

SARAH A. ROLLER, PH.D.

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EDUCATION

- Ph.D. Curriculum, Teaching, and Educational Policy** 2015
Michigan State University, East Lansing, MI
Focus area: Mathematics Education
- M.A. School Principalship** 2008
Central Michigan University, Mount Pleasant, MI
Focus area: Elementary School Administration/Curriculum
- B.S. Elementary Education** 2004
Central Michigan University, Mount Pleasant, MI
Major: Mathematics, Minors: Physical Science and Language Arts
State of Michigan Professional Teaching Certification
- Elementary K-5 All Subject (K-8 Self Contained Classroom)
 - Mathematics (EX), 6-8
 - Science (DX) 6-8
 - Language Arts (BX), 6-8

RESEARCH INTERESTS

- Teacher preparation and mentoring practices
- Research-based instructional strategies for teaching mathematics education
- Development of prospective/practicing teachers

PUBLICATIONS

- Roller, S. A.** (in preparation). Characteristics a mathematician and secondary school students associate with success in mathematics. *Mathematics Teaching in the Middle School*.
- Roller, S. A.** (in preparation). It's not just what they say, but how they say it – exploring the form and focus of mentoring conversations. *Teaching and Teacher Education*.
- Roller, S. A.** (in preparation). Noticing and wondering: A deceptively simple structure to support mentoring conversations. *Mathematics Teacher Educator*.
- O'Brien, J. L., Lampley, S. A., & **Roller, S. A.** (under review). ScootPad conundrum: The perils of using third party software and student privacy. *Journal of Cases in Educational Leadership*.
- Wessling, F. C. & **Roller, S. A.** (accepted for 2015 Annual Conference). *Lessons Learned in Teaching Heat Transfer with a Flipped Classroom*. Paper submitted to American Society for Engineering Education. New Orleans, LA.
- Roller, S. A.** (2015, April). What they notice in video: a study of prospective secondary mathematics teachers learning to teach. *Journal of Mathematics Teacher Education*. doi:10.1007/s10857-015-9307-x

PRESENTATIONS

Professional Presentations

- Roller, S. A.** (2015, November). *Identifying Educative Mentor-Intern Conversations: What is High-Level and Low Level?* Poster Presentation for 37th Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education, East Lansing, MI.
- Roller, S. A.** (2015, April). *It's Not Just What They Say, but How They Say It –Exploring the Form and Focus of Mentoring Conversations.* Presentation for American Educational Research Association, Chicago, IL.
- Roller, S. A.** (2015, April). *Prospective Teachers' Noticings in Videos of Their Own Mathematics Teaching.* Presentation for National Council of Teachers of Mathematics, Boston, MA.
- Roller, S. A.** (2015, April). *It's Not Just What They Say, but How They Say It –Exploring the Form and Focus of Mentoring Conversations.* Presentation for CITE Academic Showcase Program, East Lansing, MI.

Presented

- Roller, S. A. & Van Hal, S.** (2014, August). *Let's Talk About It – Effective Ways of Communicating about Teaching.* Invited professional development session at Secondary Internship Opening Day, Michigan State University, East Lansing, MI.
- Roller, S. A.** (2014, August). *Let's Talk About It – Effective Ways of Communicating Feedback.* Invited professional development session at Elementary Internship Opening Day, Michigan State University, East Lansing, MI.
- Roller, S. A.** (2014, August). *Navigating the Ups and Downs of Grad School.* CITE Ph.D. Orientation. Invited panel discussion at Michigan State University, East Lansing, MI.
- Roller, S. A.** (2013, November). *Teacher Panel 2: Teaching Diverse Learner.* Invited panel discussion at University of Wisconsin-Milwaukee, Milwaukee, WI.
- Roller, S. A.** (2013, August). *Let's Talk About It – Effective Ways of Communicating Feedback.* Invited professional development session at Secondary Internship Opening Day, Michigan State University, East Lansing, MI.
- Crespo, S., Brakoniewski, A., Thorpe, J., **Roller, S. A.**, Ji, X. (2012, May). "Using Preservice Teachers' Invented Classroom Dialogues as a Window into their Developing Mathematical Teaching Practices." Poster Presentation at CREAT-ing the Future of STEM Education, East Lansing, MI.
- Roller, S. A.** (2012, April). *MSU Intern Expectations Seminar.* Invited panel discussion at Michigan State University, East Lansing, MI.
- Grzesiak, B. & **Roller, S. A.** (2011, March). *We Are Family...All Mi-BLSi Team and Me!* Presentation at Michigan's Integrated Behavior & Learning Support Initiative (MiBLSi) State Implementer's Conference, Lansing, MI.

