

## ***Not Your Grandma's Lecture: Interactive Lecture in Calculus I in the CSPCC Two-Year Cases***

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### ***Abstract***

The quality of classroom instruction in Calculus I is recognized as a major contributor to student success in STEM (science, technology, engineering, and mathematics) fields. A national study of Calculus I revealed that *interactive lecture*, described as a combination of lecture and student-instructor interactions, was the dominant pedagogy in the two-year colleges selected for case study. The present study further analyzes data collected in the national study and provides a detailed description of features of an interactive lecture in the two-year cases. Overall, the study found that interactive lecture involves a combination of lecture, active learning mainly in the form of in-class problem solving, and student-instructor interactions that promote relationship building, opportunities for feedback, and validation strategies. The findings suggest that, in a climate where lecture often has a negative connotation, mathematics instructors may be oversimplifying when describing their instructional method as lecture. The paper concludes with suggestions for professional development aimed at improving interactive lecture and directions for future research.



**Helen E. Burn** is an instructor in the Department of Mathematics and director of the Curriculum Research Group at Highline College, where she has served as both chair of the Pure and Applied Sciences Division and the mathematics department coordinator. Her research focuses on community college mathematics curriculum, including reform of precollege mathematics and college algebra, and supporting adjunct faculty and the partner disciplines. She and coauthor Vilma Mesa are currently principal investigators on the NSF-funded grant *Transitioning Learners to Calculus in Community Colleges*. Helen received the 2014 Washington State Two-Year College Mathematics Education Reform Award for her decade-long work in reforming precollege mathematics within her department and state. She holds a BS from The Evergreen State College, an MS in mathematics from Western Washington University, and a PhD in higher education from the University of Michigan Center for the Study of Higher and Post-Secondary Education.

**Vilma Mesa** is associate professor of education and mathematics at the University of Michigan. She investigates the role that resources play in developing teaching expertise in undergraduate mathematics, specifically at community colleges and in inquiry-based learning classrooms. She has conducted several analyses of instruction and of textbooks and collaborated in evaluation projects on the impact of innovative mathematics teaching practices for students in science, technology, engineering, and mathematics. She has collaborated with several community college faculty on numerous federally funded projects. She served as associate editor for the *Journal for Research in Mathematics Education* from 2000–2004 and is currently serving as associate editor for *Educational Studies in Mathematics*. She has a BS in computer sciences and a BS in mathematics from the University of Los Andes in Bogotá, Colombia, and a master's and a PhD in mathematics education from the University of Georgia.

