MEETING THE MULTIPLE NEEDS OF STUDENTS WITH EXCEPTIONALITIES: What Is Effective Practice?

- Learning Disabilities
- Emotional and Behavioral Disabilities
- Mild Intellectual Disabilities
- Attention Deficit/Hyperactivity Disorder
AUTISM SPECTRUM DISORDER

COMMUNICATION DISORDERS

SEVERE COGNITIVE AND MULTIPLE DISABILITIES

SENSORY IMPAIRMENTS (VISUAL AND HEARING)

PHYSICAL DISABILITIES, TRAUMATIC BRAIN INJURY, AND CHRONIC HEALTH DISORDERS

ACADEMICALLY GIFTED OR TALENTED
Learning Disabilities

REFLECT UPON

• How are students with learning disabilities defined and classified?
• What are the primary characteristics of students with learning disabilities?
• How many students are identified with learning disabilities, and what are the major causes?
• How are students with learning disabilities identified?
• What principles guide effective instruction for students with learning disabilities?
• What are prevailing controversial issues related to learning disabilities?
Carol Sprague began teaching after completing an undergraduate degree in elementary education. She loved school as a child, always knew she wanted to be a teacher, and has never questioned her decision to become a teacher. She entered teaching because every day is different and a challenge. Teaching for Carol Sprague is not a job but a career.

Carol has taught at both elementary and secondary levels, as both a general and special education teacher. Many of her assignments have been in inclusive settings. For several years Carol has taught in an inclusive elementary classroom.

A typical day in Carol Sprague’s classroom begins with a morning meeting in which students share things that have happened to them, learn to know and appreciate one another socially, and get excited about learning. Throughout the day, she strives to connect academic content across the curriculum and make this information applicable to the students’ lives. She asks questions to make these connections as well as to encourage students to think deeply and learn about small things in their lives. Carol goes on to note that learning is more fun for students and the teacher and students retain more information if learning is made real for them.

Carol describes her greatest successes as a teacher in relation to individual students. She describes several students, some of whom had learning disabilities, who made significant progress in learning to read during their time in her class and learned to feel successful and confident as readers when they left her class. Interestingly, when asked about the positive impact she has had on her students, she emphasizes the classroom climate and sense of community she has worked to develop. She notes that when she develops a good classroom climate, all students, including low, middle, and high achievers, are supported and make progress in learning the academic content.

An effective teacher for students with learning disabilities, from Carol’s perspective, is a teacher who views students as individuals and takes responsibility for each student’s learning. She emphasizes
that a lack of academic progress should *never* be viewed as the student’s fault. Rather, an effective teacher closely monitors student progress, reflects on her practice, examines what could have been done differently, and adapts instruction until the student does make progress. Carol notes that a large part of meeting students’ needs relates to how the teacher organizes instruction. Small groups, cooperative groups, peer tutoring, and related activities provide more individualized instruction that focuses on the specific skills the student needs.

A final quality of an effective teacher that Carol emphasizes relates to the need to understand what children need to learn and monitor their progress as they learn this content. She notes that state standards have been quite helpful in that teachers know what students need to learn and when. She states that an effective teacher systematically monitors student progress toward learning content, especially students who are struggling, and organizes her class to ensure that all students reach benchmarks.

While Carol loves to teach, some aspects of teaching nonetheless frustrate her. Two major sources of frustration are paperwork and giving students grades. She makes every attempt to limit paperwork that doesn’t support student learning but has little control over it. However, she does have control over student grades. From her perspective, teachers vary greatly in the criteria they use for grading students, emphasizing some combination of effort, mastery of material, and progress related to others. She recently developed a new report card at her school to ensure that grades were used to support students and clearly communicate with parents. Carol emphasizes that grading should be fair to all students, which means that grading should vary depending on the student’s needs.

Carol notes that certain characteristics have helped her continue to improve as a teacher, including the fact that she works hard and doesn’t give up easily. She also emphasizes the need for all teachers to continue to learn throughout their educational career. She emphatically states that most “sit and get” professional development has not been useful for her. The source of the most beneficial learning for Carol has come from a network of friends who are also teachers. They meet frequently to discuss teaching issues and how to improve as a teacher. She also notes that she benefited from teaching in a school with a well-developed learning community. This school supported continual teacher learning by providing retreats, time for teachers to plan together, book studies, and so forth.

Carol’s advice to a beginning teacher is to view teaching as a career, not just a job. She also encourages new teachers to “find a way to feed yourself and continually learn. The best way to do this is to surround yourself with other teachers who share a similar philosophy, who will challenge and feed off each other.”
in reading or mathematics, resulting in a high level of frustration for both student and teacher. In this chapter, we consider a group of students who, by virtue of their disability, struggle in school and require special supports to make adequate yearly progress (AYP) academically, as mandated by NCLB. These students are identified with a learning disability (LD).

Students with learning disabilities are often perplexing to parents and teachers because they have difficulty in some academic areas but not others. This uneven pattern of development is a primary characteristic of these students. Moreover, students with learning disabilities are sometimes said to have a specific learning disability because they tend to struggle to learn academic content in one or two specific academic areas and have strengths in other areas (Torgesen, 2002).

What sets these students apart from others in general education classrooms who struggle to learn academic content is that they often continue to struggle, even when given highly effective, intensive instruction, and are typically the lowest of the low achievers in general education classrooms (Fuchs, Fuchs, Mathes, Lipsey, & Roberts, 2002). These students need a highly effective teacher, much like our featured teacher in this chapter, Carol Sprague. Carol’s persistence, never-give-up attitude, use of varied grouping strategies, and application of effective instructional strategies are all vital if the needs of students with learning disabilities are to be met and these students are to make adequate yearly progress in core academic areas.

DEFINITIONS AND CLASSIFICATION CRITERIA FOR LEARNING DISABILITIES

DEFINITION OF STUDENTS WITH LEARNING DISABILITIES

For at least the past 40 years, students with learning disabilities have perplexed educators, parents, and researchers. These students, at least superficially, do not seem to differ from their typical peers yet struggle to learn academic content in particular academic areas. Since the passage of the original Individuals with Disabilities Education Act in 1975, children with learning disabilities have been defined and identified based on “unexpectedly” low achievement (Fletcher, Morris, & Lyon, 2003). That is, their measured level of intelligence suggests that they should learn academic content with little difficulty; but for some unexplained reason, they do not readily learn this information.

As we noted in Chapter 4, the most widely accepted definition for learning disabilities has been provided by the U.S. Department of Education in the regulations for P.L. 94–142, the Individuals with Disabilities Education Act:

A) In general—The term “specific learning disability” means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which disorder may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations.

B) Disorders included—Such term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

C) Disorders not included—Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage. (IDEA 2004, H.R. 1350, Sec. 602 [30])
### FAQs Sheet

#### STUDENTS WITH LEARNING DISABILITIES

**Who are they?**
- Students with learning disabilities have an intelligence level in the normal range (i.e., above the cutoff for intellectual disabilities) and unexpectedly low achievement in one or more academic areas, most often in reading.
- Students with learning disabilities have also been labeled using terms such as dyslexia (reading disability), dysgraphia (handwriting or written expression disability), dyscalculia (math disability).

**What are typical characteristics?**
- Low achievement
- Inattention/distractibility
- Information-processing deficits
- Social-skills deficits
- Poor motivation
- A heterogeneous category

**What are the demographics?**
- 5.24% of students ages 6 to 17 (approximately 2.58 million) have been identified with learning disabilities.
- Approximately 45% of all school-age students with disabilities have a learning disability.
- The percentage of the school-age population identified with learning disabilities increased by approximately 14% between 1990 and 2004.
- 90% of students identified with learning disabilities have reading problems.
- Approximately 75% are male.

**Where are students educated?**
- 51% of students identified with learning disabilities spend most of the school day in general education classrooms.
- The proportion of students with learning disabilities who are educated in highly segregated separate settings declined by approximately 42% between 1990 and 2003.

**How are students identified and assessed for intervention?**
- Primary criteria for identification are a severe discrepancy between expected and actual achievement levels and exclusion of students who have other disabilities and those who have not had adequate opportunities to learn.
- A test of intelligence is used to determine expected achievement level, while a standardized achievement test is used to determine actual achievement level. These tests are compared to determine if a severe discrepancy exists between expected and actual achievement levels.
- Curriculum-based measures are used to determine current academic level in classroom curriculum as well as to monitor student progress.

**What are the outcomes?**
- Reading problems tend to become more severe as students with learning disabilities move through school.
- Learning disabilities tend to persist into adulthood.
- Many adults with learning disabilities have difficulty finding good employment, living independently, and finding satisfaction in life.

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There are four primary components of this definition. First, learning disability is defined based on low academic achievement in one or more of several academic areas. Second, it is assumed that these academic problems exist because of some form of psychological processing disorder, which causes a student to have difficulty in acquiring academic knowledge and skills in certain areas. For example, many students...
with learning disabilities who have difficulty learning to read have trouble using sound-symbol correspondences to sound out words they have not previously seen, which is referred to as a phonological processing problem (Torgesen, 2002).

