SIP = HODGSON 2022-2024 Mathematical Achievement

BUILDING THINKING CLASSROOMS

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① Begin w/ a Problem

Give a problem-solving task

To start:

Problems should be
- ☐ engaging
- ☐ non-curricular
- ☐ collaborative

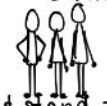
↳ promote talking

Later:

Problems can be curricular
eg textbook problems

② Visibly Random Groups

- ☐ Randomly assigned eg playing cards
- ☐ Daily & in front of students
- ☐ 2 or 3 students / group



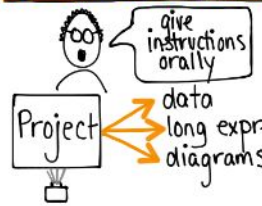
- ☐ Sit & stand together

③ Vertical Non-Permanent Surfaces

- ☐ Vertical
- ☐ Erasable

- ☐ 1 marker or chalk per group
  ↳ promotes discussion

④ Oral Instructions

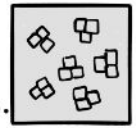


→ groups will discuss (instead of decoding text)

⑤ Defront the room

Desks
- orient in various directions
- pull away from wall (room to stand @ VNPS)

Teacher addresses the class from a variety of locations.

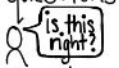


⑥ Answering Questions

Acknowledge, but don't answer:

✗ Proximity questions (b/c teacher is close by)

✗ Stop thinking questions



Answer:

✓ Keep thinking questions
↳ give HINTS not answers

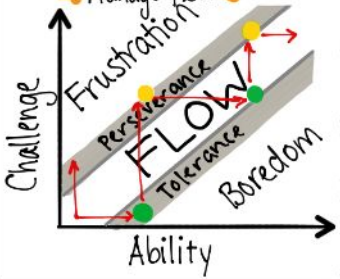
⑦ Build Autonomy

- ☐ Model how groups can visit other groups when they are stuck or done.
- ☐ Hints & extensions come from peers (not just the teacher).

→ Helps manage flow

⑧ Hints & Extensions

↳ Manage flow



FLOW → Mihaly Csikszentmihalyi

⑨ Level to the Bottom

- debrief
- class discussion
- direct teaching
- the "lesson"

Once all groups pass a minimum threshold.

Debrief 1 or more groups' solutions

Work through a new problem w/ whole group

⑩ Student Notes

Student created:

- select
- synthesize → ideas
- reorganize

Provide time for this after levelling.

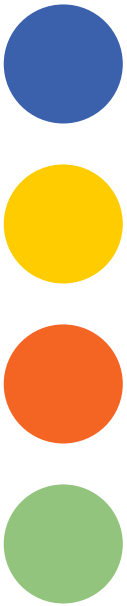
⑪ Assessment

Process > Product

Group work + Individual work

Student learning
- Where are they?
- Where are they going?

