Intervention:

Growing Mathematicians, Cultivating Mathematical Mindsets

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Learning Goals

- Share the beliefs and strategies that drive our model of math intervention
  - Growth mindset
  - Co-teaching
  - Assessment Capable Learners
  - Homeroom Support
  - After School Program
  - Evening Webinars
- Provide inspiration for future intervention implementation

* An area of strength
? An opportunity to learn

Session Norms courtesy 

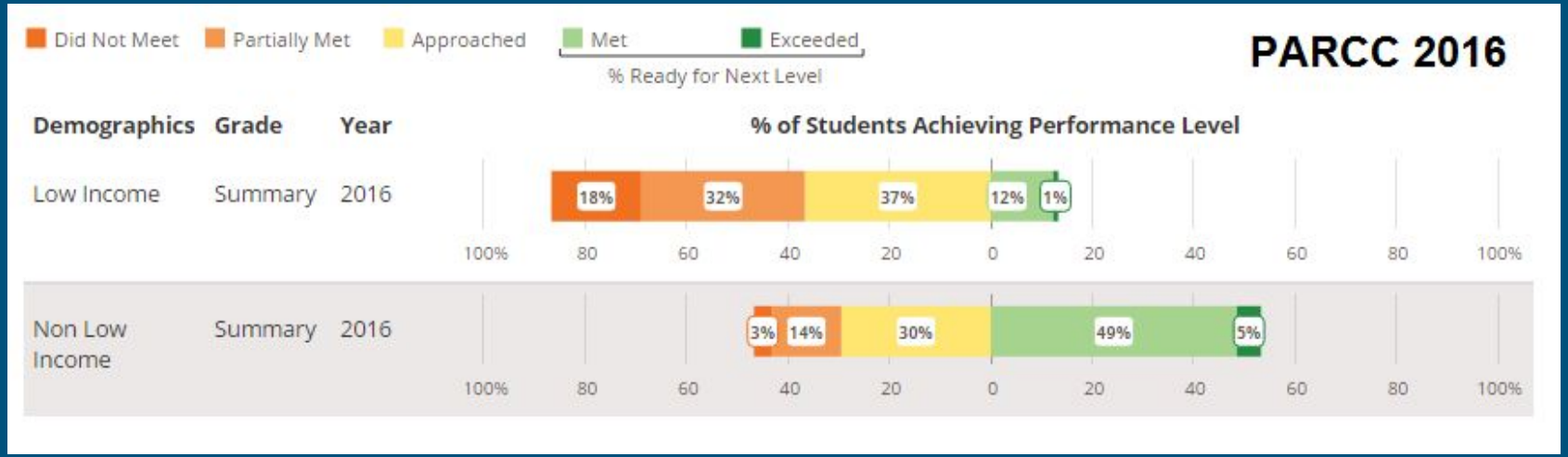
- Help one another to speak
- Welcome diversity
- Collaborate
- Bring a growth mindset
- Give and take
- Say the thing

Our Beliefs

- Cultivating a growth mindset contributes to personal and academic success
- Intervention is more preventative than prescriptive
- The use of formative assessment and feedback are opportunities for progress, not declarations of deficiency

Our School

- Lake Zurich Middle School North, northwest suburban Chicago
- Diverse student population of 700 students, grades 6-8
- Twelve percent receive free or reduced lunch



Growth Mindset

Growth Mindset

In other studies, researchers have shown that students' (and adults') mindsets can change from fixed to growth, and when that happens their learning approach becomes significantly more positive and successful (Blackwell et al., 2007).

The highest-achieving students in the world are those with a growth mindset, and they outrank the other students by the equivalent of more than a year of mathematics.

Boaler, J., & Dweck, C. (n.d.). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages, and innovative teaching*.

Growth Mindset in the Classroom

- “Not Yet”
- “You can do this.” “This is important.” “I won’t give up on you.”
- Provide opportunities to:
  - Take risks
  - Make mistakes
  - Experience productive struggle
  - Self assess
  - Relearn

Growth Mindset

“The key growth mindset message was that effort changes the brain by forming new connections, and students control this process.”

