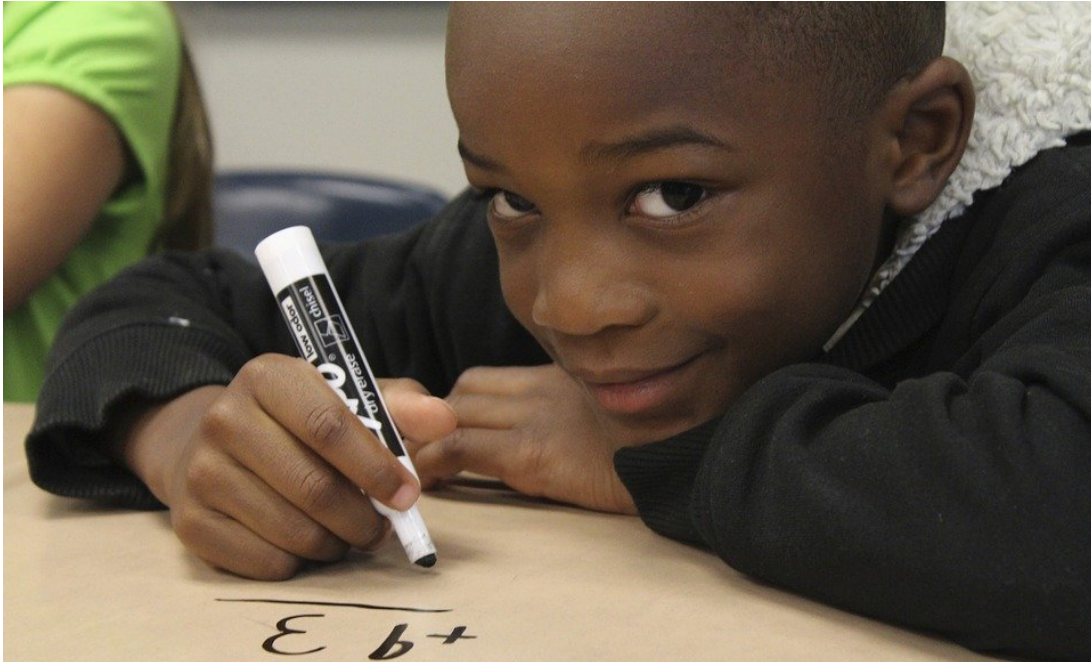# Erase K-8 "Math Dread" with 7 Powerful Tools for Lasting, Massive Motivation

Have you ever had that experience where students groan out loud when they discover it is time for math? Perhaps they blurt out, "Math – not again!" Or maybe you can see a physical transformation in their body from happy to dread as they slump their shoulders walking in to your math class.

I'm talking about those moments when teaching math to your K-8 students feels more like pulling teeth. You push, pull, twist, bend, do a cartwheel, whatever – and they still don't budge. But you are not a dentist, and you sure aren't paid like one. Whether it is trying to get them to complete an assignment, participate in an activity, or contribute to a class discussion, some days it feels like you are doing all the pulling.

When your efforts to motivate students fall short do you feel defeated, exhausted, and perhaps even frustrated with your students and yourself? Have you ever experienced how your student's level of motivation impacts your own motivation?

The Brain's Natural Motivators

Instead of pushing, pulling, twisting and cartwheeling to get students to do things during math, you'll find tremendous success (and relief) by simply tapping into the brain's natural motivation systems. If you've heard me speak at a conference or to your staff, you already know the brain's three hardwired motivators that universally drive motivation. Tapping into these in every lesson is a game-changer for math teachers. If you aren't aware of the brain's hardwired motivators, email me now so we can find a

way to get you up to speed. All math teachers need to know them, and how to use them.

This special report is an addition to those BIG 3 motivators. While those 3 motivators stay constant throughout life, we have other motivational drivers that shift as we age. What motivates a 17-year-old will likely not get the job done with at 7-year-old.

What you'll find below are additional motivators that are effective specifically amongst K-8 students. These early years are marked by brain developments that come with unique motivational drivers.

To keep everyone's motivation levels WAY UP, check out these 7 tools to transform your math instruction from mundane to motivating. With these tools, you'll experience the magic and joy of learning. You'll feel energized and connected to your purpose of being a teacher.

