



Research Council on Mathematics Learning
46th Annual Conference

*Leading & Learning: Mathematics Made
Accessible for All*



Hilton Charlotte University Place
Charlotte, NC
February 28 – March 2, 2019

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Welcome from the 2019 Program and Conference Chair

Welcome to the 46th annual RCML Conference. We are honored and delighted to host the annual conference at the Hilton Charlotte University Place, Charlotte, North Carolina. We would like to thank all who contribute to the success of this conference, the speakers, attendees, reviewers, committee members, and contributors to the conference. We know the success of the conferences depends on planning, organizing, and dedicating your services to this organization. We anticipate you will have a rewarding and enlightening experience filled with rich discussions and engaging presentations. Please let us know if we can assist you in any way. Have a wonderful conference!



Tyrette Carter
North Carolina A&T State University
2019 Program Chair



Kerri Richardson
UNC Greensboro
2019 Conference Chair

2019 Conference Leadership

Tyrette Carter, *Program Chair*
North Carolina A&T State University
tscarte1@ncat.edu

Kerri Richardson, *Conference Chair*
UNC Greensboro krichardson@uncg.edu

Adrienne Redmond-Sanogo,
Proceedings Editor
Oklahoma State University
adrienne.redmond@okstate.edu

Jennifer Cribbs, *Proceedings Co-Editor*
Oklahoma State University
jennifer.cribbs@okstate.edu

Sarah Pratt, *VP-Conferences*
University of North Texas
sarah.pratt@unt.edu

Special Thanks

Program Materials: A special thank you to the Department of Teacher Education & Higher Education at UNC Greensboro for donating the materials for program booklets.

Conference Materials: We also wish to offer a special thank you to North Carolina A&T State University and UNC Greensboro for their donation of materials and use of technology.



Proposal Reviewers: A special thank you to all the proposal reviewers for reading and scoring so many proposals for this year's conference.

Luke Foster

Travis Mukina

Anthony Thompson

Ryan Fox

Cynthia Orona

Jared Webb

Melanie Fields

Montana Smithey

Jamaal Young

Proceedings Reviewers: A special thank you to all of the proceedings reviewers for reading and scoring the immense amount of proceedings for this conference.

Melanie Autin

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Summer Bateiha

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Judy Benjamin

Elizabeth Howell

Janet Shiver

Jonathan Bostic

William Jasper

Amber Simpson

Joanne Caniglia

Natasha Johnson

Mercedes Sotillo-Turner

Chelsea Caswell

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Tracy Thompson

Nancy Cerezo

Dennis Kombe

Juliana Utley

Gregory Chamblee

Karl Kosko

Linda Venenciano

Colleen Eddy

Karl Kruczek

Ben Wescoatt

David Erickson

Lance Kruse

Jacqueline Wroughton

Brian Evans

Ruby Lynch-Arroyo

Cong-Cong Xing

Ricela Feliciano-Semidei

Cathrine Maiorca

Seanyelle Yagi

Lucas Foster

Hope Marchionda

Sean Yee

Kristine Glasener

Gabriel Todd Matney

Fay Zenigami

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Diana S Perdue

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Marnie Phipps

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- Conference Proceedings Editor* (Appointed), Adrienne Redmond-Sanogo, Oklahoma State University, adrienne.redmond@okstate.edu
- Conference Proceedings Co-Editor* (Appointed), Jennifer Cribbs, Oklahoma State University, jennifer.cribbs@okstate.edu

Conference Committee Members

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- 2016-2019, Cynthia Orona, University of Arkansas, orona@uark.edu
- 2018-2021, Travis Mukina, Chaminade University of Honolulu, travis.mukina@chaminade.edu
- 2018-2021, Jamaal Young, University of Iowa, jamaal-young@uiowa.edu

CONFERENCE EVENTS AT A GLANCE

Thursday, February 28, 2019

3:30 – 8:30 PM Registration open

Midway

4:00 – 5:20 PM **RESEARCH POSTER PRESENTATIONS**

Lakeshore Ballroom Salon III & IV

5:30 – 6:30 PM Welcome: *Kerri Richardson*, 2019 Conference Chair

Lakeshore Ballroom Salon III & IV **FOUNDER'S LECTURE: *Rose Sinicrope***

INTRODUCTION BY: *Catherine Schwartz*

6:30 – 8:30 PM Welcome Reception (with heavy hors d'oeuvres)

