

Matt Roscoe
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EDUCATION

Ph.D. Mathematics (May, 2011)

University of Montana, Missoula, MT

Dissertation: *Informal Mathematics Activities and the Beliefs of Elementary Teacher Candidates*

M.A. Education, Curriculum and Instruction, Math Education (May, 2001)

University of Montana, Missoula, MT

Thesis: *Enhancing Instruction in Undergraduate Precalculus with Laboratory Investigations*

Secondary Mathematics Teaching Certification (May, 2000)

University of Montana, Missoula, MT

B.S. Mechanical Engineering (May, 1993)

University of Notre Dame, Notre Dame, IN

PROFESSIONAL EXPERIENCE

- 2012- **Assistant Professor**
University of Montana, Department of Mathematical Sciences
- 2011-2012 **Faculty Associate**
University of Wisconsin-Madison, Curriculum and Instruction
Director of the Middle School Mathematics Specialist Program.
Responsibilities included the design and instruction of a program of five graduate-level mathematics courses for in-service middle school teachers.
- 2003-2007 **Director of Developmental Mathematics**
University of Montana, Department of Mathematical Sciences
Directed a remedial program in mathematics with an enrollment of 1500 students per academic year. Responsibilities included design of curriculum and assessment, management of tutoring services and supervision of instruction.
- 2002-2003 **Mathematics Teacher**
Sentinel High School, Missoula, MT
Instructed integrated algebra, geometry and probability.
- 2001-2002 **Mathematics Teacher**
Hellgate High School, Missoula, MT
Instructed integrated algebra, geometry and probability.
- 2000-2001 **Mathematics Teacher**
Clinton Elementary School, Clinton, MT
Instructed middle school mathematics.

POST-SECONDARY TEACHING EXPERIENCE

2012- **Assistant Professor**
University of Montana, Department of Mathematical Sciences
M605 – Learning Theories in Mathematics
M596 – Research in Mathematics Education
M595 – Teaching Geometry from a Problem Solving Perspective
M572 – Algebra for Middle School Teachers
M570 – Calculus for Middle School Teachers
M429 – History of Mathematics
STAT 341 – Introduction to Probability and Statistics
M326 – Number Theory
M301 – Teaching Mathematics with Technology
M291 – Probability and Statistics for Elementary School Teachers
M291 – Teaching MathCounts
M234 – Higher Mathematics for Elementary School Teachers
M 133 – Geometry and Measurement for Elem School Teachers
M132 – Arithmetic for Elementary School Teachers
M171 – Calculus I
M 115 – Probability and Linear Mathematics

PUBLICATIONS

- Feldman, Z. & Roscoe, M. (Revised and Resubmitted 4/2017). Encouraging teachers to make use of multiplicative structure. *Mathematics Teacher Educator*.
- Feliciano-Semidei, R. & Roscoe, M. (2017). Preservice Teachers exploring prime factorization. In T. A. Olson & L. Venenciano (Eds.), *Proceedings of the 44th Annual Meeting of the Research Council on Mathematics Learning*, Fort Worth, TX.
- Luebeck, J., Diemert, C., Cobbs, G., Roscoe, M. & Scott, L. (In Press). Re-envisioning technology as a medium for learning in mathematics: Teachers' performance, perceptions, and practice in blended professional development. *Journal of Technology and Teacher Education*.
- Roscoe, M. (2016). Quilt while you're ahead: Investigating quilt block symmetries. *MTCircular*, Summer/Autumn: 4-7.
- Roscoe, M. & Zephyrs, J. (2016). Quilt block symmetries. *Mathematics Teaching in the Middle School*, 22(1): 19-27.
- Roscoe, M. (2016). A vehicle for bivariate data analysis. *Mathematics Teaching in the Middle School*, 21(6): 348-356.

Sriraman, B. & Roscoe, M. (2015). Interdisciplinary perspectives to the development of high ability in the 21st century [Commentary on *Borrowing insights from other disciplines to strengthen the conceptual foundations for gifted education* by D. Ambrose]. *The International Journal for Talent Development and Creativity*, 3(2), 147-152.

Roscoe, M & Feldman, Z. (2015). Strengthening prospective elementary teachers' understanding of factors. In Che, S. M. and Adolphson, K. A. (Eds.). *Proceedings of the 42nd Annual Meeting of the Research Council on Mathematics Learning*. Las Vegas, NV.

