NEWSLETTER

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COUNTING IS MORE THAN SAYING NUMBERS IN ORDER

DMT Insight 19 · The Five Counting Principles

Educators!

A child counts five counters: “1, 2, 3, 4, 5.” Then you ask, “How many are there?” The child starts counting again.

The student may know the counting sequence without yet using the final number to name the quantity. That is the cardinality principle. It is one of five counting principles.

What Are Students Coordinating When They Count?

- **One-to-one correspondence:** One number word for each unit counted.
- **Stable order:** Number words stay in a consistent sequence.
- **Cardinality:** The final number tells how many are in the set.
- **Abstraction:** Objects, sounds, actions, or events can be counted as units.
- **Order irrelevance:** Counting in a different order does not change the quantity, as long as each unit is counted exactly once.

These principles work together. One student may know the counting sequence but not yet give one number word to each object. Another may count every object correctly but not yet understand that the final number tells how many.

Classroom Tips

1. **Ask what is being counted.** Before students count, ask: What are you counting? How will you make sure you count each one once?
2. **Ask “How many?” after the count.** Watch whether the student says the final number or begins counting again.
3. **Change the order and the arrangement.** Ask: If we start counting over here instead, will there still be the same number? If I move these farther apart, did the quantity change?

Try This Tomorrow

> Give a student 7 counters and ask the student to count them. Then ask:
>
> - "How many are there?"
> - "If you start from the other end, how many will there be?"
> - "What would happen if I added one more?"

Listen for whether the student answers or counts again. The responses give you information about what the student understands about counting and quantity.

What Does the Research Say?

Gelman and Gallistel (1978) identified five principles that describe successful counting. Later research has shown that knowing the number-word sequence and understanding what those number words mean are not the same thing (Wynn, 1990). Cardinality develops as children connect the final number in a count to the quantity of the whole set (Bermejo, 1996). Research also shows that children may successfully recount a set in a different order before they can predict that the quantity will remain the same (Baroody, 1993).

Counting is one of the first places students coordinate units, number words, and quantity. Students continue to count throughout mathematics. What changes is the unit: ones, tens, fractional units, and units of measure.

Keep developing mathematical thinkers.

More Information

This is a quick overview. To download the full research overview on the five counting principles and watch the short video, go to DMT Insights at mathsuccess.io/dmtinsights.

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