Promoting a Positive Math Identity

Module 3

Kernels of Practice to Promote Positive Math Attitudes

Classroom Practices to Promote a Positive Math Identity, Module 3 of 3

Note. These materials were produced for the Idaho State Department of Education and the Idaho Regional Mathematics Centers and were presented on August 14, 2019 at the Idaho Council of Teachers of Mathematics conference.

REL NORTHWEST
Regional Educational Laboratory

Fizz Buzz

- If a number contains or is divisible by 5 say “Fizz” instead of the number
- If a number contains or is divisible by 7, say “Buzz” instead of the number
- If a number contains or is divisible by both 5 and 7, say “Fizz Buzz” instead of the number

REL NORTHWEST
Regional Educational Laboratory

Training series progression

Module 1

The importance of math identity for math success

- Build knowledge of what math identity is and why it is important for math success

Module 2

Building the math environment (2 parts)

- Learn how to create a classroom environment that supports a positive math identity

Module 3

Kernels of practice

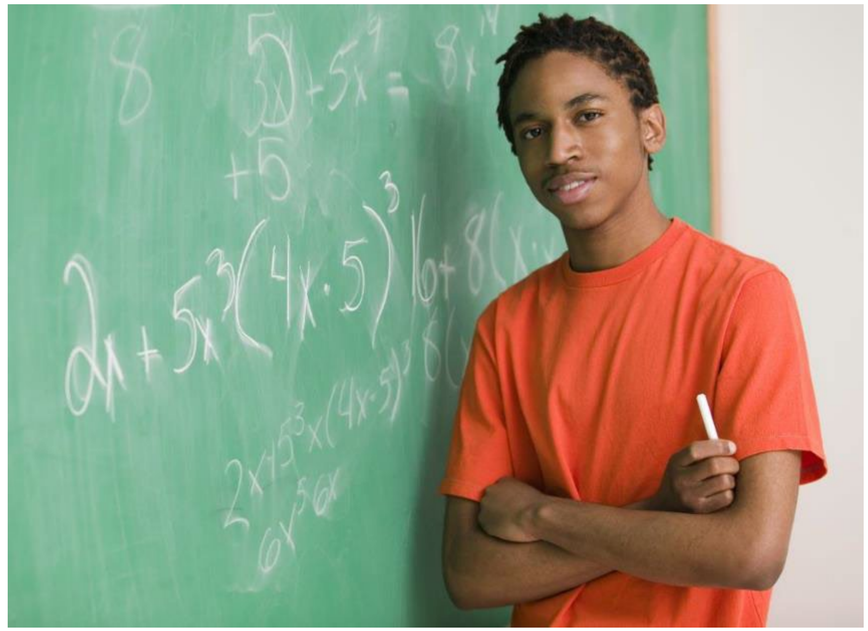
- Learn how to implement targeted activities that promote a positive math identity

REL NORTHWEST

Module 3 learning objectives

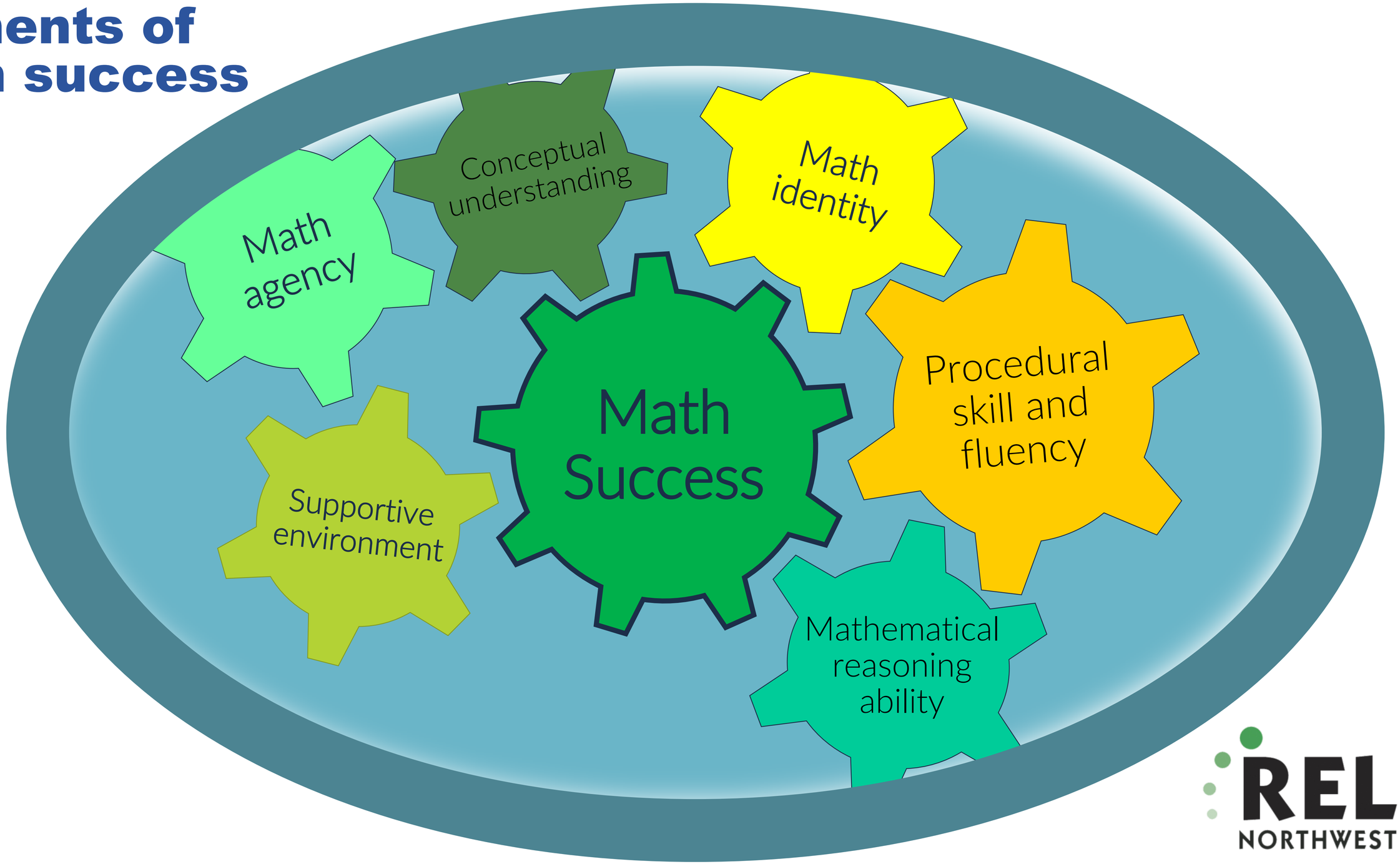
By the end of this session, you will be able to:

