

MIKA MUNAKATA

Department of Mathematics, Montclair State University

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Education

PhD *Mathematics Education*. Columbia University. Graduate School of Arts and Sciences. New York, NY. May, 2002.

MS *Mathematics Education*. Teachers College, Columbia University. May, 2001.

MA *Science Education*. Teachers College, Columbia University. October, 1999.

BA *Biology*. Pomona College, Claremont, CA. May, 1993. Semester abroad in Kenya, School for International Training. Fall, 1991.

Research Interests: Professional Development of Teachers, Interdisciplinary Teaching and Learning, Teacher Leadership, Creativity in STEM.

University Positions

Professor of Mathematics Education. Department of Mathematics, Montclair State University. Montclair, NJ. 2013-present.

Director. Mathematics Education PhD and EdD programs. College of Science and Mathematics. Montclair State University. 2010-2018.

Associate Professor of Mathematics Education. Department of Mathematical Sciences, Montclair State University. 2007-2013.

Assistant Professor of Mathematics Education. Department of Mathematical Sciences, Montclair State University. 2002-2007.

Mathematics Education Courses taught

Doctoral: Mathematics Education Leadership, Mathematics Education in Higher Education, Research in Mathematics Education, Mathematical Modeling in the Middle and High School Grades, Mathematical Modeling in the Sciences, Mathematics Education in Higher Education Practicum, Dissertation Proposal Seminar.

Masters: Leadership Development in Mathematics Education, Mathematics for Elementary School Teachers, Geometry for the Middle Grades, Chance and Statistical Thinking for the Middle Grades, Numbers and Operations for the Middle Grades, Contemporary Teaching of Mathematics; Selected Topics (Number Theory), Selected Topics (Discrete Mathematics), Research Methods (Independent Study), Approaching School Mathematics through Applications, Problem Analysis for High School Teachers.

Undergraduate: Methods of Teaching Mathematics (secondary level); College Geometry, Mathematics for Elementary School Teachers, Student Teaching Supervision.

Mathematics Courses taught

Calculus A, Business Calculus, Contemporary Mathematics, The Development of Mathematics, New Student Experience, Creative Thinking in Mathematics.

Instructor, Mathematics. State University of New York—Fashion Institute of Technology. New York, NY. 2000-2001.

Instructor, Mathematics. Green River Community College. Auburn, WA. 2000.

Secondary School Positions

Mathematics Specialist, Middle School. Trinity School, New York, NY. 1998-2002.

Mathematics Teacher, Middle School. The Lakeside School, Seattle, WA. 1998.

Mathematics Teacher, Middle and High School. Head-Royce School, Oakland, CA. 1993-1997.

Mathematics Teacher. Heads-Up Program, enrichment program for students from low-income situations. Oakland, CA. 1993-1997.

External Grant Awards

Wipro Technologies Phase III Funding. “Extending our Reach: Montclair State University Wipro SEF Program”. Munakata (PI), Emily Klein and Monica Taylor (Co-PIs). July 1, 2022—June 30, 2026.

Total Funded: \$561,630.

National Science Foundation. Robert Noyce Teacher Scholarship Program. “Secondary STEM Teacher Education Scholarship Program”. Award #2150649. Doug Larkin (PI), Munakata (Co-PI), PJ Ricatto (Co-PI). February, 2022—January, 2027.

Total Funded: \$1,450,000

National Science Foundation. International Research Experiences for Students. “US-Japan study of novel genetic elements regulating seasonal behavior of medaka fish.” Award #1952513. Carlos Molina (PI), Munakata (Co-PI). September 2020—August 2024.

Total Funded: \$300,000

Wipro Technologies Phase II Funding. “Wipro Science Education Fellowship.” Privately funded teacher leadership program for experienced science teachers in partnership with University of Massachusetts Boston, Mercy College, Stanford University, University of South Florida, University of Missouri, and University of North Texas at Dallas. Munakata (PI), Emily Klein, Monica Taylor, and Jackie Willis (Co-PIs). September 2017—December, 2020.

Total Funded: \$300,000

National Science Foundation. Improving Undergraduate STEM Education (IUSE) Program, Directorate of Undergraduate Education. “Engaged Learning through Creativity in Mathematics and Science.” Award #1611876. Munakata (PI), Ashwin Vaidya (Co-PI). September 2016—August 2021.

Total Funded: \$299,701

Wipro Technologies Phase I Funding. “Wipro Science Education Fellowship.” Privately funded teacher leadership program for experienced science teachers in partnership with University of Massachusetts Boston and Mercy College. Munakata (PI), Emily Klein, Monica Taylor, and Jackie Willis (Co-PIs). January 2013—August 2017.

Total Funded: \$1,349,040

New Jersey Department of Education. “Creative University School Partnerships”. Munakata (PI), Erin Krupa and Jackie Willis (Co-PIs). July 2013—June 2016.

Total Funded: \$1,100,000

United States Department of the State. “100K Strong in the Americas”. Partnership grant with Universidad Mayor in Santiago, Chile. Carlos Molina (PI), Munakata (Evaluator and Education Coordinator). June 2014—May 2015.

Total Funded: \$25,000

National Science Foundation Graduate Teaching Fellows in K-12 (GK-12) Program, Directorate of Graduate Education. “GK-12 Fellows in the Middle: Partnerships for Inquiry and Interdisciplinary Middle School Science and Mathematics.” *Award #0638708.* Munakata (PI), Ken Wolff and Mary Lou West (Co-PIs). March 2007—February 2015.

Total Funded: \$2,825,141

American Physical Society. “The Art of Making Sustainable Science.” Ashwin Vaidya (PI), Munakata (Co-PI). May 2012—September 2013.

Total Funded: \$10,000

National Science Foundation Supplemental Funding. Division of Graduate Education and the Office of International Science and Engineering. “Beijing—MSU Connection” Supplement to award #0638708. Author of proposal for four-year international component of funded program, “GK-12 Fellows in the Middle: Partnerships for Inquiry and Interdisciplinary Middle School Science and Mathematics.” Directed program to Beijing China (17 participants in 2008, 8 participants in 2009) and hosted Beijing colleagues in 2008 and 2009; in Panama (19 participants) in 2010; and in Ecuador (21 participants) and hosted colleagues in 2011. September 2007—June 2011.

