



# Less is More Math Professional Learning Series: Analyzing Implementation (Part 2 of 4)



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Published by K20 Center

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**Time Frame** 80

## Essential Question(s)

- How can movement be intentionally incorporated into math lessons in order to deepen students' understanding, engagement, and problem-solving skills?
- How do we transition from 'trying out' movement to designing it intentionally as a primary strategy for deepening mathematical reasoning and classroom management?

## Summary

This professional learning session is the second in a four-part series. In this session, participants discuss previous strengths and identify barriers around physical movement in their math classrooms. Educators collaborate around what a successful physically active lesson looks like and modify existing lessons to incorporate purposeful movement. Finally, participants provide peer feedback around lessons.

## Learning Goals

## Standards

### *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—Analyzing Implementation.pptx](#)
- [Thinking Hat Roles—Analyzing Implementation - Spanish.docx](#)
- [Thinking Hat Roles—Analyzing Implementation - Spanish.pdf](#)
- [Thinking Hat Roles—Analyzing Implementation.docx](#)
- [Thinking Hat Roles—Analyzing Implementation.pdf](#)

## Materials

- Presentation Slides (attached)
- Thinking Hat Roles handout (attached; one per group)
- Notecards
- Scrap paper
- Pens/ Pencils
- Poster paper

15 minutes

## Engage

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

Show participants **slide 5** with the following prompt: *While movement strategies look great on paper, the instructional payoff rarely outweighs the time it takes to transition students back to focus.*

Using the instructional strategy [Fold the Line](#), ask participants to line up according to how much they agree with the prompt. Ask those who completely agree with the prompt to stand at one end and participants who disagree to stand at the other end. Invite participants to discuss the prompt with a neighbor. After a brief discussion, ask participants to "fold the line." Once the line is folded, and participants have been paired up, have them discuss the prompt again. Encourage participants to share their experience with physical movement in the classroom one success and one barrier.

Invite a couple of volunteers to share their opinions.

15 minutes

## Explore

Display **slide 6**. Explain to participants that purposeful movement activities in a classroom always come with a little risk, which can be scary or uneasy. Repeat this process, restarting the timer each time until participants have visited each station and remind them to change their hats at each station.

Transition to **slide 7**. Divide participants into four equal groups, then pass out the **Thinking Hat Roles** handout one per group. Introduce the [Thinking Hat](#) strategy to the participants. Draw participants' attention to the four chat stations around the room and explain that they will visit each station with their group. At each station, participants wear a different "hat." Some participants may choose to wear more than one hat.

Move to **slide 8** and give participants a moment to choose their first hat for the first station. Assign each group to a different chat station. Invite groups to discuss the scenario on their poster. Set a [K20 5-Minute Timer](#) for discussion and ask groups to talk about their responses. Once the timer stops, have groups rotate stations and remind them to choose a new Thinking Hat for that station. Repeat this process until participants have visited each station. Remind them to change their hats at each station.

After participants have finished their stations, transition to **slide 9** and facilitate a group discussion on the following prompts:

- Which perspective do you most identify with?
- What solutions do you believe can address these barriers to movement in the classroom?

15 minutes

## Explain

Display **slide 10**. Pass out notecards to every participant for each lesson. Invite participants to look over the [Math Lessons with Movement](#) collection and the specific integrated movement in the lesson. Ask participants to answer the following prompt individually on their notecards: *What are characteristics of a high-quality movement-based math lesson?* Explain that each notecard should have at least one characteristic, but participants are welcome to create as many as they want.

Allow participants time to explore the collection and answer the prompt. After participants have had enough time to answer the prompt, move to **slide 11**. In small groups, have participants sort the responses into categories. After sorting, participants will create a short list of their top three characteristics. Lead a whole group discussion to create a shared set of characteristics.

### Facilitator's Note: Guiding the Activity

As groups are sharing their characteristics, write them on a clean poster paper.

30 minutes

## Extend

Display **slide 12**. Invite participants to select an existing lesson they have designed. Have them analyze their existing lesson plan and identify 2-3 sections where movement could have a high impact. Next, have them rewrite the lesson to integrate movement intentionally.

Move to **slide 13**. Remind participants that movement should not just be a brain break or an afterthought. Movement should be purposeful. Briefly unpack these guiding questions for participants to use while planning:

- Where does this lesson traditionally lose student attention?
- Is there a concept that is abstract or hard to grasp?
- Does the room layout and time frame realistically support movement around this specific moment?

Encourage participants to revisit the lists of characteristics they have created.

10 minutes

## Evaluate

Transition to **slide 14**. Group participants in pairs or triads based on which discipline or branch of the math lesson they chose. Each participant should briefly outline the 2-3 movement moments they designed.

Invite partners to identify as Partner A or B. Partner A shares their movement integration for 1-3 minutes, while Partner B provides feedback using the [TAG Me!](#) strategy while keeping in mind the list of top characteristics the group had created for 1-3 minutes. Then, they switch roles and repeat the process.

Allow volunteers to share their experiences and what they learned.

## 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. Their research provides hope that schools can provide a structure to integrate physical movement into academics, increasing students' activity and attention. Mandelid et al (2023) argue that teachers play a central role in designing activities that connect movement with clear mathematical goals, structuring tasks, and guiding reflection so that 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., et al. (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>
- K20 Center. (2021, September 21). 5-minute timer. [https://www.youtube.com/watch?v=EVS\\_yYQoLjg](https://www.youtube.com/watch?v=EVS_yYQoLjg)
- K20 Center. (n.d.). Fold the line. Strategies. <https://learn.k20center.ou.edu/strategy/171>
- K20 Center. (n.d.). Math lessons with movement. Collections. <https://learn.k20center.ou.edu/collection/5517>
- K20 Center. (n.d.). TAG me! Strategies. <https://learn.k20center.ou.edu/strategy/2873>
- K20 Center. (n.d.). Thinking hats. Strategies. <https://learn.k20center.ou.edu/strategy/3434>
- Mandelid, M. B., et al. (2023). “Just because it’s fun, it’s not without purpose.” Exploring the blurred lines of physically active learning. *Teaching and Teacher Education*, 133, <https://www.sciencedirect.com/science/article/pii/S0742051X23002858?via%3Dihub>
- Norris, E., et al. (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>