



Less is More -- Math Professional Learning Series: Implementation (Part 1 of 4)



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Published by K20 Center

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Time Frame 100

Essential Question(s)

How can movement be intentionally incorporated into math lessons to deepen students' understanding, engagement, and problem-solving skills?

Summary

This professional learning session is the first in a four-part series. In this session, participants explore the connection between physical movement activities and mathematical proficiency. Educators engage in a collaborative "Commit and Toss" problem solving activity. Then in small groups, participants adapt movement-based strategies for various math disciplines (algebra, geometry, and statistics). Finally, participants plan a math lesson integrating a movement strategy from a K20 collection for future use.

Learning Goals

Standards

Educator Standards 6–12 (6th - 12th)

E.S.8.1: Design and provide courses that challenge students academically while fostering skills in literacy, numeracy, scientific literacy, and critical thinking, building a strong foundation for college and career success.

InTASC Model Core Teaching Standards (K-12th)

7: The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.

7a: The teacher individually and collaboratively selects and creates learning experiences that are appropriate for curriculum goals and content standards, and are relevant to learners.

7b: The teacher plans how to achieve each student's learning goals, choosing appropriate strategies and accommodations, resources, and materials to differentiate instruction for individuals and groups of learners.

8: The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.

8a: The teacher uses appropriate strategies and resources to adapt instruction to the needs of individuals and groups of learners.

8e: The teacher provides multiple models and representations of concepts and skills with opportunities for learners to demonstrate their knowledge through a variety of products and performances.

Attachments

- [Presentation Slides—Implementation.pptx](#)
- [Printable Strategy Cards—Implementation.pdf](#)
- [Strategy Break Down—Implementation .docx](#)
- [Strategy Break Down—Implementation .pdf](#)
- [Strategy Reflection—Implementation.docx](#)
- [Strategy Reflection—Implementation.pdf](#)

Materials

- Presentation Slides (attached)
- Strategy Break Down handout (attached; one per participant)
- Strategy Reflection handout (attached; one per participant)
- Printable Strategy Cards handout (attached; see preparation note)
- Chart Paper
- Sticky notes
- Scrap paper
- Pens/ Pencils

15 minutes

Engage

Use the **Presentation Slides** to guide the session. Welcome participants. Display **slide 2** and introduce yourself and the session. Transition through **slides 3-4** to introduce the essential question and learning objectives for today's professional learning activities.

Move to **slide 5** and introduce the participants to the [Looks Like, Sounds Like, Feels Like](#) strategy. Direct participants to the sticky notes on their table. Move to **slide 6** and ask participants to individually answer the following questions on a sticky note: *What do motivated and engaged students look like?* Once everyone has written on their sticky note, have them share at their table, and synthesize to one sticky note for the table. Ask one volunteer to place the sticky note on the poster or designated space under the column "Looks Like."

Use **slides 7-8** to repeat the process for "Sounds Like" and "Feels Like." Make sure to allow enough time for participants to share at their table and synthesize their responses each time. Repeat instructions from slide 5 as often as needed.

Ask for volunteers from each group to share what they discussed about the questions.

20 minutes

Explore

Facilitator's Note: Model Lesson

This phase involves the lesson "[Are You Smarter Than a Calculator?](#)" You may find it helpful to read through this lesson beforehand so that, if needed, you can inform participants about how the strategy connects with the standard and lesson.

Transition to **slide 9**. Explain how physical movement activities in math classrooms offer several benefits when done purposefully. These activities do not have to be complex, and they can be incorporated with existing lessons.

Use **slides 10-12** to briefly introduce the model lesson "Are You Smarter Than a Calculator?" Discuss the summary and snapshot of the lesson.

Introduce the instructional strategy [Commit and Toss](#) as it is used in this model lesson. Invite participants to complete the problem on **slide 13**. Remind the participants to show their work.

Transition to **slide 14**. Have them crumple up the paper with the problem on it, toss it across the room, and then collect a crumpled paper that is different from theirs. Next, have participants silently review their peer's work and compare it to their own. Invite them to share what they noticed.

Display **slide 15** and have participants use the [Walk and Talk](#) strategy to reflect on the benefits of physical movement in mathematics. Move to **slide 16** and ask participants to pair up and walk around the room while answering the provided prompt. Start the [K20 1-Minute Timer](#). When the timer stops, ask participants to find a new partner and discuss the new prompt. Repeat these steps for **slides 17-18**. Afterwards, ask participants to return to their seats. Have a brief group discussion over participants' answers.

25 minutes

Explain

Use **slide 19** to facilitate the [Gallery Walk](#) activity. Explain that we will use this strategy to synthesize what we already know about physical movement into three different disciplines of mathematics: algebra, geometry, and statistics. Split the participants into three even groups and assign each group a chart paper. Each chart will illustrate a different scenario. Using the **Printable Strategy Cards** handout, pass out an instructional strategy card to each group. Ask participants to read the instructional strategy and the description. This instructional strategy will be used by their group for all three rounds of the Gallery Walk. After they have read their strategy, invite them to read the scenario assigned and discuss how that strategy can be used in the scenario provided. Encourage each group to write notes on the chart paper. Set a [K20 5-Minute Timer](#). When the timer goes off, have each group rotate clockwise to the next scenario and make notes on how their strategy could work with this new scenario. Repeat until all participants have completed each scenario.