- Understand how short “kernels of practice” can be incorporated into current teaching strategies
- Implement activities to improve students’ math identity in your classroom
- Adapt activities presented to fit the needs of your students



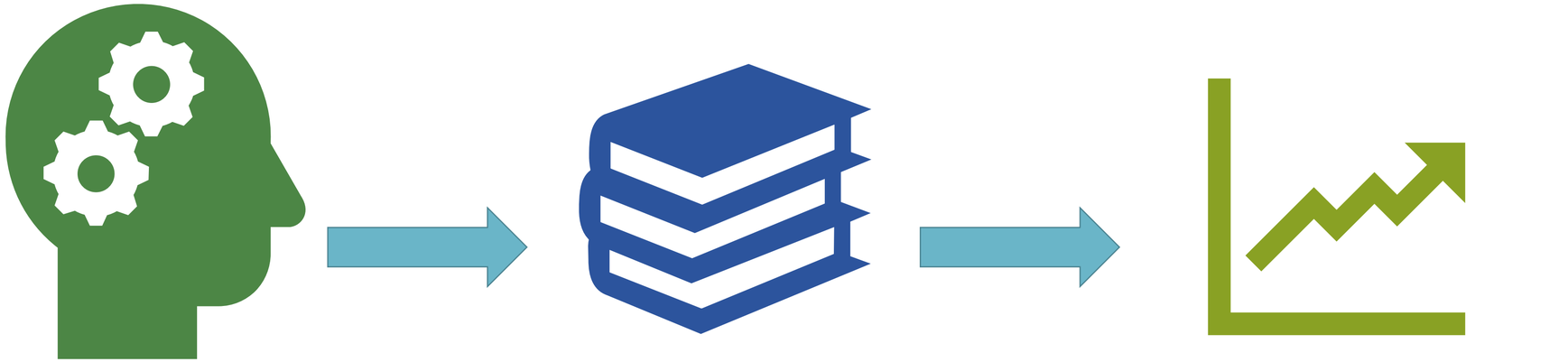
REL NORTHWEST

Elements of math success



REL NORTHWEST

Math identity and agency critical for math success



Key aspects of math identity

Sense of belonging

- Feeling like an accepted, valued, and legitimate group member

Growth mindset

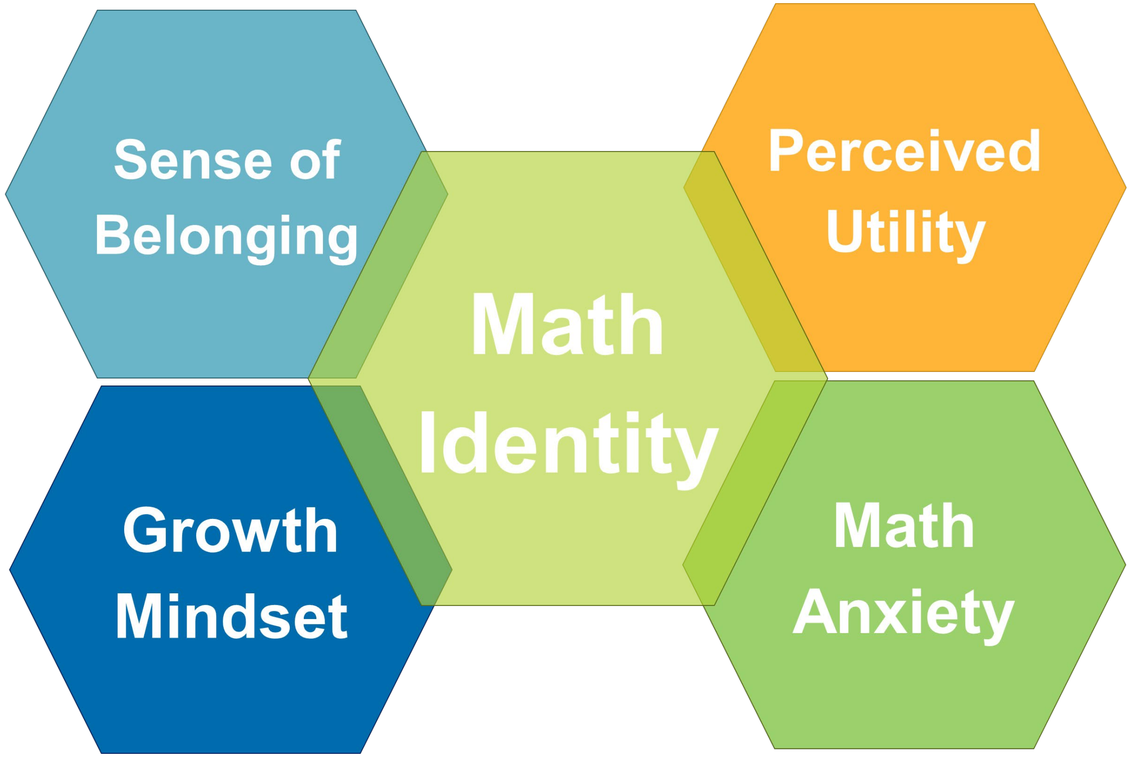
- The belief that intelligence and ability can be developed with effort, strategies, and support

Perceived utility

- Belief that math is useful, worthwhile, and relevant to life outside of school, now and in the future