Roller, S. A. (2005). *Australia Study Abroad Teacher Education Trip*. Invited presentation to Teacher Education Study Abroad Students, Central Michigan University, Mount Pleasant, MI.

Roberts, J. & **Roller, S. A.** (2003, November). *Rewards and Recognition*. Invited presentation at Central Michigan University's Connections Leadership Conference, Midland, MI.

Harris, M. & **Roller, S. A.** (2003, April). "CM²PET: Changing Michigan's Mathematics Preparation of Elementary Teachers." Poster Presentation at Student Research and Creative Endeavors Exhibition, Mount Pleasant, MI.

RESEARCH EXPERIENCE

Academic Research

Dissertation Research

2013 – Present

Michigan State University, East Lansing, MI

Learning about Teaching from Mentor-Intern Conversations – Does the Form and Focus Matter?

Directed by: Sandra Crespo

- Collected audio recordings of mentor-intern conversations (pre/post about video episode and sample conversations in field placement)
- Provided professional development session about noticing and wondering language practice
- Interviewed mentors/interns for individual perception of conversations and language practice
- Created a working definition of an educative conversation that could be used to code a section of conversation.
- Divided conversations into smaller sections based on conversation focus/topic shifts
- Analyzed pre/post conversations about video episodes to gain information about the educative nature of the conversations and frequency of noticing and wondering language.

Research Assistant

2012

Michigan State University, East Lansing, MI

Exploring Posing, Interpreting, and Responding in the Elementary Classroom (PIR Project)

Principal Investigator: Sandra Crespo

Funded by National Science Foundation Career Grant

- Discussed coding definitions and practiced for consistency with researchers
- Coded preservice and beginning teachers test responses with a mathematical code regarding single/multiple procedures with/without clear connections to math concepts
- Coded test responses with pedagogical code of teacher taking/sharing/giving math work with the student

Research Practicum

2010 – 2012

Michigan State University, East Lansing, MI

Directed by: Michael Steele

- Created observation tool for preservice teachers to use while watching their microteaching lab video that provided a place to list their observations and prioritize/explain the top three observations
- Analyzed ranked noticing statements using a grounded theory approach

- Coded ranked noticing statements for four categories (concern for student/teacher, level of inclusion of mathematics, specific or broad understanding of event, and reaction to video moments).
- Interviewed random sample of preservice teachers to gain information about their experience with videotaping and watching their teaching practice throughout the course and how they ranked their observations
- Coded interview transcripts for “I statements” expressing their desires and abilities/constraints while teaching to gain insight about preservice teachers actual and designated identities
- Produced two scholarly papers from data titled: *What They Notice in Video: A Study of Preservice Secondary Math Teachers Use of Video*, and *Can Video Usage Language Provide Insights into Preservice Secondary Mathematics Teachers’ Identities?*

Mathematics Department Educational Research Assistant

2003

Central Michigan University, Mount Pleasant, MI

CM²PET: Changing Michigan’s Mathematics Preparation of Elementary Teachers

Principal Investigators: Donna Ericksen, Dennis St. John, and William Leibfritz

Funded by The Dwight D. Eisenhower Higher Education Grant Fund

- Viewed and analyzed video of school children solving mathematics problems
- Documented strategies students used to solve mathematics problems

