Ensuring Content-Area Learning by Secondary Students with Learning Disabilities

Donald D. Deshler, Jean B. Schumaker, B. Keith Lenz, Janis A. Bulgren, Michael F. Hock, Jim Knight, and Barbara J. Ehren

University of Kansas Center for Research on Learning

Three factors tied with secondary student success in content-area reading are demonstrated: (a) validated teacher-focused and student-focused interventions, (b) integrated and comprehensive service delivery systems, and (c) well-designed, data-based professional developmental programs.

Abstract. Difficult challenges face secondary students with LD and their teachers with regard to these students’ participation and success in required general education classes. Recently, instructional methods and materials have been developed and validated for promoting these students’ success. Some of them focus on how general education teachers plan and teach their content-area courses; others focus on giving students the strategies they need to respond independently to the demands of their courses. This article describes these instructional methods, a service-delivery model for implementing these interventions in secondary schools, and professional-development mechanisms and administrative support that must be in place for the model to be maintained effectively.

BACKGROUND OF THE PROBLEM

Many educators struggle to prepare students with learning disabilities (LD) to successfully respond to heavy curriculum demands at the middle-school and high-school levels. The magnitude of this challenge is underscored by the findings of the National Longitudinal Transition Study (Wagner, Blackorby, & Hebbeler, 1993). Not only does a disproportionate percentage of students with LD drop out of school compared to the general education population, but many of these students evidence a broad array of performance and adjustment problems such as (1) higher rates of absenteeism, (2) lower grade-point averages, (3) higher course failure rates, (4) more prevalent feelings of poor self-esteem (Wagner et al., 1993), and (5) higher rates of inappropriate social behaviors (Schumaker, 1992) than the student population at large. In short, the majority of students with learning disabilities seem ill-prepared to succeed in high school. Predictably, only about a quarter of them pursue postsecondary educations (Wagner et al., 1993). As a result, few of them are prepared to face the demanding expectations of the globalization of commerce and industry, the dramatic growth of technology, the dramatic transformation of the workplace, and the very nature of work itself (Rifkin, 1995).

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As discouraging as the above circumstances appear, a host of emerging trends may exacerbate the situation even further for students with LD. Foremost among these trends are: (1) the expectation that all learners, including those with disabilities, meet curriculum standards adopted by states and professional organizations (Erickson, Ysseldyke, Thurlow, & Elliot, 1998); (2) the prevailing practice of including students with disabilities in the general education classroom for the vast majority of the school day (Hock, Schumaker, & Deshler, 1999; Wagner et al., 1993); (3) the explosion of knowledge and information and the growing expectation that...
all students not merely acquire but integrate thinking skills within subject areas (e.g., history, science) in authentic problem-solving activities (Kame‘enui & Carnine, 1998); and (4) the clear expectations set forth in P.L. 105-17 that programming for students with disabilities be outcome-based within the context of successfully mastering (and not merely gaining access to) the general education curriculum (Turnbull, Rainbolt, & Buchele-Ash, 1997).

The problem that students with LD face when trying to succeed within the general education curriculum is illustrated in Figure 1. The straight, solid line in this figure represents the path of “normal” acquisition of knowledge or skills. That is, at the conclusion of 1 year of instruction, on average, students should have acquired what curriculum designers and instructional experts would deem to be “1 year’s worth” of knowledge represented by point A on that line. At the end of the 2nd year, they should be performing at the level of point B, and so on.

On the other hand, the performance of students with disabilities does not follow this line of progress. On average, they perform at the level of point A′ at the end of 1 year of schooling and travel a path similar to the one depicted by the dotted curved line (Warner, Schumaker, Alley, & Deshler, 1980). The area between the solid line (representing normal achievement) and the dotted line (representing underachievement) depicts the “performance gap,” the gap between what students are expected to do and what they can do. Over time, this gap grows larger and larger, and it is especially exacerbated in the later grades when the academic growth of students with LD plateaus (Warner et al., 1980). As a result of this performance gap, these students are unable to meet the demands of required courses in the content areas in high school, and their resulting failure leads to discouragement and disengagement in school.

While Figure 1 helps to describe the failure experienced by students with LD, its greatest value has been related to helping researchers identify the focus of interventions that must be developed and employed to close the size of the performance gap to a point where students are able to truly access and benefit from the general education curriculum. For example, once researchers understood that, on average, students with LD were entering 9th grade reading at approximately the 4th-grade level (a 5-year performance gap) (Warner et al., 1980), they began to design interventions either to compensate for this discrepancy and/or entirely eliminate it within a short period of time. Indeed, over the past 21 years, researchers at the University of Kansas Center for Research on Learning (KU-CRL) and their associates have taken 2 major tacks in relation to the performance gap: (1) developing interventions that focus on how information is selected and presented to academically diverse classes that include students with LD so that it is more understandable and memorable (i.e., compensating for the gap); and (2) developing interventions that focus on teaching these students the necessary skills and strategies to enable them to successfully negotiate the demands of the curriculum (i.e., eliminating the gap). The 1st type of intervention (teacher-focused interventions) is directed at how teachers think about, adapt, and present their critical content in a “learner-friendly” fashion. The 2nd type of intervention (student-focused interventions) is designed to provide students with the skills and strategies that they need to learn the content.