Math anxiety

- Feeling apprehensive, tense, and fearful about situations involving math

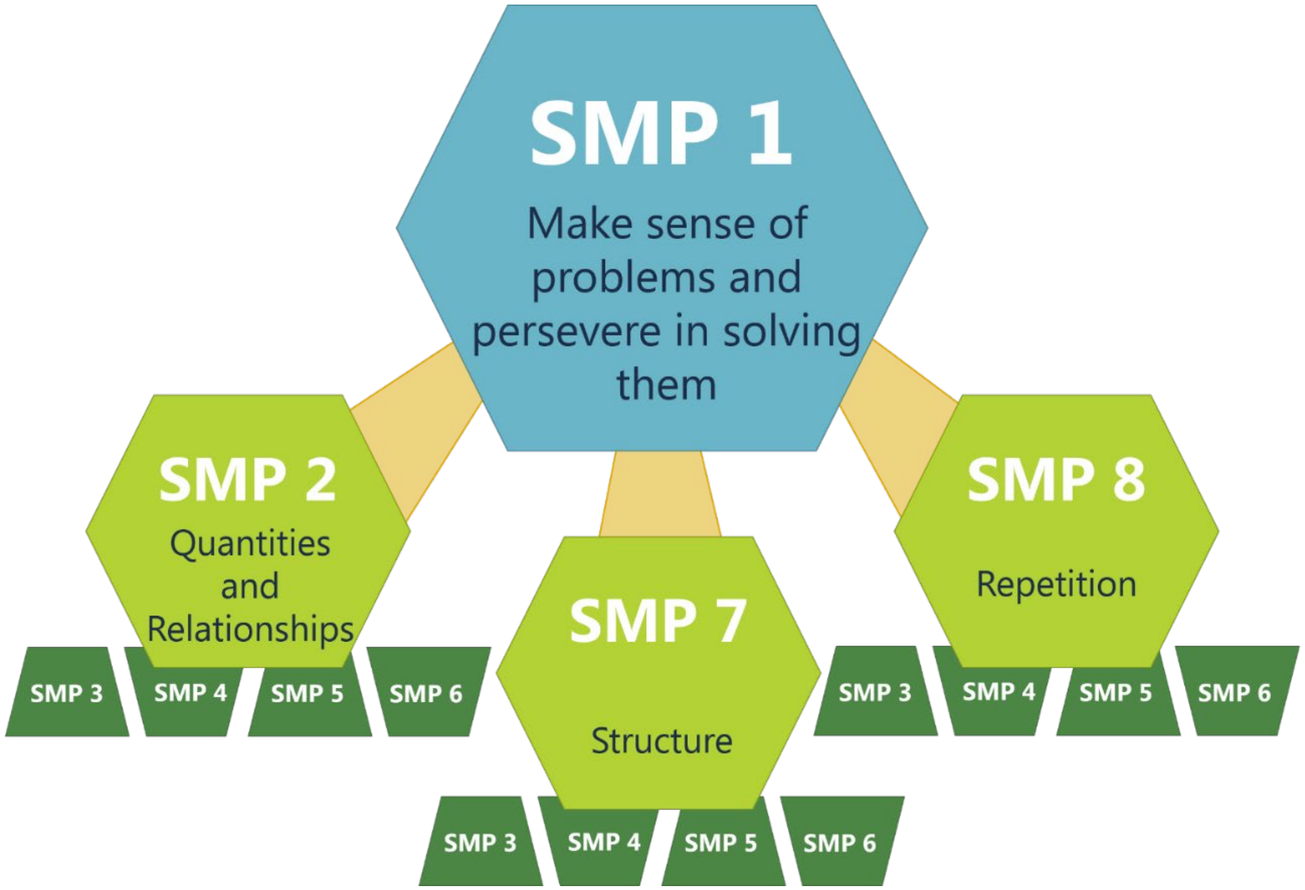


REL NORTHWEST

Connections with the Standards for Math Practice

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.



REL NORTHWEST

Content source: Common Core State Standards Initiative, n.d. ; Kelemanik, Lucenta, & Creighton, 2016

Kernels of practice

What is a psychological “intervention”?

Students perceive the same classroom environment differently based on their past experiences, beliefs, and identity. This shapes students’ experiences and outcomes at school.

- Brief psychological interventions can lead to lasting improvement in student achievement.
- Interventions identify a psychological process that harms an outcome and aims to change the process.

Intervention = Kernel of Practice

REL NORTHWEST

Content source: Cohen & Garcia, 2014; Walton, 2014; Walton & Wilson, 2018

How do kernels affect outcomes?

"Kernels" of practice: low-cost, targeted strategies (as opposed to comprehensive shifts in classroom practices), designed to reshape how students make sense of and view the environment or themselves

Interpersonal interventions

- Change how students see or relate to others
- Change the classroom cues and messages to be identity-affirming for all students'

Intrapersonal interventions

- Change how students see themselves
- Reframe students' negative thoughts and feelings

REL NORTHWEST

Content source: Jones, Bailey, Brush, & Kahn, 2017

Summary of evidence-based kernels

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes		✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Summary of evidence-based kernels: Interest interviews

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes		✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Interest interviews

Dr. Crystal Jones
@drcrystaljones

there's a huge difference between "all are welcome" and "this was created with you in mind".

2:48 PM · Mar 17, 2019 · Twitter for iPhone

Image source: Jones, 2019

REL NORTHWEST

Interest interviews

Students perform better and learn faster when given personalized problems, especially when the problems are difficult and are for students identified as struggling in math.

Typical problem:

- A particular assembly line in an automobile company plant can produce thirteen cars every hour.

Problem based on student interests:

- A recent video blog that you posted on YouTube gets thirteen hits every hour.
- Your favorite restaurant, Steak ‘n Shake, sells thirteen caramel pretzel shakes every hour.

Relevant factors
- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Walkington, 2013; Walkington, Sherman, & Howell, 2014

REL NORTHWEST

Interest interviews

Step 1. Assign interview questions for homework.

- This allows students time to think about their answers.

Step 2. Students interview each other in pairs during class.

- Ask students to record each other's answers using a phone or recorder.

Step 3. Students submit interview recordings to the teacher.

Relevant factors
- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Matthews, 2018; Walkington, 2013; Walkington, Sherman, & Howell, 2014

REL NORTHWEST

Interest interviews

You now have rich, student-generated data to use in your instruction throughout the year!

