

NEWSLETTER

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PLACE VALUE IS MORE THAN NAMING THE PLACES

DMT Insight 12 · Building Place Value Understanding

In today's edition, we explore:

- **The Classroom Reality:** Why a student can name the tens place in 340 and still not know how many tens are in 340
- **The Structure:** The four understandings that build place value, from unitizing to the $\times 10$ relationship among adjacent units
- **The Instructional Shift:** Questions and moves that reveal how a student is reasoning about units, not just naming places

Educators!

A student looks at 340 and correctly says the 4 is in the tens place. Then you ask, how many tens are in 340, and the student answers four. That difference matters. The student knows the name of the place but is not yet reasoning about the units that compose the number.

Place value understanding begins when students see 340 as 3 hundreds and 4 tens, but also as 34 tens, 340 ones, and one quantity that can be composed and decomposed in different ways.

The Four Understandings

Place value develops through four connected understandings:

- **Unitizing, Composing and Decomposing:** How many of a given unit compose the quantity?
- **Magnitude and the Number Line:** How large is the quantity, and where does it fall relative to benchmarks?
- **Position and Value:** What unit does a digit count, and what value does it contribute?
- **$\times 10$ Structure and Equivalence:** How are adjacent units related, and how can the same quantity be renamed without changing its value?

Try This Tomorrow

- Instead of asking what digit is in the tens place, ask how many tens are in 340, and how do you know?
- Ask students to show 240 in more than one way: 2 hundreds and 4 tens; 24 tens; 1 hundred and 14 tens.
- Put 472 on a 0 to 1,000 number line and ask which benchmark helped them decide.
- Compare 34, 340, and 3,400. Ask what changes and what stays the same.
- When regrouping, replace borrow with compose, decompose, or partition: partition one hundred into ten tens.

The question matters. Asking what place the 4 is in checks whether a student knows a label. Asking how many tens are in 340 begins to reveal how the student is thinking about the quantity.

What Does the Research Say?

Place value rests on unitizing, treating ten ones as one ten and 340 as 34 tens while still knowing what is inside each unit (Fuson, 1990). Kamii (1986) found that students often read a multi-digit number as separate digits placed side by side, and Ross (1989) traced how the understanding of parts, wholes, and place value develops over years, not weeks.

Place value is not about memorizing column names. It is about understanding units, quantity, and the structure of our base-ten system. When students can compose, decompose, rename, locate, and compare quantities, we can see that understanding developing.

Keep developing mathematical thinkers.

More Information

For the full research overview and the accompanying video, visit the DMT Insights page at mathsuccess.io/dmtinsights. You will find the Insight, the Companion, and related classroom resources there.

Have a classroom story, tip, or question to share? We feature teacher voices in future editions. Email us at mathsuccess@dmtinstitute.com.

