

# Sense of Belonging in Math

## Teacher Guide: Normalizing Belonging Uncertainty

Time: 30–40 minutes

Audience: Teachers of students in grades 3–5

### Research Citation

- Lin-Siegler, X., Ahn, J. N., Chen, J., Fang, F. F. A., & Luna-Lucero, M. (2016). Even Einstein struggled: Effects of learning about great scientists' struggles on high school students' motivation to learn science. *Journal of Educational Psychology*, 108(3), 314.
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, 331(6023), 1447–1451.

### Materials and Supplies

- Sample letter (original copy attached)
- Blank sheets of paper
- Pens/pencils for writing (or computers)

### Research Background

- Belonging is about subjective perceptions of acceptance within groups.
- Children's lives are rich with complex social interactions and relationships. Belonging is universally important, and humans are "hardwired" to connect with others.
- A low sense of belonging impacts achievement and can widen achievement gaps. Math is one subject area in which achievement gaps are most persistent.
- Interacting with older students who have been through similar preparation in math can increase performance and enhance feelings of connectedness, because students learn that it's normal to struggle and encounter challenges.
- Students are more motivated to learn when they believe their outcomes can change through effort.
- This is an exercise in which students learn about how older students struggled during their own experiences in school and eventually recovered, which has been shown to help promote a sense of belonging. The exercise has been adapted for upper elementary classrooms.
- This version involves exchanging written letters, but you are encouraged to use a variety of media (e.g. video) or even in-person visits from older students.

Timing	Topic/Steps/Activities	Teacher Notes
3 minutes	<p><b>Transition into activity</b></p> <ol style="list-style-type: none"> <li>1. Ask students to turn their attention to you as you guide them through an activity.</li> </ol> <p><i>Suggested Script</i></p> <ul style="list-style-type: none"> <li>• We're going to read some letters from middle school students who were once in the [X] grade like you. You'll see that school was not always easy for them, and you'll hear some examples of how they overcame their challenges.</li> </ul>	<p>Students should be seated individually with enough space to write privately. Students should have room to work in pairs and to stand and move around the room.</p> <p>In general, activities like this are most beneficial if they are not presented as "interventions." Rather than saying this activity is intended to boost a sense of belonging, emphasize the importance of learning from others and being open about what's challenging.</p> <p>Note that the setup for the activity does not explicitly emphasize math, so as not to reinforce the idea of math as something to be feared. The content of the letters/messages, however, should include some explicit examples of overcoming struggles with math.</p>
10 minutes	<p><b>A message from the future</b></p> <ol style="list-style-type: none"> <li>1. Read an example letter from a middle school student to an elementary student. You may wish to have a volunteer read the letter aloud or you can pass out copies to every student to read individually.</li> </ol>	<p>You may wish to ask previous students to write letters as examples, or you may use the provided example (see attached) and edit it to best serve your needs. You are also encouraged to use mixed media, (e.g. videos) or even to arrange for older students to visit in person.</p> <p>The more personal and authentic the messages, the better.</p> <p>Ensure that the messages include a component about overcoming struggles with math.</p>

Timing	Topic/Steps/Activities	Teacher Notes
10 minutes	<p><b>Group discussion</b></p> <p>1. Discuss the following questions as a group.</p> <ul style="list-style-type: none"> <li>a. <i>How did it feel to hear this letter?"</i></li> <li>b. <i>Have you ever had similar experiences or felt this way about school?"</i></li> <li>c. <i>What were the important messages in the letter?"</i></li> </ul>	<p>The second question (b) should be the main focus of discussion. Encourage students to think about how their own experiences have been consistent with the content of the letter. That is, a situation in which they experienced a challenge or struggle but with time things improved.</p>
10 minutes	<p><b>Individual writing exercise</b></p> <p>1. Direct students to their seats and ask them to take out a piece of paper and a writing utensil (or use computers, if available).</p> <p>2. When everyone is ready, ask them to reflect on their own experiences and then write for 10 minutes using one or both of the following prompts:</p> <ul style="list-style-type: none"> <li>a. <i>Think of a time when you struggled with something. This could be a time you felt particularly challenged in learning a new topic or when you struggled at school in some other way.</i></li> <li>b. <i>Imagine you are writing a letter to a pen pal. Write to your pen pal about how you persisted despite those struggles and how things got better with time. Give your pen pal advice that can help them if they are ever in such a situation.</i></li> </ul>	<p>To help students internalize the activity more deeply, this writing exercise directs students to 1) reflect on how the messages from the older students apply to their own lives and 2) “pay it forward” to others with advice on how to cope if they are in similar situations. This helps students see themselves as benefactors instead of beneficiaries.</p> <p>This writing exercise can be used in addition to the whole-group discussion or instead of the discussion if time is limited.</p> <p>You should decide with your students and colleagues whether or not to share the letters with incoming students, have students use them to collaborate on a “greeting” for incoming students, or just let your students keep them to read again later.</p>

## Normalizing Uncertainty Student Handout

Hi, my name is \_\_\_\_\_.

When I first started [x] grade, I worried that I was different from the other students in my class, and I wasn't sure I fit in.

I was worried about making friends, especially at the beginning of the school year. But then I met new friends who sat by me in classes, and I also joined a club, which felt like a big family. And the funniest part is that I came to realize a lot of my classmates and friends were also wondering whether they fit in or not!

I had some trouble in my math class, especially with fractions. There were times when I felt like giving up, like maybe I was just never going to be good at math. My teacher helped me understand that if I kept putting effort into it and trying new strategies, I could actually get better at it! I also started studying with the TV off, and I even tried a breathing exercise that my teacher showed me to calm myself down before taking a math test. That might sound weird, but it really helped! Now I don't get so nervous about math, and I can use all my brain power to focus on my tests or homework instead of worrying about how well I'm going to do.

I talked to my friends about it and realized that maybe I wasn't the only one who was having trouble, and now we're all helping each other get better. It seems funny to me now: Everyone feels like they're different from everyone else, when really we're all pretty similar, at least in some ways. Everyone has trouble with different classes sometimes, but we can all get better if we keep learning new ways to do things. I hope you won't give up when you feel like school is hard. There are lots of adults and friends who want to see you succeed in the future.