

Teaching Students to...Think? With Peter Liljedahl

[Math Therapy Podcast](#)

What does an engaged student look like? What is a thinking classroom and how is it going to produce an engaged student?

- Building Thinking Classrooms is a reaction to the realization that students spend a lot of time sitting in classrooms not thinking.
- Students are standing in groups of three working at vertical whiteboards on a task. When they complete that task they will be given another task. If they get stuck on that task, they will be given a hint. Students might become impatient and will steal that hint from a neighboring group or student. The students are moving through tremendous amounts of content with lots of conversation and deep understanding.
- Groups of three aren't strategically created. They aren't self-selected. The groups are randomly selected.
- Students are spending the majority of their time in this active stance, co-constructing understanding, building and making meaning with other students.

Why do we need kids to think in math class?

- Did the method of learning the algorithm and "getting through it" create the thinkers that we want?
- Less than five out of 100 people off the street would say that they thrived and succeeded at mathematics.
- The vast majority "got through" mathematics but how many of them would identify themselves as having a positive relationship and feeling confident with mathematics.
- Thinking is a necessary precursor to learning. If students aren't thinking, they're not learning.
- Build Thinking environments not only facilitate thinking but necessitate thinking.

Why do we ignore the psychology of thinking and focus too much on memorizing?

- We forget to keep our eye on the prize. If our eye is on learning, then we focus on thinking. When performance is the goal and having students perform well on standardized assessments, it changes the game.
- Let's get students thinking. The learning will be a bi-product. Performance will be a bi-product.
- How do we achieve performance or desirable outcomes? Are you going to focus on the process or are you going to focus on the outcome? When you focus on the process, the outcome will come.
- Put results in their rightful place.
- It's a lot easier to get students to university than it is to actually prepare them for university.

Empathy and Consolidation

- Kids have a tremendous capacity for empathy in collaborative settings. Kids start to care as much about each other's learning as about their own learning. Random groups and thinking surfaces unlock empathy. It's no longer about competition for marks.
- Consolidation from the bottom recognizes that students are all in different places.
- If telling kids how something worked actually worked, we would all be in a very different place right now.

How can a thinking classroom give more students access to learning?

- It can be hard for teachers to understand at an actionable level what they need to do differently to create equity.
- What's the day to day work to achieve the goal of equity? The day to day work is to try to create access. How do we create access? How do we give more students access to education?
- Building Thinking Classrooms creates more access.
 - Low floor tasks create greater access.
 - Students standing creates access. Work is oriented the same for everyone. They can see each other's solutions. Sitting students feel anonymous. The further they sit from the teacher the more anonymous they feel. When they feel anonymous they disengage and have less access to learning. Sitting in rows creates inequitable access to the learning.
 - Consolidation from the bottom gives everyone access.
- Building Thinking Classrooms was designed to create thinking. Access is a bi-product.

Student Affect

- It's so easy to ruin affect. When students approach mathematics with negative affect, they're just not learning.
- Student identity with math typically changes for the worst in the moment when speed is coupled with public shame.

Have you faced resistance?

- We all want our students to learn. It's universally true.
- The resistance does not come from a place where people don't want students to learn or to think. That resistance comes from a place of people achieving goals in different ways. Sometimes change is hard.

What is the one thing you'd like to see changed in the way math is taught in schools?

- Eliminate standardized assessments.
- We need to re-professionalize teachers and trust them to make a judgment about what students know and don't know. We need to get back to the fact that the teaching profession is a professional profession. Everytime we impose a standardized assessment, it de-professionalizes teachers. It forces us to focus on outcomes rather than processes.

What do you say to someone who says they are not a math person?

- You haven't had the right experiences. Everyone can be mathematical. Being mathematical is a process. It's a verb. That's what being mathematical is. What you have experienced in your life is a whole lot of mathematics as nouns. You have learned that you're not good at mathematics as a noun, but everyone can be mathematical. Given a rich opportunity to engage with others on an interesting activity everyone can be mathematical, whatever that looks like.