MESSAGING RECOMMENDATIONS OVERVIEW

ELEVATE STUDENT AGENCY: Messaging should elevate student agency and center students' emotions and experiences, which are critical to their math learning.

ACKNOWLEDGE REAL-WORLD CONTEXT: Empathize with students, teachers, and parents by acknowledging and naming the real-world challenges they face.

ACKNOWLEDGE EMOTIONS IN MATH LEARNING: Normalize the emotional nature of learning math, and provide examples of how negative emotions can be reinterpreted.

MAKE MATH RELEVANT: Deliver credible and motivational messaging on the relevance, value, and utility of higher-level math for students' lives, desired careers, and futures.

AFFIRM THE VALUE OF MISTAKES: Normalize making mistakes as an important and valuable part of learning, including learning math.

ENCOURAGE HELP-SEEKING: Build student confidence to seek the help they need to learn math and equip parents and teachers with messaging that supports and encourages students to seek out help.

REFRAME STRUGGLE AND CAPABILITY: Reframe struggle from a sign of lacking capability to a sign of needing support.

REASSESS ASSUMPTIONS: Encourage teachers to reexamine their assumptions about what certain student behaviors mean and the impact of students' negative emotions on their math learning experience.

PRIORITIZE BUILDING RELATIONSHIPS: Show teachers the impact of their relationships with students on math learning, and support teachers to prioritize building relationships in their classrooms.

RECOMMENDATION #1: ELEVATE STUDENT AGENCY

ELEVATE STUDENT AGENCY: Messaging should elevate student agency and center students' emotions and experiences, which are critical to their math learning.

FOR STUDENTS: Position students as active participants in their math learning with messages that:

- Feature peers who describe their own experiences learning math, and how their choices have enabled them to be persistent when math gets difficult.
- Elevate near-peer student messengers (an older student close in age) who have a range of experiences and feelings about math to help students relate more positively and quickly to the message.

Messages about math learning should balance honesty with agency.

- For example, messages should be honest about the aspects of students' math education over which they have little or no control (e.g., the stakes of making a mistake on a test, state-wide testing, a district requirement that they take certain classes to graduate) and also emphasize the parts of their lives over which they do have control (e.g., asking for help from a teacher, finding resources online, getting help from a friend).

FOR TEACHERS: Encourage teachers to be curious and have empathy about students' emotions and experiences learning math, in part by positioning students as critical messengers. You can:

- Share a diversity of first-person student stories that give teachers insight into students' emotional experiences learning math.
- Show teachers the barriers that discourage some students from seeking help and the impact teacher behavior has on students' learning environment.
- Create opportunities for teachers to hear from young people (who are not their own students) about their math classroom experiences to foster empathy and understanding.

FOR PARENTS: Encourage parents to get curious about their child's math learning experience.

- Equip parents with questions they can ask to get their child to share more about their experiences learning math.
- For example, parents can describe steps they took to get their kids to open up about their experiences learning math, and the changes they then took to better support their child's math learning.

Show parents how kids can exercise agency in their math learning.

- Share short stories that center a diversity of choices a student can make to positively impact their learning (e.g., include decisions a student makes every day in math class: asking for and accepting help, seeking or accepting resources, whether to do homework or not, deciding to practice a sport, music, theater, dance, etc.).

RECOMMENDATION #2: ACKNOWLEDGE REAL-WORLD CONTEXT

ACKNOWLEDGE REAL-WORLD CONTEXT: Empathize with students, teachers, and parents by acknowledging and naming the real-world challenges they face.

FOR STUDENTS: Acknowledge the realities students face. Examples reported by research participants include:

- Help is sometimes unavailable when students seek it
- Having a bad math teacher for one or more classes can interfere with math learning
- COVID learning interruptions and knowledge gaps
- Large class sizes/high student-to-teacher ratios
- Pacing of teaching and emphasis on testing and standardized testing outcomes

FOR TEACHERS: Acknowledge the constraints that teachers experience to help reduce their skepticism and make them more open to suggested changes. Some constraints reported by teachers include include:

- Large class sizes
- Students with different levels of math knowledge and language proficiency in the same classroom
- Gaps in learning from COVID-19 pandemic
- Student absences
- Administrative and district pressure and requirements
- Pacing and curriculum requirements
- Emphasis on testing and standardized testing outcomes

FOR PARENTS: Affirm parents' desire to be a "good parent" implicitly or explicitly. Affirm that parents face many challenges, have good intentions, and want to do right by their children.

