

# Teaching the Challenged Learner **1**

It is the first day of school and you have been told that your new class will contain twenty-eight students, five who qualify for special-education services. How do you begin to plan for instruction to meet the needs of your special-education students? What are the difficulties that these students may encounter while learning mathematics? And, what are the strategies that can be used to best facilitate their understandings of mathematics?

Amanda, Dominick, and Elizabeth may have some characteristics of students that you have previously taught. They are composites of students and are not meant to encompass all of the learning disabilities that will be discussed in this and coming chapters. Rather, these students represent a few of the possible combinations of learning disabilities that a teacher may encounter at any grade level. This chapter will introduce these three students and describe the impact their disabilities have on their mathematical understanding. It will describe recent research findings regarding students with learning disabilities and their learning of mathematics. In addition to introducing these students whom you may recognize from your own school, this chapter will also describe the teacher's responsibility regarding the process of teaching students with disabilities and the requirements placed on teachers by legislation. As you read this text and the suggestions for learning-disabled students, low achievers, and discouraged students, it may be helpful to have these concrete examples of students in mind. If you have inclusive students of your own, as you read this text, keep those students in mind and how these suggestions may apply to them.

## MEET AMANDA

Amanda is a personable, mature sixth-grade student who works very hard on homework for each of her classes. She is often assisted in this daily endeavor by a patient and supportive mother. Amanda felt success in mathematics only once in elementary school. She attributed all of her success that year to her third-grade teacher. Except for her experience in third grade, Amanda has always considered herself a failure in mathematics. Amanda defines herself as someone who is “not good” at math. She has been diagnosed with attention deficit disorder (AD/HD) and has taken the drug Ritalin for the past four years. She knows that she has problems focusing and paying attention in class but does not know how to help herself. As a result, Amanda seems to get very little from her daily classroom mathematics instruction. To help alleviate this problem, Amanda works with a math tutor and with her parents to gain more understanding of mathematics. However, this has not significantly helped her grades, as she still is failing most of her chapter exams. At times, she will do remarkably well on quizzes; she attributes this to “luck.”

Amanda has difficulties completing mathematics tests in the required amount of time. In addition, she often will confuse information on a test, combining pieces from one problem with information from another problem. Frequently, Amanda forgets to do her homework or to bring it to school (especially if her mother is busy herself the night before). She misplaces important papers, assignment sheets, and other needed materials.

Amanda enjoys working on problems that can be solved in a sequential manner and is very adept at using her calculator to check her work. Spatially, Amanda’s skills appear to be age appropriate. She enjoys working with other students and is always willing to contribute to the small-group discussion. However, she is usually very quiet outside a small-group setting. What can Amanda’s teacher do to help her gain confidence in her math skills class and become a more successful student?

## MEET DOMINICK

Dominick is an energetic seven and a half-year-old second-grade student. He was adopted from an orphanage in Asia when he was three and is currently experiencing some language problems. Dominick has trouble expressing himself in class. He becomes visibly distressed when asked to explain his answers. Dominick’s verbal responses are unorganized, use endings incorrectly, and lack appropriate syntax. Dominick also has some attention problems. He often does not appear to listen in class; perhaps because he does not fully understand all that is asked of him.

Dominick works well in a cooperative learning environment. He makes friends easily. However, when working independently, he frequently has a hard time getting started on assignments without assistance. His mathematics skills are below average. His computation is on grade level. He can add and subtract well, as long as he correctly interprets the signs. His spatial skills are strong. However, his word-problem-solving skills are much weaker. This is no doubt due, in part, to his delayed progress in reading. He seems to understand concepts such as time, basic measurement, and money, but has difficulty with place value, understanding the concept of equality, and problems involving words. His work on standardized tests is poor. Dominick says he likes mathematics, and from his class work, his teacher believes that he understands more than he is able to apply. Dominick has a lot of trouble taking tests and quizzes; failing most of them weekly. Other students easily distract him. He lacks the patience or perseverance to finish up assignments. He has difficulty completing daily homework. His locker lacks organization. He cannot locate needed books, papers, or materials when necessary.

Dominick enjoys sports and has been taking tennis lessons for a few years. He plays very well for his age.