KU-CRL researchers have concluded that both types of interventions are needed (Fisher, Schumaker, & Deshler, in press) if students with LD are to demonstrate appropriate achievement levels on state assessment tests as well as demonstrate real-world content literacy (Deshler, Ellis, & Lenz, 1996; Lenz & Ehren, 1999). Additionally, they have reported that 2 additional factors must be present if meaningful and sustained gains in student achievement are to be realized: (1) integrated and comprehensive service-delivery systems (Hock, Schumaker, & Deshler, 1999), and (2) well-designed, data-based professional-development programs that support and improve each school’s commitment to closing the performance gap for all students (including those with disabilities) (Deshler & Schumaker, 1996). These factors, in addition to the use of validated interventions, must be actively promoted and supported by administrative personnel. In short, while validated interventions are absolutely necessary for favorably impacting the performance of students with LD, their impact can be enhanced if the other factors are present. This relationship can be summarized by the formula in Figure 2.

The purpose of this article is to address each of the elements in this “student success” formula and review the KU-CRL research related to each element. First,
interventions that have been validated through several lines of KU-CRL research and that have been designed to impact the success of students with LD with regard to mastering critical curriculum content are described. Second, a service-delivery model that has been designed for optimizing the quality of services provided to students with LD (Hock, Schumaker, & Deshler, 1998) is detailed. Next, a summary of findings that have emerged during the past decade on professional-development practices is presented. These practices have been found to markedly impact the degree to which research-validated interventions are firmly embraced and integrally woven into the fabric of ongoing instructional practice for students with LD (e.g., Knight, 1998). Finally, success of all the factors involved in the formula is dependent on strong and active administrative support and coordination. Thus, the types of support required are described at the conclusion of this article.

**INTERVENTIONS**

As stated above, the interventions to be described herein have been designed to promote students’ content literacy as well as their knowledge in many areas so that they can succeed within the general education curriculum. Content literacy is defined as fluent use of the listening, speaking, reading, and writing skills and strategies needed to learn in each of the academic disciplines (Lenz & Ehren, 1999). Since content literacy involves the application of subject-specific skills and strategies (e.g., one may use different skills to learn science than to learn history), such literacy cannot be developed independent of the curriculum. Students learn skills because they need them to meet the demands they face; the skills become relevant because they enable students to do authentic tasks. Simultaneously, regular application of skills in relation to critical content in a variety of contexts helps students master the skills so that they can be fluently used.¹

### Level 1 Interventions

To ensure that students attain content literacy as well as learn subject-matter content, teachers can intervene at 5 levels, which can be arranged along a continuum. In Level 1 Interventions, subject-area teachers compensate for limited levels of literacy presented by some students by using various tactics to modify the curriculum content in ways that promote understanding and mastery. These interventions represent a teacher’s 1st response to meeting the needs of students who are struggling within content instruction. Although Level 1 Interventions are designed to help those students with limited levels of literacy, they also must be designed such that their use benefits all the students in an academically diverse class because general education teachers have indicated that they will not use interventions that help only a small percentage of their students (Lenz, Schumaker, & Deshler, 1991).

The **Content Enhancement Routines** (e.g., Bulgren & Lenz, 1996; Schumaker, Deshler, & McKnight, 1991, 2001) are examples of Level I Interventions. These routines are sets of inclusive teaching practices that help teachers carefully organize and present critical content information in such a way that students identify, organize, comprehend, and recall it. Three major types of Content Enhancement Routines have been validated through KU-CRL research: organizing routines, understanding routines, and recall routines.

Organizing routines have been designed to help students understand how the information associated with a course fits together within a “big picture.” Specifically, teachers use these routines in advance of a lesson or unit of study to depict for students a method for organizing the content, to define the relationships among pieces of content, to clarify what content has been presented in relation to what content is left to be taught, and to help students self-monitor what content they have learned. Overall, these routines are used to create frameworks for understanding the structure of presented content. The frameworks orient students to where they have been, where they are, and where they are going in a learning situation.

The **Unit Organizer Routine** (Lenz, Bulgren, Schumaker, Deshler, & Boudah, 1994), an example of an organizing routine, is used by teachers to introduce a unit of study and continue to inform students about the relationships among sets of information within that unit. When this routine was used in secondary science and social study classes, the unit-test performance of students with and without learning disabilities increased an average of 10 percentage points over baseline. Following regular implementation of the routine, 7 of the 8 participating students with LD earned average scores of 72% or higher on unit tests in secondary general education classes, whereas they were failing the tests prior to the use of the routine.

To help students understand important abstract and/or complex concepts, teachers can use a second type of Content Enhancement Routine called “understanding routines.” Understanding routines guide teachers’ translation of concepts into easy-to-understand formats, primarily by relating new information to students’ prior knowledge. Specifically, teachers use understanding routines to help students comprehend and acquire new information by specifying what concept is going to be learned, accessing the knowledge students possess related to the new concept, explicitly depicting information related to the new concept in a graphic organizer, connecting student knowledge with the new concept, and summarizing what has been learned in a brief written statement.

