

Transitioning STEM Learners to Calculus: Findings from a National Survey of Mathematics Chairs in Two-Year Colleges by Hispanic-Serving Institutional Designation

Helen Burn, *Highline Community College*

Eboni Zamani-Gallaher, *University of Illinois at Urbana-Champaign*

Vilma Mesa, *University of Michigan*

J. Luke Wood, *San Diego State University*

Abstract:

Mathematics programs in two-year colleges face pressure to increase the success of diverse learners in the STEM math pathway given the nation's need for STEM talent, coupled with its changing population demographics. This article presents findings from a national survey of mathematics department chairs in associate degree-granting colleges, disaggregated by Hispanic-Serving Institutional (HSI) status. The analysis examines institutional practices around math placement, course offerings in the STEM math pathway, student support, and institutional support for faculty around access to local data and professional development on topics related to diversity. Overall, the findings suggest that there are more progressive practices taking place at HSIs than what was reported at other institutions, including using multiple measures for placement, having test-out policies, and offering compressed courses or differentiated pathways through developmental mathematics. Furthermore, the data suggests HSIs more often than non-HSIs disaggregate data by student demographics, offer training to their personnel to better engage diverse populations, and provide student support in addition to traditional tutoring. The paper concludes with implications for practice and research on program improvement, informed by disaggregated student outcomes data and sustained professional development that provides the theoretical foundations and practices of engagement needed with diverse student populations.



Helen 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 is currently a coprincipal investigator on the NSF-funded grant, Transitioning Learners to Calculus in Community Colleges. 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.



Eboni Zamani-Gallaher is professor of higher education/community college leadership in the department of education policy, organization, and leadership at the University of Illinois at Urbana-Champaign. She is also director of the office for community college research and leadership (OCCRL). She holds a PhD in higher education administration with a specialization in community college leadership and educational evaluation from the University of Illinois at Urbana-Champaign. Her

teaching, research, and consulting activities largely include psychosocial adjustment and transition of marginalized collegians, transfer, access policies, student development and services at community colleges.



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.



J. Luke Wood is the dean's distinguished professor of education in the college of education at San Diego State University. Wood serves as the director of the joint PhD program in education between San Diego State University and Claremont Graduate University and director of the EdD program in community college leadership. Wood is also co-founder and co-director of the CCEAL center at SDSU that houses the Black Minds Project and the National Consortium on College Men of Color (NCCMC). Wood's research focuses on factors affecting the success of boys and men of color education. He has delivered over 750 scholarly and conference presentations and has authored over 140 publications, including nearly 70 peer-reviewed journal articles and 14 books.