How can Dominick's teacher best help him understand mathematics?

## MEET ELIZABETH

Elizabeth is a very quiet fourth-grade student. She comes into class quietly and complies with requests without fussing or arguing. She turns in homework most days, but many problems are incorrect or incomplete. Although class time is given to reviewing these problems, Elizabeth never asks a question. In fact, she avoids eye contact with her teacher, and relates comfortably with only two other girls in the class. She is often absent on test or quiz days and makes no effort to make up these graded assessments.

Elizabeth can recite her mathematics facts and uses them for math computation efficiently. Her weaknesses are primarily in the area of solving word problems. When she begins the process of problem solving, she tends to have difficulty analyzing the question and developing a plan to solve the problem. At times, she cannot seem to remember having seen a similar type of problem. She has relatively good success with solving a word problem once she has guided support with setting the problem up. Spatially, Elizabeth seems to have strong skills, even in relation to other students in the class.

Often, Elizabeth seems to be daydreaming. Her teacher has stated that she appears to be a very self-conscious student. Elizabeth is nervous, she cannot relax in class, and frequently bites her nails. Elizabeth loves cats. Her parents say she spends a great deal of time reading information in

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books and online about how to care for her cat. In addition, she loves to draw; usually she draws animals.

What teaching strategies would best serve Elizabeth’s mathematics needs?

## CURRENT TRENDS IN SPECIAL EDUCATION

In the past, there were few special-education students in regular education mathematics classes; many were pulled out for instruction or extra support and placed in resource rooms. However, this has dramatically changed. Increasingly, there are larger numbers of special-education students like Amanda, Dominick, and Elizabeth in the regular education mathematics classes. It is the inclusion of these students in the legally required “least restrictive environment,” which in most cases is the regular classroom, that has prompted use of the terms “inclusion” and “inclusive classroom.” This movement toward increased inclusion, due in part to legislative mandates and trends in special education, has seen regular education classrooms accommodate greater numbers of students with disabilities, while fewer students with more severe needs are educated in separate school settings (McLeskey, Henry, & Hodges, 1999). At the same time, as more students with disabilities are being included in the regular education classroom, mathematics requirements are being increased. The National Council of Teachers of Mathematics (NCTM) in the 2000 *Principles and Standards for School Mathematics*, relates a vision for the future of mathematics

In which all students have access to rigorous, high-quality mathematics instruction, including four years of high school mathematics, [and in which] the curriculum is mathematically rich, providing students with opportunities to learn important mathematical concepts and procedures with understanding. (NCTM, 2000b, p. 1)

This reform movement advocates constructivism for teaching mathematics. In the mathematics classroom, students are to be complementing their basic computational skill knowledge with more of an emphasis on solving challenging, open-ended word problems that can be solved using a variety of methods. To do well in reform-based mathematics, students are required to reason mathematically, and to explain their thinking to others in an attempt to construct personally meaningful understandings of mathematical concepts.

Several states have legislated that all students must pass algebra I to graduate from high school. New trends in middle-grades mathematics are

also contributing to changes in what is taught in the classroom. In many schools, a shift has begun from teaching algebra in the ninth grade to teaching algebra in the eighth grade, and pre-algebra in the seventh grade. As a result, it has become even more important that K–8 students learn mathematics in a meaningful manner so that their conceptual understandings prepare them for learning higher level mathematics. In addition, because mathematics has become a gatekeeper to a number of opportunities for occupational and educational advancement (Jetter, 1993), it is more important than ever that all of our students obtain understandings of higher level mathematics.

Students with learning disabilities (LD) frequently have difficulty with mathematics computation and problem solving. Numerous investigators have found that students with learning disabilities experience even greater difficulty in math than their peers without disabilities (Ackerman, Anhalt, & Dykman, 1986; McLeod & Armstrong, 1982). Cawley, Parmar, Yan, and Miller (1998) found that while normally achieving students learn mathematics concepts in a steadily increasing pattern, students with learning disabilities acquire skills in a broken sequence and have lower retention rates than their non-disabled peers, and these lower retention rates increase as the concepts become more difficult. In addition, these researchers (1998) found that students ages 9 to 14 with learning disabilities demonstrated very little progress in computation from one year to the next. Students with and without learning disabilities who have problems learning mathematics usually begin experiencing these difficulties in elementary school, and then continue through secondary school into adulthood. The statistics regarding math performance among students with learning disabilities are alarming. Cawley and Miller (1989) reported that 8- and 9-year-olds with learning disabilities performed at about a first-grade level on computation and application.