¹ For suggestions about classroom applications related to the information presented in this article, see Deshler, Schumaker, Harris, and Graham’s (1999) book and Deshler, Ellis, and Lenz’s (1996) book.
For example, in social studies, a teacher might use an understanding routine, called the Concept Mastery Routine (Bulgren, Deshler, & Schumaker, 1993), to teach students the concept of democracy by brainstorming what students already know about democracy, outlining the characteristics that are always, sometimes, and never present in a democracy, providing examples and nonexamples of democracy, and summarizing democracy in a definition. In a study to examine the effects of the Concept Mastery Routine on 475 high-school students, 32 of whom had LD, Bulgren, Schumaker, and Deshler (1988) found that the mean score of students without LD on regularly scheduled tests increased from a mean of 72% to 87%, whereas the mean test score of the students with LD improved from 60% to 71% when the routine was used.

Two other understanding routines have also been experimentally validated. One facilitates the comparison of critical concepts (the Concept Comparison Routine (Bulgren, Lenz, Deshler, & Schumaker, 1995)); the other facilitates the linking of new knowledge to prior knowledge (the Concept Anchoring Routine (Bulgren, Schumaker, & Deshler, 1994)). The results of studies on these routines are similar to the results on the Concept Mastery Routine. Students who receive information through the use of the routines earn test scores that are significantly higher than students who receive traditional instruction. For example, students with LD who participated in the Concept Anchoring Routine earned an average score of 69%; students with LD who participated in traditional instruction earned an average score of 40%. Similar results were achieved for low-achieving and normally achieving students as well (Bulgren, Deshler, Schumaker, & Lenz, 2000).

Additionally, when students with LD participated in the Concept Comparison Routine in heterogeneous classes, they earned a mean test score of 71%, whereas their peers with LD in the control group earned a mean test score of 57%. Likewise, other low-achieving students who participated in the Concept Comparison Routine earned a mean test score of 86% while their low-achieving peers in the control group earned a mean test score of 63% (Bulgren, Deshler, Schumaker, & Lenz, 2000).

A third type of Content Enhancement Routine helps students recall critical content information. The Recall Enhancement Routine (Schumaker, Bulgren, Deshler, & Lenz, 1998), for example, was designed to enhance the concreteness and meaningfulness of information presented during a lesson or unit of study, thereby making the information easier to recall. A central component of this interactive routine is a mnemonic device, or a memory tool, which helps students remember the content. When using the routine, teachers follow a series of steps to cue students about the importance of certain content, show or coconstruct with students a mnemonic device for remembering the important content, and review the content and the mnemonic device. Research has shown that students of teachers who use this routine learn how to construct devices by participating in the routine. They earn significantly more points than comparison students on a test measuring their ability to construct mnemonic devices (Bulgren, Deshler, & Schumaker, 1997). Research has also shown that students with LD score significantly higher on content tests when the routine is used (their average score is 71%) in comparison with students who receive traditional instruction (their average score is 42%) (Bulgren, Schumaker, Deshler, 1994).

In summary, Content Enhancement Routines have been designed to be used by general education teachers while instructing academically diverse classes that include students with LD and other at-risk students. In the studies described above, the performance of students with and without LD is higher than when traditional instruction is used. However, in all the studies on these routines, a few students with LD did not earn posttest scores in the passing range, indicating that for certain students with LD Content Enhancement Routines alone may not be sufficiently powerful to improve their performance to the passing level (Joint Committee on Teacher Planning for Students with Disabilities, 1995).

**Level 2 Interventions**

When Level 1 Interventions are insufficient to impact the performance of all students with LD in a classroom, teachers must consider instructional methods at the next point on the intervention continuum, Level 2. In Level 2 Interventions, teachers directly embed instruction in selected learning strategies in core curriculum courses through direct explanation, modeling, and required application in relation to content assignments. They describe strategies for acquiring, storing, and expressing course information, design learning tasks that promote practice of the strategies, and provide feedback on students’ use of the strategies as they learn content. When content teachers allocate time to deliberately embed instruction in task-specific learning strategies within their courses, they acknowledge that students lack the necessary strategies to enable them to readily learn the required information. By teaching students strategies that are directly relevant to the demands of their courses, they are shifting the instructional emphasis, in part, from learning course content to acquiring the necessary processes to master the content.

An example of how a general education teacher might incorporate learning strategy instruction into ongoing class activities is as follows. At the beginning of an academic year, a history teacher might explain to the class that being able to paraphrase written historical information is important because paraphrasing is required to write reports, answer questions, and discuss information in class. The teacher would then share the steps involved in the Paraphrasing Strategy (e.g., Step 1: Read a paragraph; Step 2: Ask yourself, “What is the main idea and what are the key details in the paragraph?” and Step 3: Put the main idea and details in your own words).
(Schumaker, Denton, & Deshler, 1984) and model how to actually paraphrase historical information to complete different types of learning tasks. Class activities and assignments would, in turn, be structured to require students to paraphrase text and use the paraphrased information. The teacher would expect students to use the newly learned strategy in a host of naturally occurring situations within the course and would provide feedback on student work.

Several researchers have studied the effectiveness of embedding learning strategy instruction within course content in just this way. For example, Scanlon, Deshler, and Schumaker (1996) asked general education social studies teachers to teach a learning strategy called the ORDER Strategy. This strategy was designed to enable students to identify key information and depict how the information is related. During the 1st phase of instruction, teachers introduced their students to the idea of strategic learning. During the 2nd phase, they described and modeled the strategy using course content. During the 3rd phase, students practiced using the strategy to learn the content. The results of the study indicated that experimental students with LD did better than their comparison LD peers in learning and applying the strategy. Unfortunately, the experimental students with LD did not learn to use the strategy at a level typically considered “mastery.” One reason for this failure may have been the low frequency with which teachers taught, prompted, or required students to use the strategy. The teachers reported feeling significant pressure to “cover the necessary content” and that they had difficulty finding time to teach the ORDER Strategy.