Boaler, J. (2013). Ability and Mathematics: The mindset revolution that is reshaping education. FORUM, 55(1), 143. doi:10.2304/forum.2013.55.1.143

Our Intervention Model

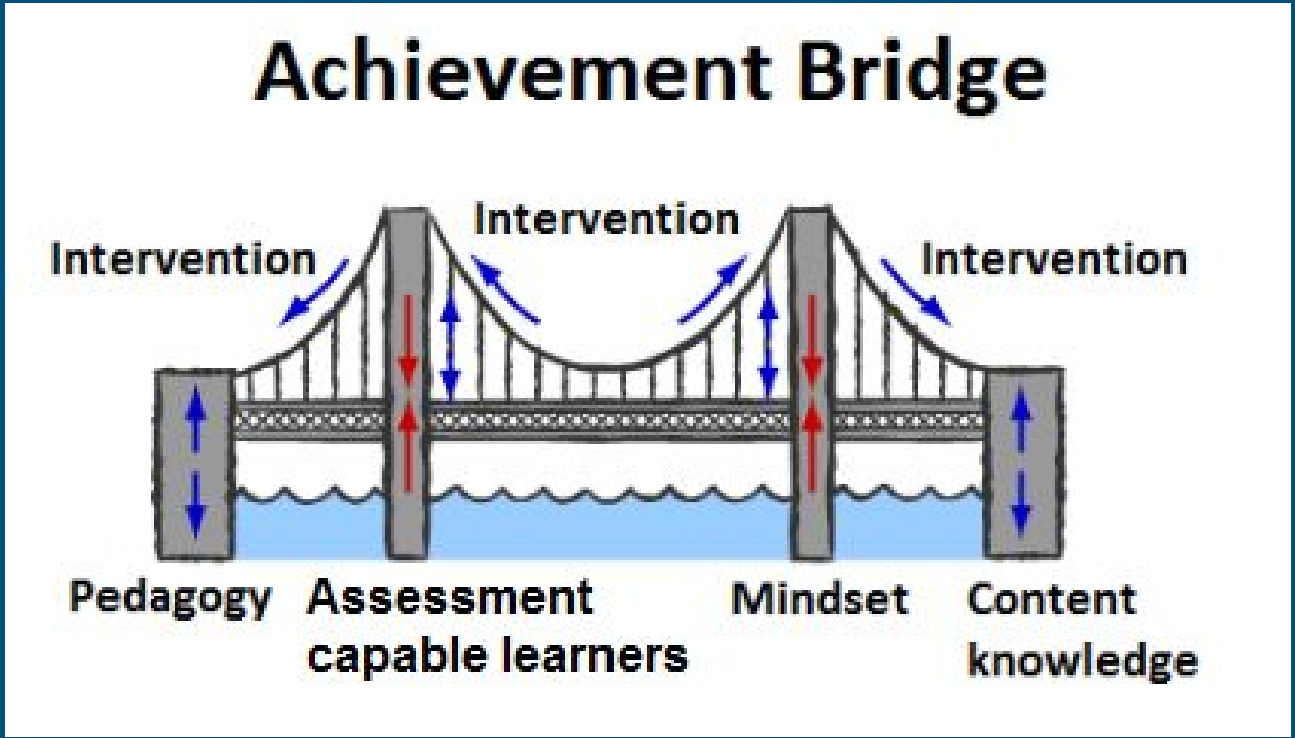
Intervention as Prevention

Co-teaching

Homeroom Support

After School Program

Evening Webinars



Co-teaching

Co-teaching Models

- Team teaching
- Parallel Teaching
- Alternate Teaching
- Station Teaching
- One teach, one assist

Dynamic Assessment and Feedback

- Assessments may be:
  - Informal (conversation, observation)
  - Formal (artifact, common assessments)
- Feedback must be:
  - Timely
  - Targeted
  - Specific

