

PROMOTION RECOMMENDATION
The University of Michigan
School of Education

Vilma M. Mesa, associate professor of education, with tenure, School of Education, and associate professor of mathematics, without tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of education, with tenure, School of Education, and professor of mathematics, without tenure, College of Literature, Science, and the Arts.

Academic Degrees

Ph.D.	2000	University of Georgia
M.A.	1996	University of Georgia
B.S.	1987	University of Los Andes, Bogotá, Colombia
B.S.	1986	University of Los Andes, Bogotá, Colombia

Professional Record

2015-Present	Associate Professor (without tenure), Mathematics, College of Literature, Science, and the Arts, University of Michigan
2014-Present	Associate Professor (with tenure), School of Education, University of Michigan
2007-2014	Assistant Professor (tenure track), Mathematics Education, School of Education, University of Michigan
2005-2007	Assistant Professor (non-tenure track) and Assistant Research Scientist, Mathematics Education, School of Education, University of Michigan
2003-2005	Instructional Consultant, Science-Technology-Engineering-Mathematics (STEM) disciplines, Center for Research on Learning and Teaching, University of Michigan
2001-2003	Coordinator, Master's Program in Curriculum Development, School of Education, University of Michigan
2000-2002	Post-doctoral Research Fellow, School of Education, University of Michigan

Summary of Evaluation:

Teaching: Professor Mesa teaches courses in the undergraduate teacher education program, master's programs in Educational Studies, and the doctoral program in Educational Studies. Since her last review in 2014, she has taught seven different courses at the undergraduate, masters, and doctoral levels, all of which are required courses in the respective program sequences. Professor Mesa teaches and has contributed to the redevelopment of Educational Research and Practice (EDUC 695). She has also taught Methods of Teaching Secondary Mathematics (EDUC 413) which is the mathematics methods course in the teacher education program; doctoral-level mathematics education courses including Research in Mathematics Education (EDUC 711) and Curriculum in Mathematics Education (EDUC 783); and a doctoral research methods course, Qualitative Research Methods (EDUC 792).

Professor Mesa has served as an advisor and a dissertation chair or co-chair for four doctoral students, and has also served on an additional thirteen dissertation committees. She has also advised five master's students and one post-doctoral researcher. Additionally, Professor Mesa has mentored seven undergraduate students through the University Research Opportunity Program (UROP), and has led four research apprenticeships, three teaching apprenticeships, and three independent studies.

Research: Professor Mesa's research focuses on understanding how interactions of instructors, students, and educational resources create opportunities for mathematics learning in post-secondary

education settings. There are three primary strands of scholarly inquiry within this focus: (1) undergraduate mathematics education, (2) mathematics education writ large, and (3) higher education. Within each of these strands, Professor Mesa explores two major areas: instructional practice and instructional resources, primarily through the analysis of textbook content and textbook use. She Mesa applies her research through theoretically grounded and empirically-based studies toward reforming post-secondary mathematics instruction, with an emphasis in community college contexts.

Since her last review, Professor Mesa has written one book, thirteen peer-reviewed journal articles, and eight book chapters. She gave eleven conference presentations, including two invited plenary sessions. She has been invited to give a Mathematical Association of America Invited Address at the 2020 Joint Mathematics Meetings—the largest mathematics meeting in the world. Professor Mesa has garnered significant grant funding in support of her research, including \$2.6 million in grants from the National Science Foundation since 2016 on three separate projects. She has also successfully attracted \$27,000 of funding from University sources, as well as \$50,000 from the 2015 Transforming Learning for the Third Century program.

Professor Mesa's research meets a critical need in post-secondary mathematics education by framing theoretically grounded and empirically-based claims that advance mathematics instruction reform, particularly in community colleges. Her ground-breaking research bridges the gap between the often divergent disciplines of mathematics education and community college teaching and research, and her collaborations with practitioners to conduct research in context are contributing to the vital reform of post-secondary mathematics instruction.

Recent and Significant Publications:

- Champion, J. & Mesa, V. (2018) Pathways to Calculus in U.S. High Schools, *PRIMUS*, 28:6, 508-527, DOI: 10.1080/10511970.2017.1315473
- Mesa, V. (2017). Mathematics education at public two-year colleges. In J. Cai (Ed.), *First compendium for research in mathematics education* (pp. 949-967). Reston, VA: National Council of Teachers of Mathematics.
- Lande, E., & Mesa, V. (2016). Instructional decision-making and agency of community college mathematics faculty. *ZDM The International Journal on Mathematics Education*, 48(1), 199-212. doi:10.1007/s11858-015-0736-x
- Helen E. Burn, Nina White & Vilma Mesa (2016) Improving calculus I in community colleges: It takes a [multidisciplinary] village, *Community College Journal of Research and Practice*, 40:6, 550-553, DOI: 10.1080/10668926.2015.1076749
- Bressoud, D., Mesa, V., Rassmussen, C. (Eds.) (2015). *Insights and recommendations from the MAA National Study of College Calculus*. Washington, DC: Mathematical Association of America.
- Mesa, V., Wladis, C., & Watkins, L. (2014). Research problems in community college mathematics education: Testing the boundaries of K-12 research. *Journal for Research in Mathematics Education* 45, 173-193.