Lakeshore Ballroom Salon III & IV

Friday, March 1, 2019

7:30 AM – 4:30 PM Registration open

Midway

8:00 – 8:50 AM **BREAKOUT SESSION #1**

9:00 – 9:50 AM **BREAKOUT SESSION #2**

10:00 – 10:50 AM **BREAKOUT SESSION #3**

11:00 AM – 12:20 PM RCML Business Meeting Luncheon

Lakeshore Ballroom Salon I & II

12:30 – 1:20 PM **BREAKOUT SESSION #4**

1:30 – 2:20 PM **BREAKOUT SESSION #5**

2:30 – 3:20 PM **BREAKOUT SESSION #6**

4:30 – 5:30 PM **WILSON MEMORIAL LECTURE: *Joseph Graves***

Lakeshore Ballroom Salon III & IV **INTRODUCTION BY: *Jared Webb***

Saturday, March 2, 2019

7:30 AM – 11:00 AM Registration open

Midway

8:00 – 8:50 AM **BREAKOUT SESSION #7**

9:00 – 9:50 AM **BREAKOUT SESSION #8**

10:00 – 10:50 AM **BREAKOUT SESSION #9**

11:00 AM – 12:30 PM *Box Lunches to Go*

Midway

FOUNDER'S LECTURE: ROSE SINICROPE

Thursday, 5:30 pm, *Lakeshore Ballroom Salon III & IV*

INTRODUCTION BY CATHERINE SCHWARTZ

A Mathematics Teacher Educator's Personal Perspective of Research on Mathematics Learning



ABSTRACT: Our understanding of how students learn mathematics has evolved during the last 50 years. It is connected—intertwined with classroom teaching, curriculum development, even assessment, and with cultural beliefs and professional standards. Each does affect the other. At times we draw on learning theory and research to change instruction. At times we react to perceived failures and unexpected differences in learning. From instruction and assessment of student learning, we are motivated to research identified weaknesses and differences in thinking. We become concerned about inequities. We study gender differences, learning styles, social interactions, student beliefs, cultural differences, and classroom structures. We return to learning theory and practice and standards.

Mathematics education moves forward not in a linear fashion but organically as we all learn from each other.

BIOGRAPHY: ROSE SINICROPE IS AN ASSOCIATE PROFESSOR EMERITA OF MATHEMATICS EDUCATION AT EAST CAROLINA UNIVERSITY. With an undergraduate degree from Concord College during a time influenced by the Modern Math movement and with limited preparation for teaching—a general psychology course, an introduction to Polya's approach to teaching problem solving, and the emergence of technology as an instructional tool, Rose began her career as a high school mathematics teacher. From teacher of accelerated students to teacher of nonacademic students, Rose became interested in the diverse ways that students solved problems and the richness of the mathematics of students who were not school successful. Rose completed her master's degree at West Virginia University at a time when a course in Piagetian psychology was very different from the behavioral objectives and programmed instruction promoted by educational generalists. This led to an interest in students who struggle with formal education and mathematics specifically. As a doctoral student at Virginia Tech, Rose was guided by her advisor Harold Mick. With opportunities to study with Mick, and Richard Skemp and Gerald Noelting, Rose pursued the conceptual development of the part-whole and operator subconstructs of rational numbers.

For the past 35 years, Rose served as a mathematics teacher educator. Her research was influenced by her students and her colleagues. With special educator Lori Bell Mick and mathematics educator Ann Crawford, she studied the mathematics learning of students with learning disabilities. Her work with rational number concepts shifted to preservice and inservice teacher knowledge—most recently with ECU mathematics teacher educators Kwaku Adu-Gyamfi and Katie Schwartz. Developmental psychologists Marion Eppler and Marsha Ironsmith and Rose researched the interactions of elementary school students in groups during mathematical problem solving. This collaboration led Marion, Marsha, mathematics educator Ron Preston, and Rose to use Carol Dweck's work to identify the reactions of college mathematics majors' when faced with mathematical challenges.