Other researchers have reported similar pressures. One researcher (Beals, 1983) showed that students with LD can master strategies taught in large, inclusive general education classes as long as special instructional groupings are arranged and the teacher receives extra support for grading student products. Again, however, the teacher indicated that too much time was spent on strategy instruction instead of content instruction. Other researchers have found that some students with disabilities do not master a strategy unless they receive additional instruction in a small-group or one-on-one instructional arrangement where more intensive, individualized instruction and feedback can be provided (e.g., Glaeser, 1998; Seybert, 1998).

Level 3 Interventions

Given the fact that some students with LD cannot master a learning strategy under the conditions usually present in general education classes (i.e., large numbers of students, little time for individual feedback, pressures to teach the content), Level 3 Interventions may be necessary. In these interventions, students receive specialized, intensive instruction from someone other than the general education teacher (e.g., the LD teacher, study-skills teacher, resource-room teacher). Continuing with the example cited above for the Level 2 Interventions, if the history teacher notices that some students in the class are struggling with mastering paraphrasing, support personnel would be asked to provide much more explicit, intensive, and systematic instruction in the strategy. A specific instructional sequence would be followed to ensure student understanding of each step of the strategy, provide sufficient opportunities to practice in materials that are at the appropriate instructional reading levels, provide elaborated feedback after each practice attempt, and teach students to generalize the strategy to a broad array of learning tasks and materials (Ellis, Deshler, Lenz, Schumaker, & Clark, 1991). Such intensive instruction would be provided for 15 to 20 minutes a day for as much as 3 to 4 weeks until the student gains the necessary confidence and masters the strategy at an appropriate level of fluency.

For the past 2 decades, KU-CRL researchers and associates have conducted numerous investigations to determine the efficacy of this type of intensive learning strategy instruction in impacting the performance of students with LD with regard to successfully responding to general education course demands. This work has resulted in the development and validation of the Learning Strategies Curriculum (Deshler & Schumaker, 1988). The research associated with the curriculum has shown that students with LD can be taught to use a broad array of learning strategies (e.g., strategies for acquiring information from the printed word, strategies for organizing and memorizing information, strategies for solving math problems, and strategies for expressing information in written form, including test taking) and that they can generalize this use to novel tasks (see Schumaker & Deshler, 1992, for a review of the research in this area). When students are taught these strategies in a systematic, intensive fashion, they demonstrate gains that enable them to perform at or near grade level in each literacy area. For example, studies have shown that secondary students who learn writing strategies are able to write at levels comparable to or higher than those of their peers without LD (Schmidt, Deshler, Schumaker, & Alley, 1989). On high-school tasks, such as reading a textbook chapter and taking a test on the content, they earn average (C) or above-average (B) grades (Bulgren, Hock, Schumaker, & Deshler 1995; Schumaker, Deshler, Alley, Warner, & Denton, 1982).

A key requirement associated with Level 3 Interventions is that support personnel and general education teachers work closely together to ensure that the strategies intensively taught are ones that are centrally related to the curriculum demands being required of students in the general education classroom. Additionally, after mastering the strategy, students must practice generalizing the strategy to different materials in different settings (e.g., general education classes). Hence, support and general education teachers must carefully collaborate to ensure that these functions take place.
Level 4 and 5 Interventions

There may be, however, a small group of students who cannot respond adequately to the intensive strategy instruction provided in Level 3 Interventions. For these students, teachers need to consider interventions at Levels 4 and 5. While the number of students who require interventions at these levels is relatively small in most school systems, educators need to be aware that these students exist and require a type of instruction that is often not available. These are students who have severe learning disabilities, who have specific underlying language disorders in linguistic, meta-linguistic, and meta-cognitive areas, who are English-as-a-second-language learners, or who have had prolonged histories of moving from one school to another. As a result, they may lack many of the foundational skills required for advanced literacy.

Students assigned to Level 4 Interventions learn content-literacy skills and strategies through specialized, direct, and intensive instruction in listening, speaking, reading, and writing skills. Reading specialists and special education teachers work together at this level to develop intensive and coordinated instructional experiences designed to address severe literacy deficits. For example, they may implement an intensive reading program for those students who are reading at the 1st- through 3rd-grade levels. These professionals may also assist content teachers in making appropriate modifications in content instruction to accommodate severe literacy deficits.

In Level 5 Interventions, students with underlying language disorders learn the linguistic, meta-linguistic, and meta-cognitive underpinnings they need to acquire the necessary content skills and strategies. Generally, at this level, speech pathologists deliver one-on-one or small-group curriculum-relevant language therapy in collaboration with other support personnel teaching literacy skills. They assist content teachers in making appropriate modifications in content instruction to accommodate severe language disorders.