Total Funded: \$100,000

International Congress on Mathematics Education (ICME-10) Travel Grant. Awarded from National Science Foundation and National Council of Teachers of Mathematics (NCTM). 2004.

Total funded: \$2000

Project NExT: New Experiences in Teaching. Mathematical Association of America (MAA). Selected fellow for 2003-2004.

Internal Grant Awards

Global Education Grant. Montclair State University. Support to evaluate and coordinate educational activities with Universidad Mayor, Santiago, Chile. 2015.

Total funded: \$3500

Separately Budgeted Research Grant. Montclair State University. For project entitled, “Crossing Boundaries in Ecology and Mathematics Education” with Dirk Vanderklein, 2013.

Total funded: \$6800

Grant Development Grant. Montclair State University. For development of a proposal for the TUES program of the National Science Foundation with Ashwin Vaidya. 2011.

Total Funded: \$2750

Grant Development Grant. Montclair State University. For development of a proposal for the DRK-12 program of the National Science Foundation. 2009.

Total Funded: \$3000

Grant Development Grant. Montclair State University. For development of a proposal for supplemental funding from the National Science Foundation. 2007.

Total Funded: \$4000

Grant Development Grant. Montclair State University. For development of a CCLI grant sponsored by the National Science Foundation. 2005.

Total funded: \$3000

Separately Budgeted Research Grant. Montclair State University. For project entitled, "Secondary School Teachers' Attitudes toward Estimation." 2003.

Total funded: \$2000

Departmental Scholarship. Department of Mathematics, Science, and Technology, Teachers College, Columbia University. 2000-2002.

Minority Scholarship. Department of Mathematics, Science, and Technology, Teachers College, Columbia University. 2000-2001.

Graduate Assistant Scholarship. Department of Mathematics, Science, and Technology, Teachers College, Columbia University. 2000-2001.

Grant-in-Aid Support for Dissertation Research. Columbia University. 2001-2002.

Peer-Reviewed Articles

Munakata, M., Monahan, C., Krupa, E. & Vaidya, A. (2022). Non-traditional assessments to match creative instruction in undergraduate mathematics courses.

International Journal of Mathematical Education in Science and Technology.

DOI: 10.1080/0020739X.2022.2128452

Monahan, C., Munakata, M. (2022). The Role of Creativity in Teaching Mathematics Online. In: Chamberlin, S.A., Liljedahl, P., Savić, M. (Eds) *Mathematical Creativity: A Developmental Perspective*. Research in Mathematics Education. Springer, Cham. https://doi.org/10.1007/978-3-031-14474-5_14

Limbere, A. M., Munakata, M., Klein, E.J. & Taylor, T. (2022) Exploring the tensions science teachers navigate as they enact their visions for science teaching: what their feedback can tell us. *International Journal of Science Education*, 44(12), 1897-1915. DOI: 10.1080/09500693.2022.2105413

Vaidya, A., Munakata, M. & Vanderklein, D. (2022). Interdisciplinary lessons on energy and entropy. *Journal of College Science Teaching*, 51(5), 10-15.

Taylor, M., Klein, E. J., Trabona, K., & Munakata, M. (2022). Disrupting the Patriarchal Binary, 2nd edition. In N. Bond (Ed). *The Power of Teacher Leaders: Their Roles, Influence, and Impact*. Routledge.

Munakata, M., Vaidya, A., Monahan, C., & Krupa, E. (2021) Promoting creativity in general education mathematics courses, *PRIMUS—Problems, Resources, and Issues in Mathematics Undergraduate Studies*, 31(1), 37-55.

DOI: 10.1080/10511970.2019.1629515. Selected as *Editors' Pick for Most Downloaded in 2021*.

Monahan, C. Munakata, M. Vaidya, A. and Gandini, S. (2020). Inspiring mathematical creativity through juggling. *Journal of Humanistic Mathematics*, 10(2) 291-314. DOI: 10.5642/jhummath.202002.14.

Monahan, C., Munakata, M., & Vaidya, A. (2020). Engaging in probabilistic thinking through play. *Mathematics Teacher: Learning and Teaching PK-12*, 113(9), 18-23. <https://doi.org/10.5951/MTLT.2019.0198>