THINKING & LEARNING



Achievement

Developing Building Thinking Classrooms

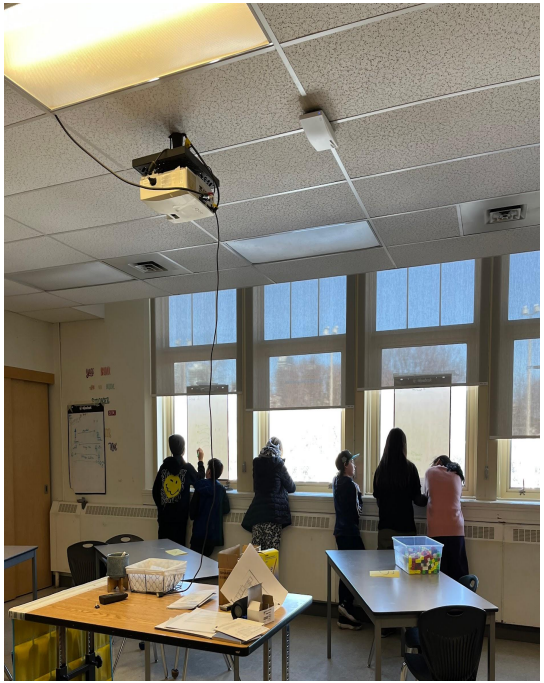
Hodgson SIP 2022-23

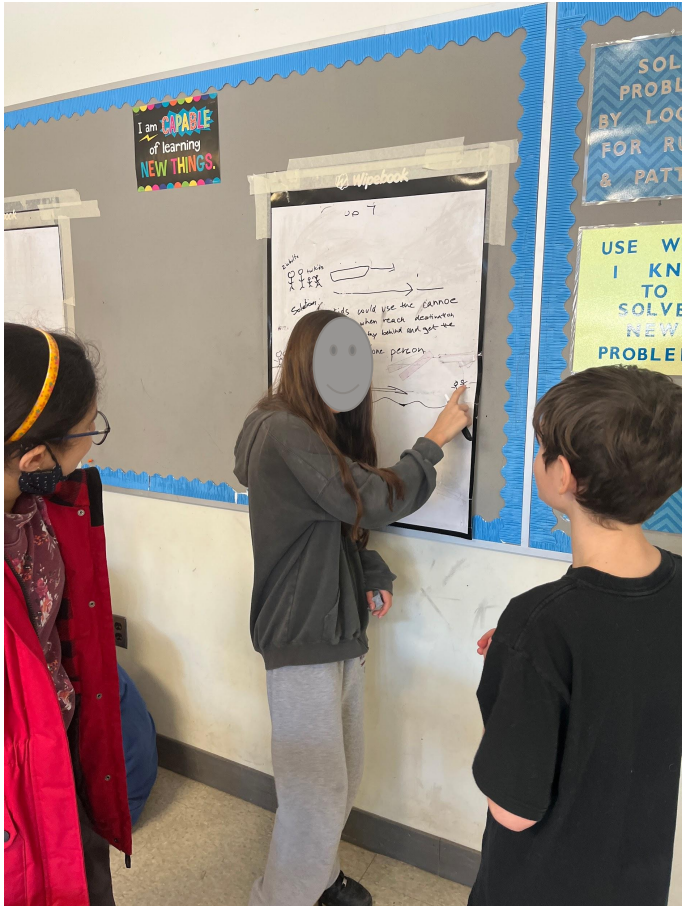
Achievement Goals: What happens when we establish and implement teacher expected practices in math and literacy (through Building, Thinking Classrooms) and teach through the lens and principles of CRRP and anti-oppression to challenge our practices in order to create a better learning environment for all of our students, we will see greater evidence of achievement in math and language?

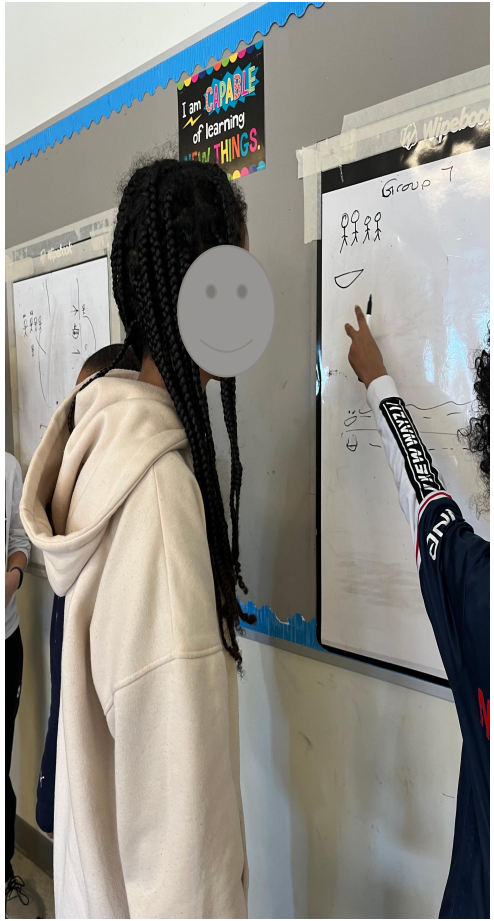
INTENTIONAL TASKS

Crossing a River

Two men and two women have to cross a river. They only have one canoe. The canoe can hold two people and everyone can paddle. What is the fewest number of trips it will take to get everyone across the river?







What are your thoughts so far on engaging in learning this way?

4. How We Arrange the Furniture in a Thinking Classroom

At its core, a classroom is just a room with furniture. Absent the students and the teacher, a classroom is an inert space waiting to be inhabited, waiting to be used, waiting for thinking to happen. This is not to say that the classroom, in its inert form, has no role in what happens in it—it actually has a huge role in determining what kind of learning can take place in it. The research showed that rectilinear and fronted classrooms promote passive learning. On the other hand, ***a defronted classroom***—a classroom where students sit facing every which way—was shown to be the single most effective way to organize the furniture in the room to induce student thinking.