It is essential that elementary students be helped to develop solid mathematical understanding in early grades in order to provide the groundwork for success rather than failure. In many schools, however, it is especially difficult for students with disabilities to obtain the necessary level of math proficiency due to issues related to tracking. Historically, special-education students encounter difficulties early on in their mathematical career, and then are not able to reach a higher level of mathematics because of placement in courses focusing on basic skills rather than upper-level math. It has become more important than ever that these students gain a solid background in elementary mathematics.

Mathematics deficiencies of students with learning problems emerge in the early years and continue throughout secondary school. Studies have shown that the mathematical knowledge of students with learning problems progresses about one year for each two years of school attendance (Cawley & Miller, 1989), and their mathematics progress reaches a plateau

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after seventh grade (Warner, Alley, Schumaker, Deshler, & Clark, 1980). These studies report that the mean scores of special-education students in the twelfth grade were at the high fifth-grade level.

Traditional mathematics curricula, especially those designed for special-education students, emphasize computational routines and memorization of basic facts (Mastropieri, Scruggs, & Shiah, 1991; Parmar, Cawley, & Frazita, 1996; Thornton & Jones, 1996). Special-education students typically experience early failure in mathematics, after which they are often placed in classes focusing on a more traditional, less challenging curriculum of basic mathematics skills versus classes that contain higher level mathematics and emphasize conceptual learning (Shriner, Kim, Thurlow, & Ysseldyke, 1993; Thornton & Jones, 1996). In particular, students with disabilities are not involved with on-going problem-solving experiences in mathematics, which also limits the opportunities for them to engage in discussions about their own mathematical thinking (Haberman, 1991). As a result, many of these students never experience a conceptually higher level of mathematics and are left out of reform-based mathematics (Baxter, Woodward, & Olson, 2001).

As a counterpoint to this sad record, encouraging research has found that students with mathematical disabilities can improve their mathematical performance (Mastropieri, Scruggs, & Shiah, 1991; Rivera & Smith, 1988). Specifically, research has indicated that students with disabilities can improve their computational and mathematics reasoning skills when they are taught using a problem-solving curriculum that engages them in learning mathematics by experiencing and thinking about meaningful problems (Speer & Brahier, 1994). Further, Marolda (2000) states that “children with learning disabilities can learn effectively and with better long-term results when conceptually oriented instruction is offered in a balanced and comprehensive fashion, using the child’s strengths to shore up the weaknesses” (p. 4).

As the integration of students with disabilities into the general education classroom increases, many teachers are struggling to meet the needs of an academically heterogeneous classroom.

The task of teaching students with learning difficulties in mathematics is indeed challenging and may seem daunting; however, by becoming more aware of how specific disabilities interfere with learning and of strategies that can mitigate the difficulties, teachers can grow in confidence in approaching this complex task. Both teachers and disabled students will find greater satisfaction as teachers adopt new approaches that go beyond the worksheets and computational drills that have been the default approach with special-education students and low achievers. Ultimately teachers can begin to help disabled students to recognize strategies that are personally helpful and to internalize them for use in other classes and in life.

It is helpful for a teacher-to become familiar with legal responsibilities and procedures regarding having a student who receives special services in their class. The following sections will describe legislation related to students with disabilities and the impact of these on the regular education teacher.

### Recent Special-education Legislation

In 1975, the Education for All Handicapped Children Act (Public Law 94-142) was passed and guaranteed that all students with disabilities would receive a public education. The law, whose name changed in subsequent reauthorizations in both 1990 and 1997 to the Individuals With Disabilities Education Act (IDEA), was the beginning of a movement toward inclusive schooling, and ruled that every child is eligible to receive a free and appropriate education in the least restrictive environment. IDEA mandated that federal funding be given to state and local agencies for the purpose of providing special education and related services to qualified students. Children and adolescents between the ages of 3 and 21 who are deemed eligible by a multidisciplinary team (teacher, administrator, school psychologist, special-education instructor, parent) would now be able to receive academic assistance. Students qualifying for special-education services must be eligible in one or more of the following thirteen categories: autism, deaf-blindness, deafness, emotional disturbance, hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, other health impairment, specific learning disability, speech or language impairment, traumatic brain injury, and visual impairment including blindness. Children 3 through 9 experiencing developmental delays may also be eligible.