- Monahan, C., Munakata, M. and Vaidya, A. (2019). Creativity as an emergent property of a complex educational system. *Northeast Journal of Complex Systems*, (Special Issue of the satellite meeting of CCS2018 on Complexity and Education, Eds. Matthijs Koopmans, Hiroki Sayama, Dimitri Stamovlasis). DOI: 10.22191/nejcs/vol1/iss1/4
- Taylor, M., Klein, E. J., Munakata, M., Trabona, K., Rahman, Z., & McManus, J. (2019). Professional development for teacher leaders: using activity theory to understand the complexities of sustainable change. *International Journal of Leadership in Education*, 22(6), 685-705. DOI: 10.1080/13603124.2018.1492023
- Trabona, K., Taylor, M., Klein, E., Munakata, M. & Rahman, Z. (2019) Collaborative professional learning: cultivating science teacher leaders through vertical communities of practice. *Professional Development in Education*, 45(3), 472-487, DOI: 10.1080/19415257.2019.1591482
- Krupa, E., Munakata, M., & Yu, K. (2019). Mathematics field day: Content-embedded play activities. *Teaching Mathematics in the Middle School*, 24(5), 296-299.
- Klein, E. J., Taylor, M., Munakata, M., Trabona, K., Rahman, Z., & McManus J. (2018). Navigating teacher leaders' complex relationships using a distributed leadership framework. *Teacher Education Quarterly*, 45(2), 89-112.
- Rahman, Z.G., Munakata, M., Klein, E.J., Taylor, M., & Trabona, K. (2018). Growing our own: Fostering teacher leadership in K-12 science teachers through school-university partnerships. In J. Hunzicker (Ed.), *Teacher Leadership in Professional Development Schools* (pp. 235-253). Bingley, UK: Emerald Publishing.
- Vishnubhotla, M. & Munakata, M. (2018). The mathematics of loopy pictures frames. *Teaching Mathematics in the Middle School*. 23(4), 231-234. DOI: 10.5951/mathteacmiddscho.23.4.0231
- Leszczynski, E., Monahan, C., Munakata, M., & Vaidya, A. (2017) The Windwalker project: An open-ended approach. *Journal of College Science Teaching*. 46(6), 27-33.
- Vanderklein, D., Munakata, M. and McManus (2016). Crossing boundaries in undergraduate ecology education. *Journal of College Science Teaching*. 45(3), 41-47.
- Munakata, M. and Vaidya, A. (2015) Using project- and theme-based learning to encourage creativity in science. *Journal of College Science Teaching*. 42(2), 23-28.
- Leszczynski, E., Munakata, M., Evans, J., & Pizzigoni, F. (2014). Integrating mathematics and science: Ecology and Venn diagrams. *Teaching Mathematics in the Middle School*. 20(2), 90-96.
- Munakata, M. and Vaidya, A. (2013). Undergraduate research: Fostering creativity through personalized education. *PRIMUS—Problems, Resources, and Issues in Mathematics Undergraduate Studies. Special issue*. 23(9), 764-775.
- Munakata, M. and Cheteyan, L.A. (2013). Mathematics at the Guilin Garden. *The Mathematics Teacher*. 106(7). 496-500.
- Munakata, M. and Vaidya, A. (2012). Encouraging creativity in mathematics and science through photography. *Teaching Mathematics and its Applications*. 31(3), 121-132.
- Munakata, M. (2011). Context based exercises in logic: To park or not to park, 'tis the question... *International Journal of Mathematics Education in Science and Technology*. 42(5), 649-657.

- Munakata, M. (2010). The mathematics education debates: Preparing teachers to be active professionals. *PRIMUS—Problems, Resources, and Issues in Mathematics Undergraduate Studies*. 20(8), 712-720.
- Li, A., and Munakata, M. (2009). Building mathematically. *Mathematics Teacher*. 103(1), 14-17.
- Munakata, M. (2009). Mathematical representations at the national art gallery. *Mathematics and Computer Education*. 43(1), 47-52.
- Jones, M. and Munakata, M. (2009). Coloring and counting rectangles on the board. In B. Hopkins (Ed.), *Discrete Mathematics Resource Guide*. MAA Notes Series #74. (pp. 19-30). Washington D.C. Mathematical Association of America.
- Munakata, M. and Li, A. (2008). Reflections on the Montclair State University—Beijing connection. *MAA FOCUS*, 28(8).
- Munakata, M. (2006). A little competition goes a long way—Holding a mathematical modeling contest in your classroom. *Mathematics Teacher*. 100(1), 30-39.
- Munakata, M. (2006). Just tell us the rule! *Mathematics Teaching*. 196, 22.
- Munakata, M. (2005). Welcome to the math book club: A new approach to integrating mathematics, reading, and writing. *PRIMUS—Problems, Resources, and Issues in Mathematics Undergraduate Studies*. 15(3), 259-266.
- Munakata, M. (2005). Constructing cooperative learning problems. *Mathematics Teacher*, 98(6), 386-389.
- Munakata, M. (2005). Exploring mathematics outside the classroom through the field trip assignment. *PRIMUS—Problems, Resources, and Issues in Mathematics Undergraduate Studies*. 15(2), 117-123
- Munakata, M. (2005). Lessons from The Little Prince: The classic children’s book spurs food for thought for science educators. *Science and Children*, 42(8), 40-42.
- Munakata, M. (2004). Using order-of-magnitude problems to promote creativity, problem-solving skills, and confidence in preservice elementary school teachers. *Connections* 14(1), 6-7.
- Munakata, M. (2004). Reflections on the 2004 AMTE Conference. *Connections*. 13(2), 4.

Research-Based Resources for Teachers

- Munakata, M. (Editor). (2005). *Grade 6 Professional Resources Handbook*. Boston, MA: Houghton Mifflin Company.
- Munakata, M. (2005). *Grade 3 Professional Resources Handbook. Unit 5: Measurement*. Boston, MA: Houghton Mifflin Company.
- Munakata, M. (2005). *Grade 4 Professional Resources Handbook. Unit 2: Operations and Algebraic Thinking*. Boston, MA: Houghton Mifflin Company.
- Munakata, M. and Esposito, L. (2005). *Grade 5 Professional Resources Handbook. Unit 1: Number Sense*. Boston, MA: Houghton Mifflin Company.
- Evered, L. and Munakata, M. (2005). *Grade 6 Professional Resources Handbook. Unit 1: Whole Numbers, Decimals, and Algebra*. Boston, MA: Houghton Mifflin Company.
- Munakata, M. (2005). *Grade 6 Professional Resources Handbook. Unit 2: Fractions and Decimals*. Boston, MA: Houghton Mifflin Company.