Summary

In summary, this 5-level literacy continuum (Lenz & Ehren, 1999) is designed to address the need of students with LD to have access to the general education curriculum. In Level 1, teachers begin by presenting the content to them in a “learner friendly” way. Unfortunately, while the types of accommodations embodied in Level 1 Interventions assist some students with LD in responding to content demands, they often are insufficient for others. Like Level 1 Interventions, Level 2 Interventions are used within the general education class, but these focus on directly teaching the strategies needed to successfully learn the content. Again, only some students with LD seem to benefit. Interventions included within Levels 3 through 5 embody varying degrees of added instructional intensity. Beginning at Level 3, the involvement of professionals other than the general education teacher is required to provide the instructional intensity needed to enable students to benefit from instruction in the general education classroom. In short, the success of students with LD within the general education curriculum requires a multifaceted approach by a team of well-trained and coordinated professionals.

SERVICE-DELIVERY SYSTEM

Because the 5-level continuum of interventions that can be made available to students with LD is comprehensive and involves several settings and educators, a well-designed and coordinated service-delivery system must be in place. Interestingly, the emphasis on inclusion in recent years has resulted in educators focusing on the general education classroom as the sole venue for service delivery to this population (where only Level 1 and 2 Interventions can be implemented). Clearly, the needs of a large proportion of students with LD necessitate a broader array of services than can be provided within the general education class. The service-delivery system that has been designed to provide this array of services is referred to as the Supported Inclusion Model (Joint Committee on Teacher Planning for Students with Disabilities, 1995). It is a service-delivery system in which many students with LD are enrolled in general education classes while their work in those classes is supported through a variety of mechanisms. This service-delivery system (Figure 3) consists of three components: (1) individualized assessment and personalized plans; (2) general education classroom instruction; and (3) intensive personalized instruction (Hock et al., 1998). The system has been designed in such a way that the instructional goals and strengths of each professional and their roles relative to educating students with LD have been taken into account.

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Individualized Assessment and Personalized Plans

Within this component of the service-delivery system, curriculum-based measures of a student's strengths and weaknesses, teacher, parent, and student reports, and student products are gathered to obtain an accurate portrait of skills and abilities (Rivera, 1997). In addition,
the general education settings the student will encounter are assessed to determine what demands are inherent in those settings (e.g., Schumaker & Deshler, 1984). Both assessments are designed to determine exactly what instruction is needed to make the student successful in the curriculum. Based on these data, a personalized educational plan is developed by the student and his or her teachers working as a team. A set of instructional methods has been validated to aid educators and students in preparing such personalized educational plans (Van Reusen, Bos, Schumaker, & Deshler, 1994). Through these methods, students are taught the Self Advocacy Strategy (Van Reusen et al., 1994), a strategy that enables them to inventory their strengths and weaknesses, assess the demands they will be facing, create goals focusing on their weaknesses, develop plans for learning, and communicate these findings to others. Van Reusen, Deshler, and Schumaker (1989) successfully taught students with LD to use this strategy to effectively advocate for themselves in Individual Education Plan (IEP) meetings. Whitaker (1997) has successfully taught this strategy to large groups of students to improve their level of engagement in educational decision making. Thus, within this model, active student involvement in the educational decision-making process is considered to be foundational to fully engaging and motivating students in that process. Too frequently, older students feel disconnected and have no voice in educational decisions made about them (Van Reusen, 1999).

**General Education Classroom Instruction**

The assumption underlying this component of the model is that educational services for all students, including those with LD, must be provided in general educational classrooms to the fullest extent possible. To this end, Level 1 and 2 Interventions are to be implemented in these settings. To do this, the general education teacher takes a central role as both the planner and the mediator of learning; that is, the teacher carefully organizes and transforms the content into a form that is “learner friendly” before presenting that content using the Content Enhancement Routines described above (Level 1 Interventions). In addition, the teacher considers the strategy or strategies that students need in order to learn the content and teaches those strategies to them while simultaneously teaching the content. In essence, by using the Content Enhancement Routines and by teaching strategies that relate to the content, the general education teacher creates a “learning apprenticeship” experience (Bulgren & Lenz, 1996; Hock, Schumaker, & Deshler, 1999). Within this experience, the teacher acts as the expert, and students are the novices. The teacher explains and models how to learn the content, and the students imitate the expert’s models. In this way, the mastery of complex academic content by all students is facilitated. All students, including students with LD, are involved in the apprenticeship in a very meaningful way. They become actively involved in the learning process. They think, listen, speak, and write throughout instruction. They learn how to find structure within information and how to use graphic devices to represent relationships among pieces of information. They learn how to distinguish important from less important information and how to connect new information to previously learned information. The outcome of the apprenticeship is students who not only know and understand information, but who also can learn information on their own.

**Intensive Personalized Instruction**

This component, in which Level 3–5 Interventions take place, is carried out using Academic Achievement Centers (AACs). All students, including normal achievers and those with disabilities or low academic achievement, can receive the personalized services that they require in these centers. AACs differ from traditional resource rooms in several key ways. First, they are not restricted to students with identified special education needs; they are open to all students regardless of academic skill level. Second, they are staffed by special educators and other ancillary specialists (e.g., speech-language professionals), general educators, para-educators, and adult and student volunteers. Special educators and ancillary specialists provide intensive instructional services, teaching small groups of students the skills and strategies they need to meet the demands of their general education classes. General educators also staff the AAC on a regularly scheduled basis (rather than supervising hallways or study hall) to provide drop-in assistance in their content areas to any student who requests additional content clarification or homework assistance. Specially trained para-educators and adult and student volunteers provide supplementary strategy practice and content practice and review to individuals...
or small groups of students (Welch, Richards, Okada, Richards, & Prescott, 1995). Finally, the AAC is open before and after school as well as during school hours to afford students optimal access to the support they need to master the skills and content and produce the products required for success in general education classes. In sum, the AAC is designed to provide the time, opportunity, and expertise for intensive personalized services that are aligned with the curriculum goals of general education classes.