Third, learning disability is considered to be synonymous with several labels that have been used in the past (perceptual disabilities, brain injury, minimal brain dysfunction) or terms that are presently used by some educators (dyslexia, developmental aphasia). Finally, students with other disabilities (e.g., mental retardation, visual impairment) or who have learning problems because of environmental factors (e.g., living in poverty) are excluded from being identified with a learning disability. This so-called exclusion clause is included in the definition to ensure that the primary reason the student has difficulty progressing academically relates to a learning disability and not to another type of disability or to environmental conditions (e.g., poor teaching).

The federal definition of learning disabilities was a model to states in the late 1970s as they developed definitions and identification criteria of their own. In spite of most states’ widespread acceptance of the federal definition of learning disability (Ahearn, 2003), there has been much controversy regarding how the definition should be used to identify students with learning disabilities (MacMillan & Siperstein, 2002). This has resulted in significant differences across states in the identification rates for these students and practices that have been characterized as “confusing, unfair, and logically inconsistent” (Gresham, 2002, p. 467). To illustrate, data from the U.S. Department of Education (2006a) reveal that, in 2005–2006, 5.24% of students in the United States were identified with learning disabilities. However, across states, the identification rate varied from 2.18 to 7.66%, with the result that some states (i.e., Iowa, Oklahoma, Rhode Island, District of Columbia) identified twice as many students with learning disabilities as did other states (i.e., Georgia, Kentucky, Louisiana).

In addition to inconsistent identification of students with learning disabilities, another controversial aspect of this category is that students often must fail before they can be identified with a learning disability. This wait-to-fail approach to identification has led to frustration for many educators and parents and a desire to develop an approach to learning disability identification that allows the use of more preventive measures (Ahearn, 2003). These concerns regarding the learning disability definition and identification criteria were significant factors that led to the inclusion of a response-to-intervention approach to identifying students with learning disabilities in IDEA 2004. This approach to identification will be described in more detail in the following section, which addresses classification criteria for identifying students with learning disabilities.

CLASSIFICATION CRITERIA FOR LEARNING DISABILITIES

The passage of IDEA 2004 resulted in significant changes in the criteria and related procedures that may be used to identify students with learning disabilities. In this section, we initially address criteria that are currently used to identify students with learning disabilities in most states. This is followed by a discussion of the changes in classification criteria that were included in IDEA 2004 and how these changes may influence identification criteria in the near future. Finally, we describe an alternative approach to the identification of students with learning disabilities that is allowed by changes in IDEA 2004.

Identification Criteria

Four criteria are frequently used to identify students with learning disabilities. The most widely used criterion is a severe discrepancy between how well the student is achieving in an academic area and how well the student is expected to achieve based on ability. (Ability is typically determined using an intelligence test.) Thus, a student in the fifth grade who has an average level of intelligence (i.e., a measured IQ of 100) and is reading on a second-grade level (as measured by a standardized achievement test) would have a severe discrepancy between expected and actual achievement levels and would most likely meet this severe discrepancy criterion.
It is important to note that, to meet the severe discrepancy criterion, a student must fall significantly behind grade-level peers in academic achievement. Thus, the severe discrepancy criterion is difficult to meet in the early elementary grades (first or second grade), when all students are learning basic academic skills, have only completed one or two years of school, and can only be one or two years behind grade level. Moreover, a student must often fail academic subjects and perhaps be retained in a later grade before the discrepancy is large enough to merit identification of a learning disability.

A second criterion that is widely used to identify students with learning disabilities is the exclusion clause, which ensures that students with learning disabilities do not have another disability, such as a mild intellectual disability or a visual impairment, which causes the learning problem. The exclusion clause is also used to ensure that learning problems do not result from environmental, cultural, or economic disadvantages. This criterion is intended to assure that the learning disability is the primary reason that a learning problem exists (e.g., the underachievement should not be the result of a visual impairment or the student’s cultural background) and is an attempt to ensure that the learning disability category does not overlap with other disability categories.

A third criterion for identifying students with learning disabilities addresses the extent to which the student has been provided with appropriate learning experiences. This criterion relates to the student’s opportunity to learn and suggests that students who have a learning problem that is the result of poor teaching should not be identified with a learning disability. Until recently, this criterion has not been widely used in identifying students with learning disabilities. However, this may change in the near future as states move to the use of a response-to-intervention approach to identifying students with learning disabilities, which is discussed later in this section.

The final criterion requires demonstrating that the student needs special education services and that the identified academic problem cannot be overcome in the general education classroom without these services. This criterion extends upon and strengthens the exclusion from the learning disability category of students who have not had appropriate or sufficient opportunity to learn as a result of not attending school or poor instruction while in school.

IDEA 2004 Changes in Identification Criteria

As we have noted, several changes were made in IDEA 2004 that in the coming years will influence procedures that are used in states to identify students with learning disabilities (U.S. Department of Education, 2006b). These changes include the following:

• States cannot require that a severe discrepancy be used to identify students with learning disabilities in local schools. As a result, some local school districts will probably continue to use this criterion, while others will use alternative approaches to student identification.

• States must permit the use of the child’s response to scientific, research-based interventions for identifying students with learning disabilities. We describe the use of this response-to-intervention (RTI) approach to student identification later in the section.

• Limited English proficiency is added to the exclusion clause. That is, limited English proficiency must be eliminated as a possible cause of the learning disability.

Response to Intervention (RTI)

An alternative approach to the identification of students with learning disabilities that uses the child’s response to scientific, research-based interventions and does not require the use of a severe discrepancy is currently being used in several states (Fuchs, Compton, Fuchs, Paulsen, Bryant, & Hamlett, 2005; Reschly, 2005). This RTI approach to identification is based on the assumption that students who are struggling academically should only be identified with a learning disability if they do not respond to
effective instruction (i.e., instruction that is based on scientific, research-based interventions). Students who are struggling academically and do not respond to effective interventions are thus assumed to have deficits that require special education services and are identified with a learning disability (Fuchs, 2003) (see Figure 6.1).

RTI typically consists of tiered levels of instruction, with the systematic use of academic measures to identify students in need of intensive instruction and monitor student progress as instruction is provided (Reschly, 2005). One approach to RTI includes the following steps (Fuchs et al., 2005; Fuchs, Fuchs, & Compton, 2004):

1. All students in first grade are tested to determine which are struggling to learn reading or mathematics content.
2. Students who are identified as at risk for poor learning outcomes during first grade are identified for intervention. Intervention is provided to these students using evidence-based practices that have been proven effective.
3. Students are tested following intervention. It is assumed that those who respond well (i.e., learn the necessary material to achieve at a level comparable to peers in first grade) had difficulty because of inadequate instruction or insufficient background experiences.

For children who do not respond, lack of quality instruction has been eliminated as a possible cause. These students are referred to a multidisciplinary team for further evaluation, more intensive intervention, and possible identification with a disability.

Several states have taken advantage of this alternative, and several models for identifying students with learning disabilities using RTI have been developed, and are currently being field-tested (Fuchs et al., 2005; Fuchs et al., 2004). While many professionals contend that the use of RTI is an improvement over traditional wait-to-fail approaches to the identification of students with learning disabilities, others are not convinced that this approach will be an improvement over current practice (Fuchs, 2003; Fuchs, Fuchs, & Speece, 2002; Scruggs & Mastropieri, 2002). The controversy regarding RTI is addressed later in this chapter.

**Reflective Exercise #3**

Why is it important to develop an alternative approach to identify students with learning disabilities that ensure these students don’t have to wait to fail to be identified? What are some of the negative effects of waiting to fail?

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**FIGURE 6.1**

**AN ALTERNATIVE APPROACH TO IDENTIFYING STUDENTS WITH LEARNING DISABILITIES**

(6) Specific learning disabilities
(A) In general—Notwithstanding section 607(b), when determining whether a child has a specific learning disability as defined in section 602, a local educational agency shall not be required to take into consideration whether a child has a severe discrepancy between achievement and intellectual ability in oral expression, listening comprehension, written expression, basic reading skill, reading comprehension, mathematical calculation, or mathematical reasoning.

(B) Additional authority—In determining whether a child has a specific learning disability, a local educational agency may use a process that determines if the child responds to scientific, research-based intervention as a part of the evaluation procedures described in paragraphs (2) and (3).

*Source: IDEA, 2004 P.L. 108-446, Sec. 614 (b).*
PRIMARY CHARACTERISTICS OF STUDENTS WITH LEARNING DISABILITIES

HETEROGENEITY

As we begin to address the characteristics of students with learning disabilities, it is important to note that the only common characteristic shared by all of these students is uneven development of academic skills. That is, students with learning disabilities achieve at significantly lower levels in some academic areas than in others. Indeed, other than low achievement in reading, which occurs in approximately four of every five students with learning disabilities (Kavale & Forness, 1995), most characteristics occur in a small number of these students (i.e., often 25% or fewer). This has led some to conclude that one of the major characteristics of the learning disabilities category is its heterogeneity (Mercer & Pullen, 2005) and that it should be separated into several categories or subtypes of learning disabilities (i.e., students with reading problems, those with mathematics disabilities, students with language difficulties, and so forth). Thus, as you review the following characteristics, keep in mind that, in most cases, they only relate to a small group of students identified with learning disabilities.