- Acknowledge that most parents strive to be "good parents," and want to be able to help their children succeed, including finding resources to support their child when learning math gets hard.
- Emphasizing the ways parents can support their child's math learning with other resources, rather than needing to be able to directly help them.

Acknowledge the factors that may influence how parents feel about supporting their child's math learning, including:

- Parents' own experience with learning math and perception of their own math capability.
- The shift to Common Core, and how this makes it more difficult for some parents to help their children learn "new math".
- Adolescent development, and the changes that young people go through physiologically, emotionally, and biologically between 6th and 9th grades.
- Emphasizing the ways parents can support their child's math learning with other resources, rather than needing to be able to directly help them.

RECOMMENDATION #3: ACKNOWLEDGE EMOTIONS IN MATH LEARNING

ACKNOWLEDGE EMOTIONS IN MATH LEARNING: Normalize the emotional nature of learning math, and provide examples of how negative emotions can be reinterpreted.

FOR STUDENTS: Acknowledge that mixed or negative emotions, like feeling frustration, being overwhelmed or being confused around learning math, are normal and shared by others.

- Share near-peer stories in which students describe the emotions they experience learning math.
- Affirm many students' perception that learning math can feel hard and sometimes feels harder than other subjects.

Reframe negative emotions as an indication of a need to seek help and not as an indication of an inability to learn higher-level math.

- Show how peers and near-peers who have had negative emotions learning math have moved from feeling overwhelmed to feeling they can and should get help.

FOR TEACHERS: Encourage teachers to empathize with students' negative or mixed emotional experiences learning math.

- Use stories of peer teachers to show teachers they have a role in helping students reinterpret their emotions.
- Provide teachers with examples of concrete things they can say to students to help them reinterpret their emotions in real-time. For example, teachers may adapt the following statements:
  - *When you're feeling frustrated, confused, or overwhelmed, that's a signal to ask questions and get extra help.*
  - *When you feel lost in class or don't understand, it can be embarrassing to ask for help. Those moments are the best time to get extra support. Even though it's hard, it's important for you to ask for the help you need.*

FOR PARENTS: Help parents reduce their stress and manage their own negative emotions about learning math by showing how they can provide support to their child(ren) without passing down their own negative emotions.

Acknowledge negative emotions and affirm struggle as a normal part of children's math learning process. This can help debunk the notion that some students are naturally good at math and help to reduce parents' stress about their child's math learning. You can do this by:

- Offering suggestions for how to speak with their child about their math learning experiences.
- Pairing messages that address or acknowledge students' negative emotions with messages about higher-level math relevance, student capability, and available resources.

RECOMMENDATION #4: MAKE MATH RELEVANT

MAKE MATH RELEVANT: Deliver credible and motivational messaging on the relevance, value, and utility of higher-level math for students' lives, desired careers, and futures.

FOR STUDENTS: Deliver credible messaging on higher-level math's relevance, value, and utility for students' lives and futures.

- Include examples of relevance that students understand, believe are real, and care about, such as: keeping your career options open; financial literacy; and having greater financial power so you don't get scammed or cheated.

Alleviate heightened stress about learning math by pairing messaging about relevance with messages that show students where and how they can get help, support, and resources.

Use different examples that resonate to different degrees with different young people:

- Examples should show how math is used in that specific instance.
- Examples should include a mix of concepts and applications so that students at different points in their math education can relate.

FOR TEACHERS: Affirm that teachers get asked frequently about the relevance of math and find it challenging to provide answers that students find credible.

- Provide a range of different examples about the relevance of math so that different students have more opportunities to connect (e.g., the immediate relevance of learning higher-level math may resonate more with middle school students compared to career-oriented examples, though it is helpful to use both).

Frame messages about the relevance of math for students as a "toolbox" for teachers, which reinforces the idea that no single example of relevance will work for all students or for all teachers.

Provide examples about the relevance of math connected to contexts students understand, believe are real, and care about.

FOR PARENTS: Share credible examples with parents of how higher-level math is relevant for students' lives, futures, agency, and "adulting." Effective examples for parents about the relevance of math connect to contexts that they and their children understand, and believe are real.