Around the same time, Section 504 of the Rehabilitation Act of 1973 and the Americans With Disabilities Act (ADA) of 1990 were also passed. These legislative acts are designed to protect the civil rights of individuals with disabilities and prevent any form of discrimination against these individuals. Both of these acts are now receiving a great deal of attention from schools because many parents are beginning to request services for children who are not eligible for them under IDEA. Due to the fact that Section 504 and the ADA have different definitions of disability, many children who are not provided services under IDEA may be eligible to receive services under one of these acts (Smith, 2001). The following are examples of disabilities likely covered by Section 504 and not IDEA: students who have low IQ scores but do not qualify as having mental retardation; students with orthopedic problems who do not need special education; students with communicable diseases such as AIDS or hepatitis; and students with learning disabilities whose discrepancy between intellectual ability and achievement is not significant enough for IDEA eligibility.

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Most recently, there is a trend toward “inclusion”—fully including all special-education students in the general education classroom. This movement supports the philosophy that all special-education students should be educated in regular education classes all of the time. Inclusion involves placement of students in their neighborhood school, with individuals their own age, in the regular education environment with appropriate support services such as aides and curricular adaptations. Inclusion assumes that these students are never segregated and their base or home in the school is the regular classroom (Shulz & Carpenter, 1995).

### The Individualized Education Plan (IEP) Process

An IEP is a written commitment of individualized services, which assures that special education and related services will be received. By law, the IEP must include information about the student and the educational program designed to meet his/her needs. These plans typically include information such as tests used to identify the student as having a disability; the student’s areas of weakness; the specific plan of action to be taken to achieve growth in each of the deficit areas identified; and any special services the student will receive from the school—accommodations and modifications, as well as the person who will deliver these services.

From a practical standpoint, IEPs do not always provide information that is necessary to the teacher. For example, the IEP offers limited help in understanding a student. Although the IEPs contain benchmarks and goals for what a student is to achieve, they do not often offer strategies to help students achieve these benchmarks.

Any teacher who teaches a student who receives special-education services will receive a copy of the child’s IEP. The development of a student’s IEP is part of the larger special-education process under IDEA. The following section will describe a typical process used to identify a student with a disability, commonly referred to as the pre-referral process and the writing of the IEP.

*What does the regular classroom teacher need to know from the IEP?*

The classroom teacher needs to know what the IEP states regarding her responsibilities for the student. The following required components of an IEP are beneficial to the regular classroom teacher when teaching a student with disabilities: The student’s current levels of educational performance, measurable goals and objectives or benchmarks, special education and related services, the extent of participation with non-disabled children, a statement of how the student’s progress will be measured and how the parents will be informed of that progress, the extent of modifications of participation in state and districtwide tests, and the dates and location of services to be provided.



