

Supporting our students in fostering a growth mindset

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What is a *growth mindset*?

- Mindset: the way people think about ability and talent. ([Carol Dweck](#), Stanford.)
- Fixed mindset: your abilities are innate and unchangeable. Failure is permanent, critical feedback is a personal attack. More likely to choose easier tasks and put in minimal effort. Give up when faced with an obstacle. Focus on measurable accomplishments.
- Growth mindset: you can improve your ability through practice. Failure and feedback are a chance to learn, improve, develop new systems. More likely to embrace challenging tasks. Focus on journey of improvement.

Why foster a growth mindset?

- Important factor in determining whether someone will improve, cope with challenges, etc.
- Research has shown that improving students' growth mindsets can help close the achievement gap for underrepresented students.

A three-part process for growing students' growth mindsets

See next page for actual prompts used.

1. Students choose from a short list an article that explains the concept of a growth mindset and its importance for learning; they read it and write a one-page personal reflection. They get full credit for a meaningful response, this is worth 30 points out of about 120 on their first assignment, assignments are weekly. ([Ben Braun](#), University of Kentucky.)
2. Students go back over the past few weeks and identify mistakes they made in the class. They then pick a subset of those and “figure them out”: what their misconception was, what the correct answer is, what lesson they have learned, how they got unstuck, etc. This is optional, for extra credit, but almost all students do all of it (20 points).
3. Students identify situations when they exhibit a *fixed* mindset, what they tell themselves in those situations, what triggered the situation. They then find something they could tell themselves instead next time such a situation occurs; something that would be more in line with a growth mindset attitude (12 points). ([Lourdes Alemán](#), MIT.)

Modifications, and scaling up?

- Scaling up for Part 1: have students watch a (not so short) video instead of the readings, or have that as an option. Have them write a half-page reflection instead of a whole page.
- Responses to Part 2 (“favorite mistake”) are not usually satisfactory on the “how you got unstuck” and “what is the take-away.” Maybe give them examples? Ask CAs for ideas?
- Responses to Part 3 (triggers) were fantastic across the board, so it seems like giving them a sample table might have helped? Come back to it later? Success story!

Sample prompts

- 1. Growth Mindset vs Fixed Mindset.** Professor Carol Dweck is a psychologist at Stanford who studies how one’s beliefs can influence one’s motivation and learning. Since learning and motivation are important in life, college, math, and beyond, I thought I would have you reflect on some of her work! Please pick one of the two articles below. Read the article, and write a one-page essay, reflecting on what you have learned in that article, but especially how this applies to you, to your life now but also to your past experiences in learning, persistence, success, and failure. This will be graded on an “honest effort” basis, not on your ability to write great papers! As long as you respond to the prompt in a meaningful manner, you will get full credit for this.
 - (a) [“Is Math a Gift? Beliefs That Put Females at Risk”](#)
 - (b) [“The Secret to Raising Smart Kids”](#)
- 2. (Optional, for extra credit.) My favorite mistake (see song [here](#))**
 - (a) Make a list of 8 “things” you struggled with since class started. By *thing*, I mean: a concept that was unclear, a problem set or worksheet question that you didn’t quite get, something in class that felt muddy or hazy, etc. Try to make these things as concrete as possible. For example, “I don’t get linear transformations” is too vague, but “I don’t get how to find the matrix of a linear transformation” is better, or “I don’t know how to use the properties of a linear transformation to answer questions such as Problem Set 3 Question 7” is very good too. Basically, if there is something you didn’t quite understand, find which part of it you’re missing and write it down. You need 8 such things! You will get one extra credit point for each.
 - (b) Choose 6 of the 8 things you wrote down in (a), and figure them out! Write your (new) solution, and whatever you needed to make things clearer! Make sure to tell me **how you got unstuck**, and **what the take-away or lesson for you is**. You will earn up to 2 extra credit points per clarification.
 - (c) (Very optional.) If you are wondering why I am making you do this, see this [Conversation with Edward B. Burger about The 5 Elements of Effective Thinking](#) (especially on the power of failing) and this [Michael Jordan “failure” video](#). (If you don’t know who Michael Jordan is, after all, he’s from my era not yours, see [here](#).)
- 3. Developing and sustaining a growth mindset can be difficult, especially when more challenging tasks present themselves (those are often called “triggers”). One thing that can help is to stop one’s automatic thoughts (often negative self-talk) and turn into positive, growth-mindset oriented self-talk. Your job this week is to identify a few of your own personal triggers and the negative self-talk you use when those triggers happen, and come up with an alternative interpretation or alternative self-talk which is positive and growth-mindset oriented. So fill out a table such as this one, which I’ve filled out with my example above and another one. Please try to find at least two triggers this week.**

Trigger	Automatic negative thoughts	Alternative interpretation
Make a mistake while teaching.	I’m so stupid, I have my notes in my hand and still I manage to make mistakes.	It’s normal to make mistakes. If I compare with my notes more frequently I’ll catch more mistakes. As I teach the subject more I’ll become more comfortable.