SIGMAA IBL
WORKSHOP SERIES

sigmaa.maa.org/ibl/events

Fall 2025

Get ready for our fall lineup of virtual workshops, hosted by the Special Interest Group of the MAA on Inquiry-Based Learning!

Zoom Link: tinyurl.com/sigmaa-ibl-series

28 Aug
4pm EDT

Matthew G. Jones
Inquiring into Inquiry-Based Learning: A Peek Inside the Big Tent

23 Sept
12pm EDT

Kayla Heffernan
Building Process Skills and Critical Thinking Through POGIL: A Guided Inquiry-Based Approach to Math

22 Oct
3pm EDT

Rebecca Machen
Active Learning Meets AI: Enhancing Precalculus Engagement

18 Nov
1pm EST

Ben Sencindiver & Mary E. Pilgrim
Same Task, New Twist: Reframing Traditional Tasks to be More Inquiry-Based

For more info about the SIGMAA on IBL, visit **sigmaa.maa.org/ibl**

Inquiring into Inquiry-Based Learning: A Peek Inside the Big Tent

Thursday, August 28th 4PM EDT

Abstract: What is Inquiry-Based Learning? What are the essentials to getting started? In this session, you will learn what defines Inquiry-Based Learning (IBL), see an example IBL classroom, and begin to plan strategies you can use to increase students' understanding of the importance of active participation as well as their engagement with your courses.

Matthew G. Jones

Speaker Bio: Matthew G. Jones is Acting Associate Dean of the College of Natural and Behavioral Sciences at California State University, Dominguez Hills. He was previously Mathematics Department Chair and participated in redesigning courses for first-year students. He has led workshops for hundreds of K-12 and college instructors, has been Director, PI, Co-PI, or Senior Personnel on multiple funded research projects, has more than 15 publications, is on the editorial board of the Journal of the California Math Project, and has broad interests in mathematics education research. He has taught more than twenty different courses at the undergraduate and graduate levels.

Building Process Skills and Critical Thinking Through POGIL: A Guided Inquiry-Based Approach to Math

Tuesday, September 23rd 12PM EDT

Abstract: This interactive presentation will introduce instructors to the Process-Oriented Guided Inquiry Learning (POGIL) approach and explore how it can be effectively integrated into mathematics instruction within an Inquiry-Based Learning (IBL) framework. Participants will explore the roles used in POGIL classrooms and how these roles foster collaboration and accountability among students. We will also delve into the POGIL Learning Cycle, discussing how it structures activities to promote deeper understanding and critical thinking in mathematics. Additionally, the session will focus on the development of essential process skills, such as problem-solving, information processing, and written and oral communication, that students cultivate through POGIL activities. This session will be interactive, offering participants the opportunity to engage in hands-on activities, discuss strategies for implementation, and leave with actionable ideas for incorporating POGIL into their own classrooms.

Kayla Heffernan

Speaker Bio: Kayla Heffernan is an Associate Professor of Mathematics at the University of Pittsburgh at Greensburg. She received her Ph.D. in Mathematics and Science Education from Temple University and has an M.S. in Applied Mathematics and a B.S. in Secondary Mathematics Education. Her research interests center on mathematics identity, guided inquiry-based learning, and interdisciplinary programming for STEM majors. She is the author of the *College Algebra: A Guided Inquiry* book published with The POGIL Project and implements POGIL regularly in her own classes. She has also served as a classroom tester for math activities seeking POGIL endorsement and has served as a reviewer and curator for the POGIL Activities Clearinghouse. She received the 2024 POGIL Early Achievement (PEACH) Award and currently serves on the POGIL Steering Committee.

Active Learning Meets AI: Enhancing Precalculus Engagement

Wednesday, October 22nd 3PM EDT

Abstract: This interactive session shares a classroom-based approach to integrating generative AI into a supplemental precalculus course that utilizes active learning. Traditional homework was redesigned to invite students into guided conversations with a custom-built GPT, shifting the focus from answers to thinking. Instead of submitting static problem sets, students submitted chat transcripts that revealed their process, questions, and insights. These chats were then used to inform the course materials for the following class meeting.

Together, we'll explore sample prompts, student work, and the intentional choices behind the GPT's design, especially its role in reducing math anxiety, sparking curiosity, and encouraging metacognitive thinking. Along the way, participants will try out elements of the assignment themselves and consider how similar approaches could support engagement and conceptual depth in their own courses. You'll leave with concrete ideas for using generative AI in ways that center student learning and reflection.

Rebecca Machen

Speaker Bio: Dr. Rebecca Machen is the Director of STEM Instruction in the Student Academic Success Center on CU Boulder's campus. She completed her graduate work at the University of Iowa and University of Colorado, earning a master's degree in educational policy and a PhD in STEM education. She is also a lecturer in the Department of Mathematics. Her research interests include active learning, policy around STEM fields in post-secondary institutions, equity in the STEM disciplines, and the role of artificial intelligence in active learning. She has been a facilitator of professional development with the Mathematical Association of America and the American Mathematical Association of Two-Year Colleges. In her free time, she enjoys paragliding, backpacking, and adventuring with her 5 year old.

Same Task, New Twist: Reframing Traditional Tasks to be More Inquiry-Based

Tuesday, November 18th 1PM EST

Abstract: While ample evidence highlights the benefits of an inquiry-focused classroom, transitioning an entire course to this approach can be daunting, especially for new or novice instructors accustomed to traditional instruction. In this interactive session, we will introduce and explore some strategies from K-12 that are accessible and effective in transforming traditional problems into inquiry-based tasks. We will discuss how we have implemented these tasks and adjusted their parameters with the goals of defining concepts, introducing new topics, highlighting different representations, and reinforcing foundational material.

Speaker Bio: Ben Sencindiver is an Assistant Professor at the University of Texas at San Antonio. His research is in undergraduate mathematics education. Specifically, he is interested in students' thinking in introductory math classes like Calculus. He studies how students think about graphs and what factors prompt students to change how they think about them. His work also includes the development of an algebra concept inventory, as well as students' metacognition in math classes.

Speaker Bio: Mary E. Pilgrim is an Associate Professor of Mathematics Education in the Department of Mathematics and Statistics at San Diego State University and is the math graduate TA professional development provider. Her research is in undergraduate mathematics education, with expertise in mathematics instructor professional development for teaching, with a focus on active, equitable, and inclusive practices. In addition, she studies the uptake and sustainability of related change efforts at the department level.