

# Introduction

*The education of all children, regardless of background or disability . . . must always be a national priority. One of the most important goals of my administration is to support states and local communities in creating and maintaining a system of public education where no child is left behind. Unfortunately, among those at greatest risk of being left behind are children with disabilities.*

President George W. Bush,  
Executive Order 13227

The demands on the K–6 teacher have changed dramatically over the past decade. These teachers are faced with an increasingly wide range of academic abilities in their classrooms, while having to stay abreast of district, state, and National Standards for teaching mathematics and other subject areas. New technologies require teachers to be familiar with latest technology and to know how to meaningfully integrate these new technologies into their curricula. In addition, an increase in the numbers of special education students in the general education classroom presents a further daily challenge. Put simply, teachers are charged with the task of “leaving no child behind” at a time when the challenges are greater than ever, and more and more students are vulnerable to being left.

This book is written for teachers of students with difficulties learning mathematics. These may be special education teachers, elementary teachers who teach all content areas including mathematics, teachers having special responsibility for teaching mathematics on an elementary team, or school mathematics specialists who want to provide help for their teachers teaching mathematics. The purpose of this book is to provide an expanded framework of understanding for K–6 educators to use when teaching their students who are having difficulties learning mathematics. This book will describe recent research on students with learning disabilities and the

impact these difficulties may have on their learning of mathematics, and it will offer strategies for instruction to facilitate their learning. This book will specifically discuss strategies for teaching students with disabilities. However, many of these strategies are useful for teaching all students, including low-achieving students in the regular education classroom.

This book will describe in detail the characteristics of students with learning disabilities as a means to help teachers “see inside the heads,” of their most challenged students and better understand the difficulties they experience. The book will provide a process of gathering information about students with learning difficulties. It will offer strategies to compensate for specific learning difficulties, as well as general strategies for instruction that benefit all students, in particular those students with difficulties learning mathematics.

While reading this book, those educators who are already teaching students whose difficulties puzzle them will probably find themselves thinking about these students and how the ideas presented here might apply to helping these children. To this end, this book will introduce three students, Amanda, Dominick, and Elizabeth, in Chapter 1.

*Amanda has always felt like a failure in mathematics and that she was just “not good” at mathematics. Amanda has attention problems; she is diagnosed with attention deficit/hyperactivity disorder (AD/HD) and has taken the drug Ritalin for the past four years.*

*Dominick says he likes math, and from class work his teacher believes that he understands quite a bit. This is confusing to his teacher because he has a lot of trouble taking tests and quizzes, failing most of them weekly.*

*Elizabeth is a very quiet fourth-grade student. She has developed fluency with her math facts; however, she consistently has difficulties when solving word problems.*

The reader will see these students reappear as example students for applying ideas in this book. The assessment chapter will provide a completed observation for each of these students so that you may see an example of how one process for assessing your students with learning difficulties can be accomplished. Other students will appear briefly throughout the book.

The book is organized to take the reader from an overview and an acquaintance with the Individualized Learning Plan (IEP) process, to deeper understanding of specific difficulties and strategies, to a tool for more productive observation of students and what they may need, to the ultimate goal of providing standards-based mathematics learning for all students. This will give readers an “organizer” with which to clarify understanding, observation, and strategy selection for their students. A description of the chapter content follows.

## **CHAPTER ONE: TEACHING THE CHALLENGED LEARNER**

This chapter introduces Amanda, Dominick, and Elizabeth, students who have difficulties learning mathematics. It discusses recent research on students with learning difficulties in mathematics, as well as special-education legislation and its importance for the teacher. The chapter will also detail the process by which a student is determined eligible for special-education services and provide guidance to assist the teacher when gathering information to plan for instruction. Finally, it will present information about the possible role(s) a paraprofessional may play in the mathematics classroom.

## **CHAPTER TWO: CHARACTERISTICS OF STUDENTS WITH LEARNING DISABILITIES AND THE IMPACT ON LEARNING MATHEMATICS**

This chapter discusses research about typical characteristics of students with learning disabilities and how these may impact their learning of mathematics. Specifically, the chapter describes learning difficulties in the areas of

- Information processing
  - Visual deficits
  - Auditory-processing difficulties
  - Motor disabilities
  - Memory deficits
  - Attention deficits
- Language
  - Expressive
  - Receptive
- Cognitive and metacognitive issues
- Maintaining positive attitudes toward learning mathematics

## **CHAPTER THREE: SPECIFIC STRATEGIES FOR INSTRUCTION**

This chapter examines each of the areas that can impact a student's learning of mathematics, and suggests multiple compensatory strategies to address each of these areas of difficulty. It also offers tips for helping students understand textbooks and complete their homework successfully. A reproducible matrix of difficulties and strategies is provided,

which teachers may use to keep track of what works best in teaching particular students.

## **CHAPTER FOUR: ASSESSING YOUR SPECIAL-EDUCATION STUDENT**

This chapter discusses a framework for assessing your students who have difficulties learning mathematics. A reproducible observation checklist of “look fors” is included. Completed examples are shown for Amanda, Dominick, and Elizabeth. This assessment offers a baseline from which to build improved learning for any student. For students with complex learning disabilities, it will provide the basis for productive conversation with building specialists about how to better include these students.

## **CHAPTER FIVE: GENERAL STRATEGIES FOR TEACHING INCLUSIVE MATHEMATICS TO ALL STUDENTS**

The final chapter for this book discusses strategies for teaching mathematics as suggested by the National Council of Teachers of Mathematics (NCTM) and research that supports the learning of mathematics for all students. Students with a wide range of difficulties learning mathematics, including learning disabilities, will benefit from the strategies presented throughout this chapter.

Teaching students who have difficulties learning mathematics can seem at first to be a very challenging task. However, as a teacher becomes aware of the specific areas of difficulty for students, develops a repertoire of possible compensatory strategies, coupled with research-based strategies for teaching students mathematics, the task of teaching these students can be successfully accomplished. The challenge is significant, but the rewards are in the increased teaching satisfaction and the joy of watching students grow in competency and self-understanding.