Peer-Reviewed Proceedings

- Krupa, E., & Munakata, M. (2021). *Characterizing feedback given among mathematics teachers: classroom observations*. In: Sacristán, A.I., Cortés-Zavala, J.C. & Ruiz-Arias, P.M. (Eds.). (2020). *Mathematics Education Across Cultures: Proceedings of the 42nd Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Mexico*. Cinvestav / AMIUTEM / PME-NA. <https://doi.org/10.51272/pmena.42.2020>
- Munakata, M. and Wolff, K. (2008). Using Field Trips and Hands-on Activities to Improve Middle School Student Achievement in, and Attitude Toward, Mathematics and Science in a Multilingual and Multicultural Environment. *Proceedings of the International Congress on Mathematics Education with Ken Wolff*. Monterrey, Mexico.
- Wolff, K. and Munakata, M. (2008). Initiating and conducting mathematics education research on school-based programs. *Proceedings of the International Congress on Mathematics Education with Ken Wolff*. Monterrey, Mexico.
- Munakata, M. and Li, A. Bringing Cutting Edge Research to the Middle School Classroom. (2008) *The Proceedings of the International Conference of Tradition and Innovation in Curriculum and Instruction*. Beijing, China.
- Munakata, M. “The Use of Pragmatic Reasoning Schemas to Improve Undergraduate Students’ Logical Reasoning Skills.” *Electronic Proceedings of the Tenth Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education*. February, 2007.
- Munakata, M. “Developing Mathematical Resourcefulness in Middle School Teachers.” *Proceedings of the 10th International Congress on Mathematics Education*. With Dr. Eileen Fernandez. July, 2004.
- Avramenko, O., Lupan, I. (both of Kirovohrad State Pedagogical University), and Munakata, M. (2003). “The computer learning technologies in mathematics in countries with different teaching systems.” *Proceedings of the conference on technology in Rivne, Ukraine*. 5(24), 3-9.
- Munakata, M. “Pre-Service Teachers’ Responses to Student Questions Surrounding Common Mathematical Conventions.” *Proceedings of the Hawaii International Conference on Education*. January, 2003.

Other Publications

- Munakata, M. and Vaidya, A. (2013). Experiments in Creative Approaches to Science Education. *The Teaching Times in Higher Education: A publication of the Research Academy for University Learning at Montclair State University*. 3(2) 6-9.
- “Mathematical Imagination” written for the Creative Research Center at Montclair State University, published online July, 2010
- Photograph of seven-crossing knot taken at the Humble Administrator’s Garden in Suzhou, China featured as “Found Math” on the website of the Mathematical Association of America. October, 2009.
- Photograph of sculpture taken at the National Art Gallery, Washington, DC featured as “Found Math” on the website of the Mathematical Association of America. April, 2008.
- Subject for feature article in Human-AD, a career magazine published in Japan. Article describes career path and educational philosophy. April, 2008.

Student Publications Advised and Published

- Mathematics Teachers Calendar Problems (2012). Guided and edited student-generated problem set and solutions assigned in course, Problem Analysis in Secondary Schools, published as Calendar Problems in *Mathematics Teacher* 106(3), 201-206.
- Quebec Fuentes, S. (2009). Estimating African elephant populations (Part 2). *Mathematics Teacher*, 102(8), 621-627.
- Quebec Fuentes, S. (2009). Estimating African elephant populations (Part 1). *Mathematics Teacher*, 102(7), 534-539.
- Quebec Fuentes, S., Garruto, P., & Lockard, F. (2007). What if we were built like the dinosaurs? *Mathematics Teaching in the Middle School*, 13(4), 249-252.
- Mathematics Teachers Calendar Problems (2009). Guided and edited student-generated problem set assigned in course, Problem Analysis in Secondary Schools, published as Calendar Problems in *Mathematics Teacher* 102(6), 440.

Conference Presentations

- Munakata, M., Lim, S., & Molina, C. (2023, November 3). *Transformative learning through international research experiences*. American Association of Universities and Colleges (AAC&U), Transforming STEM Education, Arlington, VA, November 2-4, 2023.
- Munakata, M., Lim, S., & Molina, C. (2023, April 20). *The impact of an international research experience on undergraduate and graduate students' understandings about science*. National Association of Research in Science Teaching (NARST), Chicago, IL, April 19-21, 2023
- Krupa, E., Munakata, M. (2021, June 2-7). *Characterizing feedback given among mathematics teachers: classroom observations*. North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), online.
- Limbere, A., Munakata, M., Klein, E. J., & Taylor, M. (2021, Apr. 9). *Exploring experienced science teachers' vision for science teaching*. National Association of Research in Science Teaching (NARST) Annual International Conference, online.
- Limbere, A., Munakata, M., Klein, E. J., & Taylor, M. (2021, Apr. 12). *Teacher noticing and leveraging of student thinking in science lessons and debriefs of classroom videos* [Conference session]. Annual Meeting of the American Educational Research Association (AERA), online.
- Munakata, M. & Krupa, E. E. (2020, Apr 17 - 21) *Nature of Feedback Among Teachers Observing Classrooms Lessons as Part of a Collaborative Professional Development* [Roundtable Session]. AERA Annual Meeting San Francisco, CA <http://tinyurl.com/ugmh35p> (Conference Canceled)
- “Engaged Learning Through Creativity: A Case for Revising General Education Mathematics Courses” with Erin Krupa, Ashwin Vaidya, and Ceire Monahan. Accepted for the International Congress of Mathematics Education (ICME). Shanghai, China (conference postponed).
- “Aligning Assessment with Instruction in a Creativity in Mathematics Course” with Ceire Monahan and Ashwin Vaidya. Research in Undergraduate Mathematics Education (RUME). Boston, MA. February 27-29, 2020.