Instruction takes place in the AAC in 3 ways: (1) during small-group instruction, (2) during strategic tutoring, and (3) during peer tutoring. Students can take part in small-group instruction for intensive work on a complex strategy. For example, students who need to learn to write sentences can participate in small-group intensive instruction in the Sentence Writing Strategy (Schumaker & Sheldon, 1999). They can also take part in small-group instruction to receive additional instruction on strategies being taught in their general education classes. Small groups might also work with ancillary support personnel to learn foundational literacy skills that serve as prerequisites to most of the learning strategies or the linguistic, meta-linguistic, or meta-cognitive underpinnings needed to acquire literacy skills and strategies. Small instructional groups can be organized for a relatively short period of time until students master the targeted strategies, and then other groups might be convened as needed across the school year.

Strategic tutoring (Hock, Schumaker, & Deshler, 1995, 2000) is an instructional process in which the expert learner (the teacher) teaches novice learners strategies while tutoring the subject-matter content. During strategic tutoring sessions, teachers and students respond to the demands of general education classes by coconstructing, learning, and applying strategies as assignments are completed for class. Strategic tutoring is different from traditional tutoring in that it is based on the apprenticeship notion (Hock, Deshler, & Schumaker, 1993) and on teaching students strategies that they can apply both to the task at hand and to similar future tasks. Strategic tutors engage in systematic instruction that includes: (1) assessing the student’s strategy needs and obtaining the student’s commitment to learn a strategy for the task at hand and similar tasks; (2) creating or coconstructing a strategy appropriate to the task at hand; (3) giving a direct explanation of the strategy; (4) modeling the strategy; (5) checking to see that the student fully understands the strategy and when, where, and how to use the strategy; and (6) structuring student practice of the strategy on the task at hand with constant guided support. In addition, strategic tutors provide positive and corrective feedback on student use of the strategy and guide the student to generalize the strategy to future tasks (Hock, Schumaker, & Deshler, 2000).

Strategic tutoring that embodies the process outlined above has been shown to be effective with junior-high (Hock, Pulvers, Deshler, & Schumaker, in press) and college students (Hock, 1998; Hock, Deshler, & Schumaker, 1991; Hock, Deshler, & Schumaker, 1999). For example, at-risk college students who have learned a theme-writing strategy and other strategies have earned grades in English composition classes and grade-point averages (GPAs) equivalent to students who were more academically prepared for college (with higher high-school GPAs and college entrance exam scores) who did not participate in strategic tutoring. The at-risk students’ grades in English composition classes were Cs or higher.

During peer tutoring, students instruct other students (Maheady, Sacca, & Harper, 1988). Peer tutoring has been shown to be successful in providing at-risk students time and opportunity to gain knowledge, improve skills, participate more fully in general education, and require fewer special education placements (e.g., Fisher, Schumaker, & Deshler, 1995; Greenwood & Delquadri, 1995). Some peer-tutoring programs have involved students in teaching each other strategies for learning content, like summarization of reading passages (e.g., Simmons, Fuchs, Fuchs, Mathes, & Hodge, 1995; Welch et al., 1995); other programs have focused on engaging students in practice and immediate feedback with content information and basic skills such as social science facts or spelling (e.g., Pomerantz, Windell, & Smith, 1994).

The peer-tutoring structure most appropriate for AACS is one in which students pair up and one student tutors the other outside the general education setting. Hock (1998) used peer tutoring with postsecondary students and had tutors and tutees engage in tutoring activities at the learning center. Hock emphasized the importance of peer-tutoring programs incorporating a structured approach to preparing tutors to conduct tutoring sessions and containing procedures for tutors and tutees to follow. Of necessity, therefore, the peer-tutoring program in an AAC must be based on a cadre of trained peer tutors who know how to help students complete a variety of tasks. Advanced peer tutors might be able to use strategic tutoring methods to help students complete assignments in certain subject areas. Others might be specifically trained to help students review and practice certain learning strategies. Still others might be trained to help groups of students or individual students prepare for a test through a verbal quizzing process.

One of the most significant outcomes of a well-designed tutoring program is that it frees special education teachers from the role of academic tutoring. One of the most frequently reported roles that special education teachers of students with LD report performing is that of short-term tutoring to help students complete classroom assignments (Carlson, 1985). A cadre of well-trained adult and peer tutors can enable special education teachers to invest their time and expertise in teaching skills and strategies—the very thing they are trained to do and that can best help students become independent learners and performers in content classes.