Figure 1.1 Sample: Critical Mathematics IEP Information Sheet

<p><b>Student Name:</b> <u>Jacqueline Anderson</u>      <b>Age:</b> <u>8</u></p> <p><b>Current levels of educational performance in mathematics:</b> Jacqueline has a limited understanding of place value. She is able to correctly identify the ones and tens place. She knows her multiplication facts for 0–2s, and her doubles. Jacqueline can also identify several common shapes such as a square, triangle, and circle. She has difficulty solving word problems. Jacqueline can write numbers legibly and has no difficulty with reversals.</p> <p><b>Measurable goals:</b> Jacqueline will be able to understand and apply multiplication facts to correctly solve problems through <math>7 \times 9</math>. Jacqueline will be able to understand and apply knowledge of place value including the hundreds place, thousands place, up to one million. Jacqueline will be able to correctly set up and solve word problems using multiplication facts and place-value skills that she has mastered.</p> <p><b>Measurable objectives or benchmarks:</b> Jacqueline will write or state verbally her multiplication facts from 0 to <math>7 \times 9</math> with 90% accuracy. Jacqueline will correctly set up and solve word problems involving multiplication facts with 90% accuracy. Jacqueline will be able to verbally or in written form correctly identify the value of a given numeral in a number including thousands with 90% accuracy.</p> <p><b>Special education and related services:</b> Jacqueline will receive support services from a special educator in her regular mathematics classroom three times a week for 50 minutes. This class will be co-taught and planned by the regular education teacher and the special educator.</p> <p><b>The extent of participation with non-disabled children:</b> Jacqueline should be placed in the regular education classroom for her mathematics instruction and have normal interaction times with all non-disabled students.</p> <p><b>A description of how the student's progress will be measured and how the parents will be informed of the progress:</b> The teacher will assess Jacqueline informally and formally in class. A progress report will be sent home bi-weekly that states 1) Any objectives Jacqueline mastered during this time frame 2) Assignments either not completed or which were not acceptable and still need work 3) Grades from any quizzes or exams taken.</p> <p style="text-align: right;">(Continued)</p>
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The special educator assigned to Jacqueline will formally evaluate her mathematics progress (based on written objectives and goals) every six months, and the results will be shared with parents, her mathematics teacher, and Jacqueline. In addition, Jacqueline will be assessed for progress on all goals and objectives as well as eligibility for IDEA services.

**The extent of modifications of participation in state and districtwide tests:**

Jacqueline will be provided with an adult who will read all tests/quizzes, and state and districtwide tests to her in an environment separate from her classroom. She will also be provided with extended time (as much time as necessary to complete the task) on these assessments.

**The dates and location of services to be provided:**

These services are to be provided for Jacqueline in her regular education classroom from 9/7/01–9/6/02.

It is important for a teacher to have a clear understanding of her responsibility regarding her student's IEP. Figure 1.1 provides an example of critical information to be identified for each student with a disability. This form focuses specifically on mathematics, since the focus of this book is mathematics; however, it may be adapted and used for any content area. If the needed information is not found on the IEP form, it is important to request the information from the special-education team.

*How is a student identified as requiring special-education services?*

The regular education teacher's responsibility typically lies at the beginning of this process, in the referral stage, in the development of the IEP, and when services are provided. Often the regular education teacher is the first individual, other than a parent, to notice a learning problem. It is important for the regular education teacher to be involved in the development of the IEP, if possible. The teacher is an essential component in the development of the IEP because he may provide information about how the student responds in the classroom on a daily basis to specific content and socially with other students as well as the teacher. Finally, in providing the services, the classroom teacher is responsible for instruction, working with the special-education instructor to address the needs of the student. From first concerns to IEP, the process moves through the following stages.

- *The student is identified as possibly needing special-education services.* This is commonly referred to as a referral or request for evaluation. A student may be having difficulty achieving in a specific area, and a teacher or member of the school faculty may request that the student be evaluated to determine whether he has a disability in order to receive special services. Parent consent must be provided before a student is evaluated, and the evaluation needs to be completed within a reasonable amount of time after the parent or guardian gives consent.

- *The student is evaluated.* A comprehensive evaluation must be completed in all areas related to the student's possible disability. If the parents disagree with the evaluation, they have the right to take their child for an independent evaluation and the school system must pay for it.

- *Eligibility for services is determined.* A group of professionals, typically including the special-education teacher, parents, classroom teachers, school psychologists, and other related professionals, determines if the student fits into one of the categories described by IDEA. The parents have a right to challenge this decision.

- *Student is found eligible for services.* Once a student is determined to be eligible for services under IDEA, the school has 30 days to write an Individualized Education Plan (IEP) for the student.

- *IEP meeting is scheduled.* To be in compliance, the school must notify all members of the meeting (this may include all members of the IEP development team), including the parents, giving enough notice so that they may attend at a time and place agreeable to parents and the school. In addition to informing the parents of the time, place, and purpose, parents must be told who will be in attendance and be allowed to invite individuals who have special expertise or knowledge of their child.