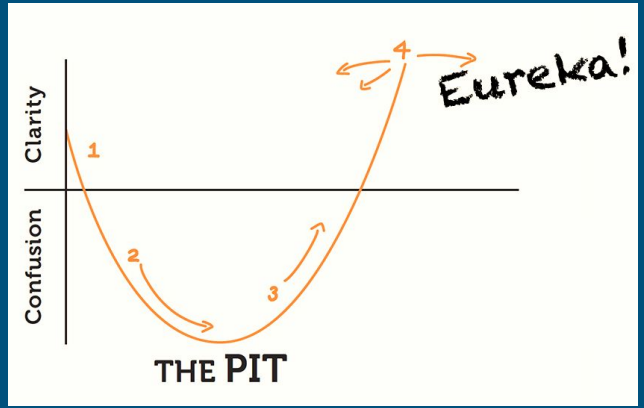
Habits of Assessment Capable Learners

GOAL: To develop assessment capable learners

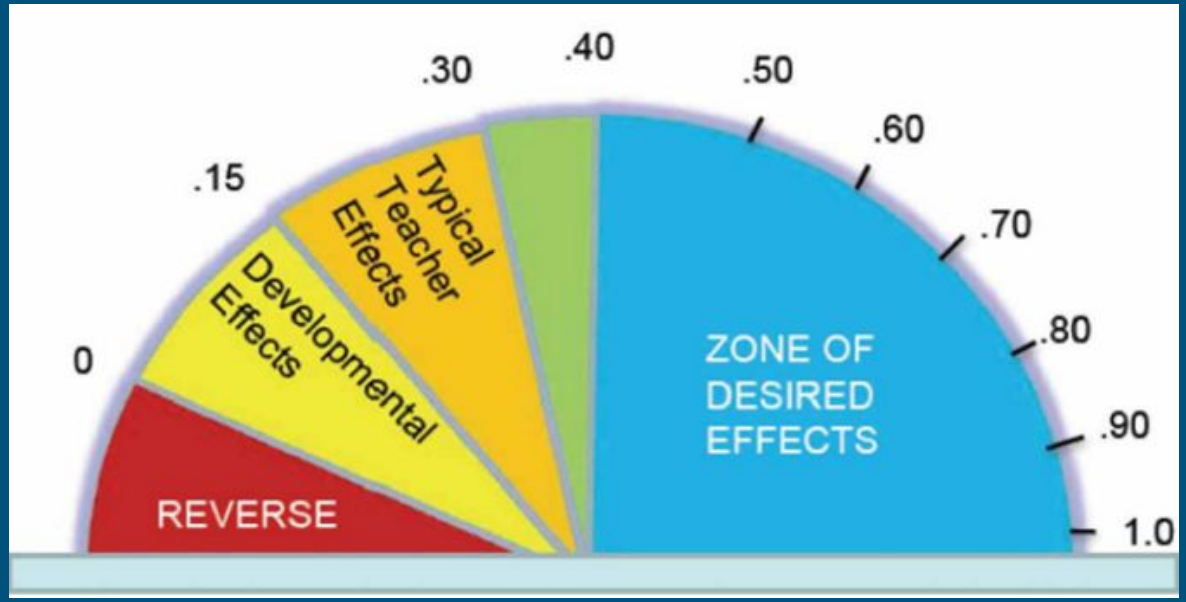
- From: “I don’t get it.”
- To: “This isn’t right, maybe if I create a table I’ll see a pattern.”

- From: “The table didn’t help me; I’m done.”
- To: “The table didn’t work; what do I do now?”

- From: “I’ll just look over my notes before the test.”
- To: “I better do a few practice problems.”



