

Dear family,

Have you heard your mathematician talk about our thinking boards yet? If not, I hope they become a topic of conversation in your home soon. This letter will explain what those thinking boards are for and how they will support your mathematician's precious thinking.

Math instruction comes in many forms in my class. I use a variety of math number sense warm-ups. I teach and review myriad concepts via our calendar time. I include differentiated small-group instruction. Students learn by playing a wide variety of mathematical games. My favorite math instructional model, though, is based on the work of *Building Thinking Classrooms in Mathematics* by Peter Liljedahl.

Liljedahl's work is based on years of classroom research. He found that math students spend more time mimicking than thinking. If they're only mimicking, they're not really thinking. If they're not thinking, they're not deeply learning. Instead of simply being told, "This is how it works" or given a set of mathematical steps to blindly follow and mimic (and most likely eventually forgetting), students grapple with math via rich, thinking tasks. Liljedahl says, "Problem solving is what you do when you don't know what to do." Thus, students will be invited to be mathematical problem solvers. They'll be thinking *and* learning.

In this model, mathematicians:

- productively struggle
- learn how math works by actively participating in the math themselves
- learn how to rise to the challenge
- learn how to persist
- learn that math is figure-outable
- learn that the process is most often more important than the answer
- take on the identity of a mathematician

What does a thinking classroom look like?

- Random pairs of students, or brain buddies as we call them, are formed each time we do a thinking task.
- Brain buddies work at vertical whiteboards around the room. The knowledge moves more efficiently when students can see each other's work, and the whiteboards invite students to engage more quickly with a task, knowing they can easily erase and revise their thinking.
- Students are given thinking tasks that require them to draw on past knowledge and take risks.
- Most tasks can be solved in a variety of ways, so students solve them in ways that make sense to them. Also, tasks are designed so all students have access. Whether a student needs additional support or has advanced mathematical skills, he/she can participate in the task.
- I float from group to group, ask questions, provide support where needed, and move the knowledge around the room by sending students to visit other brain buddies for help.

- In this model, the teaching occurs at the end of the task instead of at the beginning. I consolidate the learning by inviting the students to reflect on the work I've chosen from a few selected whiteboards. This is where new ideas and understandings will be taught. (Please note that your mathematician is also receiving math instruction in several other ways, as mentioned in paragraph two.)

Now that you know a little more about thinking boards and brain buddies, I invite you to ask your mathematician about this important work he/she is doing during math. Also, keep an eye out on our private Facebook and/or Instagram accounts. I will often share pictures and/or videos of thinking tasks in those spaces. Please don't hesitate to ask if you have any questions regarding a thinking classroom.

Thanks for supporting your mathematician's deep thinking!

Tammy