For the 3 components of the model to work in tandem, a set of administrative conditions and policy-level
supports should be present (Hock et al., 1999). These conditions and supports are founded on several notions. In order for at-risk students to become independent, effective learners, they must receive more than isolated experiences with strategy instruction, and critical concepts must be emphasized across classes. Thus, instructional conditions must be arranged such that students with LD receive daily instruction in the skills and strategies they need to learn. Teachers must have clear responsibilities in the process. Students must have access to instruction (1) in multiple strategies; (2) across multiple settings and academic areas (i.e., in the majority of a student’s classes); (3) from multiple teachers (Seybert, 1998); (4) across multiple schools and grade levels; and (5) in multiple instructional areas. Foundational policy-level supports should include: (1) planning times that are conducive to teacher collaboration; (2) sufficient budgetary support for supplies and personnel (para-professional support, substitutes for professional-development days, etc.); and (3) ongoing professional-development opportunities aligned with the goals of the service-delivery model.

QUALITY PROFESSIONAL-DEVELOPMENT
PROGRAMS

In order for the model described above to be successful, these ongoing professional-development experiences must be focused on teaching teachers how to use research-based practices that have been shown to affect the performance of students with LD. Thus, not only must a larger proportion of funds be focused on changing instructional practice, these funds must be focused on instituting research-based practices and programs (Council of Chief State School Officers, 1999). Careful consideration needs to be given to (1) what teachers should be taught to do and (2) how professional-development experiences should be conceptualized and delivered.

Program Content

Regarding the issue of what should be taught, Elmore (1996) argued that in this era of educational reform, the focus of most educational change is on external structures and processes (e.g., the adoption of a new school schedule) that provide the impression that significant change is occurring but, in reality, seldom address those factors that are at the core of the teaching process (e.g., “how teachers relate to students around knowledge, how teachers relate to other teachers in the course of their daily work, how students are grouped for purposes of instruction, how content is allocated to time, and how students’ work is assessed” (p. 7).

A research synthesis by Wang, Haertel, and Walberg (1993) has reinforced Elmore’s contention. The purpose of this synthesis was to identify the relative effects of hundreds of variables that influence student learning. They determined that all the variables could be sorted into 2 categories: distal variables and proximal variables. Distal variables were defined as those variables that are “at least one step removed from the daily learning experiences of most students” (p. 276), such as state-, district-, and school-level policy changes. Thus, the distal variables are analogous to Elmore’s notion of external structures and processes. Proximal variables, on the other hand, were defined as those variables that improve student outcomes, such as psychological and instructional factors. Thus, these variables are similar to Elmore’s notion of variables at the “core of the schooling process.” Examples of proximal variables include student self-regulation of their academic behavior, student perseverance and enthusiasm for learning, the amount and quality of teacher and student interaction, and teacher modeling of appropriate academic behaviors. Wang et al. (1993) found that proximal variables are more highly related to positive student outcomes than distal variables. Thus, to achieve the greatest change in student performance, professional-development programs should be focused on proximal variables, namely those that are related to the instructional methods used with students with LD.

In light of the fact that the learning disabilities field now has a significant array of instructional methods that have been empirically validated (e.g., Elbaum, Vaughn, Hughes, Moody, & Schumm, 1999; Fuchs, Fuchs, Mathes, & Simmons, 1997; Gersten, Baker, Marks, & Smith, 1999; Harris & Graham, 1996; Schumaker & Deshler, 1992; Swanson, 1999; Torgerson, Wagner, Rashotte, & Conway, 1997), those instructional practices that are chosen for professional-development activities must be among this array. This is especially important given Carnine’s (1995) finding that the vast majority of interventions and materials that currently dominate current practice with students with LD are not validated.

Program Process

Once the content has been chosen, the next issue is how the professional-development program should be conceptualized and delivered. To bridge the gap between research and practice—to make validated interventions available to teachers in a manner that will maximize their use over a sustained period of time and to impact student behavior in a positive way—professional-development programs must be carefully structured. Several studies have been conducted to identify ways that best provide professional development and enhance implementation rates. The following findings have emerged.

Most important, professional development must be viewed as a continuous process in which everyone in the school engages. Instead of participating in one-shot sessions about a variety of topics, teachers need to
participate in a planned sequence of learning sessions that pertain to them and their role in the educational mission. The professional-development sequence must involve at least 4 phases: (1) initiation (to give basic information to potential implementers to help them determine the degree of appropriateness and alignment between the attributes of an innovation and existing instructional needs); (2) learning and implementation (to give in-depth explanations, models, practice, and feedback); (3) follow-up support (to support implementation efforts through coaching, troubleshooting, support-team meetings, and implementation refinement); and (4) maintenance (to routinize use of the innovation within the system) (Deshler & Schumaker, 1996; Ehren, 1999; Schumaker & Clark, 1990).

Additionally, teachers must be given the materials they need to support their instruction (e.g., progress charts, lessons, supplementary materials). Those materials need to be organized and ready to use. Teachers must be afforded opportunities to meet together regularly as support teams for the purpose of reviewing the new methods, sharing ideas, and solving problems. They must develop a set of policies and procedures for ensuring the efficient delivery and management of instruction (Kline, Deshler, & Schumaker, 1992). They must be provided with specific, immediate feedback on the effectiveness of their implementation of a newly learned instructional procedure by showing them videotapes of their performance and discussing that performance (Hock et al., 1995).