ACADEMIC DIFFICULTIES

The primary characteristic of students with learning disabilities is underachievement in one or more academic areas, resulting in the uneven development of academic skills. The academic area in which most students with learning disabilities have difficulty is reading: approximately 80% of these students struggle in this area (Kavale & Forness, 1995). Research conducted over the past two decades has provided significant insight regarding why many students with learning disabilities fail to make adequate progress as they are learning to read.

Lyon and colleagues (2001) have pointed out that, as students begin to learn to read, those who progress with ease

- Understand how the sounds of speech are represented in letters
- Apply this information rapidly and fluently in decoding words
- Have sufficient vocabulary and language abilities to quickly connect what they are reading to their experiences and background knowledge

Research has demonstrated that many students with learning disabilities lack these language skills, which contributes to their difficulty in learning to read.

To illustrate, students with the most severe reading problems often have difficulty decoding words rather than comprehending text (Torgesen & Wagner, 1998). A major contributing factor to this difficulty is a problem with phonological processing (i.e., the association of sounds with letters in oral language and when reading). Fortunately, research has shown that explicitly teaching beginning readers skills related to sounds in oral language and letter/sound relationships as well as how to translate this information into words can help to reduce the impact of a reading disability for many students (Siegel, 2003).

As you will readily recognize, reading is a foundational skill that is necessary if students are to progress throughout the school years.
Thus, as students more through elementary school, reading becomes more and more important in other academic areas. For example, early mathematics skills depend heavily on recognizing numbers and learning math facts and basic operations, and reading skills are of little consequence. However, as students move to later elementary school, word problems become increasingly important in mathematics. Thus, the reading problems of students with learning disabilities tend to cause difficulty in a range of academic content areas as they progress through the school years.

Slightly more than two of every five of students with learning disabilities have mathematics goals in their IEPs (Kavale & Forness, 1995). Students with learning disabilities most often have difficulty with one of four areas related to mathematics (Bryant & Dix, 1999):

1. Learning math facts to allow quick, automatic response
2. Learning strategies to complete math calculations (e.g., regrouping)
3. Comprehending word problems
4. Learning strategies for completing word problems

The first two of these problems reflect learning disabilities in the area of mathematics. The difficulties related to word problems may also result from these initial difficulties in learning the basic skills required for higher-level math. However, as we’ve noted, many students learn these basic skills with little trouble, but word problems present difficulty because of students’ related learning disabilities in reading or language (i.e., understanding the word problems, especially as they become more complex). Thus, the teacher’s instructional intervention will differ depending on the cause of the mathematics disability and whether the student has difficulty learning math facts or operations or cannot read and understand math word problems.

A third area in which many students with learning disabilities have difficulty is written expression: as approximately two in five students have IEP goals in this area (Kavale & Forness, 1995). Reading disabilities may contribute to difficulties students with learning disabilities face in written expression as reading skills tend to develop before comparable writing skills. Thus, a student who lags behind peers in learning to read will invariably do the same in the area of written expression. However, some students with learning disabilities have problems with written expression in spite of reading well.

For students with good written expression skills, writing involves three basic processes (Graham & Harris, 2003): “planning what to say and how to say it, translating plans into written text, and reviewing to improve existing text” (p. 323). Graham and Harris note that students with learning disabilities related to written expression tend to use a simplified or condensed version of this process: they rely on generating ideas and place little emphasis on planning, organization, or reviewing the text. Thus, the goal of teaching students with written expression disabilities should often be developing a more sophisticated approach to writing, including each of the previously described steps.

**COGNITIVE SKILL DEFICITS**

**Memory Problems**

Students with learning disabilities are often characterized by certain cognitive problems that contribute to the difficulties they have learning academic content. One of the most frequently noted problems among students with learning disabilities is a memory deficit. Many students with learning disabilities have difficulty with long-term memory and experience great frustration in attempting to learn basic information and rapidly retrieving this information during school activities. For example, many students with learning disabilities who have problems with math have difficulty learning math facts. Moreover, they may remember facts one day and forget them the next. Much the same can be said about learning to spell for a significant number of students with learning disabilities.
The most frequently investigated aspect of memory for students with learning disabilities is **working memory** (Siegel, 2003). Working memory is the ability to see something, think about it, and then act on this information. For example, when reading, a student sees a word he does not know, retrieves information from his long-term memory regarding the letters in the word and the sounds they represent, blends these sounds into a word, and then says the word while retaining information regarding the context of what is being read. Obviously, this is a complex process and is made more difficult by the fact that a fundamental problem that many students with learning disabilities face is a deficit in working memory. Evidence indicates that working memory problems contribute to learning disabilities in the areas of reading, mathematics, and written expression (Swanson & Saez, 2003).

**Attention Problems**

A second cognitive factor that may contribute to many learning disabilities is attention problems. Available evidence suggests that as many as 60% of students with learning disabilities have some level of attentional difficulty (Rock, Fessler, & Church, 1999). Attentional problems for students with learning disabilities may relate to three types of attention.

- Orienting toward important activities in the classroom (i.e., the teacher provides an example of regrouping on the board, while the student looks out the window at children playing on the playground)
- Sustaining attention for an appropriate period of time (i.e., paying attention for a sustained period of time without distraction)
- Selectively attending to material that is most important (e.g., attending to directions before responding to math problems on a worksheet)

More detailed information regarding attention deficits is provided in Chapter 9, which addresses students with attention deficit hyperactivity disorder (ADHD).

**Metacognitive Deficits**

Students with learning disabilities may also have difficulty with what are called metacognitive skills. **Metacognition** relates to an awareness of thinking processes and how these processes are monitored. Scott (1999) has more simply characterized this phenomenon as “knowing what you know and how you know it” (p. 55). Students with learning disabilities often have difficulty monitoring their thinking, and these difficulties contribute to academic problems. Many strategies have been used to support students with metacognitive difficulties, including providing advance organizers before presenting material, use of mnemonic devices to assist in remembering information (e.g., HOMES is a device to remember the names of the Great Lakes), and procedures for planning and organizing study time in a content area.

**SOCIAL AND MOTIVATIONAL PROBLEMS**

While not all students with learning disabilities have social-skills deficits, research has revealed that some do manifest difficulties getting along with peers and teachers as a result of deficits in this area. For example, some students with learning disabilities lag behind others in social skills; they have difficulty helping others, accepting authority, and expressing feelings (Bender, 1999; Vaughn, La Greca, & Kuttler, 1999).

Some research suggests that social-skill deficits among students with learning disabilities may result, at least in part, from the inability to read social cues and interact successfully in conversations (Bender, 1999). Furthermore, Vaughn and colleagues (1999) point out that a critical problem for many students with learning disabilities is social alienation, resulting in a lack of affiliation or involvement in school. These authors note that many students with learning disabilities report that they feel unimportant to peers and teachers and do not feel engaged or interested in school.

Another noteworthy aspect of social skills for students with learning disabilities relates to the low social status of some of these students in school. This low status may relate to social-skills deficits but also may be influenced by factors related to the stu-
dent's low achievement level (e.g., student placement in classes with other low-achieving students, low status in a school of low-achieving students). Regardless of the cause, this low status often leads to a negative self-concept and emotional maladjustment and increases the potential for dropping out of school (Vaughn et al., 1999).

It is important to note that there is much variability among students with learning disabilities as they adjust socially in school. Some of these students are among the most popular in school and adjust very well, while others are rejected or neglected in school because of social-skill deficits and their low achievement. Although social skills are not a defining criterion of learning disabilities, teachers should recognize and address these issues to ensure that they do not exacerbate adjustment and motivational problems and contribute to lowered academic achievement.

In reflecting on the academic, cognitive, and social issues faced by students with learning disabilities, we can see that there is much potential for these students to become frustrated with school. Indeed, as many students with learning disabilities progress through school, they are faced with increasing difficulty in successfully completing school tasks and making passing grades; and this may result in avoidance of academic activities, frustration, behavior problems, and, ultimately, disengagement from school. Thus, maintaining student motivation becomes a key issue in ensuring that students with learning disabilities continue to adjust to school and make adequate academic progress.

The most important factors in maintaining a high motivation level for students with learning disabilities involve recognizing when these issues arise and addressing them by providing effective instruction that is appropriate to the student's needs. We offer information regarding effective instruction of students with learning disabilities later in this chapter as well as in Chapter 5. Another important consideration is whether a student with learning disabilities needs to be directly taught social skills. (We provide information regarding social skills training in Chapter 7.)