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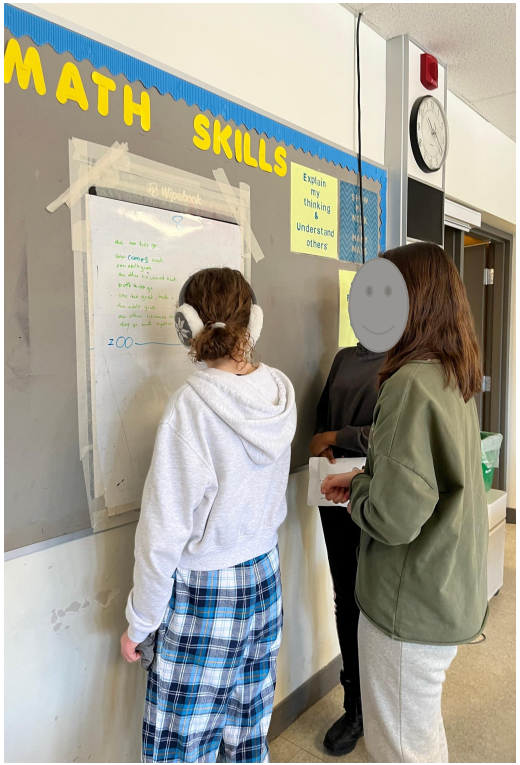
What are your thoughts so far on engaging in learning this way?



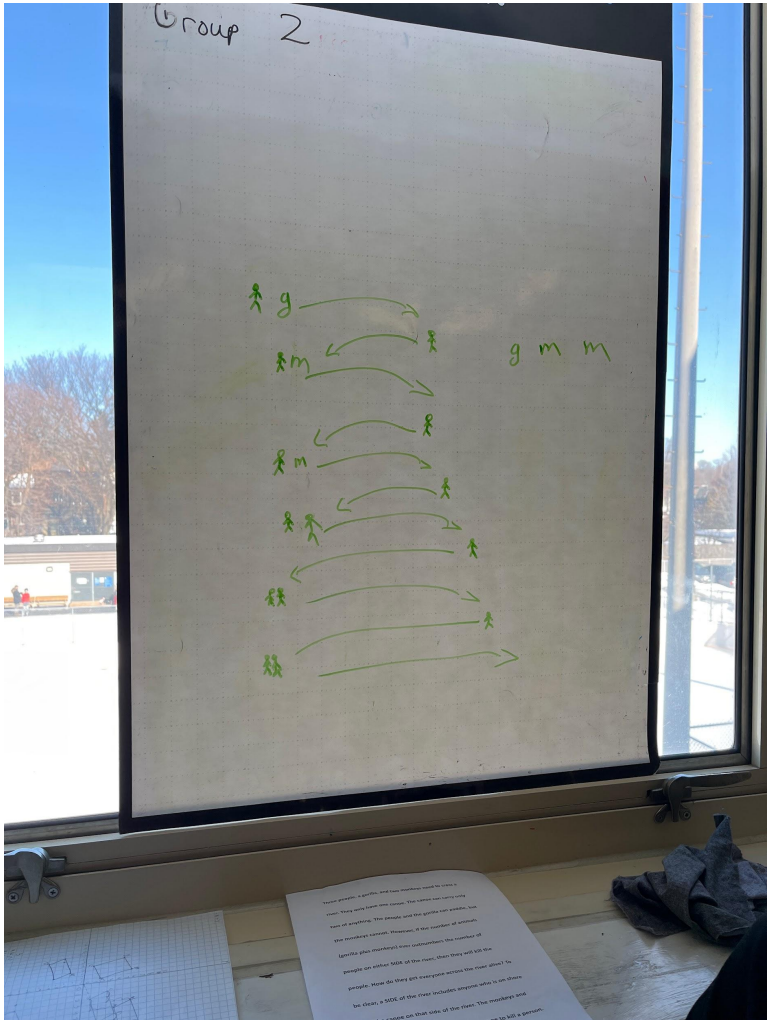
"It is challenging and when we get to the 'middle' it made sense.
When you get passed it it's like victory and you feel good about yourself."

"It's fine."

"Getting through start and keep going,
Get to a part where it makes sense
Middle is the challenging."

Q: How do you get unstuck?