Program Review Research

Contract Math Audit Consultant

2013 – 2014

Ingham Intermediate School District, Mason, MI

Mathematics Program Review (MPR)

- Conducted research related to the development and use of mathematics program audits
- Collaborated to identify process and tools necessary to conduct MPR to learn about the mathematical process, structures, and systems currently being implemented in each building.
- Collaborated with academic consultants to develop a “Framework for Effective Mathematics Instruction” which identified the essential components of strong and effective mathematics programs to be: curriculum goals/priorities, assessment, instruction, instructional time, professional development, and leadership.
- Collaborated/Created principal interview protocol, small group interview protocol for all mathematics staff, and mathematics program review survey for teachers (revised PET-M survey).
- Participated in four middle school mathematics academy workshops to receive feedback on survey from teachers and gain larger sense of schools and mathematics context in the county.
- Participated in curriculum director meetings to receive feedback on interview protocols and interviews and gain perspective on building needs regarding MPR.
- Transcribed/Analyzed principal and small group interview recordings.
- Analyzed and aligned survey data to “Framework for Effective Mathematics Instruction”
- Drafted/Revised reports with academic consult that combined all data collected to identify points of pride, staff concerns, and recommendations.

TEACHING EXPERIENCE

University Teaching

Assistant Professor, University of Alabama in Huntsville, Huntsville, AL **2015-present**
Department of Curriculum and Instruction

ED 422: Middle and Secondary School Mathematics Methods

ED 497: High School Internship

ED 374: Teaching Elementary Mathematics (attending for AMSTI certification)

Course Assistant, Michigan State University, East Lansing, MI **2010 – 2011**
Department of Teacher Education

TE 407: Teaching Subject Matter to Diverse Learners for Secondary Mathematics (1 semester)

TE 408: Crafting Teaching Practice for Secondary Mathematics (1 semester)

TE 407/408: Microteaching Lab

Mentoring Experience

Mentor Teacher of Secondary Seniors, Michigan State University **2007-Present**
Field Placement Classroom for TE407/408 Secondary Science or English

- Mentored 2-4 Science/English seniors yearly
- Encourage focused observations to build noticing skills in the classroom
- Engage seniors in educative conversations about teaching and reflecting on teaching practice
- Provide lesson planning assistance and feedback following lessons
- Complete individual evaluations twice per year
- Communicate potential concerns for internship year to field placement coordinator

Supervising Teacher of Intern, Central Michigan University **2013**
Secondary Science (6th grade)

- Engaged intern in educative conversations about teaching and reflecting on teaching practice
- Provided lesson planning assistance and feedback following lessons
- Completed formative assessments weekly and summative evaluation
- Communicate development to field placement coordinator

K-12 Teaching

Middle School Teacher

Bath Community Schools, Bath, MI

2007 – Present

Midland Public Schools, Midland, MI

2004 – 2007

- Science: 8 years sixth grade, 3 years eighth grade
- Math: 4 years sixth grade
- English/Language Arts: 4 years sixth grade, 1 year seventh grade, 2 years eighth grade
- Reading Intervention: 2 years sixth grade, 1 year seventh grade, 2 years eighth grade
- Math/ELA Guided Academics: 1 year sixth grade, 1 year seventh grade, 2 years eighth grade
- Computers: 2 years sixth grade

Curriculum Development

- Collaborated on mathematics lesson study experience with Michigan State University
- Assisted in decision-making process regarding reading intervention programs and creation of middle school system for scheduling that was driven by student needs
- Created English (6th/8th) curriculum maps/lessons/assessments aligned to Common Core State Standards
- Aligned science (6th/8th) curriculum maps/lessons/assessments to Grade Level Content Expectations and shifting to Next Generation Science Standards
- Systematically evaluated and made recommendation for middle school science textbooks