Use this data to personalize learning:

- Create powerful examples
- Facilitate discussions
- Connect math with students' lives and interests
- Foster a sense of belonging in the math classroom

Relevant factors

- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Matthews, 2018; Walkington, 2013; Walkington, Sherman, & Howell, 2014

REL NORTHWEST

Interest interviews

You now have rich, student-generated data to use in your instruction throughout the year!

Only do it if you plan to use it!!

Relevant factors
- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Matthews, 2018; Walkington, 2013; Walkington, Sherman, & Howell, 2014

REL NORTHWEST

Interest interviews

Sample interview questions

- What is your favorite thing to do in your free time?
- What's something you're saving up for or that you'd really like to buy? How much does it cost and how do you plan to save the money to buy it?
- What's something you're really good at outside of school? How do you use numbers during this activity?
- Where is a place you'd really like to visit?
- Tell me about the last time you used math in your everyday life outside of school.

Relevant factors
- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Matthews, 2018; Walkington, 2013; Walkington, Sherman, & Howell, 2014

REL NORTHWEST

Interest interviews

How could you rewrite this problem to incorporate your partner's interests?

Nathan's dog weighs 72 pounds. Nathan's dog weighs three times as much as Brian's dog. What is the combined weight of Nathan and Brian's dogs?

Relevant factors
- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

REL NORTHWEST

Summary of evidence-based kernels: Honor mistakes

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes		✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Honor mistakes as part of the learning process

Why honor mistakes?

A classroom culture that normalizes struggling and honors mistakes as part of the learning process may alleviate some pressure highly math-anxious students feel.

REL NORTHWEST

Content source: Finlayson, 2014; Turner et al., 2002; Walton & Cohen, 2007

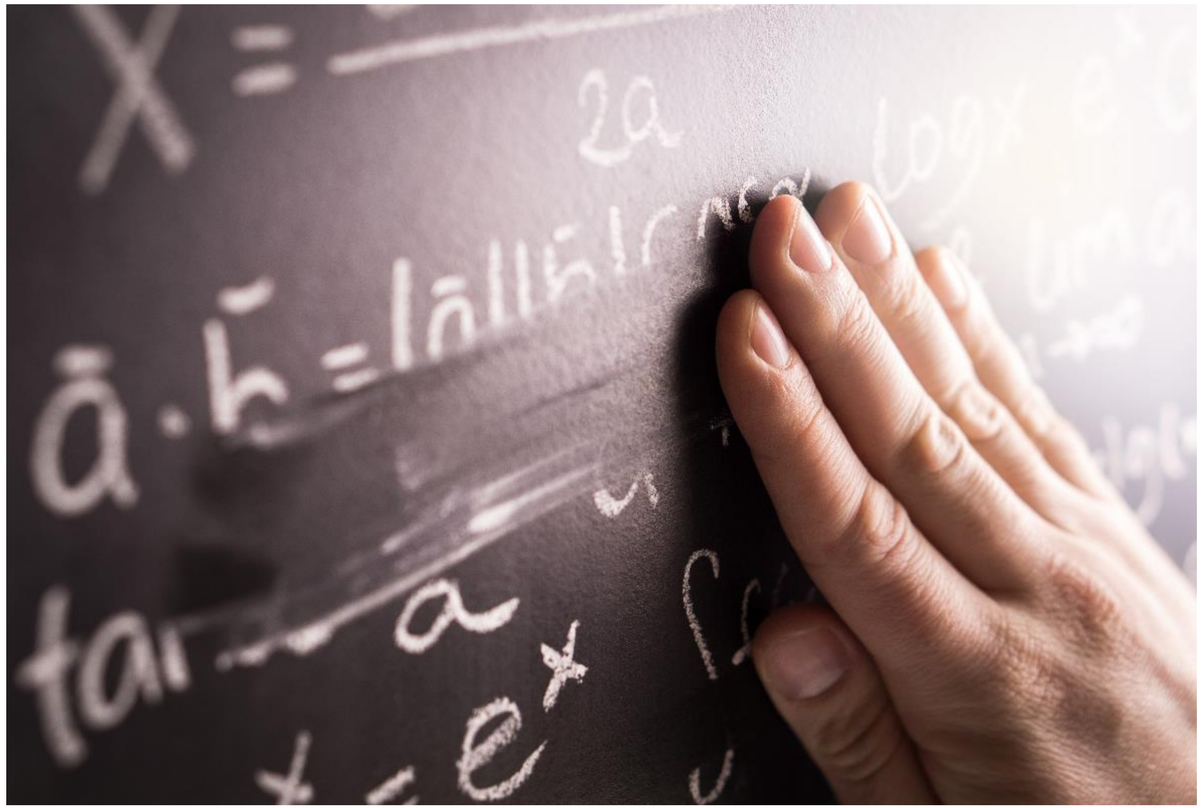
Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Project for Education Research that Scales, 2015a

Inverted test activity

1. Give students a test/assignment completed by a fictitious student. This test will have several incorrect answers.
2. Have students correct the test. Ask them to identify the mistakes and explain how they would approach or solve the problems differently.

REL NORTHWEST
Regional Educational Laboratory at Education Northwest



Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Ransom, 2015

Mistakes Game

1. Have students complete a set of problems independently.
2. Put students into groups. Each group is assigned one problem to present to the class.
3. During the presentation, each group must make (at least) one intentional mistake in its solution.
4. The rest of the class listens to the group's presentation and tries to find the mistake(s).

REL NORTHWEST
Regional Educational Laboratory at Education Northwest

My Favorite ‘No’

1. Have students complete a warm-up problem at the beginning of class and write their solution on an index card.
2. Collect the index cards and sort them into yes’s (correct answers) and no’s (incorrect answers). As you sort, look for your favorite incorrect answer that will highlight the concept you are teaching.
3. Display your favorite incorrect answer, so everyone can see the student’s work.
4. Begin by talking about what was right about the response. This way, the student whose work it is sees that there is something good in their work.
5. Then, use the mistake as an opportunity to clarify the student’s misconceptions. Ask the class to identify where the student made the mistake and to explain how to fix it.

Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Project for Education Research that Scales, 2015b

REL NORTHWEST

Decide and Defend:
Routines for Reasoning

SMPs

Interpret the Work

Decide

Draft

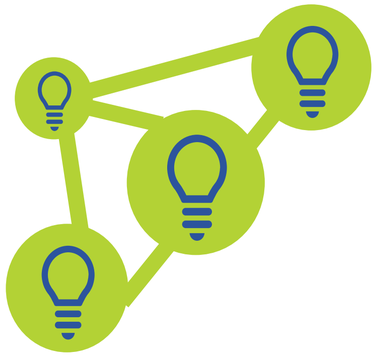
Defend

Reflect on Learning

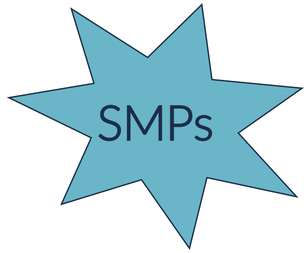
Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Fostering Math Practices, n.d.; Kelemanik et al., 2016

REL NORTHWEST



How does Decide and Defend support and build on the SMPs?



Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Common Core State Standards Initiative, n.d.; Kelemanik et al., 2016

REL NORTHWEST

Group brainstorm

How could you use sentence frames or sentence starters to foster a classroom discussion around common mistakes?

Summary of evidence-based kernels: Math role models

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes		✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Self-relevant role models

Daniel OtherBull grew up on the reservation. He spent most of his time playing with his friends and doing his schoolwork. Daniel went to middle school and high school on the reservation. In high school, he worked hard to earn good grades and joined many school clubs. During his last year of high school, Daniel applied to several colleges and was accepted to his top choice. Because of his good grades and involvement in school clubs, the university gave Daniel a scholarship to pay for his education. Daniel graduated from college in 4 years.

Relevant factors

- ✓ Belonging
- Mindset
- Anxiety
- Utility

Content source: Covarrubias & Fryberg, 2015

Discussion

How can you adapt this activity to focus on belonging and math?

How can you adapt this activity to use with your students?

REL NORTHWEST

Break

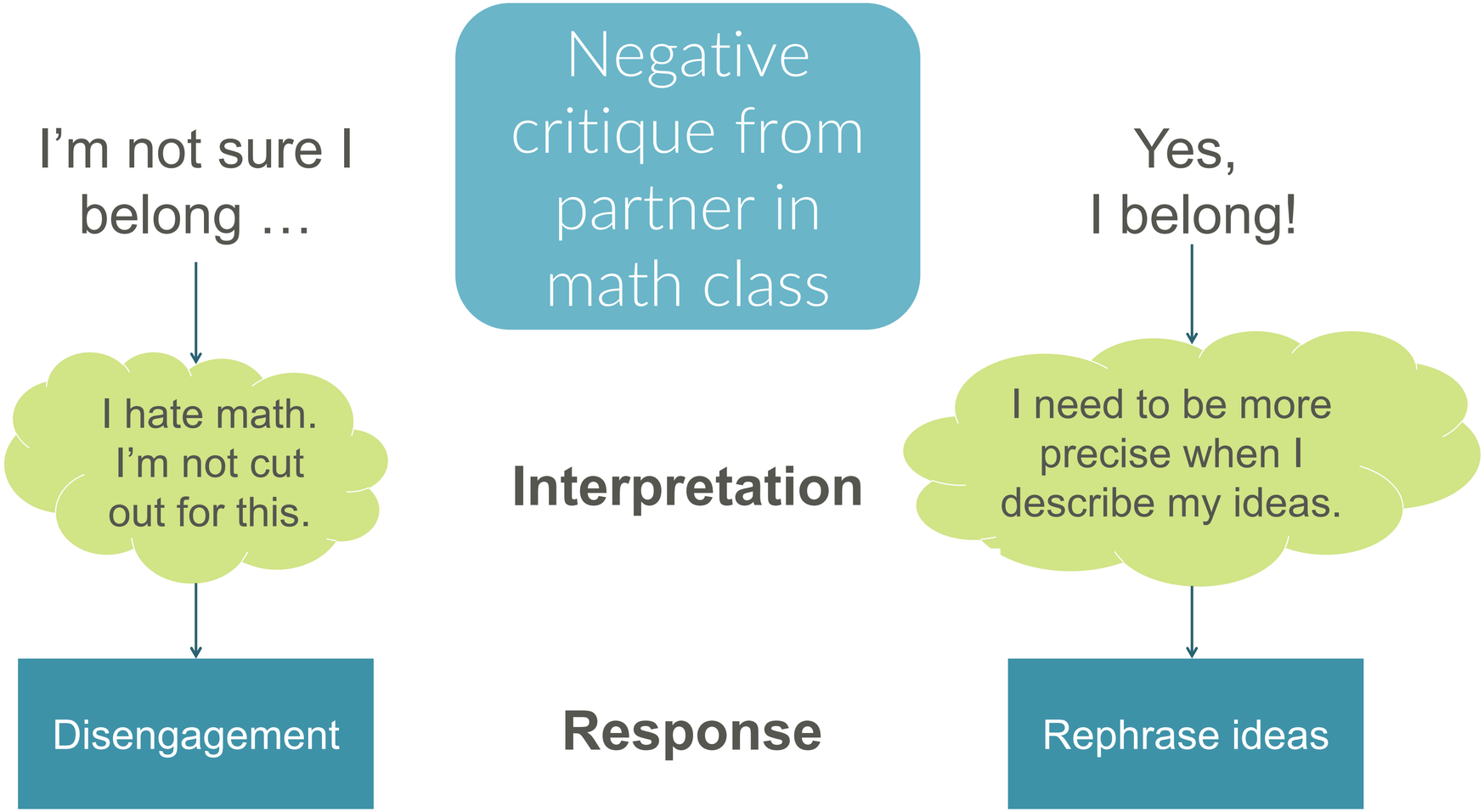
REL NORTHWEST
Regional Educational Laboratory at Education Northwest

Summary of evidence-based kernels: Normalize uncertainty

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes	✓	✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