Roscoe, M. & Pelikan, S. (2015). Palette of problems. *Mathematics teaching in the middle school*, 21(1), 14-15; 21(2), 82-83; 21(3), 140-141; 21(4), 206-205; 21(5), 270-271; 21(6), 330-331; 21(7), 396-397; 21(8), 458-459; 21(9), 524-525.

Roscoe, M. (2014). Reasoning and sense making with Pythagoras. *Mathematics Teacher*, 108(3), 176-182.

Amidon, J. & Roscoe, M. (2014). Palette of problems. *Mathematics teaching in the middle school*, 20(1), 14-15, 20(2), 82-83, 20(3), 142-143, 20(4), 210-211, 20(5), 276-277, 20(6), 332-333; 20(7), 398-399; 20(8), 458-459; 20(9), 520-521.

Amidon, J. & Roscoe, M. (2013). Palette of problems. *Mathematics teaching in the middle school*, 19(1), 20-21, 19(2), 82-83, 19(3), 146-147, 19(4), 206-207, 19(5), 270-271, 19(6), 334-335, 19(7), 404-405, 19(8), 466-467, 19(9), 530-531, 20(1), 14-15.

Roscoe, M. (2012). Discovering the inscribed angle theorem: A means of developing mathematical reasoning. *Mathematics Teacher*, 105(7), 514-519.

Haverhals, N. & Roscoe, M. (2012). Transitioning students to calculus: Using history as a guide. In *Crossroads in the History of Mathematics and Mathematics Education*. (Ed.) B. Sriraman. Charlotte, NC: Information Age Publishing. PP. 41-69.

Haverhals, N. & Roscoe, M. (2012). The history of mathematics as a pedagogical tool: Teaching the integral of the secant via Mercator's projection. In *Crossroads in the History of Mathematics and Mathematics Education*. (Ed.) B. Sriraman. Charlotte, NC: Information Age Publishing. PP. 139-170.

Roscoe, M., & Sriraman, B. (2011). A quantitative study of the effects of informal mathematics activities on the beliefs of preservice elementary school teachers. *ZDM*, 43(4), 601-615.

Sriraman, B., Roscoe, M. & English, L., (2010). Politicizing Mathematics Education. Has Politics Gone Too Far? Or Not Far Enough? In *Theories of Mathematics Education: Seeking New Frontiers*. (Eds.) B. Sriraman and L. English. Berlin/Heidelberg: Springer Science. 621-638.

Haverhals, N., & Roscoe, M. (2010). The history of mathematics as a pedagogical tool: Teaching the integral of the secant via Mercator's projection. *The Montana Mathematics Enthusiast*, 7(2-3), 339-368.

PROFESSIONAL PRESENTATIONS

Professional Presentations at Meetings

Mathematical Tasks that Promote Prospective Elementary Teachers' Attention to and Use of Multiplicative Structure. Association of Mathematics Teacher Educators Annual Conference, Orlando, FL February 9, 2017

Strengthening Prospective Teachers' Knowledge of Divisibility: An Interventional Study, NCTM Research Conference, San Francisco, CA April 12, 2016.

3-Act Modeling in 5-12 Mathematics, MEA-MFT Montana Educators' Conference, Helena, MT October 20, 2016.

A Measurement Approach to Right Triangle Trigonometry, MEA-MFT Montana Educators' Conference, Helena, MT October 20, 2016.

Strengthening Multiplicative Reasoning with Prime Numbers, NCTM General Conference, San Francisco, CA April 15, 2016.

A Technology-Assisted, Inquiry-Based Approach to Teacher Education Using GeoGebra, Joint Mathematics Meetings of the American Mathematical Society and the Mathematical Association of America, Seattle, WA, January 8, 2016.

Using R Simulation to Encourage Creativity in an Introductory Probability Course, Joint Mathematics Meetings of the American Mathematical Society and the Mathematical Association of America, Seattle, WA, January 6, 2016.

Quilt Pattern Symmetries, MEA-MFT Montana Educators' Conference, Billings, MT October 15, 2015.

3D Printing to Support Mathematical Learning, MEA-MFT Montana Educators' Conference, Billings, MT October 14, 2015.