TOOL #1: More Opportunities to Be "Right"

WHY THIS WORKS: Ever heard a student exclaim, "I already knew how to do that" or "That's what *I* said"? At this stage of development, students love being right. So, it comes as no surprise that students are motivated by feelings of **success** (Ryan & Deci, 2013). When students KNOW they have actually learned something, or done something right, the natural reward system of the brain releases dopamine. You might have heard of dopamine in discussions around addiction. That's because dopamine drives someone to come back for more. If it is a drug, they want more. If it is a feeling of successfully counting by 5s all the way to 100, they want more.

HOW THIS WORKS: Create as many opportunities for students to recognize and celebrate "being right". The more frequent, the better. Instead of waiting to check all their answers to the station problems at the end, build in a "lift the flap" system to check their answer at each station. If their answer doesn't match they can try again, ask their partner for help, or ask the teacher. When it is a match, students can shout a celebratory phrase, "Yes! I was right!" or a simple 3-step "stomp" routine to acknowledge their success. Another option is to put the answer key (or partial answer key) somewhere in the room so students can go and check their "right-ness" as often as they want.

TOOL #2: Foster Belonging in a Math Community

WHY THIS WORKS: If you want to see how significant a sense of belonging (Cillessen & Rose, 2005) is to this age group, watch the demeanor of a child being told, "I am not inviting you to my birthday party." Students want to "fit in" wherever they are – with their friends, at the park, or in math. Too many students dread math because they don't feel they fit in. This is especially true of girls (Deiglmayr, Stern, & Schubert, 2019), ethnic

minorities (Lokhande & Müller, 2019), and students from poverty (Pearman, 2019). When students don't feel they belong, they see themselves as an outsider, and motivation plummets. On the flip side, students who feel they belong exhibit higher levels of effort and motivation. How do ensure your underrepresented math students feel like they belong?

HOW THIS WORKS: To foster a greater sense of belonging, explicitly tell students "I'm so glad you are here – this is where you belong." Students consistently show higher levels of motivation when they believe their teacher cares about them personally (Urhahne, 2015). Post pictures of mathematicians that "look like them" in your classroom, and talk about them. For female STEM role models, check out the free downloadable posters available at: https://www.amightygirl.com/blog?p=23086. For Latinx and Hispanic math role models, search the extensive collection at: http://lathisms.org.

TOOL #3: Boost Student Sense of Security

WHY THIS WORKS: When students feel any level of threat, learning is immediately compromised. The perception of threat activates the amygdala, which takes over cognitive functions as the brain addresses the more pressing need of security. How big of a challenge is this in math? It is reported that 25% of students experience math anxiety (Kucian, McCaskey, Tuura, & von Aster, 2018). When students feel safe in class they are more likely to ask for help, a trait of high-achieving students (Ryan & Shin, 2011). The older students get, the less likely they are to feel safe to ask for help. I know you middle school teachers are up for the challenge!

HOW THIS WORKS: Begin by creating a safe place for students to make mistakes. Limit the "cold-calling" strategy to ask for student answers unless students have had an opportunity to check with a neighbor or their group to feel more secure. Acknowledge when you make a mistake yourself, and move on. Create policies in your class to erase any potential for teasing or bullying. Share success stories of previous students who had huge fears of math that thrived in your class. Better yet, invite that student back to your class to talk to your students. Say the words out loud, "You are safe here. I guarantee you will succeed at math this year." Then follow through on your promises.

TOOL #4: Give the Right Amount of Autonomy

WHY THIS WORKS: It's unlikely you'll have a class full of students who love being told what they have to do, when they have to do it by, without any level of personal choice. Students are motivated by choice (Mabbe, Soenens, De Muynck, & Vansteenkiste, 2018). Their perception of **autonomy** is, indeed, a strong motivator (Lazowski & Hulleman, 2016; Cheon & Reeve, 2015). But how much autonomy is too much? In a personal conversation with leading motivation researcher and co-creator of Self-Determination Theory, Richard Ryan informed me that 2-3 options is ideal. Less than

that creates no perception of choice; more than that is overwhelming to a child and can lead to cognitive load – essentially an overwhelmed working memory (Paas & Ayres, 2014).