- “What Do Emerging Science Teacher Leaders Talk About? Unpacking Feedback in a Vertically Aligned PLC.” with Zareen Rahman, Monica Taylor, Emily Klein, and Kristen Trabona. Annual Meeting of the American Educational Research Association (AERA). New York City, NY. April 16, 2018.
- “Engaged learning through creativity in mathematics.” with Ashwin Vaidya, Ceire Monahan, and Erin Krupa. Annual meeting of the Research in Undergraduate Mathematics Education association. San Diego, CA. February 23, 2018.
- “Engaged Learning through Creativity in Science and Mathematics.” American Association of Colleges and Universities Transforming STEM in Higher Education national conference. San Francisco, CA. November, 2017.
- “Supporting and Developing K-12 Science Teacher Practice, Knowledge, and Leadership Through Vertically Aligned PLCs.” Part of related paper set with University of Massachusetts Boston and Mercy College. National Association of Research in Science Teaching (NARST) Annual International Conference. San Antonio, TX. April, 2017.
- “Collaborative professional learning: Cultivating science teacher leaders through vertical learning communities” American Educational Research Association Annual Meeting. With Monica Taylor, Emily Klein, Zareen Rahman, and Kristen Trabona. San Antonio, TX. April, 2017.
- “Communication matters in science and math: University-school partnerships and Fellows in the Middle.” American Educational Research Association Annual Meeting. With Sumi Hagiwara and Eliza Leszczynski. San Antonio, TX. April, 2017.
- “Instructional Rounds as a Model of Yearlong Professional Development Support.” Association of Mathematics Teacher Educators National Conference. With Erin Krupa, Zareen Rahman, and Ceire Monahan. Orlando, FL. February, 2017.
- “Crossing Boundaries: Transforming STEM Education” at the annual conference of the Association of American Colleges and Universities. With Dirk Vanderklein. Seattle, WA. November 12-14, 2015.
- “Fostering Science Teacher Leadership for Sustainable Change” at the American Educational Research Association Annual Meeting. With Monica Taylor, Emily Klein, Jason McManus, Zareen Rahman, and Kristen Trabona. Chicago, IL, April 16-20, 2015.
- “The Wipro Science Education Fellowship Program” at the National Science Teacher Association Annual Meeting. With Arthur Eisenkraft, Pam Pelletier. Boston, MA, April 4-6, 2014
- “The Art of Science” at the American Physical Society Annual Meeting with Dr. Ashwin Vaidya. Denver, CO, March 3-6, 2014
- “Science and Mathematics Connections for the Middle School Classroom” at the National Science Teachers Association (NSTA) conference with Eliza Leszczynski. Portland, OR, October 24-26, 2013.
- “The Impact of Resident Scientist Graduate Students on Middle School Teaching and Learning”. National Association of Research in Science Teaching (NARST) Annual International Conference. April 6-9, 2013.

- “A Study on an Interdisciplinary Outreach Program”. International Consortium of Research in Science and Mathematics Education (ICRSME). March 13-16, 2013 with Eliza Leszczynski.
- “International Collaborations for STEM Graduate Students and Middle School Teachers” International Consortium of Research in Science and Mathematics Education (ICRSME). March 13-16, 2013 in Granada, Nicaragua with Eliza Leszczynski.
- “GK-12 Fellows in the Middle: Partnerships for Inquiry and Interdisciplinary Middle School Science and Mathematics.” At the annual conference of the American Educational Research Association. Vancouver, CA April 13—17, 2012. Co-presented with Dr. Sumi Hagiwara.
- “Thinking Globally, Acting Locally -- Initiatives to Improve Science Learning for All.” National Association of Research in Science Teaching (NARST) with Sumi Hagiwara, Maryam Alapa, and Jonathan Hayes. April 5, 2011
- “Ecosystems of Science Across Borders.” National Association of Research in Science Teaching (NARST) with Sumi Hagiwara. April 6, 2011
- “Using Field Trips to Promote Interdisciplinary Connections” poster presentation at the International Congress on Mathematics Education with Ken Wolff. Monterrey, Mexico. July 12, 2008.
- “Initiating and conducting mathematics education research on school-based programs” at the International Congress on Mathematics Education with Ken Wolff. Monterrey, Mexico. July 11, 2008.
- “Using Field Trips and Hands-on Activities to Improve Middle School Student Achievement in, and Attitude Toward, Mathematics and Science in a Multilingual and Multicultural Environment” at International Congress on Mathematics Education with Ken Wolff. Monterrey, Mexico. July 11, 2008.
- “A collaboration between university and middle schools to promote interdisciplinary learning: GK12 Fellows in the Middle at Montclair State University” at the International Consortium on Research in Science and Mathematics Education. Quito, Ecuador. May 14, 2008.
- “International Collaborations—Beijing Connection” at annual meeting of the National Science Foundation’s GK-12 program. Washington, DC. March, 2008.
- “The Use of Pragmatics Reasoning Schemas to Improve Undergraduate Students’ Logical Reasoning Skills” at the Conference on Research in Undergraduate Mathematics Education (RUME—MAA). San Diego, CA. February, 2007.
- “The Adopt-A-Professor Program” at the Association of Mathematics Teacher Educators (AMTE) national conference with Ken Wolff. Tampa, FL. January, 2006.
- “Using the ‘Color the Board’ game to challenge anxious students’ notions of mathematics” at the Mathematical Association of American (MAA)/American Mathematical Society (AMS) Joint Meetings. San Antonio, TX. January, 2006.
- “Topological Puzzles to Tickle the Senses” at the 83rd Annual Meeting of the National Council of Teachers of Mathematics (NCTM). Anaheim, CA. April, 2005
- “Reading and Writing in Mathematics? The Math Book Club for Undergraduate Mathematics Courses” at MathFest, The Mathematical Association of America (MAA). August, 2004.

- “Developing Mathematical Resourcefulness in Middle School Teachers” at the 10th International Congress on Mathematics Education (ICME-10) with Eileen Fernandez. Copenhagen, Denmark. July, 2004.
- “Preparing Experienced Teachers Certified in an Area Other than Mathematics to Teach Mathematics in the Middle Grades” at the Association of Mathematics Teacher Educators (AMTE) national conference with Ken Wolff. San Diego, CA. January, 2004.
- “Constructing Puzzles to Promote Mathematical Reasoning” at the Mathematics Association of America (MAA)/ American Mathematical Society (AMS) Joint Meetings. Phoenix, AZ. January, 2004.
- “Secondary students’ attitudes toward the use of estimation in the mathematics classroom: Insights into students’ perceptions of mathematics and implications for curricular design” at the 2003 Annual Meeting of the American Educational Research Association (AERA). Chicago, IL. April, 2003.
- “The Benefits of Order-of-Magnitude Problems in the Mathematics Classroom to Promote Creative Strategy Use on Problem-Solving Tasks” at the Research Pre-session of the 81st Annual Meeting of the National Council of Teachers of Mathematics (NCTM). San Antonio, TX. April, 2003.
- “Pre-Service Teachers’ Responses to Student Questions Surrounding Common Mathematical Conventions” at the Hawaii International Conference on Education. Honolulu, HI. January, 2003.

