

Powerful and Engaging Professional Development



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FIVE ENGAGING PRINCIPLES FOR ENGAGING AND EMPOWERING PROFESSIONAL DEVELOPMENT

We will engage in them first and then
we will name.

Let's Mingle!

- When I say go – you will start mingling.
- When I say stop, I will call out a number.
- Find some people next to you, introduce yourself, and answer the question.

Select the image that best represents your own mathematical teaching journey.



A.



B.



C.



D.



E.



F.



G.

Pass the Pigs!



Playing the Game:

You must keep your own score.

Play in groups of two to four.

On your turn:

Roll both pigs. Score is determined by how the pigs land (See score sheet).

Play continues until the first person reaches the target number of points! Let's play to 100!

Name the Practice!

Pinch the practices card to show what practice this question/might prompt represent.

Ready...Set...Go

Be **READY** to Explain!

About what part of the flag is red?



About what part of the flag is red?



About what part of the flag is red?



There are 25 sheep and 5 dogs in a flock. How old is the Shepherd?



Some of these Things Are Not Like
Each Other!

$8 + 23$

$18 + 35$

$44 + 26$

$34 + 17$

Sam has 4 tables for his birthday party. His mother puts the same number of things at each table.

He has 16 plates, 8 horns, 4 flowers, and 16 chairs.

What questions do you have?

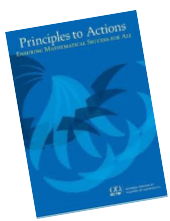


What is Engaged
Professional Learning
Principle 1?



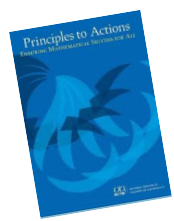
“The best Professional Learning gets going right away – No announcements please. We can get that in an email” (Teacher Interview, November, 2015).

What are OUR Beliefs and How
might these Beliefs influence our
work?



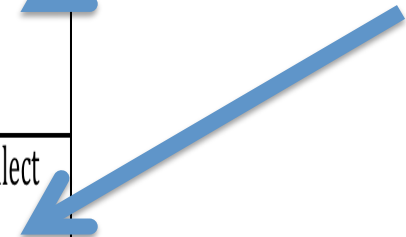
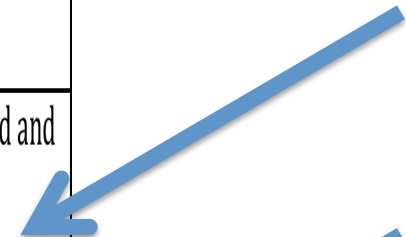
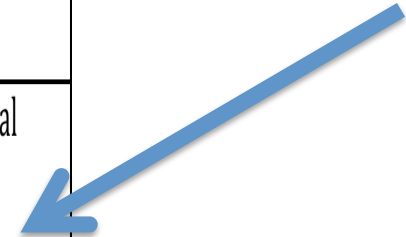
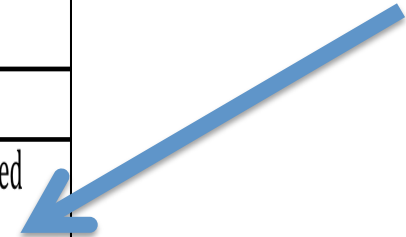
How might our Professional Learning Reflect beliefs about our teachers?

Beliefs about teaching and learning mathematics	
Unproductive beliefs	Productive beliefs
Mathematics learning should focus on practicing procedures and memorizing basic number combinations.	Mathematics learning should focus on developing understanding of concepts and procedures through problem solving, reasoning, and discourse.
Students need only to learn and use the same standard computational algorithms and the same prescribed methods to solve algebraic problems.	All students need to have a range of strategies and approaches from which to choose in solving problems, including, but not limited to, general methods, standard algorithms, and procedures.
Students can learn to apply mathematics only after they have mastered the basic skills.	Students can learn mathematics through exploring and solving contextual and mathematical problems.
The role of the teacher is to tell students exactly what definitions, formulas, and rules they should know and demonstrate how to use this information to solve mathematics problems.	The role of the teacher is to engage students in tasks that promote reasoning and problem solving and facilitate discourse that moves students toward shared understanding of mathematics.
The role of the student is to memorize information that is presented and then use it to solve routine problems on homework, quizzes, and tests.	The role of the student is to be actively involved in making sense of mathematics tasks by using varied strategies and representations, justifying solutions, making connections to prior knowledge or familiar contexts and experiences, and considering the reasoning of others.
An effective teacher makes the mathematics easy for students by guiding them step by step through problem solving to ensure that they are not frustrated or confused.	An effective teacher provides students with appropriate challenge, encourages perseverance in solving problems, and supports productive struggle in learning mathematics.



