

8 Ways to Infuse Movement into Math Class

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Teaching Strategies

These research-backed, teacher-approved activities can help early math learners engage physically with abstract concepts.

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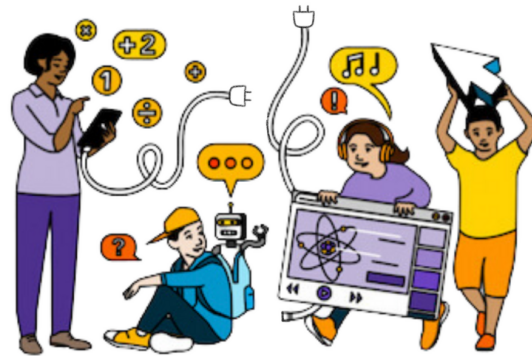


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If you think about it, movement is present in our earliest forays into math. We move our fingers to learn how to count, and do so again later, when we're first learning how to add and subtract.

Contrary to conventional wisdom, finger counting isn't a crutch, and it doesn't appear to hold kids back: One compelling piece of [research shows](#) that finger counting actually boosts math learning, helping students better understand numbers and acting as a "bridge between other (verbal, symbolic, and non-symbolic) representations of numbers."

As kids age into elementary school, according to Kendall Stallings, a first-grade teacher in Baltimore, there's significant research demonstrating that whole-body movement can help students deepen math engagement and retention, especially when the movement is integrated into instruction and physically embodies concepts being presented to students.



Writing for *Ed Week*, Stallings argues that movement works particularly well in early math lessons because “it offers students a chance to engage physically with abstract concepts and demonstrate their understanding kinesthetically.”

There's a novelty factor at work, too. Elementary school teacher Elizabeth Peterson notes that movement in math is also useful for imbuing learning experiences with “something fresh and new, which the brain likes.”

Want to add to your math toolkit? Here are eight teacher-tested ways to integrate movement into your elementary school math lessons.

1. Switching movements: To help early math students develop number sense, Stallings recommends this kinesthetic option. When teaching students to count up to 20, for example, have them do 10 jumping jacks and then switch to clapping when they get to numbers after 10. When asking them to clap to 15, they'll do 10 jumping jacks and five claps, for example. “The switch to clapping after the first set of 10 allows them to make the connection that teen numbers are 10 plus some more ones,” Stallings writes. Other movements you can try incorporating are high knees, frog jumps, or hops on one foot.

2. Skip movements: To help promote skip-counting fluency—a vital, early math skill that helps kids learn number patterns and lays the foundation for more complicated multiplication and division—try assigning specific movements to different values, Stallings writes. When teaching students to count by even numbers, for example, ask them to stand in a circle and count out loud together. But instead of counting,

“one, two, three...” have students substitute a clap for numbers that aren’t even. According to Stallings, this would sound something like: “Two, [clap], four, [clap], six, [clap], etc.” Peterson writes that you can integrate more elaborate movements into this activity, such as squats. “Giving students this additional, whole-body experience to practice these facts using movement and rhythm has truly helped the kids memorize them,” Peterson said.

3. Vocabulary movement stretches: Much of early math instruction involves helping students understand concepts—and the related vocabulary—for things like “parallel lines” or “isosceles triangles,” writes Peterson. Stretching, she says, can help students ingrain this vocabulary into their minds, and provide a nice mindfulness exercise in the process.

To illustrate an isosceles triangle, for example, students can spread their feet apart and “take a moment to trace the three sides of the triangle” with their hands, Peterson writes. “We start at the top point (our belly button) and move down one side, across the base, and up the third side.” To illustrate symmetry, students move their arms up toward the ceiling, creating a straight line with their body, and notice what about their body makes them symmetrical. “I look around and see who needs a little adjustment, telling the students that paying attention to precision is an important part of math,” she writes.

After establishing individual movements—and, at the same time, reinforcing these important terms—Peterson writes that she’ll often revisit movements to help struggling students. “If the kids are having a hard time with parallel versus perpendicular, we’ll run through a series of arm movements to show the difference.”

4. Work math into classroom transitions: There are opportunities to work math into normal, everyday movements students make in school—such as during classroom transitions. Kurt Stielow, an academic dean in Milwaukee, writes that while students are waiting in line for a transition, or walking to their next destination, teachers can give students a math equation to chew on that is rooted in concepts they’re learning.

For example: ask students what \$0.75 plus \$1.75 equals, or ask them to count the number of steps it takes them to get to the next room (fractions included!) they’re headed to, which can help them promote number fluency. Giving students some mental math to work on while moving, Stielow writes, helps keep students engaged and makes managing a line a lot easier. “Two birds, one stone.”

5. Basketball math: A 2021 study found that mixing math into hoop sessions led to a 16 percent increase in children’s motivation to learn math compared to typical classroom math activities—as well as a 6 percent increase in mastery of specific math skills. Example exercises include asking students to count how many times they can sink a basket from three meters away vs. a one-meter distance, and subsequently adding up the numbers—or, alternatively, multiplying or dividing the numbers. According to one researcher who spoke to Science Daily, the practice works because it “endows children with a sense of ownership of their calculations and helps them clarify and concretize abstract concepts, which in turn increases their motivation to learn mathematics.”

6. Fraction ball: Same ball, different game. Research shows fraction ball can help students complete fast arithmetic and understand why numbers like 0.75 and $\frac{3}{4}$ have the same value much faster, and more memorably, than they would by staring at a worksheet.

To play, an outdoor basketball court is re-drawn with paint or chalk so that the 3-point arc equals one point and other spots closer to the basket represent $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ shots on one end, and $\frac{1}{3}$ and $\frac{2}{3}$ shots on the other. Fractions can also be represented as decimals on the court to help students establish a relationship between $\frac{1}{2}$ and .50, for example. Games can include completing shots as quickly as possible to get to an exact number, like 3.50, or asking students to make as many shots as possible in a given time frame to get their highest score, while a partner keeps track by quickly adding up the fractions or decimals. You can also ask students to convert final scores from decimals to fractions, or vice-versa, to help deepen their understanding of the two types of numerical representations.

7. Math dancing: Help students solve algebra problems via a choreography unit. Try assigning a dance movement, like a twirl, to the x variable of an algebraic equation and another movement, like a stomp, to the y variable. When trying to solve an equation like $3(x + y)$, these movements can help students understand that the seemingly difficult formula really means $3x + 3y$ or, three twirls + three stomps (and $3x + y =$ three twirls and one stomp).

The after-school program Shine for Girls uses this strategy to build math skills and confidence among middle school girls and counteract stereotypes that can cause girls to avoid the STEM field. “Because movement allows a student an alternative approach to the information, it can help put them in the receptive state required for learning,” writes Kirin Sinha, the after-school program’s founder.

8. Use movement to create—and analyze—student data: An easy way to get students more invested in crucial math concepts like mean, median, and mode, is to give them the opportunity to create their own physical data to analyze. Sarah Carter, a math teacher in Oklahoma, suggests using the Blind Stork test to create a large data pool while working movement into the process.

The instructions are simple: Students pair up, then one student times the other as they close their eyes and see how long they can stand on one leg. Then they trade places, and repeat the process a few times to create a more robust dataset. Using an online data storage tool, like Google Sheets, students repeat the exercise as directed and input their values. By the end, the students will have a large enough pool of data to manipulate statistically, both as pairs and as a whole class.

Other movement-based ways to create student data include asking kids to engage in timed challenges, such as seeing how many jumping jacks they can complete in a minute.

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