



Greater Good in Education
SCIENCE-BASED PRACTICES FOR KINDER, HAPPIER SCHOOLS

MINDSET BOOSTING MESSAGES FOR MATH

"It's not who you are that holds you back, it's who you think you're not."

—Hanoch McCarty

OVERVIEW

Students watch an 8-minute video followed by a short discussion to boost their growth mindset in math.

PLANNING FOR IT

WHEN YOU MIGHT USE THIS PRACTICE

- At the start of a new year, or whenever needed, to build a growth mindset culture for students around mathematics class

TIME REQUIRED

- ≤ 1 hour

LEVEL

Choose one or more of the following:

- Upper Elementary
- Middle School
- High School
- College

MATERIALS

- Projector or screen to show video
- Access to the following video (online or downloaded): [Four Boosting Messages from Jo & Her Students](#)

LEARNING OBJECTIVE

Students will:

- Develop a growth mindset toward mathematics, including the value of mistakes
- Believe in their ability to learn and be successful in mathematics
- Understand that speed is not important in math

ADDITIONAL SUPPORTS

- [Making Practices Culturally Responsive](#)
- [Adapting Practices for Students with Special Needs](#)
- [Making Classrooms and Schools Trauma-Informed and Healing-Centered](#)

SEL COMPETENCIES

- Self-Awareness

HOW TO DO IT

REFLECTION BEFORE THE PRACTICE

- Watch the [Four Boosting Messages video](#) and reflect on your own relationship to math as a student. Did you receive any negative or biased messages about math? Do any of those messages still affect you?
- Reflect also on your current students' mindsets regarding these messages about mathematics. Have you observed any negative or biased beliefs that might limit students' participation in and enjoyment of math?
- Why did you become a math teacher? What is your hope for your students with regards to how they view and use math?

INSTRUCTIONS

Note: This is Practice 1 of 5 in the youcubed [Mathematical Mindset](#) practice collection.

TO THE TEACHER

Mindset messages and knowledge of brain science research are powerful topics for students to learn about and understand. These messages, combined with meaningful and challenging mathematics experiences and supported through a vibrant mathematics learning community, have a dramatic impact on students' beliefs in their ability to learn and be successful in mathematics. You may want to record these ideas and post them around your room. This will remind all of you to reference them throughout your course. You can find posters with mindset and brain science messages [here](#).

INTRODUCTION

In this [video](#), math education expert Jo Boaler and her students introduce and explain four important messages for all math students:

- Everyone can learn math to high levels
- Believe in yourself
- Struggle and mistakes are important
- Speed is not important in math

LAUNCH (5 MINUTES)

- When you first introduce the video, make sure to share who [Jo Boaler](#) is, why the ideas in the video are important to understand, and how these ideas relate to your students.

EXPLORE (10 MINUTES)

- Play the [video](#) for students to watch.

DISCUSS (15 MINUTES)

- After watching the video, invite students to share something from the video that was powerful to them or something they want to know more about.
- If students are interested, give space for conversation about the video and past mathematics learning experiences.
- Let students know that you will be using and reinforcing ideas from the video throughout the year.

REFLECT (5 MINUTES)

- Ask students to reflect on these questions:
 - What ideas in the video do you find most interesting?
 - What ideas in the video do you find challenging?
 - What is your relationship to math?
 - What challenges have you faced while learning math? How have you dealt with challenge? How do you feel when you make a mistake in math class?

REFLECTION AFTER THE PRACTICE

- What did you learn about students' attitudes towards math and past experiences with it? How do these compare to your own attitudes and experiences?
- Do any particular students or groups of students seem to have been more impacted by negative messages about math? What can you continue to do in your class to counteract such messages?
- Following this activity, do you notice any change in attitude among students, such as greater ease around mathematics, stronger belief that they can learn math to a higher level, and/or more acceptance of mistakes as part of learning?

THE RESEARCH BEHIND THE PRACTICE

EVIDENCE THAT IT WORKS

[Research](#) has shown that students who learned about [growth mindset](#) with regards to mathematics reported more positive beliefs about math, were more engaged in math class, and did better on standardized math achievement tests. Mindset interventions in math benefit all students, but have demonstrated [even more power](#) for groups that may be more affected by myths about math learning, including girls, English language learners, and economically disadvantaged students.

WHY DOES IT MATTER?

A substantial body of research has indicated that students who have a growth mindset about intelligence--who believe that, with effort, intelligence can be changed over time--are more likely to [do well academically](#).

Importantly, evidence shows that growth mindset [can be learned](#): in a nationally representative study, students who were taught about a growth mindset of intelligence went on to earn better grades (especially if they started out lower-achieving) and select more challenging classes. Grades improved even more in schools with more supportive learning climates, in which peer norms supported the growth mindset message.

Though much of the research on growth mindset has to do with beliefs about intelligence, other research suggests that social and emotional growth mindsets (e.g., believing that personality, emotions, etc., can grow and change) can [reduce bias](#) and promote [well-being](#), [social competence](#), and [prosocial behavior](#).

SOURCE

This is a practice from [youcubed](#), a center at Stanford University led by Professor Jo Boaler. In addition to classroom ideas and videos, youcubed offers a variety of resources for mathematics educators, including research summaries and professional development.