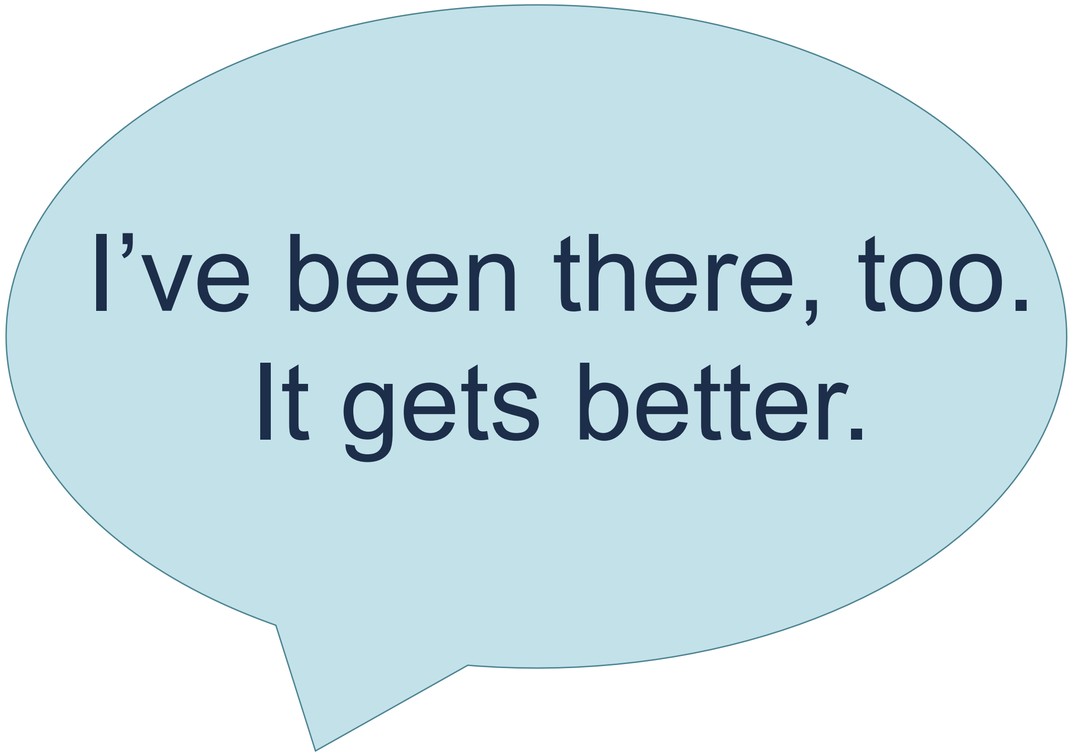
Do I fit in intellectually?



REL NORTHWEST

Normalizing uncertainty activity

Help students frame setbacks and anxieties about belonging as **common** and **transitory** instead of proof that they don't belong.



Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Walton & Cohen, 2007

REL NORTHWEST

Normalizing uncertainty activity

Reflective reading and writing exercise:

Part 1: Students hear first-person stories from more advanced students that convey that it's **typical to worry** about belonging and **normal to struggle** in school (regardless of race, gender, or other background characteristics), and that over time these concerns fade.

Authenticity is important!

Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Walton & Cohen, 2007

REL NORTHWEST

Example message

When I started pre-algebra, I felt like I was in way over my head. It seemed like nothing in class was making sense at first. And I had a really hard time asking for help, because I had always done pretty well in math and I didn’t want my teacher to think I was dumb. But after I got a D on the first quiz, I finally asked my friend if he wanted to study together. That really helped. I felt better when I realized he was having a hard time, too. Eventually I started to tell myself, “This is hard, but that’s okay. It’s meant to be!” So my advice is don’t feel bad for admitting there’s a lot left to learn. And don’t be afraid to ask for help. You will get stuck and you will need the help.

Normalizing uncertainty activity

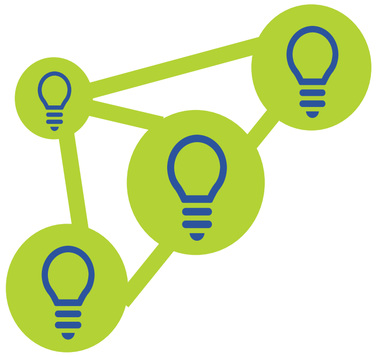
Reflective reading and writing exercise:

Part 2: **Saying-is-believing**: Writing exercises give students the opportunity to internalize the message.

Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Walton & Cohen, 2007

REL NORTHWEST



Normalizing uncertainty

SMPs

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Relevant factors
- ✓ Belonging
- ✓ Mindset
- ✓ Anxiety
- • Utility

Content source: Common Core State Standards Initiative, n.d.

REL NORTHWEST

Discussion

What do you like about the activity?

What might you have to adapt to make it useful?

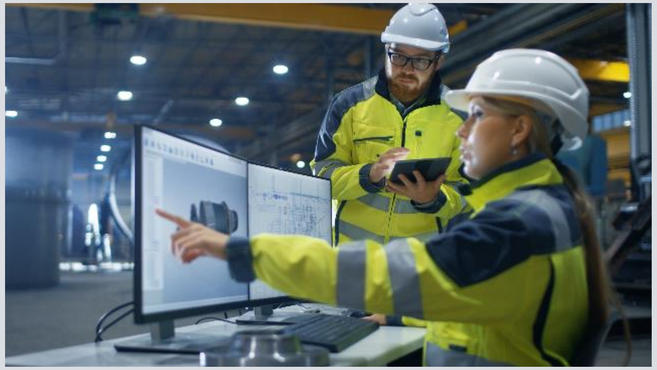
REL NORTHWEST

Summary of evidence-based kernels: Utility reflection

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes	✓	✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Perceived utility



