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Description automatically generated with medium confidenceHow Thoughts and Emotions Affect Learning

**Tip Sheet**



**What to do:** As you read this information, highlight strategies you think might help your students. The examples focus on math, but you can use the strategies in other contexts, too. Try them the next time you encounter a stressful or unpleasant situation to see which ones work best for you. Once you’re comfortable with the strategies, share them with your students so they can use them to interrupt negative thinking.

**Why it matters:** Stressful or unpleasant experiences can reinforce negative self-talk like “I must not be smart enough” or “I’m just not good at this” or “I hate doing this.” When it comes to math, this internal dialogue can feed math anxiety and lead to math avoidance. This can lead to poor academic performance and students missing out on future career opportunities.

Scientists have used brain imaging to study what happens in your head if you have math anxiety. If you’re taking a timed test and you have math anxiety, you may have trouble accessing math facts you already know. Being locked out of that stored knowledge causes you to feel stressed and frustrated. You might think, “What’s wrong with me?” Your focus shifts from the math problem to the battle happening inside you. The buzzer sounds, and you know you performed poorly. Your confidence erodes each time this happens.

# Self-Talk

This is a way to replace negative internal chatter with positive messages to reset your brain and body so you can stay calm and focus.

***To use this strategy:***

Give yourself reassuring messages. For example, right now you can tell yourself, “Remember, no one expects me to be a math teacher when I finish reading these ideas. I’m doing this because I care about my students. If I remember and use just one good idea, it could make a difference. Plus, there are tools I can use if I need them.” Teach your students about self-talk and provide opportunities for practice.

# Growth Mindset

This is the belief that people don’t have a certain “fixed” amount of math ability that can’t be changed. People can “grow” their abilities through effort and persistence.

**Yes, I Can!**

See the **Nurture a Growth Mindset** tool for more about this strategy.

***To use this strategy:***

Don’t just tell students, “You can do it!” and assume this one-time message will result in a growth mindset. Instead, use words and actions every day to send the message “You can do it!” Also enlist school-day math teachers and local math enthusiasts to help students build conceptual understandings and grow their “math muscles” over time.

# Metacognition

This literally means “thinking about thinking.” It’s the ability to examine how you process thoughts and feelings, which leads to greater awareness of how you think and learn.

***To use this strategy:***

Don’t just give a lesson on “how to think about your thinking” and assume students are now ready to do it. Instead, use direct instruction to teach students what science says about how people learn and how anxiety affects working memory. Also enlist school and community partners like psychologists and counselors to teach proven strategies students can use to influence their own thoughts and feelings.

During homework time and tutoring sessions, you can also use **math talks** — a structured format where students are supported as they discuss their problem-solving strategies, the reasoning behind their work, questions they may have, and various approaches to math and problem-solving.

# **Sweet Spot**

You’ve found the sweet spot when a math challenge, game, puzzle, or other task is neither too hard nor too easy, but “doable” with effort and the right kind of supports (for example, sufficient time and, in some cases, access to a calculator). Working in the sweet spot builds students’ math muscles. It helps students deal with stress by providing the right conditions and support for success without lowering expectations, which deprives students of learning opportunities.

**Watch the Movie**

[Teaching Habits That Promote Productive Struggle in Math](https://www.youtube.com/watch?v=HAd8n5x0LxU) is a 2-minute video from the MIND Research Institute that explains productive struggle.

***To use this strategy:***

Don’t give students the answer if they can’t solve a challenge, game, or puzzle right away. It’s OK for students to engage in **productive struggle**. That means they don’t solve the challenge, game, or puzzle with ease, but they don’t struggle to the point of extreme frustration and anxiety either. Struggle within the sweet spot, followed by success, produces new understandings and confidence. To find the sweet spot for each student, you may need to offer a variety of activities — or a single activity with various levels of difficulty.

*Let’s not forget that the little emotions are the great captains of our lives*

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Description automatically generated*and we obey them without realizing it.* — Vincent van Gogh

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