Prospective Elementary School Teachers' Reconceptualization of Factors, Annual Meeting of the Pacific Northwest Section of the Mathematical Association of America, University of Washington Tacoma, April 11, 2015.

Strengthening Prospective Elementary School Teachers' Conception of Factors, Annual Conference of the Research Council on Mathematics Learning, Las Vegas, NV, February 28, 2015.

Using Transparent Representations to Promote Prospective Teachers' Re-conceptualization of Factors, Annual Meeting of the Pacific Northwest Section of the Mathematical Association of America, Missoula, MT July 27, 2014.

A "Vehicle" for Common Core Statistics, MEA-MFT Montana Educators' Conference, Missoula, MT October 16-17, 2014.

Watch Me Move: GPS Watch as Mathematics Manipulative, MEA-MFT Montana Educators' Conference, Missoula, MT October 16-17, 2014.

Making Factors and Multiples "Transparent" to Learners, MEA-MFT Montana Educators' Conference, Missoula, MT October 16-17, 2014.

Exploring the Coordinate Plane with Desmos, MEA-MFT Montana Educators' Conference, Belgrade, MT October 18-19, 2013.

Join the Gears Revolution, MEA-MFT Montana Educators' Conference, Belgrade, MT October 18-19, 2013.

Using GeoGebra in the Middle Grades, MEA-MFT Montana Educators' Conference, Billings, MT October 18-19, 2012.

Frieze Pattern Symmetries in the Middle Grades, MEA-MFT Montana Educators' Conference, Billings, MT October 18-19, 2012.

Colloquia, Seminars, Workshops and Trainings

Math Teachers' Circle Activities: Quilt Pattern Symmetries, Prime Landscapes. Navajo Nation Math Teachers' Circle Immersion Workshop. Greyhills Academy, Tuba City, AZ, July 15, 2017. (Role: presenter).

Math Circle Activities: Prime Landscapes, Tenzy, Quilt Pattern Symmetries, Mathematical Origami. Baa Hozho Summer Camp. Dine College, Tsaile, AZ, July 10-14, 2017. (Role: presenter).

Math Teachers' Circle Trainings: Quilt Pattern Symmetries, Mathematical Origami, and Prime Landscapes. Universidad Nacional Autonoma de Mexico. Mexico City, Mexico, March 21-24, 2017. (Role: presenter).

Math Circle Activities: Prime Landscapes, Mathematical Origami. Math Teachers' Circle Summer Retreat. Canyon Ferry, MT, June 25-July 1, 2017. (Role: workshop co-organizer, presenter).

Math Teachers' Circle Activities. Cuarto Encuentro Nacional de Juegos Cooperativos para una Cultura de Derechos Humanos. Queretaro, Mexico, March 18-20, 2017. (Role: presenter).

Engaging in Mathematical Modeling. STREAM Project Summer Academy. Canyon Ferry, MT, June 19, 2017. (Role: workshop co-organizer, presenter).

STREAM Mathematical Modeling Initiative Workshop. Fairmont Hot Springs, MT, February 24-25, 2017. (Role: workshop co-organizer, presenter).

A Continuum of Mathematical Modeling. STREAM Project Midyear Workshop. Bozeman, MT, February 4, 2017. (Role: workshop co-organizer, presenter).

STREAM Essentials: Mathematical Modeling. STREAM Project Launch Workshop. Bozeman, MT, October 24, 2016. (Role: workshop co-organizer, presenter).

Sneaky Segments. Montana Math Meet. Butte, MT, August 10-11, 2016. (Role: presenter).

Math Circle Activities: G. Hart Dodecahedron, Modular Origami. Math Teachers' Circle Summer Retreat. Canyon Ferry, MT, July 7-9, 2016. (Role: workshop co-organizer, presenter).

A Challenge in Mathematical Modeling. STREAM Project Summer Academy. Canyon Ferry, MT, June 15, 2016. (Role: workshop co-organizer, presenter).

"Canned" Mathematics: How 3D Printing Can Support Mathematical Learning. South East Ohio Math Teachers' Circle Summer Immersion. Athens, OH, June 7, 2016. (Role: presenter)

The Landscape of the Primes. South East Ohio Math Teachers' Circle Summer Immersion. Athens, OH, June 7, 2016. (Role: presenter)

Quilt Pattern Symmetries. South East Ohio Math Teachers' Circle Summer Immersion. Athens, OH, June 6, 2016. (Role: presenter)

Mathematical Modeling 101. STREAM Project Midyear Workshop. Bozeman, MT, February 27, 2016. (Role: workshop co-organizer, presenter).