Transition to **slide 20** and ask participants to go back to their original scenario and break into three groups with one group staying at their original scenario and the other two moving to a different scenario. Now each scenario should have a mix of different strategy experts. Allow participants to explain what their strategy was and how they saw it working within that scenario. After the Gallery Walk, ask participants to return to their seats. Use hidden **slides 21-23** as needed to facilitate a large group discussion.

30 minutes

Extend

Display **slide 24**. Explain to participants that movement significantly improves retention and engagement, but only if it is intentional and planned.

On **slide 25**, share three questions that teachers should consider when planning a physical activity.

- Why are you having students engage in a physical activity?
- How does integrating movement help students process content?
- What point in the learning process would movement support collaboration and learning?

Display **slide 26**. Invite participants to explore the [K20 LEARN website](#) and find a lesson that fits within their school's pacing and standards. Once they find a lesson, they will select a section of the lesson in which they want to integrate a movement strategy. Start the [K20 10-Minute Timer](#) to limit time for participants to read and familiarize themselves with the lesson.

Transition to **slide 27**. Briefly introduce the [Moved by Math](#) collection of strategies and the purpose for the collection. This collection was built specifically for physical movement in a math classroom, and while these strategies are highly effective, the list is not exhaustive. Show participants that for each strategy there are model lessons that demonstrate the strategy in the "related resources."

Have participants choose a strategy from the collection to insert into their previously chosen lesson to increase movement. Pass out the **Strategy Break Down** handout to everyone. Have participants write the lesson name, the strategy name, and detailed steps about how the strategy fits into the concept. The steps should be concise and clear. Encourage participants to follow the format on the strategy card. Invite participants to use the [Elbow Partner](#) strategy to share the lesson and strategy they chose.

Facilitator's Note: Guiding the Activity

As participants work through this activity, it can be easy for them to lose focus on the end goal. You may need to remind participants of some general backwards planning questions:

1. What specific standard or object are we aiming for?
2. How will we know they learned the objective amidst the motion?

10 minutes

Evaluate

Conclude the group discussion by passing out the **Strategy Reflection** handout. Display **slide 28** and briefly discuss the different strategies used during the session. Ask participants to consider their students and reflect on how these different strategies would look in their classroom. Move to **slide 29** and using [Think-Pair-Share](#), have participants go back to their handout and answer the following questions in the space provided:

1. Which three strategies do you plan to implement in your classroom this quarter? Why?
2. How can you modify these strategies to work with your students? Explain.

After participants write their answers, have them share their answers with a partner. If time permits, have partners share their Think-Pair-Share ideas with the larger group.

Research Rationale

Physical movement incorporated into existing math lessons can increase student motivation, engagement, retention, and cooperation skills. Rather than focusing solely on knowledge retention, PAL (Physically Active Learning) emphasizes the learning process, creating opportunities for students to explore, experience, and interact with mathematical concepts through movement (Mandelid, et al, 2023). Research shows that the pedagogical approach of combining physical activity and academic learning creates a cognitive bonding process that enables enhanced comprehension and retention (González-Pérez et al, 2025).

Both González-Pérez, et al (2025) and Norris et al (2018) also found that adolescents, particularly secondary students, tend to spend a majority of their school day on sedentary behaviors, but provide hope that schools can provide a structure to integrate physical movement into academics, increasing students' activity and attention. Mandelid, et al (2023) argue teachers play a central role in designing activities that connect movement with clear mathematical goals, structuring tasks, and guiding reflection so students understand the purpose behind the activity.

By purposefully integrating kinesthetic learning into math, educators design opportunities for students to shift their perceptions of math ultimately creating classrooms that increase student's concentration, motivation, and increase academic performance.

Resources

- González-Pérez, M., Grao-Cruces, A., Bandera-Campos, F. J., Chalkley, A., Camiletti-Moirón, D., & Sánchez-Oliva, D. (2025). Less is more: Qualitative insights into physically active learning in secondary math education. *PLOS ONE*, 20(11), e0336641. <https://doi.org/10.1371/journal.pone.0336641>
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- K20 Center. (n.d.). "Are You Smarter Than a Calculator?" Lessons. <https://learn.k20center.ou.edu/lesson/4406>
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- K20 Center. (n.d.). Elbow partners. Strategies. <https://learn.k20center.ou.edu/strategy/116>
- K20 Center. (n.d.). Gallery walk/carousel. Strategies. <https://learn.k20center.ou.edu/strategy/118>
- K20 Center. (n.d.). Human bingo. Strategies. <https://learn.k20center.ou.edu/strategy/3888>
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- K20 Center. (n.d.). Still picture. Strategies. <https://learn.k20center.ou.edu/strategy/4960>
- K20 Center. (n.d.). Think-Pair-Share. Strategies. <https://learn.k20center.ou.edu/strategy/139>
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- Norris, E., Dunsmuir, S., Duke-Williams, O., Stamatakis, E., & Shelton, N. (2018). Physically active lessons improve lesson activity and on-task behavior: A cluster-randomized controlled trial of the "Virtual Traveller" intervention. *Health Education & Behavior*, 45(6), 945–956. <https://doi.org/10.1177/1090198118762106>