**PREVALENCE, COURSE, AND CAUSAL FACTORS**

**PREVALENCE**

Learning disability is commonly referred to as a high-incidence disability. In a typical classroom of 25 students, at least one is likely to have a learning disability. In a non-technical sense, high-incidence disability refers to a condition that a lot of people have. In fact, in 2006, more than 2.58 million students were identified with learning disabilities, representing 5.24% of the school-age population in the United States (U.S. Department of Education, 2006a). That year, prevalence rates ranged from a high of 7.74% in Iowa to a low of 2.18% in Kentucky. Students with learning disabilities account for more than 45% of all students with disabilities, by far the largest disability category.

The number of students identified with learning disabilities has grown dramatically over the past 30 years. In 2005–2006, there were more than three times as many students with learning disabilities as were identified in 1976–1977. Much of the early growth of the learning disability category could be attributed to its newness: students who had not previously been eligible for special education were now identified. For example, in Indiana in 1976, only 5,422 students were identified with learning disabilities (Indiana Department of Education, 2005). Ten years later, in 1985, this number had grown to 33,558, an increase of more than 500%. Similar growth occurred in many states across the United States during this time.
More recently, this dramatic growth rate has slowed, but the category continues to grow. For example, between 1990 and 2004, the learning disability category grew twice as rapidly as the overall school-age population. During this time, the total number of students identified with learning disabilities grew by more than 650,000, a 31% increase, while the overall student population grew by only 15% (U.S. Department of Education, 2006a). As we have noted, this growth may relate to states’ lack of consistency in the use of procedures to identify students with learning disabilities. The RTI approach to learning disability identification shows promise for slowing this growth in the learning disability category (Fuchs et al., 2005). However, it will be several years before we can identify such changes.

THE COURSE OF LEARNING DISABILITIES

As students with learning disabilities progress through school, a gap often widens between the performance of students with and without disabilities (Deshler et al., 2001; Mercer & Pullen, 2005). A major contributor to this widening gap for many students with learning disabilities is reading deficits that influence progress in academic content areas as well as the development of language skills (e.g., vocabulary development).

Extensive research has documented that the effects of learning disabilities persist into adulthood (Levine & Edgar, 1995; Patton, Polloway, & Smith, 1996; Vogel & Adelman, 2000; Wehmeyer & Schwartz, 1997). For example, adults with learning disabilities continue to have difficulties similar to those they experienced during their school years in areas such as reading, mathematics, language, interpersonal interactions, and so forth. While it is important to note that a substantial proportion of students with learning disabilities are quite successful in adulthood, many adults with learning disabilities (perhaps as many as one in four) have difficulty finding good employment, living independently, and experiencing satisfaction regarding their lives (Mercer & Pullen, 2005).

CAUSAL FACTORS

For almost all students identified with learning disabilities, we do not know the particular cause of the disability. Research conducted on the causes of these disabilities points cautiously to multiple contributing factors, implicating abnormal brain function, genetic predispositions, and poor teaching.

Abnormal Brain Function

In spite of the fact that most definitions implicate underlying psychological processes, central nervous system dysfunction, or minimal brain dysfunction, the cause of the disability for almost all students with learning disabilities is not known. The most widely studied cause of learning disabilities has been abnormalities in brain function. Recent advances in how the brain is studied have resulted in much progress in understanding the relationship between brain function and learning disabilities, especially those in the area of reading. For example, extensive research has documented that children with reading disabilities often differ from typically developing peers in brain structure and function (Miller, Sanchez, & Hynd, 2003).

While brain anomalies and learning disabilities are intriguing topics for many educators, it is important to recognize that this causative information tells us little about how to teach students with learning disabilities. Furthermore, it is unclear whether the brain dysfunctions cause the reading disability or the reading problem causes the brain anomaly (Miller et al., 2003). Moreover, some research has shown that brain function may improve with effective academic intervention (Shaywitz et al., 2004). While the study of brain function may provide useful information in the future regarding how to prevent or intervene with learning disabilities, to this point these findings have few implications for more effectively teaching these students.

Genetic Factors

A second frequently cited factor that may contribute to or cause learning disabilities is genetic factors. Research conducted with students with reading disabilities has estab-
lished that reading and writing disabilities tend to run in families (Thomson & Raskin, 2003). For example, parents with reading disabilities have been found to be eight times more likely to produce children with reading disabilities (Fletcher et al., 2002).

It is unclear whether genetic factors cause reading disabilities or result in a predisposition for a disability that is influenced by environmental conditions. Fletcher and colleagues (2002) have speculated that genetic factors may be an inherited susceptibility to a reading disability that will be manifested given certain environmental circumstances. For example, some parents with a reading disability may be less likely to read to their children or provide other reading and language experiences that are critical for success in early reading. When this occurs, the quality of reading instruction in the early school years becomes critical for preventing the development of a reading disability.

**Lack of Effective Instruction**

A final factor that is widely believed to contribute to the identification of many students with learning disabilities is the lack of access to effective instruction. Moreover, it is likely that many students are referred for possible identification with a learning disability because of poor teaching. Research on this issue has contributed significantly to the movement toward the use of an RTI approach to the identification of students with learning disabilities, as discussed previously in this chapter.

Researchers who have provided high-quality instruction for students with learning disabilities have found that up to 50% of these students can overcome their learning problems and succeed in school (Fuchs et al., 2005; Torgesen et al., 2001; Vellutino et al., 1996). For example, Vellutino and colleagues identified students who were at risk for reading problems in kindergarten and provided these students with high-quality reading instruction through the second grade. These researchers found that approximately half of these students made good to very good academic growth during this time and thus were unlikely to be identified with learning disabilities. Similarly, Torgesen and colleagues provided high-quality instruction for two years for students with severe reading disabilities. One year after the completion of the intervention, 40% of these students were no longer in need of special education services. Fuchs and colleagues conducted a similar study for early elementary students with math disabilities and found that they reduced the prevalence of math disabilities at the end of first grade by approximately 36%.

These studies reveal that the lack of high-quality instruction is a frequent cause of learning disabilities in reading and mathematics in the early elementary grades. Moreover, high-quality instruction may reduce, at least temporarily, the prevalence of learning disabilities in the early elementary grades up to 50%. Fuchs and colleagues (2005) caution, however, that additional research is needed to determine if these effects are lasting. Moreover, as these students progress through school, some are likely to reemerge with learning disabilities unless they continue to receive high-quality instruction.

**IDENTIFICATION AND ASSESSMENT**

At present, most states use an approach to identifying students with learning disabilities based on the previously described definition and identification criteria. Students with learning disabilities are typically identified after they enter school and are referred by their classroom teacher or parent to determine their eligibility for services. They then take several tests administered by a school psychologist or other professional with expertise in test administration and interpretation, typically including an intelligence test and a test of academic achievement. These tests are used to determine if students meet the primary criteria for learning disabilities. We describe these criteria and tests later in this section.

The primary criterion used to identify students with learning disabilities is a severe discrepancy between expected and actual achievement levels. A severe discrepancy is determined by administering an intelligence test and an achievement test. The first step in establishing if a severe discrepancy exists is to administer an intelligence
test to determine a student’s expected level of achievement. Intelligence tests that are most frequently used include the Stanford Binet Intelligence Scale (5th ed.) (Roid, 2003) and the Wechsler Intelligence Scale for Children (4th ed.) (Wechsler, 2003).

An achievement test is administered to determine the student’s current achievement level. Achievement tests that are most often used for this purpose include the Woodcock-Johnson Tests of Achievement (Woodcock, McGrew, & Mather, 2001) and the Wechsler Individual Achievement Test (WIAT-II) (Psychological Corporation, 2001). The tests include separate measures or subtests that address language, reading, writing, and mathematics. Subtest scores are used to determine student achievement level in the academic area or areas in which the student is having difficulty making progress.

Intelligence and achievement test scores are then compared to determine if the student’s actual achievement level is significantly below expected achievement—i.e., if a severe discrepancy exists. For example, a student with an average IQ (i.e., 100) in the fifth grade is expected to achieve on a fifth-grade level, while a student with a higher or lower IQ is expected to achieve commensurate with the IQ level. A multidisciplinary team typically makes a decision regarding whether or not a severe discrepancy exists using statistical procedures (Mercer & Pullen, 2005).

While a severe discrepancy is the primary criterion used to identify a student with a learning disability, the multidisciplinary team also looks at other information (e.g., results of an observation in the general education classroom, a review of the child’s previous educational experiences) to ensure that each of the classification criteria for learning disabilities is met. This includes ensuring that the student does not have another disability (e.g., an intellectual disability or visual impairment), has had appropriate opportunities to learn, and that the academic problem cannot be overcome in the general education classroom without special education services.

EDUCATIONAL PRACTICES

Extensive research has been conducted regarding evidence-based practices that are effective with students who have difficulty progressing academically, including those with learning disabilities. Some of this evidence has been obtained from classes much like Carol Sprague’s, the featured teacher in this chapter. This research reveals that, while a student identified with learning disabilities may take more time to learn a skill than a typical peer, good teaching methods persistently applied by an effective teacher work well with them.