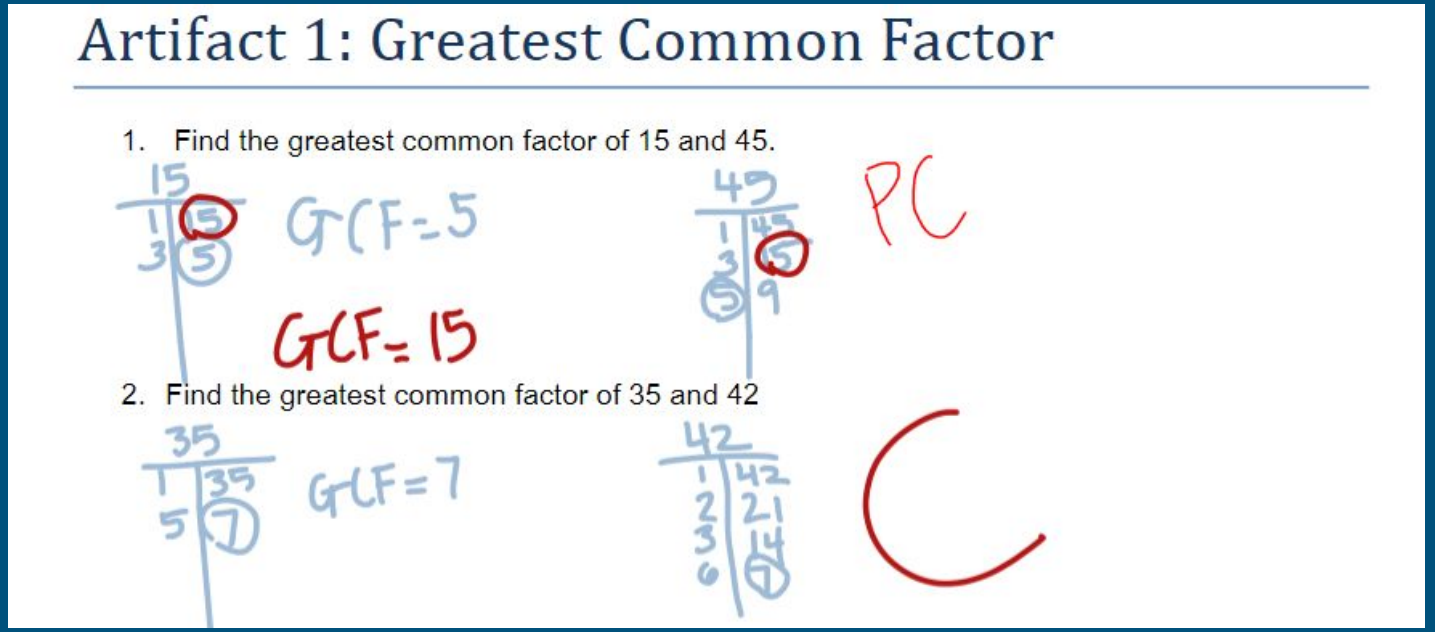
Visible Learning Research



Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. London: Routledge.

Self-assessment

Artifacts by Brianna



Canvas

How often do you check Canvas?	Daily
What do you check on Canvas?	To view the agenda, To access assignments, To access completed notes, For study guides through the modules tab

eSchool

How often do you check eSchool?	Weekly
Do you follow up with Ms. Conrad regarding low grades?	Yes
If yes, do you follow up with Ms. Conrad in a timely manner?	Yes

Work Habits

I use my notebook when I do my assignments.	Sometimes
I feel comfortable approaching Ms. Conrad, Mrs. Obsuszt, or Mrs. Dooms if I have questions.	Yes
I see Ms. Conrad, Mrs. Obsuszt, or Mrs. Dooms during lunch, homeroom, or after school if I need support.	Never
I have used outside resources to help me complete my work.	Yes

Open Response

At least one thing I feel I did well in math class during 1st quarter (be specific):	Worked hard to complete my work in a timely manner and putting as much effort as I could in it
At least one way I feel I can improve my performance moving forward (be specific):	Asking questions in class or answering more questions even if I am not totally confident I am right. I could receive understanding
The one thing about math class that I have enjoyed the most so far this year is:	All the work and definitely class time to work on assignments. I feel as though the more work we did, even if I was frustrated sometimes, it helped me get A's on every test
The one thing I struggle the most with in math class is:	If I don't know an answer to a problem, I sometimes leave it half done
Do you feel you deserved the grade you earned? Please explain.	Yes, I deserved an A because I worked hard to the best of my ability, asked questions if I didn't understand something, and did well on tests.
Name one action you can take to either "keep it up" or "pick it up"?	I'll keep up my effort and try asking questions during nite taking if needed.
Lastly, is there anything we can do to help you meet your goal of "keeping" or "picking" it up?	Nope. Canvas is always up to date and the weekly agenda really helps me out a lot.

For Discussion:

- How do we encourage students to value reflection as a learning opportunity rather than a redundant task?