Title I Summer School Administrator/Teacher (enrollment: 50)

2005 – 2006

Midland Public Schools, Midland, MI

- Assessed common student weaknesses in 6th grade math to create summer school curriculum
- Created assessments, collected data for student growth
- Enrolled, registered students
- Purchased materials, coordinated transportation
- Organized/supervised tours to zoo, college, dining experience
- Organized, directed end of school recognition for parents

GRANTS

Roller, S. A. (under review, 2015). *Unpacking a Noticing and Wondering Language Specific to Mathematics*. New Faculty Grant, University of Alabama in Huntsville, Huntsville, AL. Amount requested: \$10,000.

Morales, C. H., **Roller, S. A.**, & Wessling, F. C. (not funded, 2015). *Exploring a New Approach to Learning Linear Algebra*. UAH Cross-College Faculty Research (CCFR) Grant, University of Alabama in Huntsville, Huntsville, AL. Amount requested: \$3000.

Roller, S. A. (2015). *Identifying Educative Mentor-Intern Conversations: What is High-Level and Low Level?* Faculty Travel Grant, University of Alabama in Huntsville Humanities Center, Huntsville, AL. Amount funded: \$750.

Roller, S. A. (2015). *Prospective Teachers' Noticings in Videos of Their Own Mathematics Teaching*. Council of Graduate Students Conference Grant, Michigan State University, East Lansing, MI. Amount funded: \$300.

Roller, S. A. (2014). *MSTA Conference*. Capital Area Science and Mathematics Center Professional Learning Grant Award, Corunna, MI. Amount funded: \$1000.

PROFESSIONAL SERVICE

University of Alabama in Huntsville, Huntsville, AL

- Peer Reviewer: *Journal of Mathematics Teacher Education, Mathematics Teacher Educators*
- Member: University Women's Club
- Representative for College of Education recruitment events

Bath Community Schools, Bath, MI

- Committee Member, Science Professional Learning Committee 2013-2015
- Committee Member, Multi-Tier System of Supports (MTSS) 2013-2015
- Participant, TRIG (Technology Readiness Infrastructure Grant) – Pilot 2013-2014
- BMS Disney Team Teacher - Disney Youth Education Series Trip 2011-2014
- Mentor Teacher 2011-2013
- Multi-Tier System of Supports (MTSS)/MiBLSi Team Leader 2010-2013
- Committee Member, Science/Soc. St. & Spanish Interview Team 2010
- Director, Reading Incentive Program 2010
- Public Relations/Donations Chair - Family Fun Night 2007-2010
- Committee Member, Energy Essentials Task Force 2008-2009
- Committee Member, Positive Behavior Intervention Support program 2007-2009
- Committee Member, BCS Planning Task Force 2007-2008

Midland Public Schools, Midland, MI

- Committee Member, School Improvement Team collaborated with Michigan Schools in the Middle/Middle Start on curriculum and MEAP analysis
- Assisted in organizing Title I Math/ELA Parent Nights

HONORS

Assistant Professor

- AMTE Mathematics Education “Service, Teaching, and Research” (STaR) Fellow (2016)

Graduate Student

- The Carol and Michael LeMense Family Endowed Graduate Fellowship (2014)
- Harry and Margaret Towsley Center for Science and Mathematics Teachers Scholarship (2009)
- MSU College of Education Doctoral Fellowship (2009, 2010)

Undergraduate Student

- CMU Mathematics Department Whitmore Award for Excellence in Mathematics Elementary Education
- Student of the Month, Central Michigan University
- CMU Teacher Education Department Lee R. Lyons Prize Scholarship
- CMU Mathematics Department Whitmore and Richtmeyer Scholarship

PROFESSIONAL MEMBERSHIPS

- American Educational Research Association (AERA)
 - Division K: Teaching and Teacher Education
 - SIG: Research in Mathematics Education
- Association of Teacher Educators (ATE)
- National Council of Teachers of Mathematics (NCTM)