Furthermore, professional-development sessions must be conducted within a new paradigm (Knight, 1998a; 1998b; 2000) that is founded on the notion of Partnership Learning (Eisler, 2000). Partnership Learning is a method for planning and delivering professional-development sessions in which meaningful conversations take a central role. Meaningful conversations are defined as those in which teachers discuss issues of significance related to their roles as educators and their use of the targeted intervention. Partnership Learning embodies several core principles, including: equality (all participants in professional-development sessions are recognized as equal partners and, consequently, no one’s view is more important or valuable than any one else’s); choice (participant choice is implicit in every communication of content and the process used to learn the content); dialogue (professional developers embrace dialogue rather than lecture, engage participants in conversation about content, and think and learn with participants); praxis (professional developers offer numerous opportunities for participants to reflect on the practical implications of new content); voice (participants have the freedom to express their opinions about content being covered); and symbiosis (professional developers value the perspectives and abilities of participants to invent useful new applications of the content they are exploring).

To test this new paradigm for staff development, Knight (1998b) compared teacher attention and engagement, learning, satisfaction, and expectation for when the intervention would be implemented by using traditional training methods versus Partnership Learning methods. Results across all measures favored the Partnership Learning sessions. Specifically, workshop participants were more engaged in the Partnership Learning sessions than in the traditional sessions; they scored significantly higher on knowledge measures; they were significantly more satisfied with the quality of the training experience; and they reported that they intended to implement the interventions much more quickly and at a higher rate of implementation. These results indicate that professional-development experiences need to be orchestrated differently than they are in most districts today. Instead of minimizing the voice and active participation of the teacher, the teacher must be allowed to become actively engaged and invested in the process.

**ADMINISTRATIVE LEADERSHIP**

School administrators play a key role in ensuring that each of the factors in the student success formula takes place. They can put the weight of their office behind the implementation of each factor in a variety of ways. First, they can ensure that funds are appropriated for the needed staff who will be involved in the service-delivery system and for the needed professional-development sequences. For example, they can obtain funds from a variety of sources (e.g., the state, district, grants), and they can set priorities and restructure how their budget is spent. Second, they can ensure that research-based interventions are the focus of professional-development activities, they can structure the professional-development sequence, and they can attend all professional-development activities. Third, they can take an active role as instructional leaders by visiting classrooms, taking part in support-team meetings, insisting that interventions be implemented, and ensuring that each staff member is accountable for student outcomes. Finally, they can help staff specify and maintain their roles within the service-delivery system and document policies and procedures for institutionalizing components of the service-delivery system.

**SUMMARY**

One of the defining features of IDEA ‘97 is its emphasis on ensuring that students with disabilities have real access to the general education curriculum. This stipulation underscores a strong philosophical commitment to establishing high expectations for these students. Regrettably, in too many instances, the LD field has witnessed a major reconfiguration in how services are provided to students with learning disabilities (Kauffman, 1999). Namely, placement in the general education classroom is mistakenly equated with access to and success in the general education curriculum. The confusion between place (that is, the general
education classroom) and instructional conditions (that is, the conditions necessary to enable students to be successful in responding to the requirements of the general education curriculum) has led to a dramatic narrowing of how services are conceptualized on behalf of students with LD. Specifically, the types of support services that are most frequently made available to students with LD come in the form of (1) consultation with the general education teacher by a special educator; (2) coteaching between a general and special educator in the general education classroom; and (3) various accommodations or adaptations of the general education curriculum and assessments. Each of these services is aimed at helping students with LD to “make it through” the general education curriculum and pass the course. While there is a place for each of these services or accommodations, they are grossly inadequate for many students with LD. The research reviewed here shows that these students earn failing grades on tests under such conditions. Typical attempts to help them lack the intensive focus on teaching them the skills and strategies needed to transform these students into learners who can independently negotiate and respond to the demands of the curriculum in successful ways. Learners who barely pass their courses while failing over and over again on tests quickly become discouraged and drop out of school. Something different needs to be done to give these students a feeling of success. As Kauffman (1999) so powerfully summarized:

Placement in the general education classroom is mistakenly equated with access to and success in the general education curriculum.

if we are going to help students with disabilities, we are going to have to change course. We cannot continue to avoid focusing on instruction. We cannot continue to suppose that consultation and collaboration will somehow make up the deficit in instruction. We cannot rely on substitutes for specialized, individualized, intensive, relentless instruction that special education is supposed to be in all cases but actually is today in too few cases. This kind of education is very expensive and highly visible. As such, it is out of step with today’s sociopolitical currents. (p. 251)

In order for students with LD to succeed in learning subject-area content, they must have a broad array of services available to them similar to the ones described in this article. Accommodations in the organization and presentation of the general education curriculum will not be sufficient to enable most students with LD to successfully master the content in rigorous general education classes. Many students with LD need direct, intensive, systematic instruction to teach them the necessary skills and strategies (and in some instances, foundational language competencies) that they lack. The magnitude of their deficiencies in these areas demand a type of instruction that simply cannot be provided within the general education classroom. Additionally, a well-conceptualized model for providing and coordinating services within and across schools must be in place in each district. Finally, teachers and support personnel who participate in the education of students with LD need to have access to high-quality professional-development experiences on a sustained basis. Successfully teaching subject-area content to students with LD is not a simple matter. Students with LD require a comprehensive, well-conceptualized array of services that are focused on developing independent learners and performers capable of meeting high expectations both in the general education curriculum and life.

REFERENCES