Homeroom Math Support

Homeroom Math Support

Purpose:

- Reteach or preview the day’s learning objective
- Provide feedback and guidance with practice problems
- Review and reinforce prior learning

Homeroom Math Support

Implementation:

1. Student identification
    a. Teacher recommendation
    b. Three year MAP data <30%
2. Parent notification of student eligibility

Structure:

Students attend for 30 minutes, twice weekly.

After School Program

After School Program

Purpose:

- Focus on problem-solving skills and strategies using grade level standards

After School Program

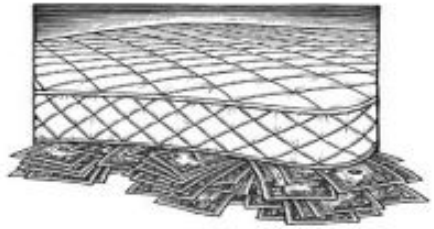
Implementation: Same criteria as homeroom support

Structure:

- One hour, twice a week
- Sixth, seventh, and eighth grade groups
- Group size 3-8 students depending on the number of tutors

After School Program

The Money Munchers



Emily doesn't trust banks with her money.

She has stored $24,400 in one-dollar bills under her mattress.

Emily's daughter tries to persuade her to take her money to the bank.

"Just think of all those little bedbugs munching through your money, mom."

The thought of millions of bedbugs eating her money is too much for Emily.

She decides to take the money to the bank.

1. Emily removes the money from under the mattress.
   By how many inches will the mattress be lowered?

Link to After School Curriculum

Weekly Lessons			
Week #	**Grade 6**	**Grade 7**	**Grade 8**
Week 0	Intro	Intro	Intro
Week 1	Decimal Operations	Decimal operations	Equation solving
Week 2	Factors 1 of 2	Integers	Linear Patterns
Week 3	Factors 2 of 2	Factors and divisibility rules	Linear Patterns and slope
Week 4	Estimation	Rational numbers	Linear equations
Week 5	Fractions 1 of 2	Integers/problem solving	Linear equations 2
Week 6	Algebraic Reasoning	Interpreting algebraic expressions	Comparing linear functions table/graph
Week 7	Fractions M/D	Expressions and equations	Systems of equations graphing
Week 8	Area and Perimeter w/Fractions	Algebraic reasoning	Systems graphing 2
Week 9	Area of irregular polygons	Simplifying Expressions	No lessons this week (return from winter break)
Week 10	Fractions/Decimals/Percents 1 of 2	One step equations	Systems substitution
Week 11	Fractions/Decimals/Percents 2 of 2	Two step equations	Systems elimination

http://bit.ly/2iM8QzS

For Discussion:

- Share any constraints or obstacles your school has in implementing a homeroom math support or after school program.
- How can we help each other overcome these obstacles?

Live, Evening Webinars

Live, Evening Webinars

Purpose:

- An interactive learning session conducted via the internet
- Additional opportunity to reinforce current learning