SERVICE DELIVERY

Research has revealed that students with learning disabilities benefit from spending a large proportion of the day in general education classrooms (e.g., Salend & Duhaney, 1999). Through the 1980s and much of the 1990s, many students with learning disabilities were educated for a substantial portion of the school day in separate settings (McLeskey, Henry, & Axelrod, 1999; McLeskey & Pacchiano, 1994). However, recent data indicate that most students with learning disabilities now spend the majority of the school day in general education classrooms (McLeskey, Hoppey, Williamson, & Rentz, 2004).

Table 6.1 illustrates that increasing numbers of students with learning disabilities have been educated in more inclusive settings over the last 15 years. For example, in 1990–1991, only 22.6% of all students with learning disabilities spent most of the school day in the general education classroom. This per-
TABLE 6.1


<table>
<thead>
<tr>
<th>School Year</th>
<th>General Education¹</th>
<th>Resource¹</th>
<th>Separate Class¹</th>
<th>Separate Setting²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990–1991</td>
<td>22.6</td>
<td>53.6</td>
<td>22.4</td>
<td>1.5</td>
</tr>
<tr>
<td>1998–1999</td>
<td>43.2</td>
<td>40.4</td>
<td>15.5</td>
<td>0.9</td>
</tr>
<tr>
<td>2004–2005</td>
<td>51.2</td>
<td>35.8</td>
<td>12.0</td>
<td>1.1</td>
</tr>
</tbody>
</table>

1. Students in general education settings spend 80% or more of the school day in general education classrooms. Those in resource settings spend 21–60% of the school day in a separate special education resource class. Students in a separate class spend more than 60% of the school day in a separate special education class.

2. Separate setting combines several categories reported by the U.S. Department of Education, including public separate facility, private separate facility, public residential facility, private residential facility, and home/hospital environment.


percent increased to 43.2% in 1998 and continued to climb to 51.2% in 2004–2005 (the most recent year for which LRE data is available from the U.S. Department of Education). While the growth in placements of students with learning disabilities in general education settings has slowed somewhat in recent years (McLeskey et al., 2004), we anticipate that the trend toward educating increasing numbers of students with learning disabilities in general education classes will continue in the coming years.

While placements of students with learning disabilities in general education placements have increased, placements in highly restrictive settings have declined. For example, in 1990–1991, approximately 24% of all students with learning disabilities were segregated from their peers for most or all of the school day in separate classes or separate schools. This percentage had declined to approximately 16% in 1998–1999 and still further to 13% in 2004–2005. These highly segregated placements are likely to continue to decline in the coming years as the movement toward educating students with learning disabilities in general education settings for much of the school day continues (McLeskey et al., 2004).

If increasing numbers of students with learning disabilities are to be included in general education classrooms, several activities are needed to ensure that these students have appropriate supports to succeed in these settings. These supports include, perhaps more than anything else, well prepared general and special education teachers who are knowledgeable about providing effective instruction for these students as well as adapting instruction and curriculum to meet student needs. McLeskey and Waldron (2000, 2002) suggest that the provision of adequate supports for these students in general education classrooms requires schoolwide change that addresses how schools are organized, how they plan and deliver instruction, and what roles that teachers play in addressing student needs.

EARLY INTERVENTION

Only within the past 20 years have educational programs for preschool children with disabilities been developed and widely available. This has occurred primarily for two reasons. First, research has documented that the early experiences of children have a

Reflective Exercise #8

What are the potential benefits for students with learning disabilities who are placed in inclusive general education settings as compared to placements in highly segregated separate class settings? What are the potential negative factors associated with inclusive placements? How might you as a teacher address these factors?
Early intervention programs for students with learning disabilities often emphasize rich oral language experiences.

significant impact on their later growth and development. Moreover, effective preschool programs have been shown to positively influence students’ intelligence levels, academic achievement, and social competence (Beirne-Smith, Patton, & Kim, 2006; Lerner & Kline, 2006).

Providing early intervention for students with learning disabilities can be complex. For example, it is difficult to accurately identify students with learning disabilities before they enter school. As we have noted, most students with learning disabilities are identified because they struggle while learning to read. In schools, students are not expected to begin learning to read until kindergarten or first grade. Thus, identification of students with learning disabilities before they enter kindergarten or first grade requires hypothesizing that the student will fail in the future, or is at risk for a learning disability.

Research has revealed that most students who are identified with learning disabilities before entering school have problems with language (Mann, 2003). More specifically, as students learn about the world by talking and listening, the information they obtain provides a foundation for reading and writing (Lerner & Kline, 2006). These early oral language experiences allow children to build vocabulary (semantic knowledge) and develop an awareness of sentence structures (syntactic knowledge) that will be used in learning to read and write (Lerner & Kline, 2006). Early language problems prevent children from obtaining the language skills that are needed in early reading and writing.

Young children who are at risk for learning disabilities because of language problems benefit from early intervention programs that include rich experiences with oral language. These experiences should address activities that enhance listening comprehension, phonological awareness of language sounds, building a listening vocabulary, understanding sentences, listening comprehension, critical listening, and listening stories (Lerner & Kline, 2006). For example, listening comprehension entails focusing on activities that allow students to learn to follow directions, understand a sequence of events, listen for details, get the main idea, make inferences, and draw conclusions. Research reveals that early intervention for preschool children with language problems can significantly influence a child’s development and reduce or prevent later school failure (Wolery & Bailey, 2003).

Early intervention programs have proven very beneficial for students with learning disabilities, especially those students with reading problems. Early in this chapter, we discussed the use of interventions with students with reading problems that included explicitly teaching phonemic awareness skills, the alphabetic principle, and other skills that are necessary for early reading (Torgesen, 2000). Success with these early intervention programs has precipitated the movement toward the RTI approach to the identification of students with learning disabilities, which ensures that evidence-based instruction is provided to children who are at risk for reading failure at an early age (kindergarten and first grade) before these students experience failure in school.

CLASSROOM INTERVENTIONS

The discussion of effective instruction in this chapter is primarily based on the work of Kame‘enui and colleagues (Kame‘enui & Carnine, 1998; Kame‘enui & Simmons, 1999). These principles have been documented through extensive research as effective guiding practices for teaching students who struggle to learn academic content. The six principles of effective curriculum design and instruction are defined in Figure 6.2, and are subsequently described in more detail.
Big Ideas
As we are sure you have heard scores of times, information has proliferated at an unprecedented pace over the past 30 years. What students are expected to learn in school reflects this explosion of knowledge, resulting in curricula in many schools that are so broad that only the highest-performing students can begin to learn all of the information. The most widely used approach used in schools to address this information explosion is to superficially expose students to a broad range of information. This results in very little in-depth learning for many students, especially those with disabilities, and entails very little teaching when students fail to learn needed knowledge or skills.

A more effective strategy is needed to ensure that students, especially students with disabilities, learn academic content. “Big ideas” offers such an alternative. This approach entails examining the curriculum to determine key skills, knowledge, and concepts and focusing instruction on this information. Big ideas are “concepts, principles, or heuristics that facilitate the most efficient and broadest acquisition of knowledge” (Kame‘enui & Carnine, 1998, p. 8). These big ideas serve as anchoring concepts as students learn smaller ideas. The primary assumptions underlying big ideas are (1) not all curriculum objectives contribute equally to academic development and (2) important information should be taught more thoroughly than less important information (Kame‘enui & Simmons, 1999).

Using big ideas to guide curriculum planning and instruction ensures that all students learn the most important information and have basic skills and anchoring concepts that are necessary for higher-level knowledge and skills. Furthermore, this approach allows students who quickly learn curriculum to both assist others in learning this valuable information and to learn higher-level concepts. Two examples of big ideas follow, one in elementary school and a second at the high school level.

Beginning Reading for Elementary Students. Most researchers agree that three big ideas are needed to ensure that beginning readers succeed: (1) phonemic awareness, which is the awareness of sounds in letters and words; (2) the alphabetic principle, which is an awareness of letter-sound relationships and a facility with mapping sounds to letters; and (3) automaticity with the code, which ensures that beginning readers can rapidly translate letters to sounds and sounds to words.

Written Expression in High School. Research has demonstrated that good writing requires students to progress through a sequence of steps as they write increasing complex narrative or expository passage. These steps include planning to write, drafting an initial version of the passage, revising the draft, changing plans as deemed necessary, modifying drafts as plans change, and editing the final version (Kame‘enui & Carnine, 1998).
Reflective Exercise #9

Can you name the five Great Lakes? (a hint—HOMES). Which months have 30 days? (another hint, use your knuckles or “Thirty day hath September . . . ”). What are strategies you have used to remember information? Would these strategies be useful for students who are struggling to learn in your classroom?