"Think we talked to each other
You think about it"



Student explains thinking:
“3 people 2 monkeys
Gorilla takes the first
If the human takes the monkey over first.
What what if we take a monkey with a human?”
“I don’t get it”
“Look!”

Q: What are you trying to make work?

“Red cubes equal monkeys”

Student watching student move manipulatives
“Hello” to gorilla
Start using manipulatives

5. How We Answer Questions in a Thinking Classroom

A typical teacher will answer between 200 and 400 questions in a day, all of which fall into one of three categories:

1. *proximity questions* — the questions students ask because you happen to be close by
2. *stop-thinking questions* — the questions students ask so they can reduce their effort, the most common of which is, "Is this right?"
3. *keep-thinking questions* — the questions students ask so they can keep working, keep trying, and keep thinking.

The research showed that 90% of the questions that students ask are either proximity questions or stop-thinking questions and that answering these is antithetical to building a culture of thinking and a culture of learning. To build a thinking classroom, we need to ***answer only keep-thinking questions***.

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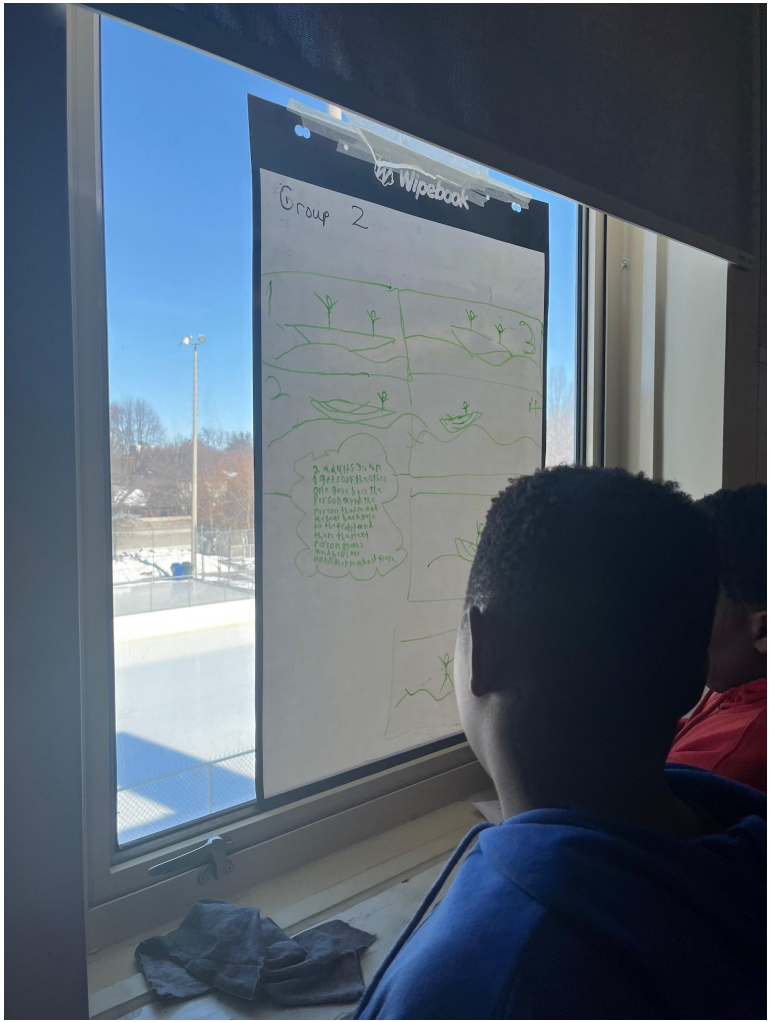
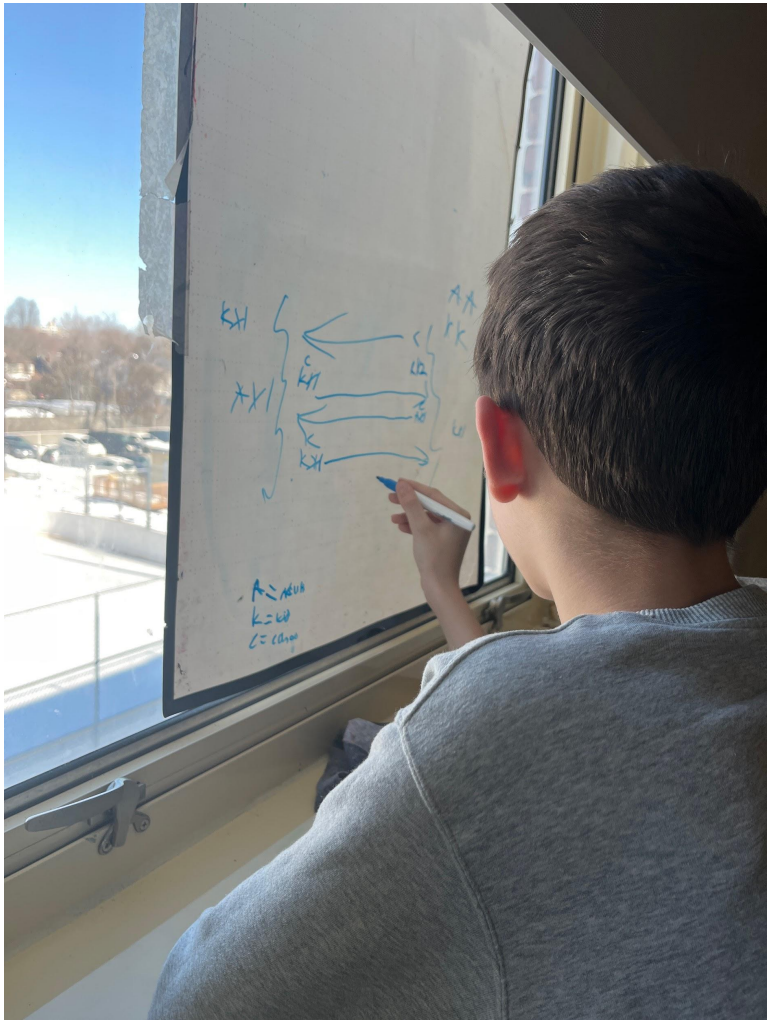


