



TPSE Math
Transforming Post-Secondary Education in Mathematics

Research Evidence for Active Learning Invited Address

Wednesday, June 15, 2022

3:30-4:30pm Eastern time (2:30-3:30pm Central, 12:30-1:30pm Pacific)

Active Learning in Undergraduate Mathematics Courses:

**What we know, What we're pretty sure of,
and What we still need to figure out**



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Abstract: The research literature in undergraduate mathematics education, and other science and engineering education fields, is showing a general convergence towards the position that actively engaging students during classroom instruction improves learning and persistence outcomes. In this talk I will provide an overview of the preponderance of research on the use of “active learning” in undergraduate STEM courses, calling specific attention to the consensus findings of this research. However, in order to contextualize these findings, I will also draw out the nuances and considerations that challenge the oversimplified idea that “any active learning is better for all students”. With both the major trends of the research field and necessary considerations presented, I will then highlight promising strategies and resources for those considering pedagogical changes at their own institutions.

Bio Sketch: Dr. Johnson is an Associate Professor of Mathematics and the Assistant Dean for Inclusion and Diversity for the College of Science at Virginia Tech. Her research focuses on the pedagogical practices of mathematicians, with the goal of better understanding and supporting high quality, ambitious teaching in undergraduate mathematics classrooms. She has worked extensively on investigating and supporting mathematicians as they work to implement inquiry-oriented instructional materials (NSF #143195). Additionally, Dr. Johnson has worked on large-scale national survey projects investigating instructional practice, and influences on practice, in undergraduate STEM education (e.g., NSF #1430540, NSF #0910240, NSF #1726281). More information about her research can be found at <https://estrellajohnson.com/>.

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