provide teachers the time they need to plan the devices and the questions that they will ask students so that they can use several of the routines in each course. Schools need to provide time for teachers who teach the same course and who teach courses that relate sequentially to work together on these activities. Finally, schools need to ensure that teachers implement the routines regularly and with high levels of fidelity.

SUMMARY

This chapter has described two of the options that educators have for enhancing the reading comprehension of students with high-incidence disabilities. First, they can teach these students reading comprehension strategies. This requires intensive, explicit instruction. Such instruction can yield gains in reading comprehension that span several grade levels. Alternatively, they can use content enhancement routines to prepare students before they read their assignments. This method does not directly improve students' reading skills; it simply gives students a framework within which they can discriminate important from unimportant information and create relationships among pieces of information, which in

turn improves their understanding of content. Ideally, educators will use both options for maximum impact on student performance. That is, they will not only teach students to be strategic readers who can successfully read and understand their textbooks and other assigned passages but will also use content enhancement routines frequently enough that students will become prepared for each assignment and will learn the processes required to understand information. As a result, a large majority of students with high-incidence disabilities will become successful in their subject-area classes. Only then will they begin to feel good about themselves as learners. Only then will they begin to have a vision of themselves as lifelong learners capable of success in today's ever-changing world.

REFERENCES

- Beals, V. L. (1983). *The effects of large group instruction on the acquisition of specific learning strategies by learning disabled adolescents*. Unpublished doctoral dissertation, University of Kansas, Lawrence.
- Bulgren, J. A., Deshler, D. D., & Schumaker, J. B. (1993). *The concept mastery routine*. Lawrence, KS: Edge Enterprises.
- Bulgren, J. A., Deshler, D. D., Schumaker, J. B., & Lenz, B. K. (2001). The use and effectiveness of analogical instruction in diverse secondary content classrooms. *Journal of Educational Psychology, 92*(3), 426-441.
- Bulgren, J. A., Lenz, B. K., Deshler, D. D., & Schumaker, J. B. (1995). *The concept comparison routine*. Lawrence, KS: Edge Enterprises.
- Bulgren, J. A., Schumaker, J. B., & Deshler, D. D. (1988). Effectiveness of a concept teaching routine in enhancing the performance of LD students in secondary-level mainstream classes. *Learning Disabilities Quarterly, 11*(1), 3-17.
- Bulgren, J. A., Schumaker, J. B., & Deshler, D. D. (1994). *The concept anchoring routine*. Lawrence, KS: Edge Enterprises.
- Clark, F. L., Deshler, D. D., Schumaker, J. B., Alley, G. R., & Warner, M. M. (1984). Visual imagery and self-questioning: Strategies to improve comprehension of written material. *Journal of Learning Disabilities, 17*(3), 145-149.
- Darch, C. B., Carnine, D. W., & Kameenui, E. J. (1986). The role of graphic organizers and social structure in content area instruction. *Journal of Reading Behavior, 18*, 275-295.
- Deshler, D. D., Ellis, E. S., & Lenz, B. K. (1996). *Teaching adolescents with learning disabilities: Strategies and methods*. Denver, CO: Love Publishing.
- Deshler, D. D., Schumaker, J. B., Alley, G. R., Warner, M. M., & Clark, F. L. (1982). Learning disabilities in adolescent and young adult populations: Research implications. *Focus on Exceptional Children, 15*(1), 1-12.
- Deshler, D. D., Schumaker, J. B., & McKnight, P. C. (1997). *The survey routine*. Lawrence, KS: University of Kansas.
- Ellis, E. S. (1996). *LINCS: A starter strategy for vocabulary learning*. Lawrence, KS: Edge Enterprises.
- Ellis, E. S. (1997). *The clarifying routine*. Lawrence, KS: Edge Enterprises.
- Ellis, E. S. (1998). *The framing routine*. Lawrence, KS: Edge Enterprises.
- Ellis, E. S., Deshler, D. D., Lenz, B. K., Schumaker, J. B., & Clark, F. L. (1991). An instructional model for teaching learning strategies. *Focus on Exceptional Children, 23*(6), 1-24.
- Erickson, R. N., Ysseldyke, J., Thurlow, M. L., & Elliot, J. L. (1998). Inclusive assessment and accountability systems: Tools of the trade in educational reform. *Teaching Exceptional Children, 31*(2), 4-9.
- Hock, M. F., Deshler, D. D., & Schumaker, J. B. (1999, Spring). Tutoring programs for academi-