Workshop Presentations

- “Reconsidering Undergraduate Mathematics Courses for Non-Majors.” with Ashwin Vaidya, Ceire Monahan. Mathematical Association of America Regional Conference, Essex County College, NJ. October 25, 2019.
- “Mathematics in Unexpected Places” with Ashwin Vaidya. Kasser Theater, Montclair State University. December 15, 2018.
- “Creativity in Mathematics: Rethinking how we teach.” with Ashwin Vaidya and Ceire Monahan. Bergen Community College. June 27, 2018.
- “Science teacher leadership” with Monica Taylor, Emily Klein, Dan Mazol, and Mary Goffredo. New Jersey Teacher Leadership Network, New Jersey Department of Education. June 4th, 2018.
- “The Complexities of Teacher Leadership Within A Distributed Leadership Framework.” Keynote address at BUILD convening conference at Montclair State University with Monica Taylor, Emily Klein. Montclair, NJ. May 7, 2018.
- “Encouraging creativity in mathematics: Engaged learning through creativity in science and mathematics (CMS)” with Ashwin Vaidya. Department of Mathematical Sciences seminar, Montclair State University, NJ. April 23, 2018.
- “Encouraging creativity in mathematics: The rethinking of a general education mathematics course.” With Ceire Monahan. STEM C2 Conference. Bergen County Community College. April 13, 2018.
- “Encouraging Creativity in Mathematics and Science” workshop for Montclair State University faculty. June 20, 2017.
- “Hand-Spun Tales: At the Crossroads of Creativity and Sustainability in Art and Science.” University Teaching and Learning Showcase, sponsored by Research

- Academy of University Learning (RAUL) at Montclair State University. May 3, 2013 with Ashwin Vaidya and Anuj Vaidya.
- “Mentoring in the Academy” Presented to graduate students at the MSU Graduate Development Conference, September 17, 2011.
- “Creativity in Science and Mathematics.” University Teaching and Learning Showcase, sponsored by Research Academy of University Learning (RAUL) at Montclair State University. May 4, 2011 with Ashwin Vaidya
- “Education in China.” Facilitator for panel discussion on China—US teacher collaborations related to GK12 program. Presented as part of Chinese Festival of the Arts and Humanities. April 8, 2010.
- “Encouraging Critical Thinking in the Science and Mathematics Classroom”. CCRAA Cooperative Arrangement: Improving the Pipeline for Latinos in Science and Mathematics. Invited seminar to mathematics and science faculty of Jersey City Community College and Hudson County Community College. June 15, 2009.
- “Using Order-of-Magnitude problems to promote critical thinking in the mathematics classroom.” Shanghai Normal University. Invited presentation. December 17, 2008
- “Bringing Cutting Edge Research to the Middle School Classroom” with Aihua Li. The International Conference of Tradition and Innovation in Curriculum and Instruction. Beijing, China. December 13, 2008
- US-Sino Workshop on Mathematics and Science Education: Common Priorities that Promote Collaborative Research. Middle Tennessee State University. Facilitator for teacher preparation research group. June 22-27, 2008.
- “The MSU—Beijing Connection” at the regional meeting of the National Science Foundation’s GK-12 projects. New Jersey Institute of Technology. Newark, NJ. May 19, 2008.
- “GK-12 Fellows in the Middle Program at Montclair State University” at the Xi’an Proseminar in Mathematics Education. Xi’an, China. January, 2008.
- “Problem Solving across the Disciplines” presented with Ken Wolff and Mary Lou West at the Institute of Education, Beijing Normal University. Beijing, China. January, 2008.
- “Mathematical Contortions” at the Hands and Minds Together Conference. PRISM—Professional Resources in Science and Mathematics. Montclair, NJ. May, 2005.
- “Paradoxes Galore” at the Hands and Minds Together Conference. PRISM—Professional Resources in Science and Mathematics. Montclair, NJ. May, 2005.
- “Chance and Statistical Thinking for the Middle Grades” at the Association of Mathematics Teachers of New Jersey (AMTNJ) conference. Somerset, NJ. October, 2004.
- “Probability and Statistics for the Middle Grades” for a six-hour professional development workshop. Montclair, NJ. December, 2003.
- “Exploring Science Education through Literature” in the Department of Curriculum and Teaching, Old Dominion University. Norfolk, VA. October, 2002.
- “Teaching Mathematical Reasoning to Elementary School Students” for prospective elementary school teachers. Department of Early Childhood, Elementary and Literacy Education, Montclair State University. Montclair, NJ. November, 2002.
- “Mathematics Education in Japan” at the Colloquium on Multicultural Mathematics. Teachers College, Columbia University. New York, NY. September, 2001.

Global Education Experience

- “Teaching in English: A University Faculty Advancement Program.” Taught teaching methodology course to faculty members at Technical University of Graz (TUGraz). July, 2012, 2013, 2014, 2015, 2016, 2017, and 2018.
- Coordinated and hosted one mathematics teacher and one administrator from Escuela del Mileneo en el Beatrío, Quito for a week-long visit to Montclair State University and local middle schools as part of international collaboration of NSF GK12 program. June, 2011
- Coordinated and led 10-day visit to Ecuador for a group of 21 that included MSU faculty, middle school teachers, graduate students, and Dean of College of Science and Mathematics as part of the NSF-funded GK12 program. March, 2011.
- “Teaching in English: Advanced English Writings Skills for Content-based Instructors”. Taught a two-week writing course for research faculty at Dankook University. Emphasized writing for research and professional development. Seoul, Korea. January 3—January 14, 2010.
- “Teaching in English: Advanced English Writings Skills for Content-based Instructors in the Natural and Applied Sciences”. Taught a four-week writing course for science and mathematics faculty at East China Normal University. Emphasized writing for research and professional development. Shanghai, China. July 13—August 7, 2009
- Coordinated and led ten-day trip to Panama for a group of 19 that included MSU faculty, middle school teachers, and graduate students for NSF GK12 program. March, 2010.
- Coordinated and hosted two mathematics teachers from Beijing, China for a week-long visit to Montclair State University and local middle schools as part of international collaboration of NSF GK12 program. June, 2009.
- Coordinated and led two-week trip to Beijing, China for a group of 8 that included MSU faculty, middle school teachers, and graduate students. January 2009.
- Coordinated and hosted two mathematics teachers from Beijing, China for a week-long visit to Montclair State University and local middle schools as part of international collaboration of NSF GK12 program. June, 2008.
- Coordinated and led two-week trip to Beijing, China for a group of 17 that included MSU faculty, middle school teachers, graduate students, and a school district superintendent. January 2008.
- Co-authored Memorandum of Understanding for partnership between MSU and Universidad Tecnológica Equinoccial (UTE) in Quito, Ecuador.

