

# UD COE Inclusive Teaching Workshop Series: Promoting a Positive Student Mindset

## The Takeaways

- A student's mindset is the most important predictor of academic success in your course, more so than performance in pre-requisites, because mindset drives behaviors that set students up for success or failure.
- Your instructional approach can positively or negatively affect students' mindset.

## Fast Facts

- Mindset refers to how an individual feels in general about themselves (self-confidence) as well as their trust in task-specific abilities (self-efficacy)<sup>1-3,7</sup>.
- Multiple studies specific to engineering have shown a priori disparities student mindset
  - Women have more negative mindset towards hands-on and applied tasks<sup>4-6</sup>
  - Students of color have lower self-confidence in math & science abilities<sup>6</sup>

## Teaching Tips

- The following practices should be used to **promote a positive student mindset** in your classroom:
  - Stress a **growth mindset**<sup>8</sup> in your classroom by holding your students to **transparent and consistently high standards** and believing that students can modify their behaviors to meet your standards.
  - Provide **early mastery experiences**<sup>1,3,7</sup> to bolster student self-efficacy, for example, a low-weight early first exam that covers mostly pre-req material.
  - Model and promote **metacognition**<sup>3,7</sup> (thinking about thinking), particularly with challenging concepts. Use “think alouds” where you model your own metacognitive processes, e.g., deciding plan of attack for a problem, “gut checking” a solution, or correcting your board work



# UD COE Inclusive Teaching Workshop Series: Promoting a Positive Student Mindset

- The following instructional approaches **should not be used** because they can hinder students' development of a positive mindset in your course:
  - Overly competitive or “weed out” culture where students are constantly compared to their peers<sup>7</sup>. Generally, students are already receiving enough feedback to know where they stand in the class and do not need this to be stressed, particularly in public settings, e.g., “The lowest grade in the class was a 43%.”
  - Attributing a particular student's failure to innate abilities, e.g., “You're just not cut out to be an engineer.”
  - Calling attention to a student's race or gender when it is not relevant to the class discussion<sup>7,9</sup>, e.g., “Let's hear from one of the women.”

## References:

1. National Alliance for Partnerships in Equity. Inspire Courage to Excel Through Self-Efficacy. Professional Development Module. 2019.
2. Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International journal of educational research*, 31(6), 459-470.
3. Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of social and clinical psychology*, 4(3), 359-373.
4. D. Chachra and D. Kilgore, “Exploring gender and self-confidence in engineering students: A multi-method approach,” *Cent. Adv. Eng. Educ. NJ1*, 2009
5. R. M. Felder, G. N. Felder, M. Mauney, C. E. Hamrin, and E. J. Dietz, “A longitudinal study of engineering student performance and retention. III. Gender differences in student performance and attitudes,” *J. Eng. Educ.*, vol. 84, pp. 151–164, 1995.
6. Buckley JM, Grajeda S, Trauth AE, Roberts D. Gender and Racial Disparities in Students' Self-Confidence on Team-Based Engineering Design Projects. 2019 Proceedings of the American Society for Engineering Education.
7. Gibbs, Graham. "Teaching Students to Learn: A Student-Centered Approach." (1981).
8. Dweck, Carol S. *Mindset: The new psychology of success*. Random House Digital, Inc., 2008.
9. Steele, Claude M. *Whistling Vivaldi: And other clues to how stereotypes affect us*. WW Norton & Company, 2011.

