



Growth Mindset

Lesson Plan

Introduction

[Khan Academy](#) and [PERTS](#), Stanford University's applied research center on academic motivation, created this lesson alongside some of our middle school classrooms in order to provide a few activities to introduce students to the concept that intelligence can be developed. Feel free to adapt and edit these activities below to meet the needs of your classroom.

Objectives

By the end of this lesson, students will understand:

- Intelligence can be developed
- The brain is malleable
- Doing challenging work is the best way to make the brain stronger and smarter

Before we get started...

Past learnings

Cultivating a growth mindset in students *can* (unfortunately) *be quite tricky*. Researchers and educators have spent years thinking about this, and we are still learning! From our experience thus far, we have learned that:

- **Simply telling students to have a growth mindset can backfire.** Students can have a negative reaction to being told how to think. Instead, a more scientific and practical explanation about how intelligence works – *that the brain can get stronger and smarter with new learning* – has been demonstrated to be effective.
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- **In the same vein, reiterating the message “just try harder” can also be problematic.** The reason is that most students have heard “*just try harder*,” but a growth mindset isn’t just about trying harder. Students need to understand *why they should put in effort and how to deploy that effort*.
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From what we know so far, sometimes a better strategy is more useful than additional effort spent doing the same thing.

Also, beyond conducting this introductory lesson, there are many ways teachers can foster a culture in which students embrace the growth mindset in practice!



Materials needed

A few things you’ll need for the lesson and other activities:

- Projector or Large Monitor
- Laptop/Computer, internet connection, access to YouTube
- Markers
- Poster-sized paper
- *Optional: Pencils and paper for students*

Here's the plan

Part I: Video & debrief

Estimated time: 20 minutes

View either (or both!) of these videos with your class to begin a discussion about the brain's malleability.

Watch [“Growing your mind” by Khan Academy \(3:04\)](#). After you have watched this video with your class, hold a small discussion about the science behind the brain as it learns. Here are a few questions to get your discussion started:

- How do people become more intelligent?
- How does the diagram of the neurons “At birth vs. At age 6” demonstrate this?
- What about the second diagram of the nerves of the animal living in a cage vs. an animal living with other animals and toys?
- How are our brains like muscles?
- When do our brains grow the most?

Watch [“Neuroplasticity” by Sentis \(2:03\)](#). This is a good visual introduction to the concept of how the brain can be rewired as we learn and think differently.

- What is neuroplasticity?
- How does neuroplasticity work?
- How can you “rewire” your brain?

Part II: Personal discussion

Estimated time: 15 minutes

Discuss a time when you overcame a struggle in learning and learned to solve a problem.

As a teacher, share a personal story about a time you had to work hard to get better at something and relate it to the video. In this story, highlight:

1. Hard work
2. Strategies
3. Help from others

Here's an example below of a personal story to share with students:

When I was in middle school, I remember struggling with adding negative numbers. I had a hard time figuring out what a 'negative' even meant when talking about a number - how can you have less than nothing? I ended up going through many practice problems and continuing to get many of them wrong. I was a very shy kid, so I didn't ask my teacher many questions. My thought was that I had reached 'the peak' of my math talent, and it was all downhill from here. I eventually asked my mom about this topic and she explained to me the basic concept of negative numbers. This helped me understand it a little, but it was still fuzzy to me. I then researched online for some real-life contexts to show what these mysterious numbers represented outside of some abstract universe. Some of them made sense, and others didn't. I still didn't entirely get it and I was so frustrated that I wanted to just give up (or continue hoping that negative numbers were not going to appear in math class ever again). I started to dislike math simply because I couldn't understand it anymore. Instead of entirely giving up on my academic career, I eventually mustered up the courage to ask my teacher for help as well. She explained it in a few different ways, and gave me new strategies to try out. After some practice with these new strategies, I started to solidify my understanding of negatives which allowed me to quickly pick up basic algebra afterwards. While it was a lot of work and I wanted to give up at many points during my journey, I eventually was able to 'rewire' my brain so that negative numbers actually made sense to me.

In a small group, ask students to share a story about a time that they made their brains smarter. This leads to a discussion about how working hard, taking on challenges, and finding the right strategy can make people smarter.