Student Research Supervised

As dissertation chair

Helene Leonard, in progress.

Christa Mawn, in progress.

Daniel Abuabasa, in progress.

SuSan Lim, in progress. *Co-chair with Dr. Nicole Panorkou.*

Doctoral dissertation chair. “Secondary Teachers' Noticing of Students' Mathematical Thinking as They Participate in a Professional Development Program Centered on

- Task-based Student Interviews.*” Gurkan Kose, PhD in Mathematics Education, May 2021.
- Doctoral dissertation chair.* “Fostering Mathematical Creativity Among Middle School Mathematics Teachers” Ceire Monahan, PhD in Mathematics Education, January, 2021.
- Doctoral dissertation chair.* “*Adult Learners, Learning Disabilities, and Mathematics: A Case Study.*” Marguerite Flood, Ed.D. in Mathematics Education, January, 2017.
- Doctoral dissertation chair:* “*Quantitative Literacy and Mathematics Education: The Benefits and Challenges of a QL Course.*” Mark Russo, Ed.D. in Mathematics Education, May, 2014.
- Doctoral dissertation chair:* “*Connecting Mathematics and Science: The Middle School Teachers’ Perspective.*” Eliza Leszczynski, Ed.D. in Mathematics Education, May, 2014.
- Doctoral dissertation chair:* “*Reform in Mathematics Education—Teaching for Social Justice.*” Marius Petric, Ed.D. in Mathematics Education. May, 2011.
- Doctoral dissertation chair:* “The Evolution of One Teacher’s Interactions with Students Working in Small Groups with the Intention of Improving Students’ Communication, Self-Regulating, and Problem Solving Skills.” Sarah Quebec Fuentes, Ed.D. in Mathematics Pedagogy. May, 2009.

As committee member.

- Doctoral dissertation committee member.* Karmen Yu, in progress.
- Doctoral dissertation committee member.* Elise Lahiere, in progress.
- Doctoral dissertation committee member.* Amanda Provost, in progress.
- Doctoral dissertation committee member.* Meimee Persau, in progress.
- Doctoral dissertation committee member.* “Investigating Elementary School Students’ Reasoning about Dynamic Angles.” *Germia, E.*, Ph.D. in Mathematics Education, May, 2022.
- Doctoral dissertation committee member.* “Using Teacher Noticing and Video-Mediated Professional Learning to Develop Preservice Teachers Knowledge for Teaching the Derivative.” *Alfred Limbere*, Ph.D. in Mathematics Education, June, 2022.
- Doctoral dissertation committee member.* “*A Community of Learning in an Elementary School.*” Megan Roeder, Ph.D. in Mathematics Education, 2020.
- Doctoral dissertation committee member.* “*The Role of Covariational Reasoning in Preservice Teachers’ Meanings for Quadratic and Exponential Relationships.*” Madhavi Vishnubhotla, PhD in Mathematics Education, 2020.
- Doctoral dissertation chair.* “*Adult Learners, Learning Disabilities, and Mathematics: A Case Study.*” Marguerite Flood, Ed.D. in Mathematics Education, January, 2017.
- Doctoral dissertation chair:* “*Quantitative Literacy and Mathematics Education: The Benefits and Challenges of a QL Course.*” Mark Russo, Ed.D. in Mathematics Education, May, 2014.
- Doctoral dissertation chair:* “*Connecting Mathematics and Science: The Middle School Teachers’ Perspective.*” Eliza Leszczynski, Ed.D. in Mathematics Education, May, 2014.
- Doctoral dissertation chair:* “*Reform in Mathematics Education—Teaching for Social Justice.*” Marius Petric, Ed.D. in Mathematics Education. May, 2011.

Doctoral dissertation chair: “The Evolution of One Teacher’s Interactions with Students Working in Small Groups with the Intention of Improving Students’ Communication, Self-Regulating, and Problem Solving Skills.” Sarah Quebec Fuentes, Ed.D. in Mathematics Pedagogy. May, 2009.

Doctoral dissertation committee member. “*Diagramming to improve mathematics achievement.*” Banmali Banerjee, candidate for Ed.D. in Mathematics Pedagogy. Completed May, 2010.

Doctoral dissertation committee member. “The effect of visually enhanced instructional units on high school calculus students’ visualization ability and their understanding of the limit concept.” Arpi A. Lajinian, Ed.D. in Mathematics Pedagogy. Completed May, 2008.

Master’s thesis committee member. John O’Meara, 2022.

Master’s thesis advisor. “Student Approaches to Problem Solving with Cooperative Logic Activities.” Frank Forte, MS in Mathematics. Completed 2007.

Master’s thesis committee member. “Mathematical sophistication and educational philosophies among prospective and practicing mathematics teachers.” Jodie Sovak, MS in Mathematics. Completed 2003.

Service to Local Schools

Presenter. Mathematics in Juggling? Presented to 9th grade students at Jonathan Dayton High School. July 9, 2021.

Professional Development Provider. Developed and implemented series of professional development workshops for mathematics teachers at Kearny High School. Spring 2018, Fall 2018.

Professional Development Presenter. “Encouraging Creativity in High School Mathematics”. Whippany Park Regional High School. October 9, 2017.

