

Teaching Students to be Resilient Problem Solvers

Using the New Three Rs and Positive Failure to transform our math culture

Math and You

Solve one of the following problems

- Mary has ten dollars and Sam also has some money. Taking away 2 of Sam's dollars leaves him with as many as Mary has. How many dollars does Sam have?
- $\frac{2}{5}$ of a number equals 12. What is the number?
- Jane's savings are two thirds of Amy's savings. Together they save 450 dollars. How much money did Jane save?
- The ratio of Simon's to Ramon's marbles is 3:5. Simon has 42 marbles. Simon buys 8 marbles more. Find the new ratio of Simon's to Ramon's marbles.
- Sam has $\frac{3}{7}$ the amount of marbles that Lisa has. Sam gives Lisa $\frac{1}{6}$ of his marbles. What will be the new ratio between the number of marbles of Sam and Lisa?
- If Amy gives 10 of her stamps to Robin, she will have four times as many stamps as Robin. If she gives 20 of her stamps to Robin, she will have three times as many stamps as Robin. How many stamps do they have in all?

Discussion questions:

- Which problem did you choose to solve?
- What did you notice about your problem-solving strategy?
- How did you feel about these problems?
- What did you think about math as a student?
- Has that changed now?
- What is your favorite part of teaching math?
- What do you look forward to when teaching math?
- Does anything make you anxious when teaching math?

Numeracy in your classroom

- What does your typical math block look like?
- Who does most of the thinking during your math block?
- How would your students describe math in your classroom?
- What does problem solving look like in your classroom?
- Do your students have the opportunity to be independent thinkers in math?

The Importance of Math and Numeracy

“Without numbers, we cannot send rockets roaming the solar system, nor could we build bridges, exchange goods, or pay our bills. In some sense, then, numbers are cultural inventions only comparable in importance to agriculture or the wheel. But they might have even deeper roots,” (Dehaene, 1997).

Math is a Sense

What is numeracy?

Why does numeracy matter?

The New Three Rs

Reasoning

Resilience

Responsibility

Your thoughts

- How do you see the New Three Rs fitting at our school?
- Do they work with any of our existing models and structures?
- Which one stands out to you?
- Which one do you think our students are doing already?
- Which one do you think our students need the most practice with?
- How can we integrate them into our school culture?

Failure

How do we treat failure

Importance of failure

Failure and learning

Shifting our mindset

Chaos

Core words for learning

Words to describe learning in my classroom:

My top four words to describe learning:

Connection

Wonder

Play

Student Choice

What next?

Next steps

Teacher Resources

<http://ntimages.weebly.com/photos.html>

<https://www.understood.org/en/articles/number-sense-what-you-need-to-know>

<https://nrich.maths.org/10712>

<https://www.youcubed.org/tasks/>

<https://www.center.edu/MathTheirWay.shtml>

High-Yield Routines for Grades K-8

Choral Counting & Counting Collections

Amanda's Blog

<https://blog.missyonger.com/>

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