Focusing on big ideas provides a good framework for addressing certain aspects of academic problems. For an example of a first-grade student with a reading problem, and how these ideas might be applied, see “Can You Help Me with This Student?”

Conspicuous Strategies

Once big ideas have been identified, effective teachers use conspicuous strategies to ensure that complex cognitive information has been conveyed to the learner effectively and efficiently. To effectively and efficiently solve problems or learn information, students need strategies for learning. These are likely to be strategies you have used in school to learn or to remember information or solve problems.

While some students develop these strategies independently, students who struggle to learn academic content often do not develop them unless they are explicitly taught. Experts in content areas are successful because they have developed strategies for solving problems, perhaps strategies that they cannot articulate. Kame‘enui and Carnine (1998) note that there is an intuitive appeal to the idea of letting students who struggle in school (and others, for that matter) in on trade secrets that experts know and use. They go on to note that research evidence supports the perspective that students in general, and those who struggle to learn academic content in particular, benefit from instruction in the use of good strategies.

Several approaches to strategy instruction have been developed for use with students who struggle in school. For example, mnemonic devices have been developed across content areas to facilitate learning for students who have difficulty remembering important information. Mastropieri and Scruggs (2007) note that mnemonic devices have proven very effective in improving or aiding memory of students with disabilities as well as other students as they learn new information. For example, let-
• **Provide explicit instruction in phonological processing.** Most children in the early elementary grades learn to associate sounds and symbols and recognize sight words with ease and require very little explicit instruction. However, when students do not make adequate progress in learning these skills, explicit, systematic instruction will help them learn these skills, which are needed to decode words.

• **Instruction in reading must be more intense.** If Juan is to successfully learn the phonological processing skills needed to progress in reading and also catch up with peers in learning sight vocabulary, he will require more intense instruction than is typically offered to first-grade students. More intense instruction is required because Juan will likely learn these skills more slowly than other children and will thus require more repetition of skills to ensure that they are learned to a level at which he can apply them automatically. More intense instruction can be provided by either increasing the time Juan is engaged in reading in the general education classroom or by providing small-group instruction using one of the strategies we discussed in Chapter 5, such as classwide peer tutoring or cooperative learning.

• **Instruction must be more supportive cognitively and emotionally.** Instruction must be more supportive cognitively because Juan has not learned the skills needed for early reading spontaneously and thus requires teacher instruction and support to learn these skills. This is often done using approaches such as scaffolding, which is discussed in this chapter, and entails breaking a task down and teaching the student manageable parts of the task and then leading the student in putting the parts of what is learned together to create a whole. Scaffolding may be done with Juan as he learns oral sounds, the names of letters, how oral and written sounds relate, how these sounds are blended into words, and so forth.

For more information on strategies to address the needs of early elementary students with reading disabilities, consult the following resources:


**EXTEND AND APPLY**

• If you were Juan’s teacher, what type of emotional support would you offer alongside his intensive instruction to learn to read?

• How could one or more of the principles that guide effective curriculum design and instruction that were discussed previously be used to support Juan’s reading instruction?

To learn more about . . .

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**Mediated Scaffolding**

Scaffolding is the support that teachers give students as they learn content. If you have observed a toddler learning to walk, you have observed mediated scaffolding in action. Parents and others provide support (scaffolding) as a toddler learns to walk by holding her hands, catching her before she falls, encouraging her to walk short distances, purchasing devices that provide support but require her to move herself along with her legs, and so forth. As quickly as possible, these scaffolds are removed in hopes
Deshler, Schumaker, and colleagues (Deshler et al., 2001; Schumaker & Deshler, 2006) have worked for almost 30 years to develop and validate instructional materials that help adolescents with disabilities access and succeed in the general education curriculum. This work has focused on directly teaching adolescents learning strategies, which Schumaker and Deshler have defined as “an individual’s approach to a task”: “how a person thinks and acts when planning, executing, and evaluating performance on a task and its outcomes” (p. 122). This work has been based on five assumptions:

1. Research has shown that a major contributing factor to the learning problems exhibited by adolescents is a failure to obtain the necessary strategies to succeed in the secondary curriculum.
2. Many adolescents with learning problems do not automatically produce strategies as they address novel tasks. Thus, these strategies must be explicitly taught.
3. Adolescents are more proficient in acquiring strategies for learning than are younger children.
4. Adolescents need to acquire learning strategies so that they will be in a position to learn independently in secondary school and beyond.
5. A learning strategies approach requires students to take responsibility for their own learning.

The curriculum that Schumaker, Deshler, and colleagues have developed operationalizes learning strategies instruction for adolescents. The curriculum includes three strands that address different types of learning. The first, the acquisition strand, focuses on teaching students strategies for acquiring information from written material. The second, the storage strand, provides students with instruction regarding strategies that may be used to identify, organize, and store important information. The third, the expression strand, is designed to teach strategies that allow students to demonstrate competence, especially in the area of writing.

### ACQUISITION STRAND—MULTIPASS STRATEGY

The multipass strategy is designed to provide adolescents with a strategy for learning information in a textbook chapter (Schumaker & Deshler, 2006; Schumaker, Deshler, Alley, Warner, & Denton, 1982). Students are initially taught to complete a survey pass through the chapter as they familiarize themselves with the title and organization of the chapter; the chapter’s introduction, illustrations, and summary; and the relationship of the chapter to other chapters in the book. After completing this step, students then complete a size-up pass, in which they review questions at the end of the chapter, review textual cues in the chapter such as headings and boldfaced words and ask themselves a question related to these cues, skim the text to find the answer to the questions they asked themselves in the previous step, paraphrase the answer to the question, and repeat this process that she will begin walking independently. A similar approach is used to teach mathematics (Kame‘enui & Simmons, 1999).

When learning math skills, some students are presented information once with from the teacher and are then able to independently solve problems, apply this information in other settings or to other material, and retain the information over time. For those students who do not learn this information immediately, more steps in instruction and more support are needed. Effective teachers build this support into the curriculum by scaffolding instruction. Effective teachers have support available for students as they need it and withdraw the support when it is no longer necessary.

In math, scaffolding may be built into the curriculum through partially solved examples, or may take the form of peer or teacher support for solving problems. For example, instructional materials that are scaffolded with partially solved problems might include the following:

\[
\begin{align*}
1/2 + 1/3 &= 3/6 + 2/6 = ___/6 \\
1/4 + 1/3 &= 3/12 + ___/12 = ___/12 \\
1/5 + 1/2 &= ___/10 + ___/10 = ___/10
\end{align*}
\]

Notice that the prompts or hints gradually fade as the student learns the material. There are no set rules regarding when to use scaffolding, how long it should be used,
throughout the chapter. After completing the size-up pass, students paraphrase all of the information from the chapter that they can remember. Finally, students complete a sort-out pass, in which they test themselves on the questions at the end of the chapter, skimming the chapter for answers that are not known.

Results of research on this strategy have demonstrated that students can learn the multipass strategy and generalize it to chapters across content areas (Schumaker & Deshler, 2006). Furthermore, students with learning disabilities who learned and applied the multipass strategy significantly increased their scores on end-of-chapter tests, demonstrating that they successfully comprehended grade-level chapter material.

STORAGE STRAND—PAIRED ASSOCIATES STRATEGY

The paired associates strategy is used by students to learn pairs or small groups of informational items, such as names of historical figures and events or places and events (Bulgren, Hock, Schumaker, & Deshler, 1995; Schumaker & Deshler, 2006). This strategy entails having students

• Identify pairs or small groups of informational items to learn
• Create mnemonic devices based on this information
• Develop study cards to review the information

Students then study the cards they have developed and test themselves on the material.

Research has revealed that students can learn and use the paired associates strategy across a range of content areas. Furthermore, the use of this strategy has been shown to significantly increase student retention of information (Bulgren et al., 1995; Schumaker & Deshler, 2006).

EXPRESSION STRAND—PROJECT STRATEGY FOR HOMEWORK COMPLETION

The PROJECT strategy was designed to support adolescents as they complete homework assignments (Hughes, Ruhl, Schumaker, & Deshler, 2002; Schumaker & Deshler, 2006). This strategy provides a sequence of activities that are required to ensure that a student moves from accurately recording the homework assignment to successful homework completion. Seven steps are involved in this strategy:

• Prepare your forms. Prepare forms to record assignments (e.g., a task assignment notebook, planner).
• Record and ask. Record assignments accurately, and ask the teacher to ensure accuracy.
• Organize. Organize the assignment, including breaking the assignment into parts, estimating the number of study sessions required to complete the assignment, scheduling the sessions, and taking appropriate materials home.
• Jump to it. Overcome avoidance, get out materials, and begin the homework session.
• Engage in the work. Monitor any problems that occur, and seek assistance as needed.
• Check your work. After work completion, evaluate neatness, completeness, accuracy, and so forth.
• Turn in your work. Put the assignment in a certain place (e.g., backpack, assignment folder), and hand it in the next day.