Rose welcomes the opportunity to reflect on her research as a mathematics teacher educator.

WILSON MEMORIAL LECTURE: JOSEPH GRAVES

Friday, 4:30 pm, *Salon III*

INTRODUCTION BY JARED WEBB

The Language of the Universe

Abstract: Mathematics is the language of the universe. Here I discuss the hypothetico-deductive method, in which mathematical functions describing potential natural phenomena serve as the basis of experimental tests allowing the falsification of hypotheses. Several examples are provided from the discipline of evolutionary biology.



Biography: DR. GRAVES IS PROFESSOR AND ASSOCIATE DEAN FOR RESEARCH IN THE JOINT SCHOOL FOR NANOSCIENCE AND NANOTECHNOLOGY AT NORTH CAROLINA A&T UNIVERSITY. He received his Ph.D. in Environmental, Evolutionary and Systematic Biology from Wayne State University in 1988. In 1994 he was elected a Fellow of the Council of the American Association for the Advancement of Science (AAAS.) In 2012, he was chosen as one of the “Sensational Sixty” commemorating 60 years of the NSF Graduate Research Fellowship Award. In 2017, he was named one of the “Outstanding Graduates” from the first 182 years of Biology at Oberlin College; that same year his 1992 paper in Physiological Zoology and Biochemistry was listed as one of the top 90 cited papers in that journal’s 90 years of publication, and was named by US Black Engineer Magazine and the Historically Black Colleges and Universities council of Deans as one of the “Innovators of the Year.” His research concerns the evolutionary genomics of adaptation, particularly as relevant to postponed aging and bacterial responses to nanomaterials. He has also written extensively concerning biological concepts of race in humans. His books on the biology of race are entitled: *The Emperor's New Clothes: Biological Theories of Race at the Millennium*, Rutgers University Press, 2005 and *The Race Myth: Why We Pretend Race Exists in America*, Dutton Press, 2005. He has been a leader in addressing the under representation of minorities in science careers, having directed successful programs in California and Arizona. He is a leading force in aiding underserved youth in Greensboro via the YMCA chess program.

OVERVIEW OF SESSIONS: THURSDAY AFTERNOON

Research Poster Presentations

4:00 – 5:20 pm, *Lakeshore Ballroom Salon III & IV*

1. **Parents' beliefs in teaching young children mathematics** *Frederique Yova, Temple Walkowiak, Vicki Jacobs*
2. **Pre-Service Teachers Support of Argumentation During a Co-Planned Lesson** *McKenzie Brittain*
3. **Lesson Study's Role in Teacher Dialogue about SMPs** *Chelsea Caswell, Gabriel Matney*
4. **Preservice Teachers Making Sense of Measurement Division with Fractions** *Gayle Millsaps*
5. **Community Outreach Experiences for Math K-6 & 4-8 Pre-service Teachers** *Winifred Mallam*
6. **The Corequisite Model for First-Year College Level Mathematics** *Lucas Foster*
7. **HLM analysis of Math Talk and Representations in Elementary Classrooms** *Reema Alnizami*
8. **The Impact of Mathematics Teachers on Student Learning and Motivation** *Danya Corkin*