Frame higher-level math as opening more career paths to young people rather than being a requirement for a good career (e.g., "higher-level math helps students have more choices about what they do in their lives.")

DOWNLOAD: How to talk to students about math relevance

RECOMMENDATION #5: AFFIRM THE VALUE OF MISTAKES

AFFIRM THE VALUE OF MISTAKES: Normalize making mistakes as an important and valuable part of learning, including learning math.

FOR STUDENTS: Normalize making mistakes as an important and valuable part of learning.

- Remind students that most people make mistakes when learning something new.
- Draw parallels to learning other subjects or skills, including sports, gaming, music, and other activities that students enjoy and feel positively about.
- Use messages from teachers and near-peers to help ease students' negative feelings about making mistakes.
- Be honest that mistakes carry different consequences in certain contexts, like homework or in the classroom; failing to acknowledge that mistakes on tests are higher stakes can undermine the credibility of the messaging.

Affirm that making mistakes is not a reflection of a student's overall capability or potential but rather an indication that you need more help or support.

- Include messaging that encourages asking questions and seeking support.

FOR TEACHERS: Show teachers how to respond positively when students make mistakes and address negative emotions such as embarrassment or fear that students often experience when they make mistakes.

- Acknowledge mistakes that students — or adults — make as opportunities for learning.
- Model how you can unpack a mistake to learn from it.
- Affirm that making mistakes does not reflect a student's overall capability but rather indicates needing more help or support.
- Acknowledge that some mistakes come with higher stakes than others: mistakes in homework or in the classroom can be learning opportunities, whereas mistakes on tests are more consequential. Not acknowledging these differences can undermine the credibility of the messaging.

Help teachers realize that students need to hear explicit messages that reframe making mistakes as a valuable part of the math learning process. You can:

- Share stories from students describing how they feel when they make mistakes and how teachers respond.
- Include negative experiences, such as a student who feels embarrassed or ashamed about mistakes, to help teachers build empathy for students.
- Include positive experiences, such as a student who feels good when a teacher responds non-judgmentally to a mistake by breaking down the specific steps to solving a problem.

RECOMMENDATION #6: ENCOURAGE HELP-SEEKING

ENCOURAGE HELP-SEEKING: Build student confidence to seek the help they need to learn math and equip parents and teachers with messaging that supports and encourages students to seek out help.

FOR STUDENTS: Encourage students to recognize that asking questions is a valuable part of the learning process and that everyone has questions at some point in their learning.

- Share stories of students who demonstrate and model confidence and have the agency to ask questions in and out of the classroom.

Take the stigma out of asking questions during math learning:

- Convey that everyone needs to ask questions when they are learning new things, with messages such as "questions are part of understanding new ideas."
- Utilize teacher messengers who model supportive responses to students' questions.
- Acknowledge that fear of embarrassment and social anxieties are a normal part of adolescence and may be present for many students.

Share stories of students who asked a question despite their concerns of being embarrassed and had a good experience. Or share instances in which students found ways to ask a teacher for help privately or to ask their peers.

Expand students' perceptions of the places and people who can assist them with learning math.

FOR TEACHERS: Encourage teachers to understand better the barriers to seeking help that many students experience. You can:

- Use student stories or reflection questions to motivate teachers to encourage students to ask questions in the classroom and notice how they may be inadvertently discouraging questions.
- Remind teachers about the realities of students' developmental age.

Guide teachers to feel better equipped to encourage students to seek help by using messaging interventions that:

- Share stories of peer teachers who have successfully created classroom environments where students regularly ask for help.
- Point out the sources students can easily access to seek help (e.g., in school, after school, online, one-on-one at the teacher's desk, etc.)

Motivate teachers to create an environment in which students feel more comfortable asking questions with messaging interventions that highlight stories of other teachers who started more actively soliciting questions in group settings or one-on-one, which took shame and embarrassment out of learning.

FOR PARENTS: Affirm parents' desire to be "good parents" who can help their child learn math, even if the help is not direct support for homework. Build confidence among parents to seek resources and support for their children when learning math feels hard.

Provide parents with lists of resources that include a diversity of options with varying levels of financial cost and time commitment.