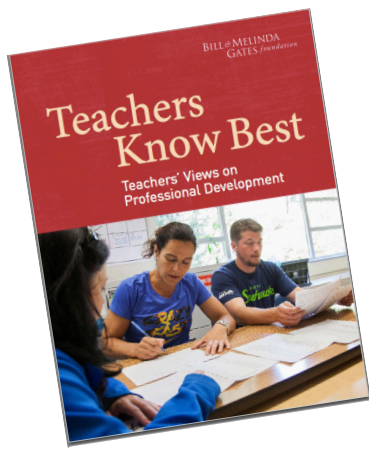
How does Professional Learning Reflect beliefs about our teachers?

Beliefs about Mathematics Professional Learning (Development)	
Unproductive Beliefs	Productive Beliefs
Professional Learning should be designed around teacher deficits.	Professional learning should be designed around teacher assets.
All teachers need the same professional learning.	All teachers need a range of professional learning opportunities.
One shot, expert, professional learning works to motivate teachers to make changes.	Professional learning must be sustained and teacher driven.
If teachers just knew the mathematics, they would be able to teach better.	Professional learning respects the intellect and experience of teachers.



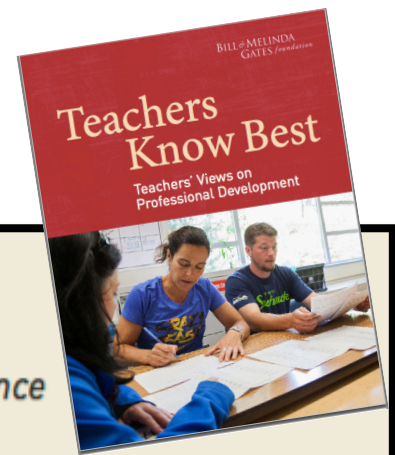
What do teachers say about Professional Development?





The Reality.

- Few teachers (29 %) are highly satisfied with current professional development offerings.
- Few teachers (34 %) think professional development has improved.



COLLABORATION: CURRENT VS. IDEAL

Focus group question: Which images represent your current experience and the ideal state of collaborative professional development?

CURRENT EXPERIENCE	<p>Lack of engagement</p> <ul style="list-style-type: none"> • "Feels like I'm being held hostage" • "I would rather be somewhere else" 	<p>Poor use of time</p> <ul style="list-style-type: none"> • "Not another meeting" • "Not one more thing I have to do" • "Don't read PowerPoint presentations to me" 	<p>Poorly planned/executed</p> <ul style="list-style-type: none"> • "People might have good knowledge but the pieces don't fit together" • "Need an agenda and rules ... otherwise it's a social hour"
IDEAL STATE	<p>Energizing</p> <ul style="list-style-type: none"> • "Makes me feel fired up" • "Energized to go back to my classroom" 	<p>Supportive</p> <ul style="list-style-type: none"> • "Makes me feel supported" • "Feel accountable to show up to help each other" • "Bounce ideas off of each other" 	<p>Hands-on/scenario-based</p> <ul style="list-style-type: none"> • "Specific activities to do" • "Brainstorm solutions for a specific teacher" • "Gives me what I need in bite-sized pieces"