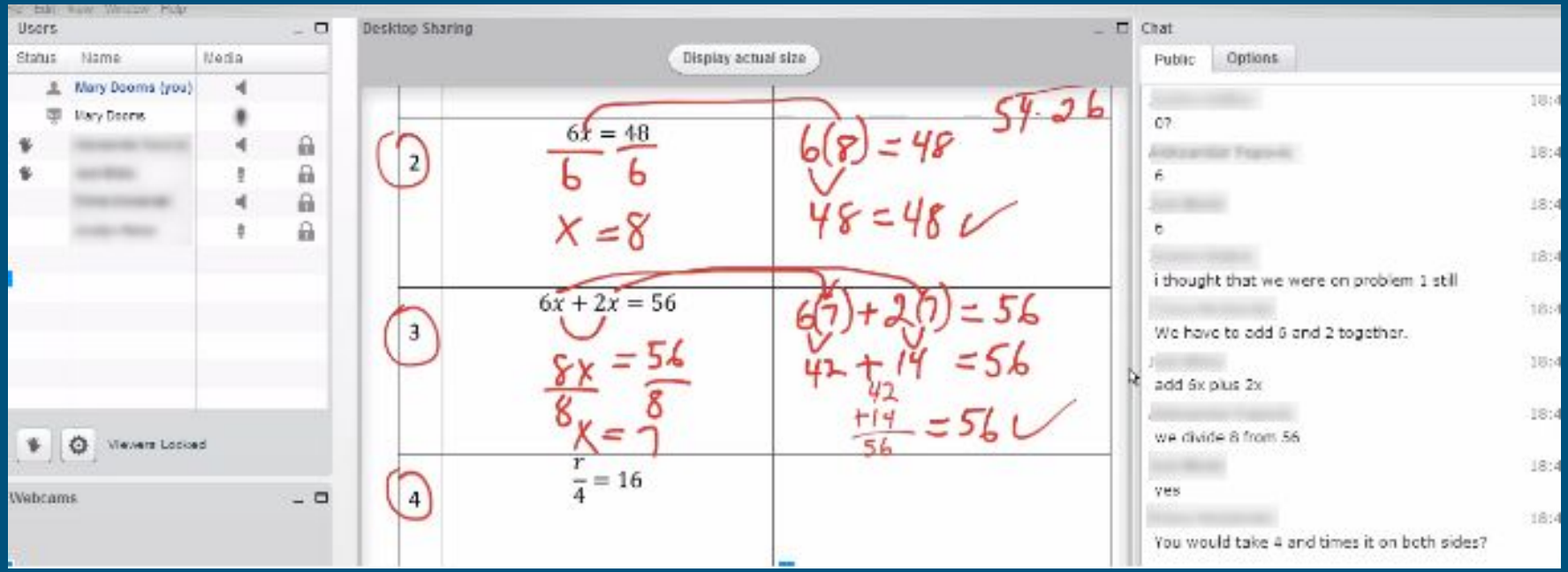
The Compelling “WHY”

Based on Old Dominion research (2015)...

- The findings suggest that the tutoring contributed to statistically significant gains in student assessment scores post-intervention.

Chappell, S. L., Arnold, P., & Nunnery, J. (n.d.). *An examination of an online tutoring program’s impact on low-achieving middle school students’ math achievement* (Tech.). Retrieved August 4, 2016, from https://www.odu.edu/content/dam/odu/offices/tcep/docs/fev-tutoring-eval-tech-report-final.pdf

Live, Evening Webinars - Brief Video



Live, Evening Webinars

Implementation:

- Students trained during math class

Structure:

