

# How Do We Consolidate Student Learning in Math While Building a Thinking Classroom?

## [Exemplars](#)

### **Why are people so excited about Building Thinking Classrooms?**

- We've known for a long time that something in math education is off. There's been an itch to make it better for many years.
- Building Thinking Classrooms offers practical tools to actually transform our classrooms for enacting these practices that we've known for a long time are good.
- BTC values, is conducive to, and supports thinking which makes it easier to enact practices.

### **Why are rich tasks so important? What is a good, rich task?**

- If we want students to think, we have to give them something to think about.
- It isn't true that really rich tasks will solve all problems. The task itself is inert. It needs pedagogy and environment to bring it to life. The task is necessary but far from sufficient.
- Asking students to add  $19 + 13$  is an amazing thinking task if we haven't shown them how to do it yet. A task doesn't have to have this richness to be a thinking task. Our resources are dripping with thinking tasks. We suck the thinking out of tasks by turning them into mimicking tasks.
- Are they exploring this or are they just mimicking this?
- Rich tasks create curiosity and propel students into the task, but used in the right way, content that is mundane can be highly engaging for students.
- We're not trying to find engaging tasks. We're trying to build engaged students.

### **Is there a framework for using a certain number of thinking tasks and non-curricular tasks?**

- Students need 4 - 6 experiences with rich, non-curricular tasks to start the journey with the thinking classroom.
- When we start to build a culture of thinking we need to use tasks that feel mathematical but don't feel curricular.
- Every time a teacher is implementing a new practice, it's easiest to do it in the context of a non-curricular task.
- Lean into your resources, but beware of one thing. The difference between task 1 and task 2 in some programs can be large. Before moving to task 2, do task 1.1 and then 1.2 so students can test their understanding before moving to task 2.

## What does good consolidation look like?

- Not all students are going to be at the same point in a lesson. Students all work for the same amount of time but they get through different amounts of work.
- One of the most important things about a thinking classroom is that nobody is ever done. When it's time to consolidate, students are going to be at different places.
- Consolidation is often misunderstood. It's not just a recap of what they've learned. The purpose is to bring order to disorder.
- Students are spitballing. As individuals, they're working in unstructured, informal, unorganized ways. Their ideas are free-form and floating around. Those ideas will float away when students leave the room and won't remember the content the next day. Although this doesn't happen for everyone. Consolidation helps bring order to the chaos. It helps turn informal to formal, unstructured to structured, and unorganized to organized. It helps the individual sort out their ideas into schema building. They're more likely to hold on to these ideas.
- Consolidation in a thinking classroom happens in more ways than just the consolidation. There are other practices that help with this. We close out the lesson:
  - Consolidation
  - Meaningful notes
  - Check your understanding
- Rich or Divergent Task - there are multitudes of ways to solve the task.
  - Wade into the richness of the diversity. A guided gallery walk allows this to happen.
    - Select
    - Seed - suggest ideas that aren't emerging
    - Sequence - choose the order of tasks from most concrete to most abstract or most common to less common or most accessible to least accessible
  - It's incredibly hard.
- Convergent or thin slicing task - students by and large are solving it in the same way.
  - A gallery walk doesn't work with these tasks.
    - Everyone pretty much did the same thing.
    - The boards don't contain the thinking. They show a record of the answer.
  - "Here are some questions similar to what we did in class today, but I may have put them in the wrong order. What order should they be in and why?" Students turn and talk. The teacher is the scribe and then the group works on them together. "What's something I can do to all of them? What's

another thing I can do to all of them? What's something I have to be a little careful about?"