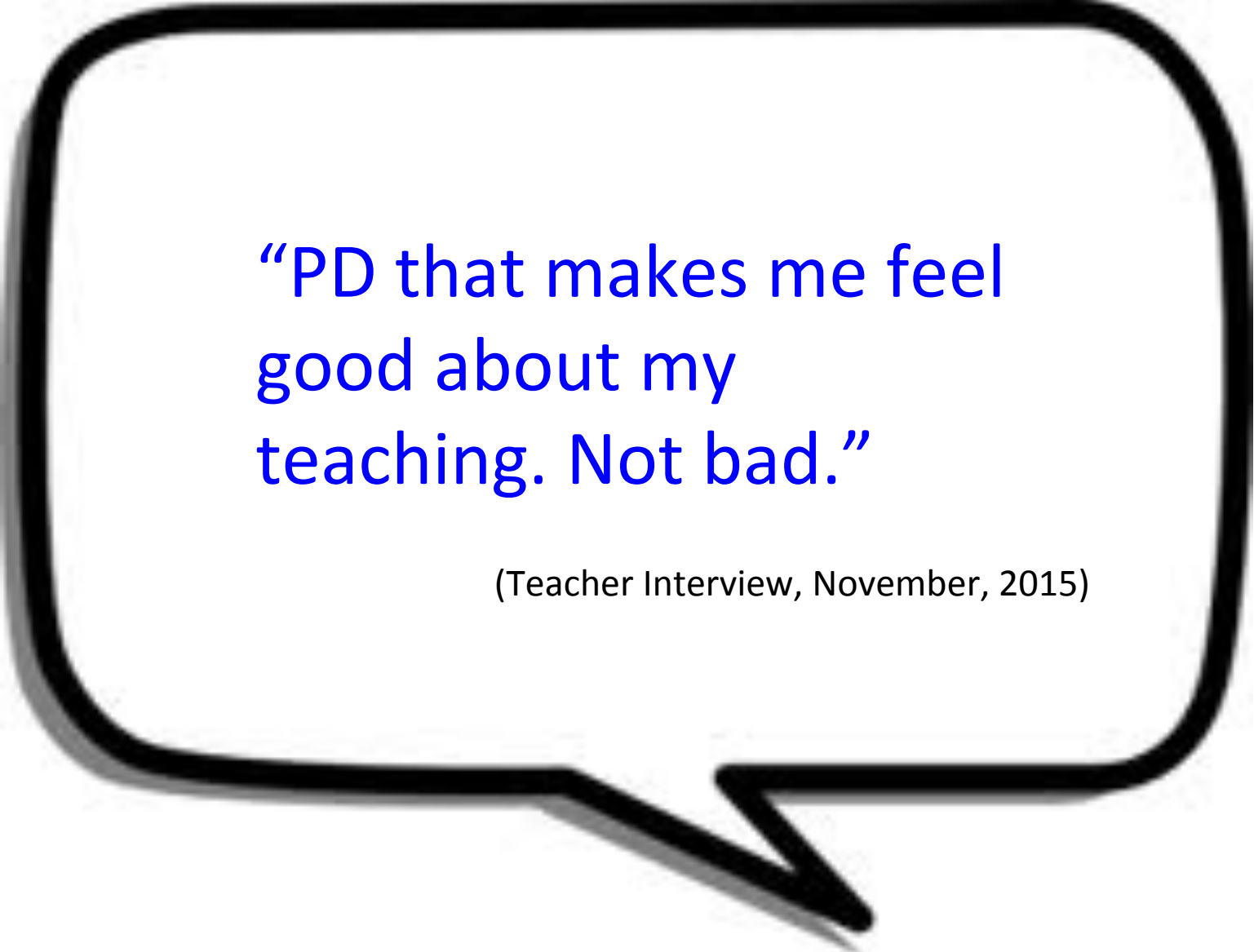


“We have too many professional development presenters who have come to save the teachers. They have all of the answers for how teachers should be teaching students mathematics, and those still in the classroom have none of the answers.”
(Teacher Interview, November, 2015).

“What do you wish your
mathematics leader
knew?”

wish list





“PD that makes me feel
good about my
teaching. Not bad.”