- 30 minutes, once a week per grade level

Co-teaching

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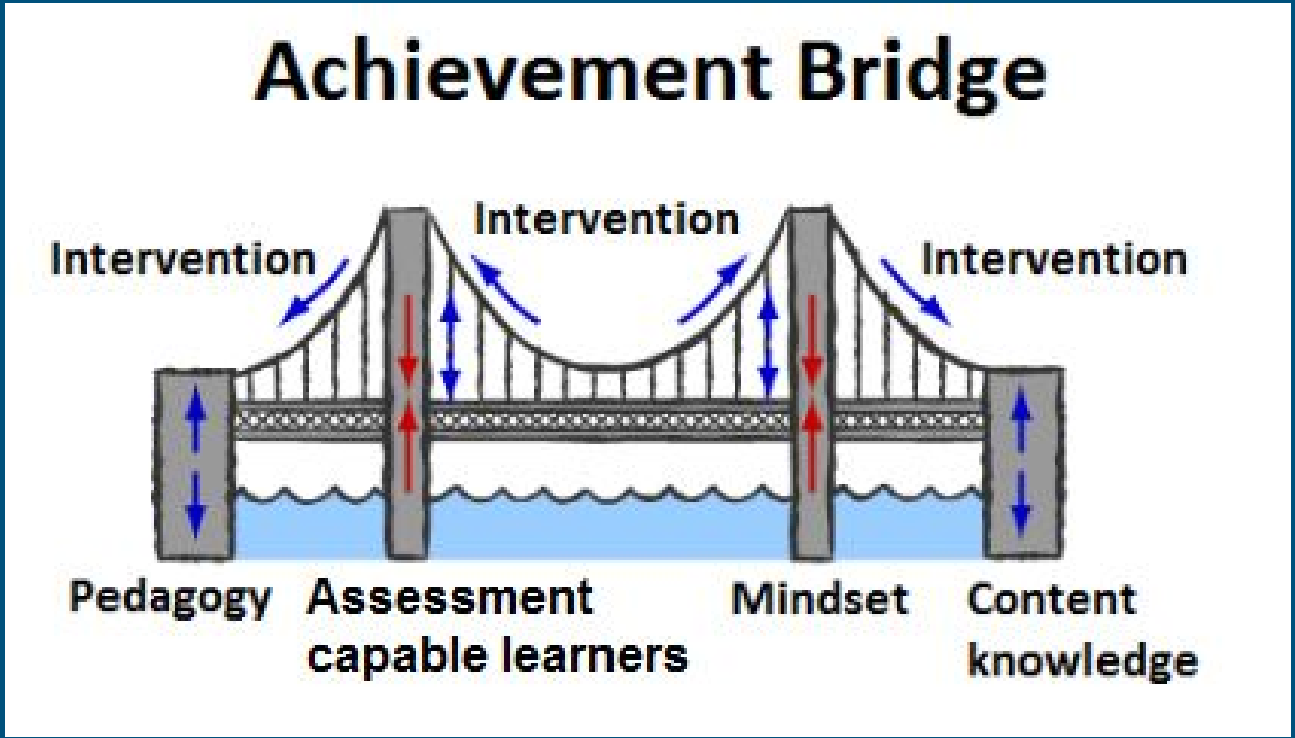
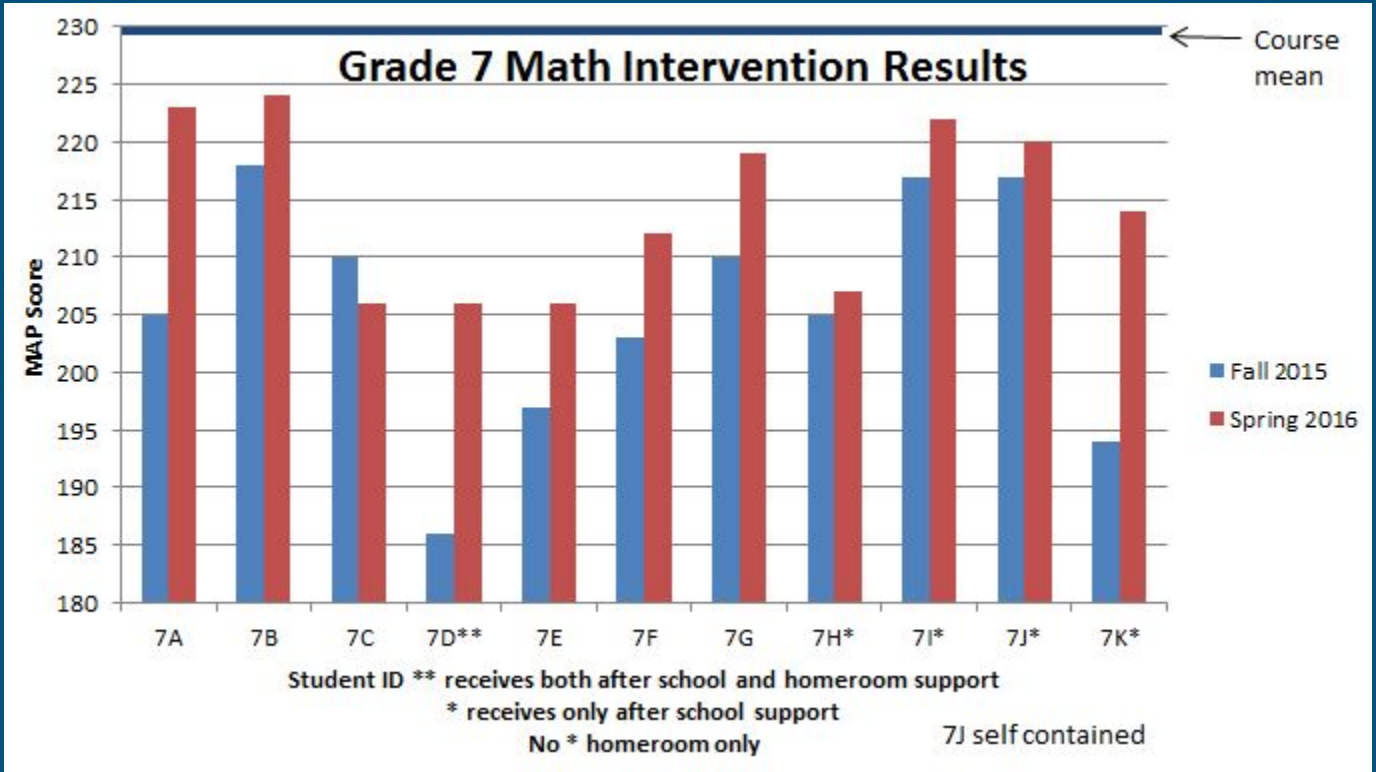


