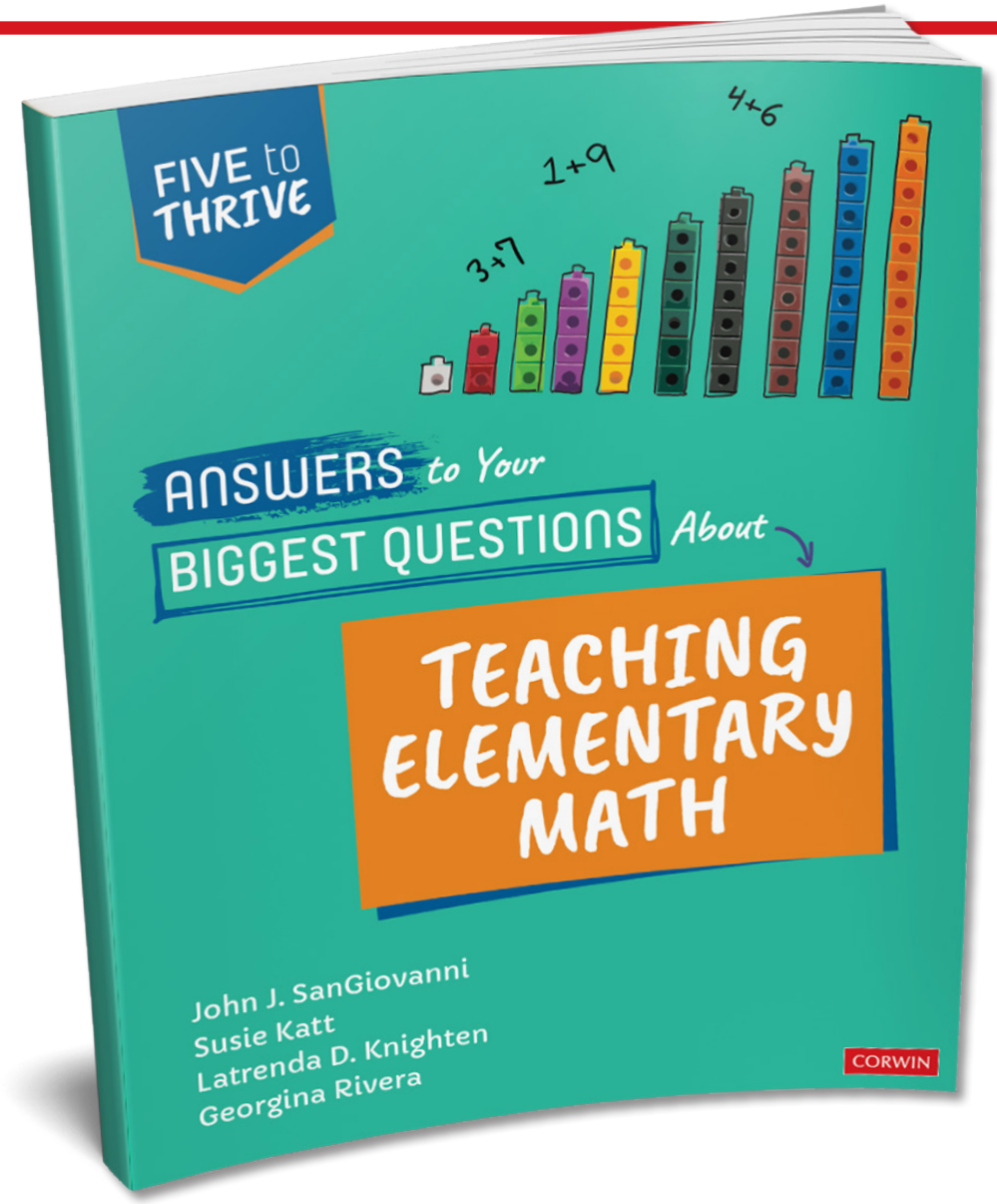

Thank you

FOR YOUR INTEREST IN CORWIN

Please enjoy this complimentary excerpt from Answers to Your Biggest Questions About Teaching Elementary Math, by John J. SanGiovanni, Susie Katt, Latrenda D. Knighten and Georgina Rivera.

LEARN MORE about this title!

CORWIN

How Do I Nurture Students' Math Identity?

In school, many of us saw ourselves as either math people or not. *Mathematical identity* is how one sees oneself as a doer or learner of mathematics (Aguirre et al., 2013; Anderson, 2007; Boaler, 2002; Grootenboer & Zevenbergen, 2007). Understanding your own math identity is important because it affects how you approach teaching mathematics and how you view your students. Your students have math identities too, which has a major impact on how well they perform in mathematics and how they view themselves in relation to their peers in the class. Student experiences and interactions at school, in the community, and at home shape their identities. As a teacher, you must nurture your students' math identities so that they can grow and learn as mathematicians.

Agency and Identity

Identity influences motivation. Motivation drives action. And action creates outcomes. So then, attending to identity is a critical step to helping each and every learner succeed in mathematics.