What are your thoughts so far on engaging in learning this way?

Student explains:

“This allows me to be more creative. I can use my imagination.”
“Picture about what it is like and how you have to draw pictures.”
“Pictures in my mind.”
“I like to see stuff in pictures sometimes.”



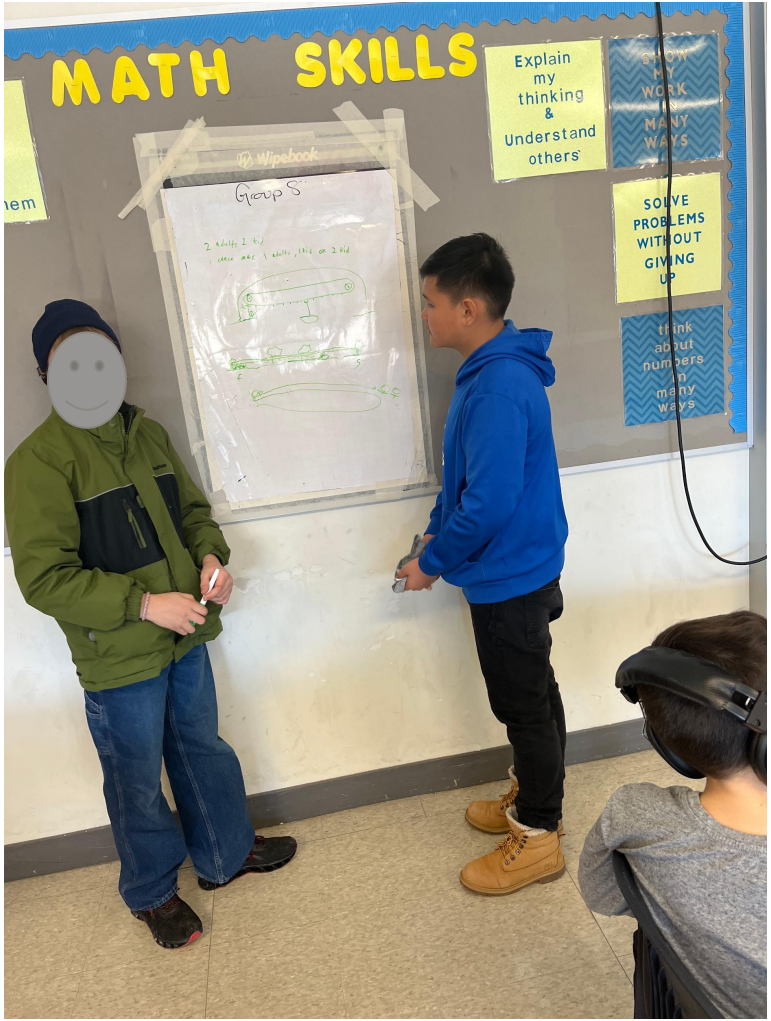
What are your thoughts so far on engaging in learning this way?