(Teacher Interview, November, 2015)

“A safe environment where I feel comfortable being a risk-taker while learning, sharing, and questioning” (Teacher Interview, September, 2015)



“We need time to talk...
process... reflect... We
don't need to be saved... Let
us save ourselves” (Teacher
Interview, October, 2015).



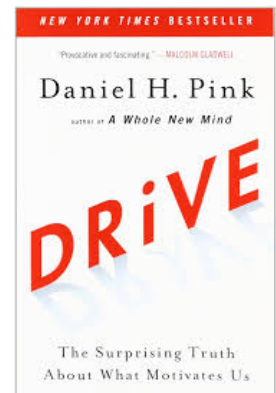
Think of a time when one or more of your **mathematics teaching strengths** made a difference in your life or in the life of someone else.



What kinds of PD Motivates Us?

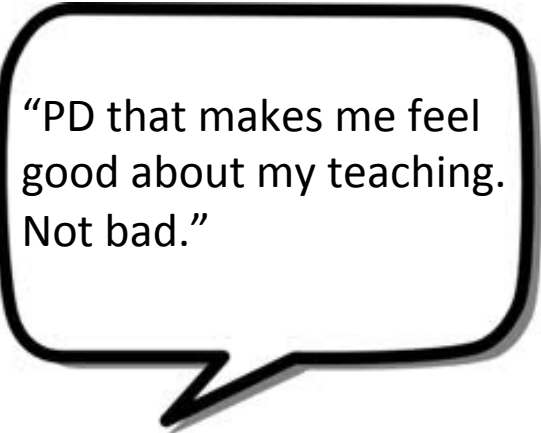
“Control leads to compliance; autonomy leads to engagement”

“Human beings have an innate inner drive to be autonomous, self-determined, and connected to one another. And when that drive is liberated, people achieve more and live richer lives.”



What Words do we use to Create our Professional Learning?

Our reality, as we know it, is socially created through language and conversations.

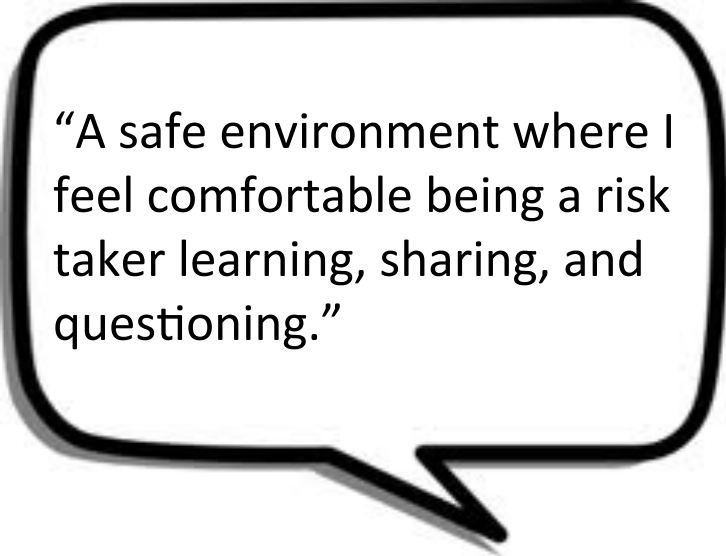


“PD that makes me feel good about my teaching. Not bad.”

What kinds of questions do we ask? (Inquiry Creates Change)

Inquiry is the intervention. We begin to create a change. The questions we ask move us forward.

We Can Choose What We Study



“A safe environment where I feel comfortable being a risk taker learning, sharing, and questioning.”

What we **choose** to study makes a difference.

Image Inspires Action

“The more positive and hopeful the image of the future, the more positive the present-day action” (Center for Appreciative Inquiry, 2014).

Positive Questions Lead to Positive Change

Momentum for [small or] large-scale change requires large amounts of positive affect and social bonding. This momentum is best generated through positive questions that amplify the positive core (Center for Appreciative Inquiry, 2014).





Think back on previous point in your mathematics teaching. Imagine a **peak experience**, and **success** that you have experienced this year. Let's **focus** on the **high points** of a change experience when it all worked out well.