In the case that your students are not ready to be vocal with their classmates about their stories, it might be a good idea to try Part III (below) after sharing your personal story instead.

Part III: Letter to a future student

Students write a letter about a learning-related struggle (*worksheet on pg. 5*).

Ask your students for a short story about a struggle they had when they were learning. How did it make them feel? How did they overcome it, and what did it teach them? Tell them to write a letter to this future student to tell them about their struggle, what they learned from it, and any advice they could give for the student. Collect their letters, and save them in order to give them back to them during difficult testing periods, such as final exams.

LETTER TO A FUTURE STUDENT

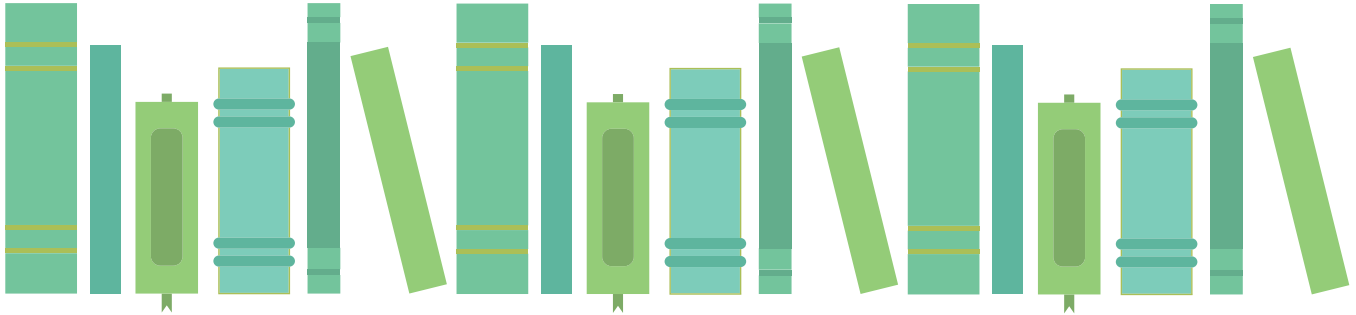
Take a few minutes to think of a time when you overcame a struggle to learn something. It could be anything - from adding negative numbers to learning a technique in baseball to writing an introduction for a difficult essay. Reflect on the times when you failed at first but through persevering your brain created new neural connections and you eventually became better at the task at hand.

Write a letter to a future student of your class about this struggle. In at least five sentences, tell this student your story and give them advice on what they should do next time they encounter an obstacle when learning something new. An example is below. Feel free to be as creative as you would like.

	Dear Future Student,
○	When learning my multiplication tables I found it really hard to memorize the 7's table. With 5 and 10 there's a pattern to their products, but 7 really gets complicated.
	I got kind of down for a while, but then I remembered how I learned to make free throws in basketball. It took try after try to get them in. I had to start from two feet from the basket and keep practicing my form. Only after a long time could I make them in with some consistency. With that in mind, I stuck with it and learned all the way from 7×1 to 7×12 . Even though it took me a little longer than other students at that time, I am now able
○	to recall them very easily. Stick with what you're working on. The struggle means you're getting close.
	Sincerely,
	Charlie

More activities :)

You can use these activities below interchangeably with the ones provided above **or** use them later on in the school year to refresh your students' minds on the growth mindset!



Activity 1: Research Project

Using the brief guidelines below, get students to make a project on how the brain grows as it struggles to learn something new.

Ask students to create a poster, diorama, painting, video, Powerpoint presentation or simple computer program to showcase how the brain works. You can either allow them to choose from the options listed or choose for them - whichever works for your particular class. If they are relatively young and struggle with research, here is [one kid-friendly resource](#) from Brainology to get them started. The article on pages 1-3 is a brief overview of the science behind the growth mindset.

Each teacher-approved project must at least answer these questions, either within the project itself or in a separate 1-page essay. Also be sure that your students include evidence to back up your claims (ex. Are there studies that show this? Don't forget to cite your sources!):

- What is neuroplasticity and how does it work?
- What are neurons? How can they change over time? How do we know this?
- What are ways of making your brain grow?
- What is a growth mindset?