STREAM Essentials: Modeling. STREAM Project Launch Workshop. Bozeman, MT, October 24, 2015. (Role: workshop co-organizer, presenter).

Active Learning with Gears. University of Montana Noyce Scholar Symposium. Missoula, MT, August 1, 2017. (Role: presenter).

Designing Standards-Based Assessments. Missoula County Public Schools Assessment Institute, Missoula, MT. June 10, 2015. (Role: presenter).

Guided Reinvention: The Case for Technology in the Mathematics Education Classroom. University of Montana Department of Mathematical Sciences Colloquium Series, Missoula, MT. October 28, 2013.

Basic, Applied and Pedagogical Content Knowledge of Preservice Elementary School Teachers. Montana State University Mathematics Education Colloquium, Bozeman, MT, March 6, 2013

The Montana Common Core Standards for Mathematical Practice and Content. Sentinel High School, Missoula, MT, February 14, 2013. February 28, 2013

GRANT ACTIVITY

NSF-Noyce: Promoting Meaningful Mathematics with Learning Assistants, David Erickson (PI), Matt Roscoe, Fred Peck (Co-PIs), \$1,500,000 submitted August, 2017.

OCHE Title IIa: Problem Solving Pathways to Concurrent Enrollment Courses, Matt Roscoe (PI), Fred Peck, Ke Wu, David Erickson (Co-PIs), \$115,000, funded January, 2017.

NSF-DRK12: Studies of Teacher Renewal in Education and Mathematics (STREAM), Jennie Leubeck (PI Montana State University) and Matt Roscoe (Co-PI), \$2,983,000, not funded February 2017.

DOE-MSP STREAM: Standards-based Teaching Renewing Educators Across Montana, Jennie Leubeck (PI Montana State University) and Matt Roscoe (Co-PI), \$298,000, renewal July 2016.

NSF-DRK12: Studies of Teacher Renewal in Education and Mathematics (STREAM), Jennie Leubeck (PI Montana State University) and Matt Roscoe (Co-PI) \$2,919,000, not funded January 2016.

OCHE Title II Improving Teacher Quality State Grants, Montana Math Teachers' Circle, Wu (PI), Erickson, Peck and Roscoe (Co-PIs), \$109,000, funded December 2015.

DOE-MSP STREAM: Standards-based Teaching Renewing Educators Across Montana, Jennie Leubeck (PI Montana State University) and Matt Roscoe (Co-PI), \$320,000 funded July 2015.

EAGER NSF STEM Teacher Leader Initiative IMPACT, David Erickson (PI) and Matt Roscoe (Co-PI), \$283,000, not funded September 2015.

NSF CAREER: Developing Concept Connectedness via Measured Quantities in Trigonometry, Matt Roscoe (PI), \$421,292, not funded September 2013.

Seed Grant Math Teachers' Circle, Ke Wu (PI) and Matt Roscoe (Co-PI), \$2000, funded October 2013.

PROFESSIONAL MEMBERSHIP AND SERVICE

Project Team Member, *Montana Math Teachers' Circle*

Member Board of Directors, *Montana Council of Teachers of Mathematics*

Panel Editor, *Mathematics Teaching in the Middle School* (2013-2016)

Fellow, *PNW-MAA Project NExT*

Collaborator, *Learning Mathematics for Teaching (LMT) Project*

Member, *Psychology of Mathematics Education, North American Chapter (PMENA)*

Member, *National Council of Teachers of Mathematics*

Peer Review Referee, *Mathematics Teacher, Mathematics Teaching in the Middle School, Mathematics Teacher Educator, Research Council for Mathematical Learning*

Regional Competition Motivator, *MathCounts*

State of Montana Educator License, Mathematics Endorsement, Folio 68973, Class 1, Level 8

AWARDS AND RECOGNITION

University of Montana Merit Award for Beyond Normal Performance 2012-2015 (4/2017)

Helen and Winston Cox Educational Excellence Award (5/2017)

University of Montana Merit Award for Beyond Normal Performance 2015-2016 (4/2017)

Dr. William A. Stannard Award for Excellence in Mathematics Teaching (9/2015)