WHAT

DID

YOU

DO?

How did
your
students
respond?

WHAT

DID

YOU

DO?

**What was
YOUR role
in the
success?**

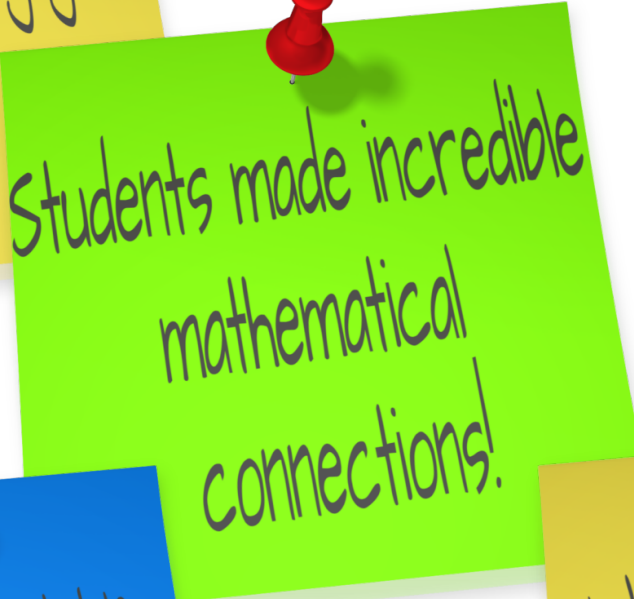


From the collective stories you've heard, what **themes** emerge: those factors that make it **vibrant, energizing, and satisfying?**

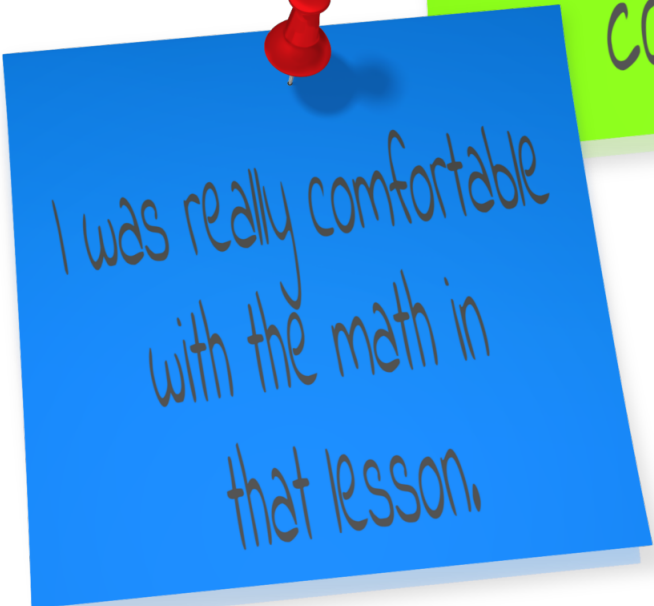
.




Students were engaged!



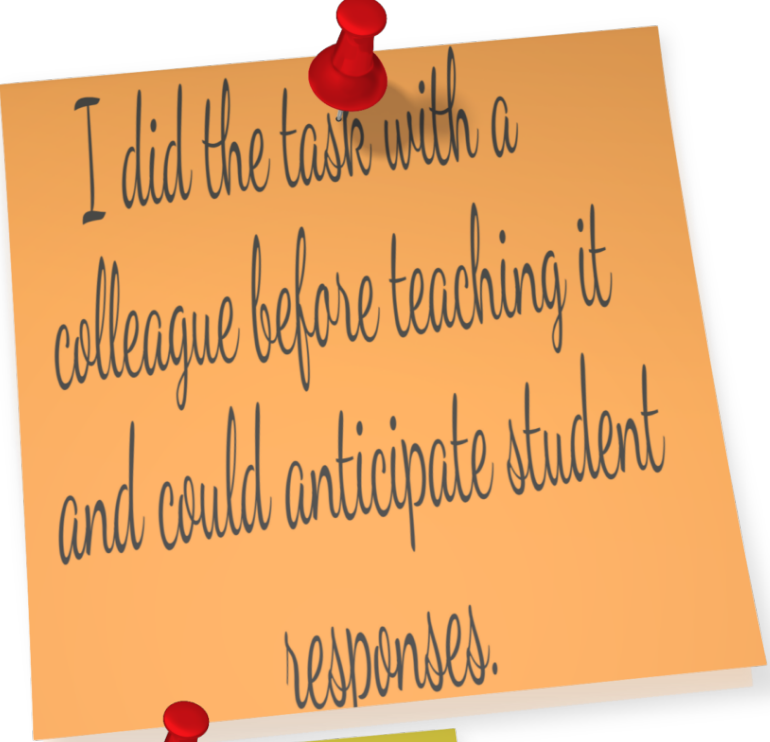
Students made incredible mathematical connections!