	A	B	C	D	E	F	G	H
1	**Family Budget Planner**							
2	http://www.vertex42.com/ExcelTemplates/family-budget-planner.html							
3								
4	Starting Balance	1,500						
5	Total Income	4,352	4,360	4,365	4,370	4,380	4,380	4,380
6	Total Expenses	3,925	3,925	3,910	3,905	3,895	3,890	3,920
7	NET (Income - Expenses)	427	435	455	465	485	490	460
8	Projected End Balance	1,927	2,362	2,817	3,282	3,767	4,257	4,717
9								
10		JAN	FEB	MAR	APR	MAY	JUN	JUL
11								
12	INCOME							
13	Wages & Tips	4,200	4,200	4,200	4,200	4,200	4,200	4,200
14	Interest Income	112	120	125	130	140	140	140
15	Dividends	40	40	40	40	40	40	40
16	Gifts Received							
17	Refunds/Reinbursements							
18	Transfer From Savings							
19	Other							
20	Other							
21	Other							
22	Total INCOME	4,352	4,360	4,365	4,370	4,380	4,380	4,380
23								
24	HOME EXPENSES							
25	Mortgage/Rent	987	987	987	987	987	987	987
26	Electricity	85	85	85	85	85	90	120
27	Gas/Oil	100	100	85	80	70	60	60
28	Water/Sewer/Trash	100	100	100	100	100	100	100
29	Phone	120	120	120	120	120	120	120
30	Cable/Satellite	98	98	98	98	98	98	98
31	Internet	45	45	45	45	45	45	45

When students reflect on the utility of math, they show:

- ✓ Greater utility value of math for daily life, future careers, and future life
- ✓ Increased math self-concept
- ✓ Increased effort in math
- ✓ Increased math achievement

REL NORTHWEST

Content source: Brisson et al., 2017; Gaspard et al., 2015

Perceived utility activities

How can you guide students to understand how math is relevant to their lives?

- Discuss math utility with your students.
- Showcase older students who use math in their jobs.
- Incorporate hands-on activities that focus on relevant and engaging problems.

Relevant factors
- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Brisson et al., 2017; Gaspard et al., 2015

REL NORTHWEST

Math utility

SMPs

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Relevant factors

- ✓ Belonging
- • Mindset
- • Anxiety
- ✓ Utility

Content source: Common Core State Standards Initiative, n.d.

REL NORTHWEST

Discussion

What strategies can you use to guide student reflection on math utility?

REL NORTHWEST

Bring parents into the conversation!

REL NORTHWEST

Bring parents into the conversation!

- ✓ More conversations with parents about course choices, educational plans, and the importance of math and science
- ✓ More math and science courses completed
- ✓ More elective math courses
- ✓ Improved math and science ACT scores
- ✓ Increased STEM interest and career pursuits
- ✓ Increased number of college STEM courses

Relevant factors

- Belonging
- Mindset
- Anxiety
- ✓ Utility

Content source: Choices Ahead, n.d.; Harackiewicz et al., 2012; Rozek et al., 2017

REL NORTHWEST

Bring parents into the conversation!

- Encourage parents to communicate the utility value of STEM topics to their children
- Give parents advice on how best to communicate utility value
- Provide parents with resources and materials to aid these discussions:
  - Making Connections brochure
  - Choices Ahead weblinks: http://choicesahead.wceruw.org/Default.aspx

Relevant factors
- Belonging
- Mindset
- Anxiety
- ✓ Utility

Content source: Choices Ahead, n.d.; Harackiewicz et al., 2012; Rozek et al., 2017

REL NORTHWEST

Bring parents into the conversation!

Design your “elevator pitch” about positive math identity

- What topics of math identity will you cover?
- What information will you include?
- How could you guide parents to reflect on their own math identity?

REL NORTHWEST

Summary of evidence-based kernels: Focused breathing

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes	✓	✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Practice and teach mindfulness

Mindfulness is a focused awareness on the present, without judgment, to calmly attend to the present state.

Research shows that mindfulness can have benefits for both teachers and students.

Relevant factors
- Belonging
- Mindset
- ✓ Anxiety
- Utility

Content source: Brunyé et al., 2013; Khng, 2016; Shobe, Brewin, & Carmack, 2005

REL NORTHWEST

Focused breathing practice

Mindfulness in practice

Video source: Digital Promise, n.d.

Summary of evidence-based kernels: Emotion regulation

Focus	Kernel	Key Aspect(s) of Math Identity Affected			
		Belonging	Growth Mindset	Perceived Utility	Math Anxiety
Interpersonal	Interest interviews	✓		✓	
	Honor mistakes	✓	✓		✓
	Math role models	✓		✓	
Intrapersonal	Normalize uncertainty	✓	✓		
	Utility reflection			✓	
	Focused breathing				✓
	Emotion regulation				✓

REL NORTHWEST

Emotion regulation exercises

- ✓ Improved exam performance for students from lower-income backgrounds
- ✓ Percentage of students from lower-income backgrounds who failed the course was reduced by 21 percent
- ✓ Students were more likely to re-appraise their test anxiety as adaptive at a later point in time

Relevant factors

- Belonging
- Mindset
- ✓ Anxiety
- Utility

Content source: Jamieson, Peters, Greenwood. & Altose (2016)

REL NORTHWEST

Discussion

How would you incorporate focused breathing or emotion regulation into your classroom?

What other calming or mindfulness techniques have you used or seen that might be helpful for easing math anxiety?

REL NORTHWEST

Final reflection

1. *Reflect on your thinking during the session on ways to apply the key concepts.*
2. *For each identity aspect, select a kernel of practice that you think is most relevant for your classroom.*
3. *Determine a topic/standard that would lend itself to utilizing the kernel of practice. Generate notes on how/when you may explicitly implement this kernel within your instruction.*

REL NORTHWEST
Regional Educational Laboratory at Education Northwest

About REL Northwest

REL Northwest partners with practitioners and policymakers to use data and evidence to help solve educational problems that impede student success. We do this by:

- Conducting rigorous research and data analysis
- Delivering customized training, coaching, and technical support
- Providing engaging learning opportunities

