Sense of Belonging in Math
Teacher Guide: Group Membership

Time: Variable (adds 15 minutes to math lesson)
Audience: Teachers of students in grades 3–5

Research Citation

- Master, A., & Walton, G. M. (2013). Minimal groups increase young children's motivation and learning on group-relevant tasks. *Child Development*, *84*(2), 737–751.

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.
- Several studies have found that young children persist and perform better on individual math and spatial tasks when teachers use social cues to help them feel like part of a group.
- Incorporating nonacademic social factors, such as group membership, into curricula could be an effective way to boost young children's motivation in math and science.
- Positive outcomes can include persistence, performance, self-efficacy, interest, and choice.
- This exercise is adapted for upper elementary classrooms. It will add about 15 minutes to the beginning of a math lesson.

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Timing	Topic/Steps/Activities	Teacher Notes
3 minutes	**Transition into the activity** 1. Ask students to turn their attention to you as you guide them through an activity. *Suggested Script* ➢ For our next math activity, we are going to work in groups. Let's take a minute to form our groups and give our groups special names. Then we'll work together to solve some math problems.	Prepare the space with groups of chairs and tables so that students can form groups (size of groups is dependent upon math activity).

10 minutes	**Grouping strategies**
	
	1. Organize students into small groups. The groups can be created in a variety of ways, such as color groups, groups with a specific purpose (e.g. a multiplication group and a subtraction group), or groups named after animals. Consider a randomized grouping strategy to avoid forming ability or friendship groups. Below are some examples of random grouping strategies:
	
	   a. **Use popsicle sticks.** Write students' names on popsicle sticks, shake them up in a cup, and pop out the number of names you want in a group.
	   b. **Use colored index cards.** Let students choose colored index cards from a stack and sort them based on the colors they picked up.
	   c. **Make a math matching game**. Write a number on an index card and then on the next two, three, or four cards (depending on size of group you want), write equations to obtain that number. For example, you could have cards containing "4," "2x2," "1+3," and so on. Anyone with a card that equates to 4 will be part of the "4" group.
	
	2. Help the groups form a group identity. Consider having some matched accessories (hats, bandanas) or another visual way to signal group membership. Group members can also come up with a shared song or slogan. *Remember that groups should be value-neutral: No particular group should be presented as better than another.*
		This exercise is adapted from http://www.teachhub.com/30-ways-arrange-students-group-work It is most effective when students do not believe they are being grouped by ability. Avoid saying anything like "This group is especially good at fractions."

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Timing	Topic/Steps/Activities	Teacher Notes
Variable	**Math instructional unit** 1. Once the groups are named and group identity is established, they can work together on the pre-planned math task, such as solving math problems.	This strategy has been shown to work best when students identify with their groups.
2 minutes	**Transition out of activity** 1. Allow students time to transition into their next activity.	

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