I was really comfortable with the math in that lesson.



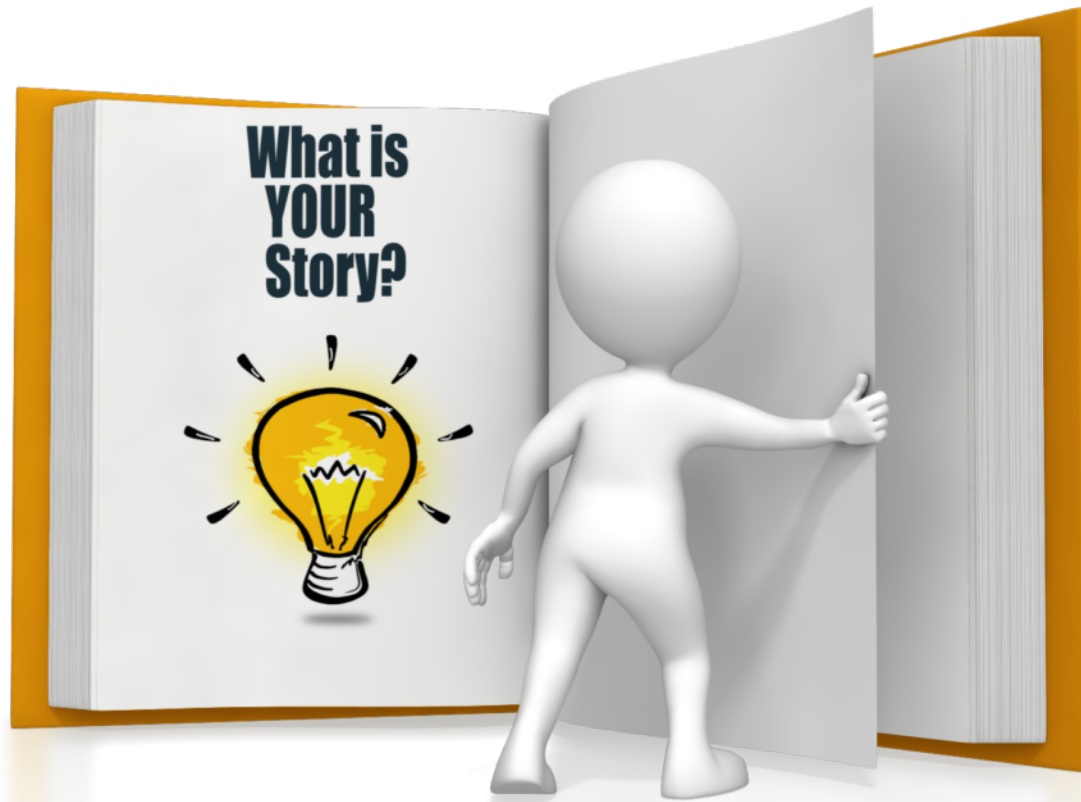
I designed the task around student misconceptions



