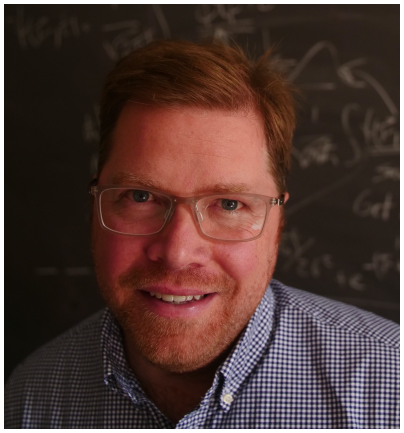
Seminar Program
The Science of Teaching: Evidence-Based Approaches in Biology Education

UC San Diego
Biological Sciences

Students may learn (even) more than they think! Effortful deliberate practice in the classroom



Dr. Louis Deslauriers
Department of Physics, Harvard University

Friday, April 29th, 2022, 10:00 – 11:00 AM
Zoom link: https://ucsd.zoom.us/j/95884665888

A roundtable discussion with Dr. Deslauriers will take place immediately following (11-11:30)

Abstract: Despite overwhelming evidence indicating that students learn more when they are actively engaged in the classroom, traditional lecturing remains the dominant mode of instruction in college STEM courses [1]. Why do students and faculty still find the concept of a traditional lecture acceptable as a mode of instruction? I will draw on some of our findings [2] to show that it is due, in part, to the fact that the effortlessness associated with listening to a highly-polished traditional lecture can mislead students (and instructors) into thinking they are learning a lot.

I will discuss the powerful interplay between perceived fluency, feeling of learning and actual learning and their rooting in cognitive psychology. These misperceptions have broad implications for STEM education. For instance, course evaluations based on students' perceptions of learning could inadvertently promote inferior (traditional) methods of instruction—a superstar lecturer can explain things in such a way as to make students feel like they are learning more than they actually are. I will discuss how these perceptions of learning are likely to play a role with popular active learning methods that rely heavily on instructor feedback [3, 4].

During the talk, I will also provide a detailed description of the types of active learning currently being used in small and large enrollment science courses at Harvard University along with research-based techniques we use to boost the effectiveness of active learning.

1. M. Stains, et al., Anatomy of STEM teaching in North American universities. Science 359, 1468–1470 (2018)
2. L. Deslauriers, L. S. McCarty, K. Miller, K. Callaghan, G. Kestin, Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom, Proc. Natl. Acad. Sci. U.S.A. 116 (39), 19251-19257 (2019)
3. M. K. Smith, W. B. Wood, K. Krauter, J. K. Knight, Combining Peer Discussion with Instructor Explanation Increases Student Learning from In-Class Concept Questions. CBE—Life Sciences Education, 10 (1), 55-63 (2011)
4. L. Deslauriers, E. Schelew, C. E. Wieman, Improved learning in a large-enrollment physics class, Science 332, 862–864 (2011)

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