Research on this strategy has shown that it can be used to significantly increase the level of homework completion for students with learning disabilities and others who have difficulty with organization and completion of assignments (Hughes et al., 2002; Schumaker & Deshler, 2006).
Strategic Integration

Any time you are faced with new information, you use previously learned information to better understand the new information and determine how it fits with and expands on what you already know. Similarly, if a student is to learn and apply new information, this information must be combined with previously learned information to produce higher-order learning (Kame‘enui & Simmons, 1999). More specifically, strategic integration is the explicit combining of what has already been learned with new learning so that the relationship between old and new learning is clear and results in more complete or new knowledge. For some students in every content area, this process seems to occur automatically. However, for many students in some content areas (e.g., math or written composition), this process does not occur automatically and needs to be built into instruction.

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Kame'enui and Simmons (1999) use written narratives as an example of strategic integration. In the initial stage of writing a narrative, students might generate a series of narrative elements such as setting, main characters, initiating events, and resolution of the problem. After this is done, these elements are then used as the basis for writing the narrative. To ensure that this is done effectively, ask yourself the following questions:

1. Are the connections between prior learning and the current lesson (writing a narrative) explicit?
2. Are explanations provided as needed regarding the relationships among the parts of the narrative (e.g., begin by describing the characters and setting)?
3. Does the lesson result in the student's ability to demonstrate higher-order learning based on the integration of prior and new learning?

Strategic integration can also be used in beginning reading as students initially learn to identify letter sounds and then learn to combine these sounds into words. Similarly, strategic integration should be part of instruction for many students in mathematics as they progress from multiplication to division, building on previous learning to complete more complex problems.

Kame'enui and Simmons (1999) suggest that strategic integration should have the following features:

1. Combine cognitive components of instruction
2. Result in new or more complex knowledge structure
3. Naturally integrates meaningful relationships across concepts, and not be forced
4. Link big ideas across the curriculum

Judicious Review
At times in any content area there is information that simply must be practiced and learned. The most common example that comes to mind is math facts, but every content area has basic information or facts that must be learned and then combined to produce higher-level learning. These are the essential building blocks within a content area. Simple repetition does not ensure that the facts are learned (Kame'enui & Simmons, 1999). Rather than dull, boring, and often mindless review, Kame’enui and Carnine (1998) have identified dimensions of what they call “judicious review,” which include the following.

1. Review should be distributed over time, not massed into a brief time.
2. It should be varied to provide the students with a wide understanding and application of the information and prevent boredom.
3. It should be sufficient to enable the student to perform a task without hesitation.
4. It should be cumulative over time, and information should be integrated into more complex tasks.

Research has long revealed that students who study material for 10 minutes a day over five days retain more information than students who study for 50 consecutive minutes during one day. It is often more effective to provide brief presentations (e.g., 10 minutes) of material spread over time rather than packing these presentations into a single time period (e.g., 60 minutes). Brief presentations ensure that students attend to more of the information, provide students with repeated opportunities to review and remember the information, and thus often result in improved learning outcomes.

Kame’enui and Carnine (1998) suggest that curriculum materials be reviewed to determine if opportunities for judicious review are provided. Some curriculum and textbook developers provide for distributed, judicious review, while others do not. For example, some particularly difficult skills in beginning reading such as readings words that end in “ing” or “ed” require more practice than many other skills. Kame’enui and Carnine suggest reviewing curriculum materials and textbooks to determine the extent to which opportunities for distributed practice using a variety of tasks is provided in curriculum materials. If sufficient opportunities are not provided, then the teacher

Reflective Exercise #10
Do you remember learning information in school that seemed painless? Or information that was learned in a boring way and seemed to take forever? What did the teacher do to facilitate the learning of the information that was learned painlessly? Why was the information that took forever so painful?
needs to build these opportunities into lessons across time with a variety of activities. This is a time-consuming task for teachers and illustrates the need to carefully select curriculum materials that build in judicious review with a variety of tasks that are distributed over time.

**Primed Background Knowledge.**

As you are well aware, it is easier to remember information on a topic if you are familiar with it. For example, how often have you listened to a friend or acquaintance talk about a topic (e.g., lacrosse, interior design, international politics) that you did not know much about? After the conversation, you probably remembered little of what was said. This is true for students in school. The best predictor of how much a student will learn about a topic is how much the student already knows about the topic. For example, someone who knows a lot about baseball comprehends much more of a passage about baseball than someone who knows little about this topic. The same is true for theoretical nuclear physics or gourmet cooking. Instruction should be designed to capitalize on the background knowledge that students bring to a task.

Kame’enui and Carnine (1998) provide an excellent example of the importance of ensuring that background knowledge is sufficient to learn a new concept. In early childhood education, should a child learn the concept of *intentional* before learning the concept of *accidental*? There is no appropriate sequence for learning these concepts. However, Kame’enui and Carnine note that we often define one of the concepts by using the other. For example, to explain to a young child what *accident* means, we might say, “That was an accident. It wasn’t intentional.” If a young child understands *intentional*, then she is likely to quickly understand the concept of *accident* with this explanation. However, if a child does not know either concept, the explanation will be confusing and will not facilitate learning. This happens at times in instructional materials when a concept that is unknown to the child is used to define a new concept.

Successful use of background knowledge depends on (1) the knowledge or skills the student brings to the task, (2) the accuracy of the information, and (3) the extent to which the student accesses and applies this information to the new task (Kame’enui & Simmons, 1999). Appropriate review of background information should be built into any lesson to ensure that all students are refreshed on this information, and teachers should recognize the importance of this information in addressing the task at hand.

**TRANSITION TO ADULT LIFE**

As we have noted, the symptoms of learning disabilities persist into adulthood. Of course, this category is populated by a broad range of students, with varying needs for support as they transition to adult life. The supports that any particular student with a learning disability will need depends on the severity of the deficits that the individual has relative to academic and social/behavioral skills. Some of the students with the mildest of disabilities learn to compensate for these deficits and are very successful in life with no support. Others with severe reading or language problems that persist into adulthood may have great difficulty succeeding in postsecondary education or getting and keeping a job.

**VOCATIONAL SUPPORT**

Research has documented relatively high levels of employment for persons with learning disabilities immediately after high school. For example, Goldstein, Murray, and Edgar (1998) found that persons with learning disabilities worked more hours per week and earned more than peers without learning disabilities during the first four years after high school. This finding reflects the fact that the relatively mild disabilities that characterize learning disabilities did not serve as a major barrier to obtaining entry-level (and relatively low-paying) jobs.
While this finding is cause for some optimism regarding the employment prospects for persons with learning disabilities, which are better than those for people in other disability categories (Mellard & Lancaster, 2003), the long-term employment prospects are not so positive. More specifically, Goldstein and colleagues (1998) found that, after four years, persons with without learning disabilities earn much more than persons with learning disabilities, with no significant difference in hours worked. Mellard and Lancaster (2003) speculate that this trend in earnings occurs because “adults without learning disabilities are finishing college or specialized training and receiving promotions during and following the 5th year of employment, while adults with learning disabilities are experiencing career stagnation” (p. 360). This career stagnation occurs primarily because a large proportion of persons with learning disabilities do not participate in postsecondary education.

Thus, the vocational success of students with learning disabilities, as with students without learning disabilities, is strongly related to participation in postsecondary education. Engaging these students in a discussion of the value of postsecondary education and the range of postsecondary options that exist is critically important to ensuring that students with learning disabilities are well prepared to make decisions about their life after school (Mellard & Lancaster, 2003). Furthermore, careful selection of postsecondary options that provide the necessary supports for persons with learning disabilities to be successful is an important consideration.

**SUPPORT IN HIGHER EDUCATION**

Many students with learning disabilities will attend some form of postsecondary education, often a two- or four-year college. Many colleges and universities make special accommodations and provide supports for students with learning disabilities through student services offices on campus. Information regarding colleges and universities that offer comprehensive programs for students with learning disabilities are described in *Colleges with Programs for Students with Learning Disabilities or Attention Deficit Disorders* (Peterson’s Guide, 2003).

It is noteworthy that some states have made significant efforts to develop support systems for students with learning disabilities in postsecondary settings. For example, the California community college system has developed supports for students with learning disabilities, including extensive in-class assistance as well as support in other
As increasing numbers of students with learning disabilities attend colleges, there is a need to develop supports to ensure that these students are successful. Although a major emphasis for students with learning disabilities in higher education is to provide classroom accommodations, few of these accommodations have evidence to support their effectiveness. The purpose of the program developed by Allsopp and colleagues (2005) is to use evidence-based practices to design an individualized model for supporting students with learning disabilities in college classrooms.