Encourage your students to be creative and scientific when explaining how learning can help develop the brain. If possible, allow them to research for themselves.

Display these projects around your room and refer to them throughout the year as motivation and a friendly reminder about the brain's plasticity.

Activity 2: Growth vs. Fixed Mindset Poster

Using your students' input, make a two-column poster on the beliefs and behaviors of a growth mindset and how it compares to a fixed mindset. Urge students to map out how beliefs influence behaviors which ultimately lead to results.

If they need scenarios to help them brainstorm, use the examples below or create your own! What are the behaviors/thoughts of people that believe intelligence can be developed when:

- ...they fail a test?
- ...they put a lot of effort into practicing for a basketball game but still lose?
- ...they don't understand a math problem?
- ...they are not putting any effort into their class but are passing?

Use this poster as a reference throughout the year to help students recognize when they have a fixed mindset and to give them ideas on methods to shift towards a growth mindset.

Here's an example of what this poster might look like:

FIXED	GROWTH
<p>I'm just not a natural at this topic, what's the point?</p> <p>This is so easy. I can get a B without any effort.</p>	<p>I can get better - I just have to keep learning.</p> <p>This worksheet is easy, what else can I learn? I might be able to get a B without trying, but I could get an A if I studied just 10 minutes every day.</p>

Activity 3: “The Power of Belief” video

Estimated time: 20 minutes

This particular video is about how a growth mindset is proven to help students succeed. For students who might be resistant to the idea that intelligence can change, we suggest starting with an activity that helps students understand the neuroscience of how the brain changes. Then, you can use this activity to show the power of believing that the brain is malleable.

Watch [“The Power of Belief” TEDTalk \(10:52\)](#) with students and stop to discuss it as you go along.

Stop at 1:57

Briefly discuss Josh’s story and the quote

- “The moment we believe that success is determined by an ingrained level of ability, we will be brittle in the face of adversity.” - Josh Waitzkin

Stop at 4:20

Discuss the study about 7th graders with both fixed and growth mindsets

- What is a growth and fixed mindset?
- What happened to the 7th graders’ scores over the next two years?

Stop at 5:36

Discuss differences in Growth and Fixed Mindsets

- What do people with fixed mindsets focus the most on? How do both mindsets view effort?
- How do both mindsets view obstacles?

Optional viewing and discussion from 5:36-7:55

Gauge whether your students would respond positively to this study on praise and its overall take-away.

- What was this study about?
- What kind of praise did the kids in the “Fixed Mindset” group get?
- What kind of praise did the kids in the “Growth Mindset” group get?
- What were the results of this study?

Optional viewing from 7:55 - 9:40

Watch remaining video, then ask students:

- How does their brain change?
- How does it grow?

Additional resources

Below are a variety of resources to use when preparing for your lesson as well as additional materials for your students' use throughout the year. The resources below are just the tip of the iceberg, so do not hesitate to do your own research as well!

Books

Carol Dweck, *Mindset: The New Technology of Success* (2006)

Daniel Coyle, *The Talent Code: Greatness isn't born. It's Grown. Here's how.* (2009)

Malcolm Gladwell, *Outliers: Stories of Success* (2008)

Videos

Khan Academy

- John Legend - [“Success Through Effort”](#)
- Khan Academy - [“You Can Learn Anything”](#)

TED Talks

- Angela Lee Duckworth - [“Grit”](#) (Note: Make it clear that grit is a behavior that happens only when you have a growth mindset.)
- Derek Sivers - [“Why You Need to Fail to Succeed”](#)

Articles, visuals, and more

- [Complete Mindset Kit](#) by PERTS, a complete guide to the growth mindset
- Infographic by Nigel Holmes on [Growth vs. Fixed Mindsets](#)
- Edutopia writes about how the brain can continue to grow much longer than we thought possible: [“Neuroplasticity: Learning Physically Changes the Brain”](#)
- Carol Dweck talks about parenting tips to encourage positive learning attitudes: [“The Perils and Promise of Praise”](#)
- Paul Tough discusses experiments in college that drastically boost learning by helping students feel like they belong: [“Who Gets to Graduate?”](#)
- Carol Dweck, [“Even Geniuses Work Hard”](#)