Friday Morning			
	Breakout Session 1	Breakout Session 2	Breakout Session 3
Room	8:00 – 8:50 AM	9:00 - 9:50 AM	10:00 – 10:50 AM
Welwyn	Teaching Moves and Rationales of Preservice Elementary School Teachers <i>Montana Smithy</i>	Connecting Observation Protocols and Post-Observation Feedback <i>Robert Petrusis, Duncan Wright</i>	
Lakeview Room <i>Research Briefs</i>	8:00 – 8:20 am Designing and Evaluating OERs for Effective Teaching and Learning <i>Marnie Phipps, Patty Wagner</i>	9:00 – 9:20 am Teachers’ Knowledge of Modeling: A Scale Development with Factor Analysis <i>Reuben Asempapa</i>	10:00 – 10:20 am Technology Integration...It’s Not All About The Numbers. Technology integration into Elementary Mathematics <i>Brooke Rothwell</i>
	8:30 – 8:50 am Co-Defining High Quality Mathematics Instruction in an Online Community <i>Lauren Baucom, P. Holt Wilson</i>	9:30 – 9:50 am The Impact of Reflection on Developmental Mathematics Students <i>Hannah Grant, Eileen Faulkenberry</i>	10:30 – 10:50 am Addressing Culturally Responsive Teaching Beliefs <i>Shelby Morge, David Pugalee, Premkumar Pugalenth, i,</i>
Walden	Cross-Sectional Study: Preservice Teachers’ Beliefs about Mathematics <i>Jennifer Cribbs, John Weaver, Juliana Utley</i>	Research Into Practice: 29 Years of Classroom Teaching <i>Daniel Brahier</i>	How Constructing Number Sequences Affects Students’ Learning of Measurement <i>Tiffany LaCroix</i>
Salon III & IV <i>Research Briefs</i>	8:00 – 8:20 am Mathematical Mindsets and Visions of Effective Classroom Practice <i>Ashley Whitehead</i>	9:00 – 9:20 am Preservice Teachers Perspectives on Teaching Mathematics for Social Justice <i>Stacy R. Jones, Carlos Nicolas Gomez</i>	10:00 – 10:20 am "I Hate Math." Breaking Preconceived Attitudes <i>Dena Walker</i>
	8:30 – 8:50 am Visions and Implementation of Mathematical Tasks: A Longitudinal Study <i>Ashley Whitehead, Temple Walkowiak</i>	9:30 – 9:50 am Student Experiences of Learning Math via a Social Justice Framework <i>Denice Hurlbut, Darlinda Cassel</i>	10:30 – 10:50 am The Struggle is Real: Addressing Gaps in Preservice Teacher Knowledge <i>Thomas Roberts, Cathrine Maiorca</i>
Keynes	Fostering Modeling Discussion through Examining Migrant Mortality Data <i>Stephen Lewis, Ayse Ozturk</i>		Teaching from the Heart: Examining K-6 Mathematics Instruction in Guatemala <i>Natalia Bailey</i>
University Ballroom E <i>Research Briefs</i>	8:00 – 8:20 am Using the Q-Sort for Professional Development: A Card-Sorting Tool <i>Dana Franz, Drew Polly</i>	9:00 – 9:20 am Opportunity to Learn Surface Area and Volume Concepts in Textbooks <i>Sofia Hatziminadakis</i>	10:00 – 10:20 am Trends in Cross-national Comparative Math Education: An Argument for Culture <i>Hilary Tanck</i>
	8:30 – 8:50 am The Challenges of Automaticity: Teaching and Learning Multiplication Facts <i>Barbara Allen-Lyall</i>	9:30 – 9:50 am Developing Pedagogical Content Knowledge for Remedial Instruction <i>Jessie Store</i>	10:30 – 10:50 am Conceptualizing QuantCrit for Mathematics Education Research <i>Jamaal Young</i>
Burnham	Numeric Relational Reasoning Learning Progressions: K-2 Protocols <i>Eloise Aniaq Kuehnert</i>	Students’ Proportional Reasoning with the Pantograph <i>Anna Athanasopoulou</i>	Investigations in Mathematics Learning: Getting Involved with Publishing and Reviewing <i>Drew Polly, Jonathan Bostic, Colleen Eddy</i>

