

Metacognition to Support Growth Mindset: A Resource of Reflective Question Prompts

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Metacognition is the use of reflective awareness to guide subsequent self-regulation in support of a goal (Flavell, 1976).

Meanwhile, **mindset** is a way of viewing one's ability to understand or do something (Dweck, 2006). It has the following six components:

- Beliefs about Skills
- Focus (on learning process or performance)
- Beliefs about Effort
- Beliefs about Challenge
- Beliefs about Failure
- Beliefs about Feedback

Individuals with a *growth mindset* about an ability/task believe that you can grow skills, and they focus on the learning process rather than performance outcomes. They believe that effort is needed to grow, and challenges are a natural part of growing. Unsuccessful attempts are expected to happen and feedback is useful to guide one's growth. Those without a growth mindset (i.e. those having a *fixed mindset*) tend to think they either are born with an ability or not, and they are threatened by the need to put in effort on a task - it's a sign they may not be as talented as they hoped. They focus on performance and avoid challenges and failures. Constructive feedback also feels threatening because it focuses on ways to improve, which again suggests that they may not be naturally good at the task.

Given these characteristics, it's fairly easy to understand why students will be better learners if they adopt a growth mindset. However, it's not as easy as simply telling them to "have a growth mindset" even if they cognitively understand the principle and why it would help them be better learners. Beliefs about skills and anxiety about feedback can be deeply ingrained.

We believe that metacognition can help support the development of a growth mindset by bringing one's beliefs about the different components of mindset into conscious awareness, which can then support ongoing self-regulation in ways that move us from a fixed to a growth mindset. (See our blog post that further elaborates this premise: [Using Metacognition to Scaffold the Development of a Growth Mindset](#) by Scharff, Fleisher & Roberts, November 2022.)

The questions below are example prompts that can support metacognition related to each of the six mindset components. We provide a separate set of example prompts for both students and instructors in order to support two efforts:

- **Students having a growth mindset about their learning.** A variety of studies have found that students who have a growth mindset report greater enjoyment of the academic process, more engagement and better performance. For example, see Aronson et al., 2002; Blackwell et al., 2007.
- **Instructors creating an environment and activities that support students having a growth mindset about their learning.** Instructor mindset about student learning has been shown to significantly influence student motivation, sense of belonging, engagement, grades, and racial achievement gaps. For example, see Canning et al., 2019; Muenks, et al., 2020.

Metacognitive Prompts for Students

Beliefs about Skills:

- (Self-assessment/awareness) Am I engaging in patterns of thinking (self-talk; excuses) that suggest that I don't believe I can improve my skills for my current task?
- (Self-regulation) Have I experienced certain improvements in this or similar skills in the past? By acknowledging some of those successes, I may foster confidence in my prospects for further improvement.
- (Self-regulation) What changes in thinking will I enact when I find myself undermining my skill development by making excuses or engaging in maladaptive self-talk?

Focus – What you are trying to accomplish:

- (Self-assessment/awareness) Am I engaging in patterns of behaviors (going through the motions to complete the task without thinking deeply about my actual level of understanding) that suggest that I am more concerned about the end result than the process of learning?
- (Self-assessment/awareness) Am I aware of my own emotions and how aspects of my life are impacting my attitudes about this course and my ability to focus on my learning?
- (Self-regulation) What strategies might I consider to help myself develop in this area?

Beliefs about Effort:

- (Self-assessment/awareness) Am I vilifying effort and interpreting the need for effort as a sign that I'm incapable at this skill?
- (Self-assessment/awareness) Am I putting in an appropriate amount of effort and does that indicate it will be sufficient to complete this task?
- (Self-regulation) What have I built into my schedule to support my self-assessment and regulation of my learning?
- (Self-regulation) What could I use from previous experiences where my efforts resulted in growth, which then showed that improvement is possible?

Beliefs about Challenge:

- (Self-assessment/awareness) When I think about this current challenge, do I feel overwhelmed or invigorated?
- (Self-assessment/awareness) Am I comfortable/willing to adjust my approach to learning if evidence (my performance, my self-assessment of learning) suggests my current approach is less effective than I'd like?
- (Self-assessment/awareness) Can I identify challenges that I – or a role model – overcame? What strategies were used? How did it feel?
- (Self-regulation) How do I apply lessons from overcoming previous challenges to this current situation?
- (Self-regulation) What changes in thinking will I use to reframe perceived academic threats as opportunities, and how will I leverage those changes in thinking to support approach behaviors (persistence) rather than avoidant behaviors (backing down)?