HOW THIS WORKS: Instead of telling students to do all 20 math problems, let them pick which 15 problems they want to do (and leave the rest blank!), then watch their motivation soar. Let them design their own math problem that will show up on the next quiz (ie. a long division problem with a triple digit dividend and no remainder), then watch them get so excited to see *their* math problem on the next assessment. Let them choose their partner, which operation they want to practice more during math mania time, etc. The options are endless (pun intended).

TOOL #5: Foster a Strong Math Identity

WHY THIS WORKS: Students who claim an identity of "I am just not a math person" are setting themselves up for a rough ride through the motorways of mathematics. Reinforcing it by frequently stating, "I'm not good at math" only makes it worse. When an action feels in alignment with your identity, even a difficult task feels more meaningful and important (Oyserman & Destin, 2010). So, how do help students adopt a math-positive identity?

HOW THIS WORKS: One powerful way to foster a stronger math identity in younger students is to use a daily math affirmation (or creed). Repeating these words daily (and as a class) can literally rewire the brain to adopt more of an "I can" attitude toward math (Tod, Hardy, & Oliver, 2011; Wang, Shim, & Wolters, 2017). Here are a couple you can modify to fit your students:
For K-3: I have super math skills. I am good at math, and get better every day. My friends and teacher are here to help. I know I have what it takes.
For 4-8: I am a math master. I have the power to think, work, and improve every day. These numbers and letters don't know who they are up against. I am a math master!

TOOL #6: Give Students More Power

WHY THIS WORKS: Have you ever heard a PreK-3rd grade student exclaim, "I can do it myself!"? Whether it is zipping up their jacket, or discovering how to make a 2-D shape that transforms into a square pyramid, young learners are driven by a sense of independence. As they transition out of the total dependence of infancy and toddlerhood, the middle childhood years (6-12) are marked by seeking personal power (DelGiudice, 2018). Keep in mind, however, one of their other core drivers is security. So, let them know you are there for them if they need it, and then let them take the wheel.

HOW THIS WORKS: To tap into this motivational driver, students need to feel like they are in charge of some aspect of their learning. Different from making a choice

(autonomy), this motivator is about having all the power. One of the fastest ways to give students a sense of power is through classroom roles and responsibilities. Let a student be in charge of your doc camera, smart board, or whatever tech tool you prefer for the day. Another student can have the power over the music, or writing on the board. If some of those roles seem to threatening for your students, start with roles within their team. Leader, timer, energizer, scribe, etc.

TOOL #7: Make it Social

WHY THIS WORKS: Research supports the idea that students are more motivated when they can interact and feel connected to their peers (Ryan & Deci, 2013). Students who feel socially connected to their classmates are also more intrinsically motivated, have higher levels of cognitive attention (because they aren't consumed with worry about whether their peers like them/will tease them), and ultimately demonstrate higher levels of achievement (Mikami et al., 2017). In addition, having strong social connections improves the level of "brain syncing" occurring in your class, where students and teachers are all on the same page, moving in the same direction (toward high achievement) (Bevilacqua et al., 2019).

HOW THIS WORKS: Unless it is an individual assessment, seek out ways to allow students to work together more often on math. Let them build shapes together, go on a walk and talk review together, create challenging math problems for another partnership together, solve math challenges together. Outside of actually doing math, there is also value in fostering friendships. Have students stand with a partner and share one thing they did over the weekend, a food they like to eat, or movie they like to watch. All efforts to build strong social connections in class will pay off in their math proficiency.

Not every motivation strategy works for every student ALL the time. The more tools you have at your disposal, the greater your chances you'll meet your goal. Pay attention to what works for each student so you can replicate that strategy again. If a particular strategy doesn't work, don't give up. Keep trying until you find the tool that works. Remember, *your* motivation level impacts *your student's* motivation. Stay positive, and be persistent in your worthwhile goal of motivating all your K-8 math students.

WHAT NOW? No one wins when students are bored or discouraged. It is bad for student learning, and just as bad for teacher morale. If you are struggling to boost your math teacher's motivation skills, give them the support *THEY NEED*. High engagement, high energy, with evidence-based tools for math teachers is my professional development expertise. I'd love to help. Contact me at:
< Liesl.mcconchie@gmail.com>

Citations

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