REL NORTHWEST

Contact Us

REL Northwest at Education Northwest
101 SW Main Street Suite 500
Portland, OR 97204-3213

ies.ed.gov/ncee/edlabs/regions/northwest

@relnw

1.800.547.6339

REL NORTHWEST

Content References

- Brisson, B. M., Dicke, A., Gaspard. H, Häfner, I, Flunger, B, Nagengast, B., & Trautwein, U. (2017). Short Intervention, Sustained Effects: Promoting Students' Math Competence Beliefs, Effort, and Achievement. *American Education Research Journal, 54(6),* 1048 – 1078. DOI: 10.3102/0002831217716084
- Brunyé, T. T., Mahoney, C. R., Giles, G. E., Rapp, D. N., Taylor, H. A., & Kanarek, R. B. (2013). Learning to relax: Evaluating four brief interventions for overcoming the negative emotions accompanying math anxiety. *Learning and Individual Differences, 27,* 1–7.
- Choices Ahead (n.d.). *Making connections: Helping Your Teen with the Choices Ahead.* Retrieved from http://choicesahead.wceruw.org/Default.aspx
- Cohen, G. L. & Garcia, J. (2014). Educational Theory, Practice, and Policy and the Wisdom of Social Psychology. *Policy Insights from the Behavioral and Brain Sciences, 1(1),* 13 – 20. DOI: 10.1177/2372732214551559
- Common Core State Standards Initiative. (n.d.). *Standards for Mathematical Practice.* Retrieved from http://www.corestandards.org/Math/Practice/
- Covarrubias, R. & Fryberg, S. A. (2015). The Impact of Self-Relevant Representations on School Belonging for Native American Students. *Cultural Diversity and Ethnic Minority Psychology, 21(1),* 10 – 18. DOI: http://dx.doi.org/10.1037/a0037819
- Finlayson, M. (2014). Addressing math anxiety in the classroom. *Improving Schools, 17(1),* 99 – 115. DOI: 10.1177/1365480214521457
- Fostering Math Practices. (n.d). *Decide and Defend.* Retrieved from http://www.fosteringmathpractices.com/decide-and-defend/
- Gaspard, H., Dicke, A., Flunger, B., Brisson, B. M., Häfner, I., Nagengast, B., & Trautwein, U. (2015). Fostering Adolescents' Value Beliefs for Mathematics With A Relevance Intervention in the Classroom. *Developmental Psychology, 51(9),* 1226 – 1240. DOI: http://dx.doi.org/10.1037/dev0000028
- Harackiewicz, J. M., Rozek, C. S., Hulleman, C. S., & Hyde, J. S. (2012). Helping Parents to Motivate Adolescents in Mathematics and Science: An Experimental Test of a Utility-Value Intervention. *Psychological Science, 23(8),* 899 – 906. DOI: 10.1177/0956797611435530
- Jamieson J. P., Peters B. J., Greenwood E. J., Altose A. J. (2016). Reappraising stress arousal improves performance and reduces evaluation anxiety in classroom exam situations. *Social Psychological and Personality Science, 7,* 579–587.
- Jones, S., Bailey, R., Brush, K., & Kahn, J. (2017). *Kernels of Practice for SEL: Low-Cost, Low-Burden Strategies.* Retrieved from https://www.wallacefoundation.org/knowledge-center/Documents/Kernels-of-Practice-for-SEL.pdf

Content References

- Kelemanik, G., Lucenta, A., & Creighton, S. J. (2016*). Routines for Reasoning: Fostering the Mathematical Practices in All Students.* Portsmouth, NH: Heinemann.
- Khng, K. H. (2016). A better state-of-mind: Deep breathing reduces state anxiety and enhances test performance through regulating test cognitions in children. *Cognition and Emotion, 31(7),* 1–9.
- Matthews, J. S. (2018). On Mindset and Practices for Re-Integrating “Belonging” into Mathematics Instruction. TeachingWorks working papers. http://www.teachingworks.org/images/files/TeachingWorks_Matthews.pdf
- Project for Education Research that Scales. (2015a, March 24). *Inverted test*. Retrieved from https://www.mindsetkit.org/practices/xrsBxcAgzTictvnb
- Project for Education Research that Scales. (2015b, March 24). *My Favorite No.* Retrieved from https://www.mindsetkit.org/practices/zQmqDhMHzTictvnb
- Ransom, B. (2015, April 9). *Mistake Game* [Web log post]. Retrieved from https://www.mindsetkit.org/practices/BUU1z2fT2eVy8YZ1
- Rozek, C. S., Svoboda, R. C., Harackiewicz, J. M., Hulleman, C. S., & Hyde, J. S. (2017). *National Academy of Sciences, 114(5),* 909 – 914. DOI: https://doi.org/10.1073/pnas.1607386114
- Shobe, E., Brewin, A., & Carmack, S. (2005). A simple visualization exercise for reducing test anxiety and improving performance on difficult math tests. *Journal of Worry & Affective Experience, 1(1),* 34–52.
- Turner, J. C., Midgley, C., Meyer, D. K., Gheen, M., Anderson, E. M., Kang, Y., & Patrick, H. (2002). The Classroom Environment and Students’ Reports of Avoidance Strategies in Mathematics: A Multimethod Study. *Journal of Educational Psychology, 94(1),* 88 – 106. DOI: 10.1037//0022-0663.94.1.88
- Transforming Education. (2017). *Mindfulness Toolkit.* Retrieved from https://www.transformingeducation.org/mindfulness-toolkit/
- Walkington, C. (2013). Using Learning Technologies to Personalize Instruction to Student Interests: The Impact of Relevant Contexts on Performance and Learning Outcomes. *Journal of Educational Psychology 105(4),* 932–45.
- Walkington, C., Sherman, M., & Howell, E. (2014). Personalized learning in algebra. *Mathematics Teacher, 108(4),* 272-279. doi:10.5951/mathteacher.108.4.0272

Content References

- Walton, G. M. (2014). The New Science of Wise Psychological Interventions. *Current Directions in Psychological Sciences, 23(1),* 73-82. DOI: 10.1177/0963721413512856
- Walton, G. M. & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology, 92, 82-96.*
- Walton, G. M., & Wilson, T. D. (2018). Wise interventions: Psychological remedies for social and personal problems. *Psychological Review, 125*(5), 617-655. http://dx.doi.org/10.1037/rev0000115

Video References

- Digital Promise. (n.d.). Teens Using Mindfulness and Moving in the Classroom [Video] (Licensed under Creative Commons 4.0). Retrieved from https://lvp.digitalpromiseglobal.org/content-area/math-7-9/strategies/mindfulness-activities-math-7-9/summary

Image References

- Jones, C.. (2019, March 17). Retrieved from https://twitter.com/drcrystaljones/status/1107398449962647552