- *IEP meeting is held and the IEP is written.* The IEP team discusses the student, and writes an IEP soon after. The student may be present for this meeting, if appropriate. After the plan is written, the parents must provide their consent for the child to receive services. Parents have the right, if they do not agree with the IEP, to ask for mediation from their state education agency.

- *Services are provided.* Parents, teachers, and other service providers are given a copy of the IEP, and its services are carried out as described by the plan. Typically, students are then evaluated on an ongoing manner according to the specifics of the IEP. A complete yearly review is performed, and at least once every three years, the student is re-evaluated to determine eligibility for IDEA services.

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*What if a student is determined not to have a disability and cannot receive special services?*

Once a determination has been made that a student cannot receive services under IDEA, Section 504, or ADA, the classroom teacher must then meet the needs of the student without external support. It is quite common for students to exhibit difficulties consistent with students with disabilities and not qualify for services. These students can benefit from the same assessments and strategies used to bolster special learners, easing the frustrations of teachers, students, and their families. While the following chapters will discuss characteristics of students with learning disabilities and difficulties, and strategies to teach these students, many of these strategies may be useful to under-achieving students who do not qualify for special-education assistance; they may also be useful for the general population of learners. All students with difficulties learning do not have the same needs or approaches to learning. The classroom teacher assesses and evaluates her students, and she can then match strategies to specific needs.

## PARAPROFESSIONALS

Particularly in the inclusive environments, many classroom teachers have a paraprofessional in the classroom. Paraprofessionals are also known as paraeducators, teachers' aides, or instructional aids, among other terms; these staff people are hired to support instruction, working alongside the teacher in the classroom in a variety of capacities. The manner in which a paraprofessional is utilized in the classroom depends upon the school and the teacher. When IDEA was amended in 1997, the responsibilities of paraprofessionals changed; they are now allowed to provide instructional assistance in special-education programs if they are appropriately trained and supported.

Typically paraprofessionals serve as liaisons between regular education and special education. They spend most of their time working with small groups of students, or individuals (French, 1998). Some of their responsibilities are to tend to student's health care needs, assist students in completing assignments, instruct students one-on-one, and assist in entire general education classes where students with disabilities are included. Paraprofessionals are employed in special education primarily to increase the instructional quality and time for students with disabilities.

According to French (2002), the paraprofessional changes the role of the teacher, requires a clear delineation of roles and responsibilities, and generally lacks special training. Most teachers are not provided with training on how to supervise a paraprofessional. This can be challenging for the veteran teacher with twenty years' experience who is uncertain about having another individual in the classroom, as well as for the first-year

teacher who is faced with new-teacher demands as well as having to plan and supervise another (likely older) individual in the classroom. The lead teacher now must plan instruction and make provisions for how to utilize a paraprofessional efficiently.

Paraprofessionals need their roles and responsibilities to be clearly articulated. It's best not to assume that an aide has the same knowledge base as a teacher. For example, many of these people have not had the training in teacher education that teachers have, and therefore they need many rules and other school information explicitly explained to them: school rules, policies of dealing with parents—much of the information that teacher training programs offer that a non-teacher would likely not know about. In addition, all expectations will need to be clearly delineated—what the teacher's aide can expect from the special-education students, as well what will be expected of the aide as he or she works with them. Finally, paraprofessionals must become familiar with education plans of all students that they interact with.

### The Paraprofessional in the Mathematics Education Classroom

Depending on the comfort level of the teacher, and the paraprofessionals' comfort level and knowledge base of mathematics and willingness to instruct, there are a variety of roles they may take on in the regular classroom. One possibility is that the paraprofessional plays an active role in planning and implementing instruction; this usually requires the teacher and paraprofessional to have common planning time. Another configuration is one in which the teacher provides instruction to the class, and the paraprofessional supports the instruction of all students who are having difficulties learning the material. At the other end of the spectrum, the paraprofessional could be utilized to independently work with only those students who are to be provided with special-education services.

## CONCLUSION

Currently, regular classrooms contain a larger diversity of learners than ever before. New reform movements in mathematics and trends in special education have spurred the increased inclusion of students with learning difficulties in the classroom and made it incumbent upon the regular classroom teacher to meet the needs of all students. Understanding the identification process and legal aspects of educating students with learning disabilities is the first step in the process. These will be addressed more fully in the next chapter.