Sample Intervention Results



For Discussion:

- Describe and share other classroom structures that ensure students “get what they need.”

Co-teaching

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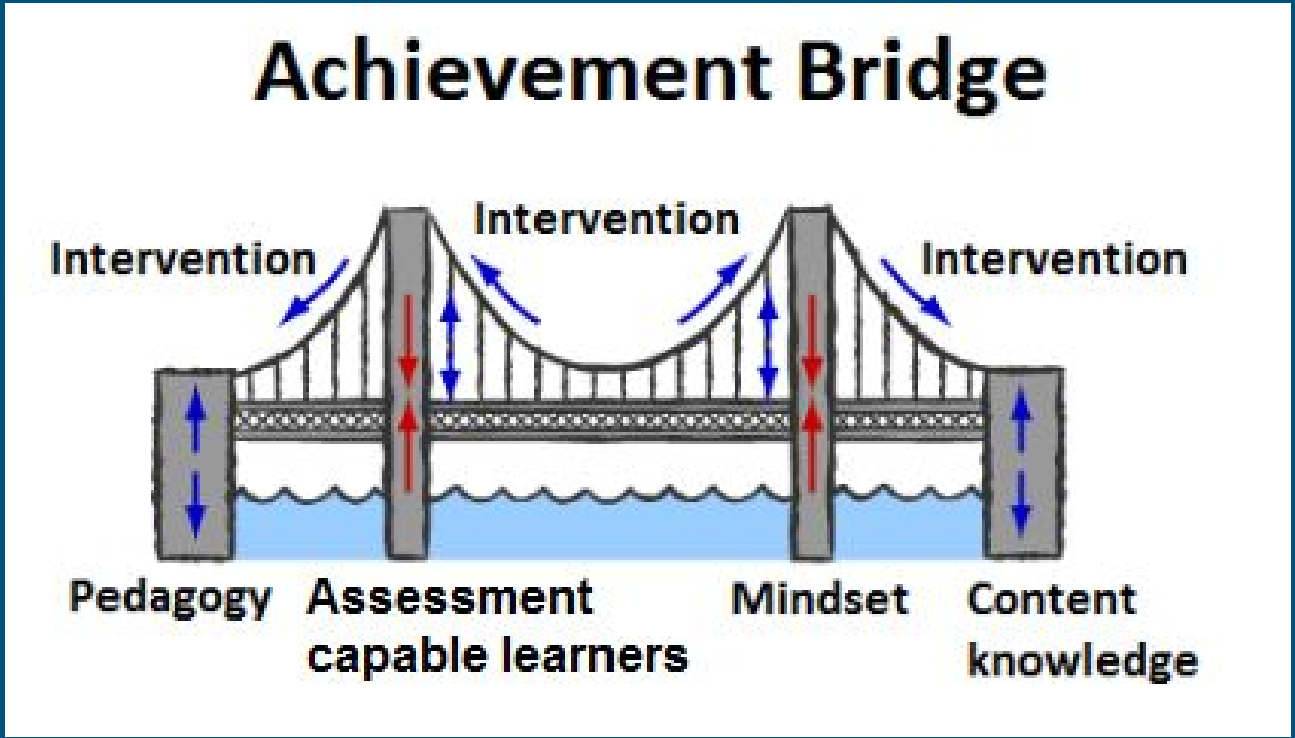

Closing thoughts

Reflecting on our model

- Mindset shift from fixed to growth takes time
- Structure relies on voluntary student commitment
- Continuous teacher collaboration is necessary

Questions?

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