Beliefs about Failure:

- (Self-assessment/awareness) Am I interpreting success or failure in this area as a more global and unchanging judgment of my abilities?
- (Self-assessment/awareness) Am I engaging in patterns of thinking and behaviors that suggest I am avoiding opportunities for trying something at which I might not be immediately successful?
- (Self-regulation) How might I reframe this failure as a positive effort to learn and grow? For example, if I continue to struggle, what are the opportunities to learn adaptive strategies that may help me beyond this area?
- (Self-regulation) What changes in thinking will I use to reframe my attitude toward trying new things where I might at first struggle or fail?

Beliefs about Feedback:

- (Self-assessment/awareness) How am I thinking about and responding to feedback that implies I need to make changes or improve?
- (Self-assessment/awareness) How am I interacting with the instructor in response to feedback? (emotional regulation; comfort versus frustration)
- (Self-assessment/awareness) Am I willing to be vulnerable and talk with my instructor and/or other students in order to facilitate my learning?
- (Self-assessment/awareness) What is a specific goal for my current task, and how would specific feedback on that goal help me build towards it?
- (Self-regulation) How do I plan to respond to feedback I have / will receive?
- (Self-regulation) How might I reasonably seek feedback from peers or the instructor when more is needed?
- (Self-regulation) How can I be more self-compassionate about my failures like I try to be towards others' failures?
- (Self-regulation) How might I use this feedback to experiment with alternate learning strategies?

Metacognitive Prompts for Instructors

Beliefs about Skills:

- (Self-assessment/awareness) Is it possible that some of my students are caught in patterns of negative self-talk in approaching this learning? What signs could I look for?
- (Self-assessment/awareness) When students are not successful do I consider them to be generally unable to succeed or unfit for the discipline?
- (Self-regulation) What are some opportunities to help students see their growth in knowledge and skills so far?
- (Self-regulation) What language can I use to indicate that skills are developed and that I have confidence that students can develop them with focus and effort?

Focus – What you are trying to accomplish (a nurturing environment and activities that promote growth mindset):

- (Self-assessment/awareness) Am I helping students set – and be aware of – concrete learning goals in this area? Are there opportunities for the students to see improvement towards those goals and then establish new goals?
- (Self-assessment/awareness) Am I creating a nurturing and safe learning environment that encourages student development and not just content coverage?
- (Self-regulation) What would I include on a knowledge survey that helps students assess and take ownership of their growth?
- (Self-regulation) How might I remind myself to include growth-oriented messages when I interact with students (during a lesson, office hours, etc.)?

Beliefs about Effort:

- (Self-assessment/awareness) Am I able to assist students in understanding the role that their effort has on different learning tasks?
- (Self-assessment/awareness) Do I role model and share that I had to (and maybe continue to have to) put in effort on tasks that might seem easy to an observer (such as a student) watching me complete the task?
- (Self-regulation) What kinds of formative opportunities can I provide for students to experience the benefits of their efforts and persistence?

Beliefs about Challenge:

- (Self-assessment/awareness) Am I helping students to assess challenges appropriately as opportunities worthy of their perseverance?
- (Self-regulation) How might I provide encouragement and support to students relative to the needed levels of preparedness and challenges?

Beliefs about Failure:

- (Self-assessment/awareness) Am I viewing students' learning in this area with a gatekeeper mentality? Do I think failure shows that they're not cut out for this area?
- (Self-assessment/awareness) Am I signaling to students a certain interpretation of success/failure at this activity?
- (Self-regulation) In this learning context, how might I highlight times that I – or another expert in this field – “failed” but nonetheless persevered and had further growth?

Beliefs about Feedback:

- (Self-assessment/awareness) Are students using my feedback? Are there aspects of content or tone of feedback that may be interacting with students' mindsets?
- (Self-assessment/awareness) Is my feedback consistent with students being aware of and setting concrete learning goals in this area? Are there opportunities for students to use the feedback to support improvement and to establish new goals?
- (Self-assessment/awareness) Does my feedback not only indicate correctness but also support student growth (e.g. identification of learning bottlenecks, possible alternate learning strategies, missing relevant foundational knowledge, mindset)?
- (Self-assessment/awareness) Am I appropriately focusing my feedback on student performance (e.g. meeting standards) rather than on students themselves (e.g. their dispositions or aptitudes)?
- (Self-regulation) How can I adapt the content or tone of my feedback, such as finding opportunities to highlight students' improvement or using encouraging language?
- (Self-regulation) When a student approaches me with a question, what do I signal via my demeanor? Am I demonstrating that engaging with feedback can be a positive experience?
- (Self-regulation) What formative assessments might I develop to provide students feedback about their progress and learn to constructively use that feedback to support their growth?
- (Self-regulation) How can I regulate my thoughts and emotions in ways that support being responsive rather than reactive with students?

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