

NEWSLETTER

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WHY STUDENTS NEED MORE THAN THE CORE CURRICULUM

Developing mathematical understanding, fluency, and flexibility through intervention.

In today's edition, we explore:

- **Intervention:** why some students need a different mathematical approach
- **An example:** what $23 \times 4 = 812$ can tell us
- **Classroom tips:** understanding, fluency, and flexibility
- **The research:** what studies of conceptual and procedural knowledge suggest

Educators!

When students have difficulty with mathematics, additional explanations and practice may help. However, some students need a different approach to understanding the mathematics. They may know the steps of a procedure without understanding the quantities and relationships involved.

Mathematically focused intervention provides opportunities to examine those relationships and connect them to accurate, efficient, and flexible strategies.

What Makes Mathematical Intervention Different?

Core mathematics instruction provides students with grade-level concepts, procedures, and opportunities for mathematical reasoning. However, students who struggle to develop these ideas may need additional instruction focused on the mathematics they have not yet understood.

Effective intervention begins with student thinking. Teachers examine what students understand, identify mathematical relationships, and select tasks and representations that help students develop them. The goal is to develop conceptual understanding, procedural fluency, and flexibility together.

An Example: 23×4

A student writes $23 \times 4 = 812$. The response suggests the student may have multiplied the digits separately and written the products together. Before deciding how to intervene, ask the student to explain the calculation. Students can represent 23 as 2 tens and 3 ones and examine four groups of each quantity: $23 \times 4 = (20 \times 4) + (3 \times 4) = 80 + 12 = 92$. The emphasis is on understanding place value and the distributive property, not simply correcting the answer.

Classroom Tips

- 1. Conceptual understanding.** Students recognize the quantities, units, and relationships underlying mathematical concepts and procedures. Ask, “What does each number represent?”
- 2. Procedural fluency.** Students develop accuracy and efficiency in using procedures, supported by an understanding of the mathematics involved. Ask, “How do the partial products connect to the numbers in the original problem?”
- 3. Flexibility.** Students recognize when different strategies are appropriate and use mathematical relationships to select and adapt them. Ask, “Is there another way to find 23×4 ?”

Math Success by DMTI provides intervention materials designed to develop students’ conceptual understanding, procedural fluency, and flexibility. Its tasks and representations focus on units, quantities, composing and decomposing, partitioning, iterating, equivalence, and mathematical relationships. Students examine these relationships and connect their reasoning to increasingly accurate and efficient strategies.

What Does the Research Say?

Conceptual understanding and procedural knowledge develop together, each supporting the other (Rittle-Johnson et al., 2001; Rittle-Johnson et al., 2015). Adding It Up describes procedural fluency as carrying out procedures flexibly, accurately, efficiently, and appropriately (National Research Council, 2001).

Students who need intervention may benefit from a different approach to understanding mathematics. When instruction develops the relationships underlying concepts and procedures, students have opportunities to reason, develop fluency, and use strategies flexibly.

Keep developing mathematical thinkers.

More Information

Read DMT Insight 24, watch the accompanying video, and download the Companion at mathsuccess.io/dmtinsights.

Share how you plan intervention with us at contact@dmtinstitute.com.

For more information on professional development and curricular resources, visit mathsuccess.io.