Students explain:

“What’s going on?
Oh wait! Genius!”

Working through the problem...

“Who is on your first trip?”

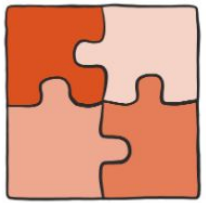


Tell me more about your thoughts on using different conditions to find a solution to this problem.

Q: What happens when you use a pulley system?

Students talking all at once:
“We will need to bring a rope....
If a river there is a forest.. There are trees
Pulley..
Connect each kid...
How many do you get from one side to another?
1 adult or 2 kids
First bring over the kids...
Then they construct the pulley system....
The adults come over...

Q: Who would you start with ?
“1 adult”



10. How We Consolidate a Lesson in a Thinking Classroom

In a thinking classroom, consolidation is of the utmost importance in every lesson. Through consolidation we are able to bring together the disparate parts of a task or an activity and help students to solidify their experiences into a cohesive conceptual whole. For over 100 years, this has involved teachers showing, telling, or explaining the learning that the teachers desired for the students to have achieved (Schoenfeld, 1985). The problem is that it doesn't work. As mentioned, students, by and large, don't learn by being told how to do it. In a thinking classroom, consolidation takes an opposite approach—***working upwards from the basic foundation of a concept and drawing on student work produced during their thinking on a common set of tasks***.

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What are your thoughts so far on engaging in learning this way?

Teachers discussing assessment:

When we test out, basic, medium, spicy. We are wondering about how this prompts some thinking for some students and not others.

What are we wondering about the way point system vs. concept attainment? Scores this way. Basic scoring does not always create a true picture of learning. Using achievement chart is important.

12. What We Choose to Evaluate in a Thinking Classroom

When asked what competencies they value most among their students, and which competencies they believe are most beneficial to students, teachers will give some subset of perseverance, willingness to take risk, ability to collaborate, patience, curiosity, autonomy, self-responsibility, grit, positive views, self-efficacy, and so on. The question is, if these are the most valuable competencies for students to possess, how do we then develop and nurture these competencies in our students? It turns out that the answer to this question is to ***evaluate what we value***. This is not to say that we stop evaluating students' abilities to demonstrate individual attainment of curriculum outcomes. But, if we value perseverance, then we need to also find a way to evaluate it. If we value collaboration, then we need to also find a way to evaluate it. What we choose to evaluate tells students what we value, and, in turn, students begin to value it as well. But it turns out that *how* we choose to evaluate is just as important as *what* we choose to evaluate. And the optimal practice for evaluating these valuable competencies turns out to be a particular type of rubric that emerged out of the research.

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14. How We Grade in a Thinking Classroom

For the last 25 years, there has been a movement in assessment and evaluation to shift away from what is sometimes referred to as "events-based grading" and toward outcomes-based grading (also known as standards-based or evidence-based grading). The benefits of this shift are many—from increased student agency to increased student performance (O'Connor, 2009; Stiggins et al., 2006). What this looks like in a thinking classroom, it turns out, is closely linked to how we do formative assessment and involves not only the ***gathering of information on what students are capable of*** vis-à-vis specific outcomes or standards, but also a ***folding back of this information to the students*** to inform their learning.

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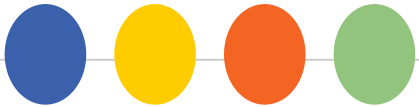

BUILDING THINKING CLASSROOMS
14 PRACTICES

1. What Types of Tasks We Use in a Thinking Classroom

2. How We Form Collaborative Groups in a Thinking Classroom

3. Where Students Work in a Thinking Classroom

4. How We Arrange the Furniture in a Thinking Classroom

5. How We Answer Questions in a Thinking Classroom

6. When, Where, and How Tasks Are Given in a Thinking Classroom

7. What Homework Looks Like in a Thinking Classroom

8. How We Foster Student Autonomy in a Thinking Classroom

9. How We Use Hints and Extensions in a Thinking Classroom

10. How We Consolidate a Lesson in a Thinking Classroom

11. How Students Take Notes in a Thinking Classroom

12. What We Choose to Evaluate in a Thinking Classroom

13. How We Use Formative Assessment in a Thinking Classroom

14. How We Grade in a Thinking Classroom

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