Service: Professor Mesa has served as a member of two central school-level committees: the Promotion and Tenure Committee (2015), which she chaired in 2017-18, and the Executive Committee (2012-2015). She also served as the unit coordinator for the education in Mathematics, Science, and Technology unit in Educational Studies. She is an affiliate faculty member in the Center for the Study of Higher and Postsecondary Education and in the Engineering Education Program. At the university-level, Professor Mesa has served on the Student Evaluations Task Force, the Center for the Education of Women Steering Committee for the Women of Color in the Academy

Project, the Center for Research on Teaching and Learning Internal Review Committee, the Comprehensive Studies Advisory Board, the mathematics department Mathematics Teaching Seminar committee), and the Fulbright application review committee.

Professor Mesa serves as an associate editor of the journal *Educational Studies in Mathematics*, one of the top journals in mathematics education. She serves as a member of the editorial board of the *International Journal for Research in Undergraduate Mathematics Education*. Professor Mesa is highly involved in the Mathematical Association of America as a curriculum and resource specialist. Globally, she has consulted with educational institutions in Chile and Colombia, and is a member of the editorial board of the mathematics education journal *Revista Pensamiento Numérico Avanzado, PNA* published by the University of Granada in Spain.

External Reviewers:

Reviewer A: “My assessment of Professor Mesa’s work leads me to conclude that she is in the top group of colleagues in her peer group working in the field of mathematics education. She is advancing the field of mathematics education in substantial ways, and she is now a respected scholar, called upon to take on leadership roles in the field of STEM education.”

Reviewer B: “I regard Professor Mesa as a leading international researcher in the field of tertiary mathematics education. She occupies a distinctive position in this field because of her strong interest in and commitment to college-level mathematics teaching and learning. This is an embryonic research field much in need of stronger theorisation, closer attention to the needs of students and instructors, a clear focus on the mathematics being taught and learned, and powerful methodologies. Professor Mesa has demonstrated that she is extremely capable in addressing these priorities.”

Reviewer C: “I find Dr. Mesa’s work striking a rare balance between intellectual acuity and professional pragmatism: working across the disciplinary boundaries of mathematics and education requires both. Dr. Mesa’s involvement with and leadership of research projects that cut across these boundaries so often and so well is testimony to her valuable position in our community.”

Reviewer D: “Vilma Mesa is a prolific researcher and widely read scholars on community college mathematics instruction. By working with colleagues representing a remarkably wide variety of traditions in educational research, Professor Mesa has been a centripetal force bringing coherence to what has been a much-neglected area in math education. ... Her various publications arising from the NSF-funded National Study of Calculus Instruction are particularly noteworthy and certainly exemplify the breadth of her technical competence as a researcher... Her papers have become standard references in the field and appear regularly in both foundation proposals and dissertation literature reviews.”

Reviewer E: “As a distinguished expert in the area, Professor Mesa was invited to contribute a chapter to the ‘Compendium,’ ... an edited volume of 1000 pages that summarizes the state-of-the-art research on various issues related to theory, methods and particular content areas of research in mathematics education. It is a great honor for a researcher to be invited to contribute to this publication; it acknowledges the invited author’s reputation in the community of scholars.”

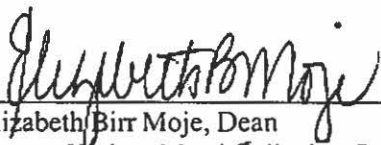
Reviewer F: “Vilma Mesa strikes me as akin to what Etienne Wenger calls a ‘knowledge broker’ – one who spans and connects two or more communities of practice, but in Mesa’s case, one who links fields of study and who works both in and across them, braiding their knowledge. This is very rare in higher education, certainly in the topic areas in which Professor Mesa works.”

Reviewer G: "Professor Mesa chose both a challenging and important area of research, to which she has continuously contributed significantly to theory as well as to practice. Most scholars in the field study either characteristics of teaching (of mathematics), focusing on the teacher, or processes underlying learning (of mathematics), focusing on the learner/student. Some scholars focus solely on textbook analysis. Thus, I find Professor Mesa's efforts to understand instruction remarkable, as she looks at the interactions between instructors, students, and resources. While it increases the complexity of conducting research, this approach allows her to offer insights that otherwise would not be possible."

Reviewer H: "In my opinion, the impact of Professor Mesa's work on the field of mathematics education is considerable. A strong indicator of this is that she is known as the leading researcher in the field on questions pertaining to mathematics education in community colleges. Most of my colleagues would consult Professor Mesa first if they had questions about what is known in this area or if they wanted to begin a research agenda on teaching and learning mathematics in these settings."

Summary of Recommendation:

Professor Mesa's research is recognized as critical to understanding how to improve and advance post-secondary mathematics education. She teaches core courses at all levels within the school, and engages in significant mentorship and research collaboration with students. Professor Mesa also provides service to the school, to the university, and to her profession commensurate with that of the highest levels of the faculty. Her scholarship, teaching, and service are worthy of recognition through promotion to professor, with tenure, and thus it is with the support of the School of Education's Executive Committee and the Promotion and Tenure Committee that I recommend Vilma M. Mesa for promotion to professor of education, with tenure, School of Education, and professor of mathematics, without tenure, College of Literature, Science, and the Arts.



Elizabeth Birr Moje, Dean
George Herbert Mead Collegiate Professor of
Education, and Arthur F. Thurnau Professor
School of Education



Elizabeth R. Cole, Interim Dean
Professor of Women's Studies, Psychology, and
Afroamerican and African Studies
College of Literature, Sciences, and the Arts
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