The approach has the following characteristics:

1. Use of informal assessment of a student’s individual learning needs with respect to learning strategies
2. Selection of learning strategies to meet individual student needs
3. Teaching learning strategies using explicit, systematic instruction while addressing the context of a particular course
4. Evaluation of the impact of the model

This program addresses teaching students with specific learning strategies that can be used in particular courses to improve performance. Learning strategies include activities that addressed one of more of eight areas:

- Organization (e.g., keeping track of assignments)
- Test taking (e.g., reducing test anxiety)
- Study skills (e.g., organizing information from notes or texts)
- Note taking (e.g., dealing with a teacher who talks fast)
- Reading (e.g., understanding difficult words)
- Writing (e.g., writing narrative text)
- Mathematics (e.g., order of operations)
- Advanced thinking (e.g., categorizing information)

Evaluation results indicated that the model was effective in supporting students, helped them improve their grades, and was valued by the students (Allsopp et al., 2005). In addition, follow-up indicated that use of the strategies was sustained over time.
PREVAILING ISSUES, CONTROVERSIES, AND IMPLICATIONS FOR THE TEACHER

Great progress has been made in the past 30 to 40 years in addressing the educational needs of students with learning disabilities. While there is general agreement in the professional literature regarding educational interventions for these students, several areas of controversy remain regarding who is identified with learning disabilities and where the education of these students should occur.

IS AN ALTERNATIVE APPROACH NEEDED TO IDENTIFY STUDENTS WITH LEARNING DISABILITIES?

Much controversy currently surrounds the identification of students with learning disabilities. Major problems related to the learning disability category include the following:

- The discrepancy criterion used to identify these students is not educationally meaningful (i.e., students who are behind grade level in reading but who do not have a discrepancy are taught using the same methods as students with a severe discrepancy) (Fuchs, Mock, Morgan, & Young, 2003).

- Children must wait to fail before a severe discrepancy exists and they are eligible for identification with a learning disability (Vaughn & Fuchs, 2003).

- The number of students identified with learning disabilities has grown much more rapidly than the general population. Currently students with learning disabilities make up almost 50% of all students with disabilities.

As noted, the controversy surrounding the identification of students with learning disabilities led to language in IDEA 2004 that allows states to use an alternative approach to the identification of these students that does not require the use of a severe discrepancy. While many professionals are supportive of the alternative RTI approach to student identification (Fuchs, 2003; Reschly, 2005; Vaughn & Fuchs, 2003), there are questions about the feasibility of this approach (Gerber, 2005; Kavale, Holdnack, & Mostert, 2005; Mastropieri & Scruggs, 2005).

Some contend that RTI has advantages over more traditional approaches to the identification of students with learning disabilities (Fuchs, 2003; Fuchs et al., 2002, 2005; Reschly, 2005). Perhaps most important, RTI provides assistance to students in a timely fashion and does not require that students wait to fail before assistance is provided (Fuchs et al., 2004). A second advantage of this approach is that it ensures that the student’s learning problem does not result from poor instruction (Fuchs et al., 2005). Finally, the assessment data that are collected to identify students who are at risk and monitor their progress provide useful information for the teacher regarding how to improve instruction.

Several disadvantages to using RTI have also been identified (Gerber, 2005; Kavale et al., 2005; Mastropieri & Scruggs, 2005). Perhaps most important, the roles and responsibilities of teachers and school psychologists who will implement RTI procedures have not been clearly defined. For example, who will be responsible for implementing scientifically based methods of instruction? Second, it is unclear how local school systems will implement scientifically based practices in classrooms district-wide. Research evidence suggests that implementation of these practices in special education classrooms has been limited and that many general education teachers may lack the necessary skills to implement them (Gerber, 2005; Mastropieri & Scruggs, 2005). Finally, while a significant number of students are initially identified with learning disabilities at the secondary level, it is unclear how RTI will be used to identify older students.

While how RTI will be implemented remains unclear, and much controversy exists regarding technical aspects of this approach, it is apparent that RTI procedures are being widely adopted in states and local school systems across the United States (Fuchs et al., 2005; Reschly, 2005). Whether this approach will result in improved practice regarding the identification of these students and reduce some of the problems related to a traditional approach to identification remains to be seen.
ARE STUDENTS WITH LEARNING DISABILITIES APPROPRIATELY INCLUDED IN GENERAL EDUCATION CLASSROOMS ACROSS THE UNITED STATES?

For more than 30 years, controversy has reigned regarding the extent to which students with learning disabilities should be educated in inclusive settings (Dunn, 1968; Fuchs & Fuchs, 1994; McLeskey et al., 2004). Much of this controversy has addressed whether students should spend all of the school day in general education classrooms (i.e., what some call full inclusion). Most professionals who work with students with mild disabilities have not called for full inclusion but have recommended that students with learning disabilities be educated in general education classrooms for much of the school day, with small-group intensive instruction provided in separate settings as needed (e.g., McLeskey & Waldron, 1996, 2000).

This perspective is based on two areas of research regarding these students. First, research on the effectiveness of highly restrictive separate-class placement has demonstrated that these settings are generally not more effective than placements in general education for much of the school day for students with learning disabilities (Carlberg & Kavale, 1980; Salend & Duhaney, 1999). Thus, most professionals have taken the perspective that students with learning disabilities should spend much of the school day in general education classrooms.

Second, while students with learning disabilities should spend most of the school day in the general education classroom, they may need to receive brief, intensive instruction in a separate setting. This research on effective reading instruction has revealed that students with learning disabilities and reading problems need instruction that is more explicit and intense than instruction that is typically provided in the general education classroom (Foorman & Torgesen, 2001). This type of instruction is often delivered individually or in small groups (two to three students) and thus may be provided within the general education classroom or in a separate setting.

National data regarding the inclusion of students with learning disabilities in general education classrooms reveal that most states are moving toward educating students with learning disabilities for much of the school day in general education classrooms (McLeskey et al., 2004). We anticipate that this movement toward more inclusive placements for students with learning disabilities will continue in the future, although several states continue to educate large numbers of students with learning disabilities in highly restrictive settings. However, we believe that the emphasis that has been placed on student achievement outcomes in recent years will result in less emphasis on full inclusion and more emphasis on settings in which research-based practices can be delivered that result in improved outcomes for students with learning disabilities.

SUMMARY

Students with learning disabilities are often perplexing to parents and teachers. These students have difficulty in some academic areas but not others. What all students with learning disabilities have in common is that they tend to struggle to learn academic content in one or two specific areas and have strengths in other areas.

Definition and Classification Criteria for Students with Learning Disabilities

- The primary criterion used to identify students with learning disabilities is a severe discrepancy between expected achievement level and actual achievement level in one or more academic content areas.
- Other criteria that are used to identify these students include ensuring that another disability (the exclusion clause) or lack of opportunity to learn did not result in the severe discrepancy and documenting that the student needs special education services.
- An emerging approach used to identify students with learning disabilities is response-to-intervention, which is based on the assumption that students who
are struggling academically should only be identified with a learning disability if they do not respond to effective instruction.

Characteristics of Students with Learning Disabilities

- The only characteristic that is shared by all students with learning disabilities is uneven development of academic skills. This category is thus very heterogeneous.
- The most common area in which students with learning disabilities have difficulty is reading, which is a problem for approximately 80% of these students.
- Many students with learning disabilities also have difficulty with oral expression, written expression, and mathematics.
- Students with learning disabilities also often have cognitive difficulties in areas such as memory, attention, and metacognitive skills and problems with social skills.

Prevalence, Course, and Causes of Learning Disabilities

- Learning disability has experienced dramatic growth and is now the largest special education category, with a prevalence of more than 4%.
- The prevalence of learning disabilities differs significantly across states and ranges from approximately 1% to more than 6%.
- Although research documents that learning disabilities persist into adulthood, many persons with learning disabilities compensate for their disability and are successful as adults. However, one in four adults with learning disabilities have difficulty finding good employment and living independently.
- In most instances, we do not know what causes a learning disability. Several factors have been implicated as contributing factors, including abnormal brain function, genetic factors, and lack of access to effective instruction.

Identification and Assessment of Students with Learning Disabilities

- Students with learning disabilities are typically identified after they enter school and fail to make appropriate progress in one or more academic areas.

- The primary criterion that is used in most states to identify students with learning disabilities is a severe discrepancy between actual and expected achievement levels. It is determined by comparing a student’s scores on standardized measures of achievement and intelligence.

Effective Educational Practices for Students with Learning Disabilities

- Research indicates that most students with learning disabilities spend most of the school day in general education classrooms.
- The number of students with learning disabilities who are educated in separate class or separate school settings has decreased significantly over the past decade.
- To ensure that students with learning disabilities receive high-quality instruction, researchers have recommended that teachers focus on six principles to guide instruction.

Prevailing Issues

- Controversy has surrounded the identification of students with learning disabilities because many professionals contend that the primary criterion used to identify these students (i.e., the severe discrepancy) is not educationally meaningful and that children must wait to fail before being identified.
- An alternative approach to the identification of students with learning disabilities, called response-to-intervention, is being used in several states and offers much promise for improving identification practices for students with learning disabilities.
- Controversy exists regarding the extent to which students with learning disabilities should be included in general education classrooms.
- Available evidence suggests that most students with learning disabilities should spend most of the school day in general education classrooms with appropriate support.