Making Math Accessible to Students With Special Needs: Practical Tips and Suggestions (Grades 3–5)

By r4 Educated Solutions

This study guide is a companion to *Making Math Accessible to Students With Special Needs: Practical Tips and Suggestions (Grades 3–5)*. This book is designed as a resource to help all teachers and adjunct professionals provide effective mathematics instruction for all students.

This guide is designed so that readers can work through the entire book step by step or focus on specific topics in each chapter. Reflection exercises can also be found throughout the book. When used in combination with this study guide, these reflection exercises can be a valuable resource for monitoring growth and shaping practice.

Reproducibles and additional resources can be found online at go.solution-tree.com/special needs.

We thank you for your interest in *Making Math Accessible to Students With Special Needs*, and we hope this guide proves useful as you work to improve mathematics education for all students.

—Introduction—

1. What is response to intervention (RTI)? What model did it replace as a way of assessing and supporting students with learning disabilities?

2. What three major recommendations did the President's Commission on Excellence in Special Education (2001) make?

3. What are the eight core principles on which RTI is founded and to which *Making Math Accessible to Students With Special Needs* subscribes?

4. How well do your or your school's current practices align with these eight principles and three recommendations? In which of these areas do you think improvement would be most beneficial? In which would it be most challenging?

—Chapter 1—
Why Do We Need to Make Mathematics Accessible to All Students?

1. According to the provisions of the No Child Left Behind Act of 2001 (NCLB), what proportion of students is expected to be evaluated at enrolled grade-level standards in order for a district to achieve adequate yearly progress?

2. What are two requirements provided by legislation for educating students in the *least restrictive environment*? What are some of the benefits and challenges these requirements might present to general education teachers? To special education teachers? To students with various special needs?

3. Consider the guidelines for removing a student from the mainstream classroom. Which of these have you observed or seen observed? What were some of the challenges to following these guidelines?

4. What is the purpose of Section 504 of the Rehabilitation Act of 1973? How does it act in concert with other, more recent provisions for the education and nondiscrimination of students with special needs?

—Chapter 2—
Creating a Supportive Classroom Environment

1. How does research suggest teachers' attitudes and a classroom's emotional atmosphere impact student learning and performance? What student needs are satisfied by a warm and inviting classroom?

2. What are some of the consequences of low academic expectations in early childhood suggested by this chapter? Why are high expectations important?

3. What are two essential components for establishing a safe and focused environment?

4. What are the four categories of *safety* outlined by this chapter? What are some of the specific practices involved in each? What are some other strategies you might implement in your classroom?

5. Consider Question 3 in Reflection 2.3 on page 25, which asks you to reflect on the support needed to create a safe classroom. Where do these various kinds of support come? What kind of support is required from school and district administrators? How does this differ from the support of colleagues, parents, and community?

6. What are the three main elements of cooperative learning addressed in this chapter? What are the primary features or goals of each?

7. Consider the examples of cooperative learning activities listed on pages 29–31. Which of these would you most like to implement in your classroom, and why? What challenges could it present, and how could these be overcome?

—Chapter 3—
Understanding High-Quality, Effective Instruction

1. How is "high-quality, effective mathematics instruction" defined in this chapter? What are some of its components?

2. What are the five "big ideas" of high-quality instruction addressed in this chapter?

3. What language demands does mathematics text present? How do these demands impact your students?

4. What is *facilitative questioning*? What is its purpose and how does it differ from direct instruction?

5. What is *wait time*? What are some benefits of using increased wait time?

6. Consider the list of effective instructional strategies in Table 3.5 on page 55. Do you use any of these strategies regularly? Which could you implement more often?

7. What is a *graphic organizer*? Choose one of the examples on pages 54–57 to adapt to curriculum already in use in your classroom.

8. Compare and contrast *performance assessments* and *traditional assessments*. How could you use a performance assessment to assess the curriculum you considered in Question 7 above?

9. Chapter 3 frequently refers to *building on prior knowledge* as a vital part of high-quality instruction. What does it mean to build on prior knowledge? Consider, for example, the role of prior knowledge in the use of facilitative questioning.

—Chapter 4—
Accommodating Mathematics for Students With Special Needs

1. What are *accommodations*? How do these differ from *modifications*? When should each be used?

2. What are *incidental benefits*? What might be some incidental benefits to making accommodations?

3. Describe and provide an example of each of the following foundational instructional strategies:
    a. Teach to multiple intelligences.
    b. Create a bridge from prior knowledge.
    c. Use multiple representations.
    d. Teach problem-solving strategies.
    e. Use tiered instruction.

4. Describe the three different types of memory discussed in this chapter. How might a student show signs of difficulties in these areas? What are three strategies to support such a student?

5. How might a student show signs of attention difficulties? What are three strategies to support such a student?

6. Consider the abstract reasoning requirements of your instruction. What are three ways you might help students move from concrete examples to abstract concepts or principles?

7. What are some of the ways a student might show signs of organizational difficulties? How do you differentiate between students' different organizational styles and genuine organizational difficulties? When does organization start to become a problem and what are three ways to address it?

8. Describe and list three ways to support each of the following processing deficits:
    a. Cognitive processing deficits
    b. Visual processing deficits
    c. Auditory processing deficits

9. What is *metacognition*? What are its two basic processes? How might a student show signs of metacognitive deficits? What are three strategies to support such a student?

10. What are the basic characteristics shared by autism spectrum disorders (ASD)? How might a student show signs of ASD? What are three strategies to support such a student?

—Chapter 5—
The 5E Instructional Model

1. What are the five components of the 5E instructional model?

2. Consider the sample lesson described in this chapter, which addresses the concept and use of equivalent fractions. Choose a topic you could envision applying the 5E model to. Use the 5E Lesson Plan Template and/or the 5E Lesson Plan Short Form on pages 196–198 to adapt the examples in this chapter and to guide your answers to questions 3–12 below.

3. Describe the first stage of the 5E model.

4. How could you adapt the first-stage example in this chapter to suit the topic you chose? How could you build on students' prior knowledge and use facilitating questions?

5. Describe the second stage of the 5E model.

6. How could you adapt the second-stage example in this chapter to suit the topic you chose? Do the activities from the first stage align and lead naturally into the second stage?

7. Describe the third stage of the 5E model.

8. How could you adapt the third-stage example in this chapter to suit the topic you chose? Do these activities effectively help students construct the abstract concepts behind the concrete examples in the second stage?

9. Describe the fourth stage of the 5E model.

10. How could you adapt the fourth-stage example in this chapter to suit the topic you chose? Does it include cooperative learning strategies to help students master the skills and concepts for themselves?

11. Describe the fifth stage of the 5E model.

12. How could you adapt the fifth-stage example in this chapter to suit the topic you chose? Have the previous stages been aligned to this goal, and have they enabled students to achieve it?

—Chapter 6—
Creating and Adapting Lessons for High-Quality Instruction

1. What, according to this chapter, are some of the shortcomings of typical textbook lessons? Does the chapter's criticism match your own experience with textbooks?

2. What nine steps does the chapter recommend following to adapt a textbook lesson?

3. What foundational instructional strategies and what elements of high-quality, effective instruction do these steps introduce into the lesson?

4. How extensively do you use textbooks in your instruction? Choose a textbook lesson you plan to teach in the near future and, following the nine-step example modeled in this chapter, adapt it to include elements of high-quality instruction.