- cally underprepared college students: A review of the literature. *Journal of College Reading and Learning*, 29(2), pp. 101-122.
- Johnson, D. W., & Johnson, R. T. (1996). The role of cooperative learning in assessing and communicating student learning. In T. R. Guskey (Ed.), *ASCD Yearbook 1996* (pp. 25-46). Alexandria, VA: Association for Supervision and Curriculum Development.
- Kameenui, E. J., & Carnine, D. W. (Eds.). (1998). *Effective strategies for accommodating students with diverse learning and curricular needs*. Columbus, OH: Merrill.
- Kauffman, J. M. (1994). Places of change: Special education's power and identity in an era of educational reform. *Journal of Learning Disabilities*, 27, 610-618.
- Kinder, D., & Bursuck, W. (1991). The search for a unified social studies curriculum: Does history really repeat itself? *Journal of Learning Disabilities*, 24, 270-275.
- Lenz, B. K., Alley, G. R., & Schumaker, J. B. (1987). Activating the inactive learner: Advance organizers in the secondary content classroom. *Learning Disability Quarterly*, 10(1), 53-67.
- Lenz, B. K., & Bulgren, J. A. (1995). Promoting learning in content classes. In P. T. Cegelka & W. H. Berdine (Eds.), *Effective instruction for students with learning disabilities* (pp. 385-417). Boston: Allyn & Bacon.
- Lenz, B. K., Bulgren, J. A., & Hudson, P. (1990). Content enhancement: A model for promoting the acquisition of content learning by individuals with learning disabilities. In T. Scruggs & B. Wong (Eds.), *Intervention research in learning disabilities* (pp. 118-146). Boston: Springer-Verlag.
- Lenz, B. K., Bulgren, J. A., Schumaker, J. B., Deshler, D. D., & Boudah, D. J. (1994). *The unit organizer routine*. Lawrence, KS: Edge Enterprises.
- Lenz, B. K., & Hughes, C. (1990). A word identification strategy for adolescents with learning disabilities. *Journal of Learning Disabilities*, 23(3), 149-158.
- Lenz, B. K., Marrs, R. W., Schumaker, J. B., & Deshler, D. D. (1993). *The lesson organizer routine*. Lawrence, KS: Edge Enterprises.
- Lenz, B. K., Schumaker, J. B., Deshler, D. D., & Bulgren, J. A. (1998). *The content enhancement series: The course organizer routine*. Lawrence, KS: Edge Enterprises.
- Martin, C. (1999). *Net future*. New York: McGraw-Hill.
- McIntosh, R., Vaughn, S., Schumm, J. S., Haager, D., & Lee, O. (1993). Observations of students with learning disabilities in general education classrooms. *Exceptional Children*, 60(3), 249-261.
- 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.
- National Research Council. (1997). *Educating one and all: Students with disabilities and standards-based reform*. Washington, DC: National Academy Press.
- Oliver, R. W. (1999). *The shape of things to come*. New York: McGraw-Hill.
- Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading*. Mahwah NJ: Erlbaum.
- Pressley, M., Borkowski, J. G., & Schneider, W. (1990). Good information processing: What it is, how education can promote it. *International Journal of Educational Research*, 2, 857-867.
- Pressley, M., & Woloshyn, V. (1995). *Cognitive strategy instruction that really improves children's academic performance*. Cambridge, MA: Brookline Books.
- Putnam, M. L., Deshler, D. D., & Schumaker, J. B. (1992). The investigation of setting demands: A missing link in learning strategies instruction. In L. J. Meltzer (Ed.), *Strategy assessment and instruction for students with learning disabilities: From theory to practice* (pp. 325-354). Austin, TX: Pro-Ed.
- Rifkin, J. (1995). *The end of work: The decline of the global labor force and the dawn of the post-market era*. New York: Putnam.
- Scanlon, D., Deshler, D. D., & Schumaker, J. B. (1996). Can a strategy be taught and learned in secondary inclusive classrooms? *Learning Disabilities Research and Practice*, 11(1), 41-57.

- Schumaker, J. B. (1992). Social performance of individuals with learning disabilities. *School Psychology Review*, 21(3), 387-399.
- Schumaker, J. B., Denton, P. H., & Deshler, D. D. (1984). *The paraphrasing strategy*. Lawrence, KS: University of Kansas.
- Schumaker, J. B., & Deshler, D. D. (1992). Validation of learning strategy interventions for students with learning disabilities: Results of a programmatic research effort. In B. Y. L. Wong (Ed.), *Contemporary intervention research in learning disabilities: An international perspective* (pp. 22-46). New York: Springer-Verlag.
- Schumaker, J. B., Deshler, D. D., Alley, G. R., Warner, M. M., & Denton, P. H. (1982). Multipass: A learning strategy for improving reading comprehension. *Learning Disability Quarterly*, 5(3), 295-304.
- Schumaker, J. B., Deshler, D. D., & McKnight, P. C. (1991). Teaching routines for content areas at the secondary level. In G. Stoner, M. R. Shinn, & H. M. Walker (Eds.), *Interventions for achievement and behavior problems* (pp. 374-395), Washington, DC: National Association of School Psychologists.
- Schumaker, J. B., Deshler, D. D., Nolan, S. M., & Alley, G. R. (1994). *The self-questioning strategy*. Lawrence, KS: University of Kansas.
- Schumaker, J. B., Deshler, D. D., Zemitsch, A., & Warner, M. M. (1993). *The visual imagery strategy*. Lawrence, KS: University of Kansas.
- Seybert, L. (1998). *The development and evaluation of a model of intensive reading strategies instruction for teachers in inclusive, secondary classrooms*. Unpublished doctoral dissertation, University of Kansas, Lawrence.
- Skrtric, T. M., Clark, F. L., & Knowlton, H. E. (1980). Effective inservice education. In J. G. Herlihy & M. T. Herlihy (Eds.), *Mainstreaming in the social studies* (pp. 76-81). Arlington, VA: National Council for the Social Studies.
- Slavin, R. E., Stevens, R. J., & Madden, N. A. (1988). Accommodating student diversity in reading and writing instruction: A cooperative learning approach. *Remedial and Special Education*, 9(1), 60-66.
- Wagner, M., Blackorby, J., & Hebbeler, K. (1993). *Beyond the report card: The multiple dimensions of secondary school performance of students with disabilities. A report from the National Longitudinal Study of Special Education Students*. Menlo Park, CA: Stanford Research Institute.
- Wedel, M., Deshler, D. D., & Schumaker, J. B. (1988). *The effects of teaching at-risk students a vocabulary learning strategy in the general education classroom*. (Research Report No. 73). Lawrence: University of Kansas, Center for Research on Learning.