DOWNLOAD: Parent Resources for Math Learning

RECOMMENDATION #7: REFRAME STRUGGLE AND CAPABILITY

REFRAME STRUGGLE AND CAPABILITY: Reframe struggle from a sign of lacking capability to a sign of needing support.

FOR STUDENTS: Normalize the experience of struggle while learning math by acknowledging that struggle while learning is a common experience and not inherently a sign that you're bad at something.

Reframe struggle from a sign of lacking capability to a sign of needing support.

- Affirm that persisting through struggle with support is important for building stronger math skills.
- Encourage students to reflect on other parts of their lives that they enjoy (ex: sports, gaming, music, dance, etc.) where they have already demonstrated that they can engage with struggle in positive ways.

Use messengers, including adults and near-peers, who share their own experiences of struggle and describe how they overcame this and what resources helped them. These messengers can validate students' experiences of struggle, model how to reinterpret struggle, and point students toward resources that can help them.

FOR TEACHERS: Encourage teachers to reflect on when and why they determine that some students are unable or less likely to be able to learn higher-level math, like algebra. You can:

- Share stories of peer teachers who describe their own motivations to reconsider how they determine students' capability in the classroom.
- For example, spotlight stories where a teacher shares: when they realized they were assuming specific students could not or would not understand the materials; ignored students who struggle often or don't appear to get math. Then counter this with what led the teacher to question their own behavior, and how small changes helped them to engage with this student differently in order to get them the help they needed.

FOR PARENTS: Motivate parents to encourage their children to persist when learning math gets hard, by elevating three core messages as a package: 1) higher-level math is relevant and valuable, 2) anyone can get better at math with the right support, and 3) effective resources are available.

Tap into parents' existing beliefs about the value of persistence and apply it to learning higher-level math, using messaging that helps parents:

- Share the idea that mistakes are learning opportunities. Make comparisons to learning other skills or even something like exercise (e.g., "If your muscles are sore or you are short of breath, it just means you're challenging your body as you strive to get stronger.")
- Acknowledge negative feelings like frustration, but also try to surface other more positive feelings, like the satisfaction of persisting through something hard and eventually succeeding.

RECOMMENDATION #8: REASSESS ASSUMPTIONS

REASSESS ASSUMPTIONS: Encourage teachers to reexamine their assumptions about what certain student behaviors mean and the impact of students' negative emotions on their math learning experience.

FOR TEACHERS: Encourage teachers to get curious about how students feel about learning math and the connection between student behaviors and student emotions.

You can:

- Help teachers to explore potential alternative reasons for student behaviors in class by reflecting on questions such as:
  - What do I believe confusion and frustration look like in my students?
  - Could this student feel lost or stuck on a problem or a concept or frustrated and overwhelmed, so they have given up?
  - How can I find out if something else is going on for this student?

Provide opportunities for teachers to reflect on how they interpret certain student behaviors.

You can:

- Share stories from students' perspectives that describe the behaviors they do when they feel stressed or overwhelmed, such as doodling, submitting a blank worksheet or test, or talking to another student in class.
- Encourage teachers to reflect on their own assumptions about what these behaviors (above) represent.

RECOMMENDATION #9: PRIORITIZE BUILDING RELATIONSHIPS

PRIORITIZE BUILDING RELATIONSHIPS: Show teachers the impact of their relationships with students on math learning, and support teachers to prioritize building relationships in their classrooms.

FOR TEACHERS: Position building relationships as critical to learning math, an element of math learning that significantly helps students learn higher-level math effectively and successfully.

Leverage teachers' desire to help their students to motivate and encourage teachers to take on and try out interventions. You can:

- Show the power of small changes teachers can make to build and strengthen relationships with students
- Provide a range of small-scale interventions aimed at teachers and share how these interventions have been successfully adapted by other teachers with minimal preparation and time investment.

Show teachers how developing good relationships with students has a positive impact on their math learning and support teachers to prioritize building relationships with students in their classrooms.

You can:

- Tap into the beliefs most teachers have about the importance of belonging and relationships for students' learning.
- Utilize stories from both students and peer teachers to emphasize the importance of building empathy and trust in the classroom, and how once built, trust yields positive learning outcomes.
- Provide examples that match the varied needs and realities of different types of teachers (e.g., new and seasoned), working with different student demographics, in different geographic and political contexts.

DOWNLOAD: Teacher Math Story