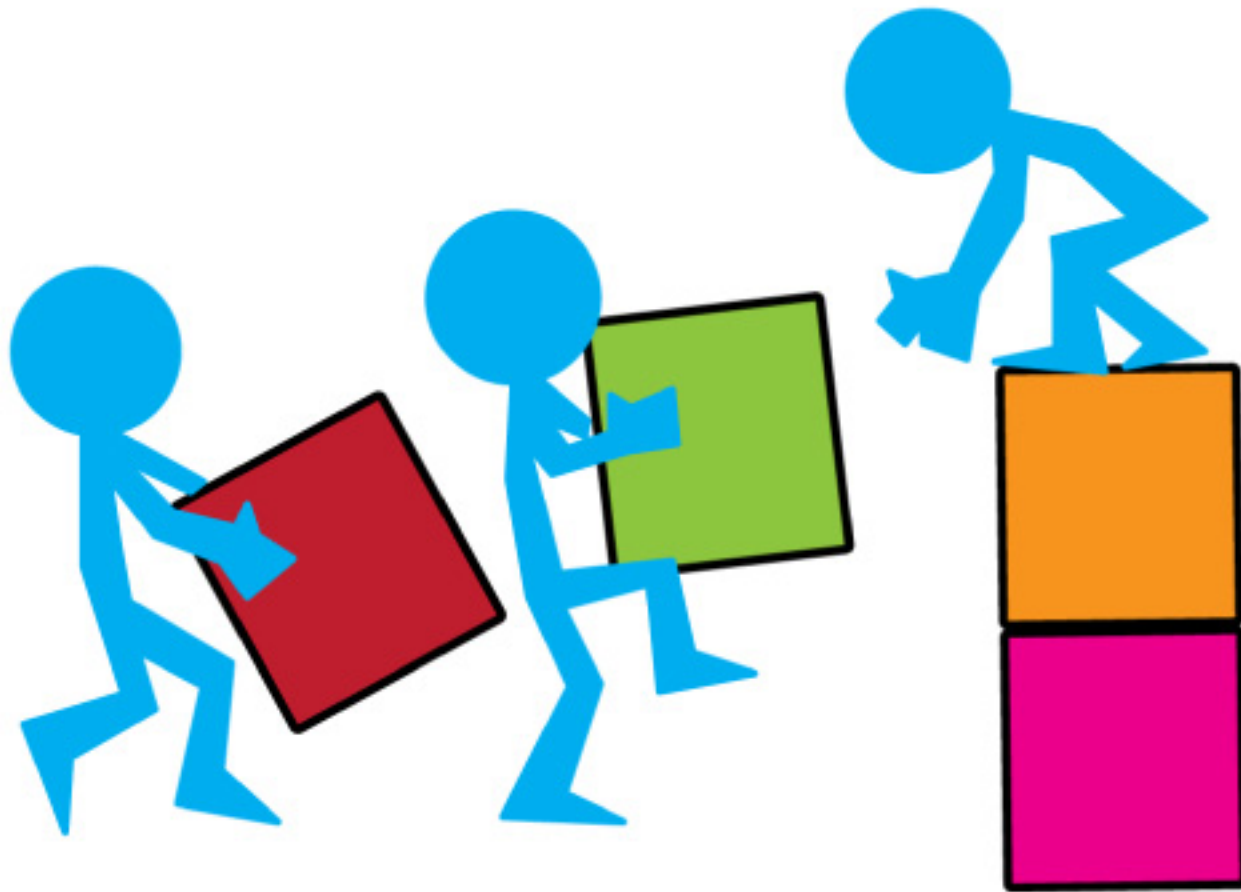
I did the task with a colleague before teaching it and could anticipate student responses.

What is Engaged
Professional Learning
Principle 2?

Our Beliefs Shine Through
Our Stories Are Important
The Words we choose are Critical



Let's Solve a Task Together!



PRETEND:

This is the task you have decided to do with your team.
You have several “license plates” on the table.

If the value of $A-F = 1/3$

$G-N = 1/4$

$O-T = 1/6$

$U-Z = 1/8$

All other numbers are the value.

How might you determine the total value of the license plates?

How can add, subtract, and multiply to reach a value closest to
1?

Task Collaboration

Use the four categories:

1. Turn one card over at a time.
2. Discuss thoroughly and deeply.



What was different between engaging in the task and reading about it?