Presenter. Visiting Scientists Program, Montclair State University. Give presentations at local public schools about innovations in science and mathematics. 2003-2004, 2014—present.

Student Teacher Supervisor. Department of Mathematical Sciences, Montclair State University. 2002-present.

Visiting teacher. Bradford School, Montclair, NJ. Offer enrichment activities to classes. 2010.

Presenter. “How do I divide thee, let me count the ways.” at Math Day, Montclair State University. Program for high school students interested in becoming a mathematics teacher. March, 2007.

Adopted Professor. Adopt-A-Professor, Montclair State University. Adopted by two local middle school classes each year. Collaborate with teachers to give presentations once a month. 2004—2006.

Presenter. “Mathematical Games, Puzzles, and Magic Tricks” at Math Day, Montclair State University. Program for local high schools. March, 2006

Invited Judge. 35th, 36th, and 41st Annual Metropolitan New York Math Fair. Pace University and Brooklyn Technical University, New York City, NY. March, 2003, 2004, and 2009.

Presenter. “Math without Numbers.” Visiting Professors Program. Montclair State University. Presented at five public middle schools. 2003-2004.

Presenter. “Mathemagicians of Montclair” at Math Day, Montclair State University. Program for local public high schools. March, 2003.

Service to Mathematics Education Community

Panelist. Research in Undergraduate Mathematics Education (RUME) conference. Panel for how to apply to academic jobs. February, 2020.

Reviewer. *Science Education* (journal).

Editorial Board (former). Primus—Problems, Resources, and Issues in Mathematics Undergraduate Studies.

External Reviewer. For faculty member applying for promotion at Towson University. Summer, 2016.

Grant Reviewer. National Science Foundation (NSF)—October 2022, September 2021, January 2009, 2007, 2005, and 2004.

Textbook Reviewer. “Snapshots from Contemporary Mathematics”. Addison-Wesley, Collegiate Math Group. Boston, MA.

Facilitator. The US-Sino Conference on Mathematics and Science Education. Facilitator for Teacher Preparation Research Working Group. Middle Tennessee State University, Murfreesboro, TN. June 22—27, 2008.

Reviewer. Enslow Publishers, Inc. Content review for a series of mathematics books for children including “*Sebastian Pig goes Shopping*”, “*Adding at the Circus*”, and “*Subtracting at the Campground*.” Berkeley Heights, NJ.

Facilitator. Project NExT’s Mathematics Education discussion session at MathFest. Mathematical Association of America. Providence, RI. August, 2004.

Reviewer. International Congress on Mathematics Education (ICME-10). Reviewed papers submitted for program. April, 2004.

Presider for Keynote Speaker. Mathematical Association of America (MAA), New Jersey Sectional Meeting. November, 2003.

Reviewer. Association of Mathematics Teacher Educators (AMTE) Task Force. Evaluated and crafted response to *Achieve’s* Mathematics Achievement Partnership document, “Foundations for Success: Mathematics Expectations for the Middle Grades.” June, 2003.

Participant (selected). PREP workshop on Knot Theory, Mathematical Association of America (MAA). Wake Forest University, Winston-Salem, North Carolina. June, 2003.

Participant. Next Steps in Mathematics Teacher Development. Mathematical Sciences Education Board, National Research Council, National Academy of Sciences, Washington, D.C. March, 2003.

Grant Reviewer. Transition to Teaching Program. United States Department of Education. Washington, D.C. 2001.

Service to University

Search Committee Member for Professor of Technical Writing (a cross-college position), 2023.

Search Committee Member for Dean of College of Science and Mathematics. 2017-2018.

Search Committee Member for Department Chairperson. 2016-2017.

Search Committee Chair for Director of the Research Academy for University Learning, 2016.

Global Education Teaching in English Advisory Committee member, 2014-2016.

Environmental Management Ph.D. program Advisory Committee member, 2010-2016.

Search committee member for Associate Dean of Graduate School. Summer, 2011

Department Personnel Advisory Committee member, 2007—2008, 2008—2009, 2018, 2019 (chair).

Course Coordinator for MATH 106 General Education Mathematics course.

Presenter on obtaining grant funding, New Faculty Program at MSU. October, 2014.

Creativity Campus Innovations Committee. Funded by a grant to the Office of Arts & Cultural Programming and the Research Academy for University Learning, present

Department assessment committee member 2006—2019.

Advisor to Research Academy for University Learning (RAUL). Served as advisor during off-campus retreat. May 19, 2011.

Provocateur for Liz Lerman Dance Exchange: The Matter of Origins. Led discussions with audience as part of Act II of a dance performance. March, 2011.

Mentor to Teaching Fellow for University Teaching Fellows program through the Research Academy for University Learning. 2008—2009.

Department Undergraduate Curriculum Committee member.

Search committee member mathematics education position. 2005-2010.

Search committee member for elementary mathematics education position. 2004-2005.

Developed doctoral course, MATH 744—Selected Topic in Mathematics Education

Co-developed doctoral course, Math 742—Mathematical modeling in science.

Co-developed two courses for the new elementary education mathematics sequence.

Roche Middle School Teaching Award committee member 2006—2007.

Presenter at University’s workshop on how to write effective grant proposals.

Presenter at College of Science and Mathematics meeting on research of new faculty.

Advisor to 15 undergraduate students in mathematics each semester.

Interviewer of undergraduate candidates for mathematics education program.

Faculty reviewer of master’s students’ comprehensive experience presentations.

Test writer for master’s comprehensive examinations.

Grader of master’s comprehensive examinations.

Department steering committee member.

Department alumni committee member.

Science education EdD Committee member. 2002-2003.

Library committee member.

Professional Association Memberships (depending on year)

New York State Teaching Certification. Secondary Mathematics—provisional in 2002.

Association of Mathematics Teacher Educators (AMTE)

National Council of Teachers of Mathematics (NCTM)

Mathematics Association of America (MAA)

American Educational Research Association (AERA)

American Association of Colleges and Universities (AACU)

National Association for Research in Science Teaching (NARST)

