

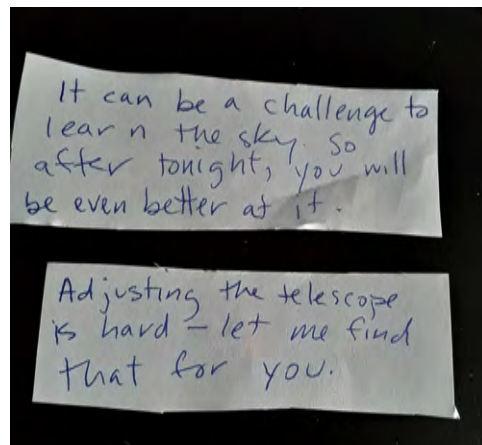
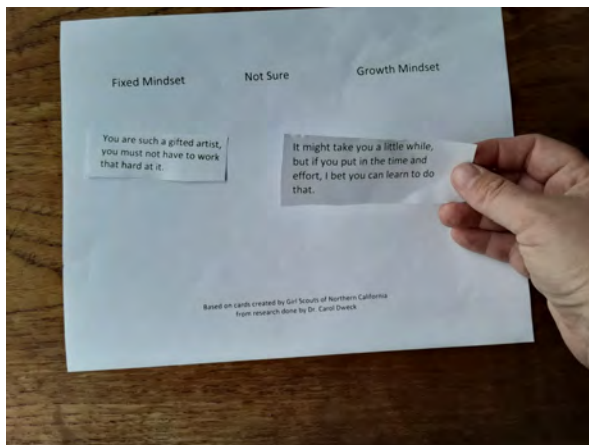
Growth Mindset Cards Activity

Learning about growth mindset and using it are two different things. What we say to students can help them understand whether mistakes are something to avoid or a healthy part of learning. Use this activity to investigate actual language to use/avoid/explore.

Steps:

1. Print out the card sheet and background chart on single-sided paper – one set per group of two to four people
2. Cut the Card Set between each statement and mix the fixed and growth mindset statements together, saving the bottom pieces of the page.
3. Lead a group discussion on growth vs. fixed mindset (page 2), then hand out the chart and cards.
4. Have the groups sort the language cards into the columns “Fixed Mindset,” “Growth Mindset,” or “Not Sure.” Allow discussion to happen and insure that different viewpoints are respected.
5. Have a group discussion afterwards about their experience, including any that were difficult to categorize.
6. Invite the participants to write an example of a Fixed Mindset statement they’ve heard or thought themselves. Then ask them to think of another way to say that so that it becomes a Growth Mindset statement.

As an example, this activity is developed for a training workshop for amateur astronomers who were looking to engage girls in astronomy more effectively.¹ When it came time for them to write their own growth mindset language cards, they thought about what is encouraging and discouraging at the telescopes. Here is a picture of one pair of responses. Can you tell which is fixed and which is growth?



¹ Research shows that girls and boys have similar abilities and interest in science, but that the biggest hurdle girls have to overcome is the exclusion they experience in scientific settings. Developing a growth mindset is one way our teachers and outreach people can show that anyone can do science, that there aren't any "science types" and "non science types" – there is just effort and trying new strategies that develop our science skill set.



How to Start a Discussion with Your Group about Growth Mindset

Growth Mindset - What is it and Why is it Important?

What is a Mindset?

A mindset is the established set of attitudes and beliefs. These are things we usually don't think about - often something we don't even realize. Let's talk about two - fixed mindset and growth mindset, and how they affect the ways people interact with science (or not).

Growth vs. Fixed

Ask the group: Have you ever been told you weren't a math person? Or heard someone say "You are very smart"? Or that you were very talented? (Listen to examples.) These expressions are examples of a fixed mindset. The idea is that you are born one way and that it is unchangeable. You are "fixed" as a science person, an athlete, an artist.

"In a **fixed mindset**, people believe their basic qualities, like their intelligence or talent, are simply **fixed** traits. They spend their time documenting their intelligence or talent instead of developing them." - Dr. Carol Dweck

This is the mindset of the expert, but an expert with no chance for growth. They avoid challenges because it may make them appear that their abilities are limited. They may say "I stick to what I know." In this way, they bar themselves from future opportunities.

Now let's look at a more flexible approach - **growth mindset**. Ask the group: What can you do now as an adult that you couldn't do as an infant? How did you learn to do those things?

Dr. Dweck, since the late '80s, has been doing research in psychology with learners. In one experiment, children were either told a task was "for smart people" vs, "this is for people who work hard." The children who were told they could do well if they worked hard performed much better than the ones who were told it was for smart people - even if they believed they were smart! In addition, the "growth mindset" children had persistence to stay with tasks that were challenging much longer.

Having a growth mindset is having the attitude of:

- I like learning and being challenged.
- If I am stuck, I try new strategies.
- There is no "---" person.
- I can learn anything with effort.

Growth-minded people seek out feedback so they can grow. They view mistakes as part of life and an opportunity to try again.

Why is a growth mindset important for science?

Science is about trial and error, not about appearing smart. We value experimentation; we take risks to understand the Universe's mysteries. Growth mindset allows us to try new things!

Why is it important for underrepresented groups?

Women, girls, and people of color have often been told that science isn't for them, both explicitly and implicitly. The idea that science is only for "science people" has discouraged many people from pursuing science. But the idea that you can succeed at what you put effort into and learn whatever you want allows for all people to be science people. It can give someone ammunition to counteract stereotypes. They will try new strategies and have courage when things get tough.

A last thought:

You can have both mindsets! You can feel confident and experienced in one area and still be learning / exploring another topic. The point is more to not get locked into or out of anything, but to embrace new ideas and new opportunities.

Fixed Mindset

Not Sure

Growth Mindset

Based on cards created by Girl Scouts of Northern California
from research done by Dr. Carol Dweck

Card Set

Fixed Mindset

Wow, you make it look easy!

You keep making mistakes.

Would you make up your mind and get this done?

You are so smart!

You are such a gifted artist, you must not have to work that hard at it.

Maybe you're right - we should pick something easier for you to do.

You'll never learn to do that.

You need to learn to do this by yourself.

Growth Mindset

Your practice is paying off.

I really like how you learned from your mistakes.

I like how you kept trying new ways to get there.

I like that you put so much effort into your figuring out how to solve that problem.

Wow! How did you learn to draw so well?

It is challenging to be a leader. It takes a lot of practice to get it right. So after this project, you'll be even better at it.

It might take you a little while, but if you put in the time and effort, I bet you can learn to do that.