How might you use this process in your own work?



How can you build your own task talk



- Do what we ask students to do...
 - Take risks
 - Collaborate
 - Question
- Look for other people who like to talk about their lessons!

What is Engaged Professional Learning Principle 3?

Opportunities to Collaborate Around Mathematics Tasks

Do the Math!

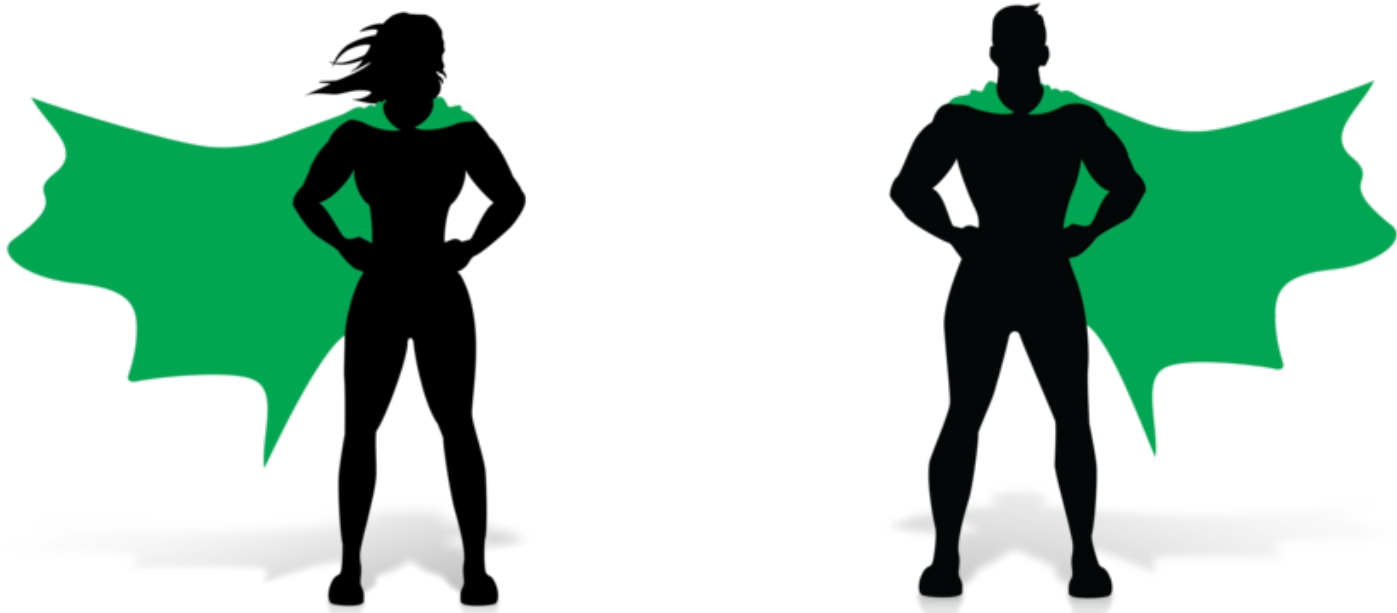


Why spend time doing, talking, and reflecting about tasks?

Student learning of mathematics “depends fundamentally on what happens inside the classroom as teachers and learners interact over the curriculum.”

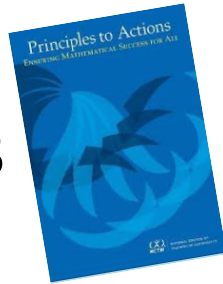
(Ball & Forzani, 2011, p. 17)

Examining our Teaching Strengths



What are your top 3 strengths?

PtA Mathematics Teaching Practices



- ① Establish mathematics goals to focus learning.
- ② Implement tasks that promote reasoning and problem solving.
- ③ Use and connect mathematical representations.
- ④ Facilitate meaningful mathematical discourse.
- ⑤ Pose purposeful questions.
- ⑥ Build procedural fluency from conceptual understanding.
- ⑦ Support productive struggle in learning mathematics.
- ⑧ Elicit and use evidence of student thinking.