HOW DO I BEGIN TO NURTURE MATH IDENTITY?

Start with your own identity by reflecting on your own math experiences and how you view yourself in math spaces. Know that your math identity has changed as you have. Think about who you are today.

> I NEVER THOUGHT I WAS A MATH PERSON, BUT THE MORE I LEARN AND DO MATH, I REALIZE I AM!
>
> —THIRD-GRADE TEACHER

Here are some questions you may ask yourself that may help you reflect and your students reflect, followed by other ways to nurture identity:

Question	Strongly disagree	Disagree	Agree	Strongly agree
I see myself as a math person.				
I enjoy learning mathematics.				
I feel confident when doing math.				
I am comfortable talking about mathematics with others.				
I see value in different ways of doing math.				
I feel like my ideas are valued in our math community.				
I see mathematicians who look like me and learn about their contributions.				
My family had a positive experience learning mathematics.				
I know what to do when I am struggling with a mathematical problem.				

LEARN EACH OF YOUR STUDENTS' MATH STORIES

No matter what grade level you teach, each of your students has a unique math story. They have had experiences that have helped shape who they are as learners. Having your students capture their own math stories is a way to gain deeper insights into who they are. A student's math story won't be written in one day. Think about how you might have students write their story over time, maybe adding to their story throughout the year.

Many elementary students will be challenged to sit down and write a long, detailed story about themselves all at once. Consider other fun, creative ways to help your students capture their stories over time. Perhaps they can create scrapbook pages that each tell a part of their math story. You can use brief and targeted journal prompts (see Math Journals, p. 163) that ask students to write about their math strengths or math "superpowers." Students can write about the good things that happened to them in mathematics or times when they enjoyed mathematics. Or they might draw pictures or show examples to illustrate their own perceptions of why it is important to learn mathematics.

Keep in mind that identities are shaped outside school too. These influences play an important role in how young mathematicians grow, develop, and perceive mathematics. Ask students to interview family members to see what they think about mathematics and how they use it. Ask them what they know about people who use mathematics in the world.

BUILD MEANINGFUL RELATIONSHIPS WITH YOUR STUDENTS

To help students build a positive math identity, you have to spend time getting to know your students and their families. You have to build and maintain meaningful relationships. That means "getting-to-know-you activities" are not just for the first day or week of school. You also have to encourage them, support them, and help build their identity (see Math Identity, p. 15) throughout the year. One of the most important skills you will need is listening, which helps build trust and understanding. Trust is built through sharing stories and getting to know your students.

For this you need to do the following:

1. Share your math story with students, and frame mathematics in a positive way. Refrain from saying that you were never good at mathematics. And if you say you didn't enjoy it, tell them why and how you're working to help them understand it so that they can enjoy it more than you did.
2. Interview your students to learn about their math history so that you know what things they enjoy and what situations make them uncomfortable, so you can avoid them.
3. Have everyone create identity boards, including yourself. By sharing interests, hobbies, and passions outside mathematics, you can incorporate them into your math instruction.

Sources: Clothes Rack by iStock/LightFieldStudios, Reading a Book by iStock/Alina Rosanova, Bicycle by iStock/sompong_tom, Jewelry by iStock/Ayman-Alakhras, Flowers by iStock/Mumemories, Travel by iStock/thitivong, and Beach by iStock/Anastasia Deriy.

4. Give students opportunities to do math on their own first to see what they think about skills, concepts, and problems, so that you can build on it and (eventually) show them your way of doing the math.
5. Position students as thinkers, doers, and authors of ideas by making their thinking the focus of discussions. Do this before you share your thinking or potential explicit instruction.
6. Use student surveys to gather and use feedback from them about what is working and not working for them in the classroom.
7. Communicate and engage with families (see Engage Families, p. 45).

KNOW THAT REPRESENTATION MATTERS

For students to see themselves as doers of math, they must see people like them both doing math and being successful in STEM careers. Representation matters! Students learn through stories and visual representations, so showing only one group of people as doers of math diminishes their view of who can and cannot do math. This means that as you work with students, you should be intentional about

- including math literature by diverse authors;
- highlighting math contributions from people who represent diverse backgrounds;
- spotlighting how mathematics is used in diverse, authentic ways; and
- inviting community speakers to tell their math stories and showcase how they use mathematics.

Great Resources

Jones, S. M. (2019). *Women who count: Honoring African American women mathematicians.* American Mathematical Society.

MONITOR STUDENT PROGRESS

Student identities are dynamic. Identities change and grow over time with more and more experience. Posing journal prompts and surveying students at different points along the year will help you see how they are changing. In fact, you can give the same beliefs survey at the beginning, middle, and end of the year or at the end of each quarter. Use the information you gather from these activities to change instructional approaches. Give feedback about their reflections and help them see positives when challenges and setbacks occur. Students' math performance significantly shapes their identity as well. This means that you will have to frequently monitor their progress in a variety of ways beyond summative assessment (see Find Out What Students Know, p. 168) and celebrate their learning and their growth (see Celebrate Progress, p. 191).

Notes