### **How do you find time to consolidate and do notes to self and check your understanding?**

- We don't always have time, but the thing that's really important is that we don't want time to get away from us. Set a timer. When the kids get engaged, the teacher gets engaged, and then the bell is ringing.
- When the timer goes off, ask yourself, "Is this the time to do a consolidation?" Maybe the answer is no. Maybe the students are really engaged and you want to keep going. Maybe you've visited every group and had great conversations with every group and you don't need to consolidate for the task. Or maybe consolidation is necessary.
- The biggest mistake we make is we drive the students into the ground before we do consolidation. We shouldn't keep them going until they're out of gas and then try to consolidate. They have nothing left for you. A good consolidation has to cut them off while there's still a lot of energy in the room. We then redirect that energy from collective meaning making to consolidation. They should bring energy, thinking, and desire to learn into that space.
- Consolidation does not happen when the misbehavior starts. It's not a shift in activity because the kids are now out of gas and are starting to behave badly.
- If you don't consolidate at the end of the day's lesson, you can't start the next day's lesson with consolidation from the day before. They have no memory of what happened. Immerse them in yesterday's task for 10 to 15 minutes and then consolidate. That is true for note making and check your understanding questions done on "day two" as well.

### **Who talks about the tasks during consolidation?**

- When groups present their own solutions, nobody listens. "Can someone not in this group tell us what they were thinking?" This works better.
- Having students feel present is really important. If we want students to feel present we have to stop reminding them of the future. These are some ways we remind them of the future:
  - We set a timer.
  - We give them a whole list of tasks we want them to get through.
  - "You're going to have to present your solution to the class at the end of this." It's impossible to be present in the doing when they know they have to present at the end. It creates a safe space for them to feel present.

- That's not to say we should never have students present to the class. Maybe we have an outcome for students to be better presenters, but don't fool yourself that the rest of the students will be paying attention.

### **What should we be trying to do during a gallery walk?**

- We're trying to tell a story. We're trying to weave a narrative that builds connections between different ways of thinking.
- You're a storyteller. You're trying to tell a story that taps into their psychology, not yours. Just because something is logically connected mathematically doesn't mean it will make sense to their psychology.
- You're trying to figure out a starting point and where to go next. What is the natural progression?
- It can be useful to look at misconceptions during consolidation.
  - Capture the misconception before it is erased. Misconceptions don't live long in a thinking classroom.
  - Find a way to talk about the misconception in a way that is safe for those who made the error.
  - "What is this group thinking? Turn and talk. Can someone not in this group tell us what this group is thinking?"
- Consolidation doesn't begin when we look at the first board. It begins when we take kids away from the boards. The first step in executing consolidation is shutting down the activity and calling everyone to a neutral location.
  - It gets them to stop working.
  - It detaches ownership. We're not looking at students. We're looking at math.

### **What is the power of students writing their own notes?**

- Student performance is a byproduct of learning. We can also focus on performance without focusing on learning. That's when we create mimicry and we cram for assessments. We're creating short-term performances.
- Long-term memory is created through episodic memory. Students have an experience that lodges in their memory as an episode. It's an event, an experience. We need to attach mathematical content to that episode.
- Why notes?
  - We want them to have a record that they can look back on.
  - Making notes is part of the learning process. It brings order and structure to the thinking, but that is only true if you are doing the organizing and the structuring. Mindlessly sitting and copying isn't a meaning-making activity.
- Students need to be making notes, not taking notes.

- Students make bad decisions. Just because a student has opted out of making notes, doesn't absolve teachers from improving their practices to try and create access to this practice.
- Students need to be sorting and selecting in order to make meaning.
- Groups follow this structure at the whiteboards with lots of markers:
  - Quadrant 1: fill in the blank
  - Quadrant 2: the example is provided and students solve
  - Quadrant 3: students pick the example
  - Quadrant 4: things to remember
- Phase 1 is in groups. Phase 2 is independent. There's 100% participation. Students tend to copy the top two quadrants and then select an example from a group they really like for quadrant three. For quadrant four they harvest things that resonate from a variety of boards.
  - Younger students can do the top two quadrants.

### **What's next?**

- Two books with tasks are coming out.
- Give yourself grace. You're not going to be perfect.