Friday Afternoon			
	Breakout Session 4	Breakout Session 5	Breakout Session 6
Room	12:30 – 1:20 PM	1:30 - 2:20 PM	2:30 – 3:20 PM
Welwyn	The 8x8 Project: A Study of a Professional Development Project <i>Cora Neal, Rachel Bachman</i>	Developing A College Quantitative Literacy Course: Assessing Student Change <i>Ryan Fox, Brad Schleben</i>	Myths of Women in Mathematics: Pre-service Teachers’ Perceptions <i>Lisa Rice, Amanda Labertus</i>
Olmstead	Number Talks from S to W <i>Kay Wohlhuter, Mary Swarthout</i>	Learn to Write Mathematics: Revision in the Mathematics Classroom <i>Melissa Gunter, Stacy Reeder</i>	Supporting Primary Teachers as They Look for the M in STEM Activities <i>Suzanne Brown, Sandra Browning</i>
Lakeview Room <i>Research Briefs</i>	1:00 – 1:20 pm Innovation in STEM Education: The School of the Future Institute <i>Alan Zollman</i>	1:30 – 1:50 pm Design of Instructional Tasks for an Authentic STEM Integration <i>Premkumar Pugalenth, Michelle, Stephan, David Pugalee</i> 2:00 – 2:20 pm Draw a Mathematician: How Female Secondary Students View Mathematicians <i>Sandra Trowell</i>	2:30 – 2:50 pm Exploring Students’ Statistical Reasoning <i>Jessie Store</i>
Walden	Evaluating Response Processes Validity Evidence for Problem Solving Measure <i>Taylor Henry Nicholson, Lance Kruse</i>	Change in Discourse Dimensions in Elementary Classrooms of PD Participants <i>Reema Alnizami, Anna Thorp</i>	Scaling Up Mathematics Methods Practices that Support Ambitious Teaching <i>Monica Gonzalez, Catherine Schwartz, Leigh Belford</i>
Salon III & IV <i>Research Briefs</i>	12:30 – 12:50 pm Designing Algebra Materials for Struggling Learners <i>Linda Venenciano</i> 1:00 – 1:20 pm Engaging in Early Algebra Discussions during Tier 2 Small-group Instruction <i>Kristen Keels</i>	1:30 – 1:50 pm Concept Maps as Content Assessment and Professional Development <i>Michael Mikusa, Lee McEwan</i> 2:00 – 2:20 pm Designing for Organizational Sensemaking of Mathematics Standards at Scale <i>F. Paul Wonsavage</i>	3:00 – 3:20 pm Problem Posing in a University Developmental Mathematics Course <i>John Sevier, Anthony Fernandes</i>
Keynes	New Teachers’ Development of Mathematical Explanations through Game Play <i>Ryan Fox</i>	The edTPA and Math Education: Perceptions, Possibilities and Problems <i>Tony Thompson, Kwaku Adu-Gyamfi</i>	Supporting Preservice Teachers’ Strategic Competence in a Non-routine Task <i>Catherine Schwartz, Kwaku Adu-Gyamfi, Rose Sinicrope</i>
University Ballroom E <i>Research Briefs</i>	1:00 – 1:20 pm Middle School Students’ Mindsets Before and After Open-Ended Problems <i>Micah Stohlmann</i>	2:00 – 2:20 pm Pre-service Teachers’ Questioning Strategies to Promote Discourse <i>Lynn Columba</i>	2:30 – 2:50 pm Children’s Conveyed Multiplicative Meaning Across Models <i>Judy Benjamin</i> 3:00 – 3:20 pm Unpacking and Decompressing Integer and Binomial Multiplication <i>Sarah Pratt, Colleen Eddy, Eloise Kuehnert</i>
Burnham	Investigations in Mathematics Learning: Getting Involved with Publishing and Reviewing <i>Drew Polly, Jonathan Bostic, Colleen Eddy</i>	A Quantitative Measure of Teachers’ SMP Knowledge: The SMP-KA <i>Gabriel Matney, Jonathan Bostic</i>	Representations: Teacher Expectations, Beliefs, Instructional Practices <i>Kwaku Adu-Gyamfi, Tony Thompson</i>

Saturday			
	Breakout Session 7	Breakout Session 8	Breakout Session 9
Room	8:00 – 8:50 AM	9:00 – 9:50 AM	10:00 – 10:50 AM
Welwyn	Activities for PSTs’ Understanding of Fraction Multiplication and Division <i>Shawn Broderick, Ryan Fox</i>	Educative Disruption: Theories of Violence, Slavery, and Mathematical Tasks <i>S. Megan Che</i>	The Impact of Number Talks on Student Achievement <i>Taajah Witherspoon, Ann Dominick</i>
Lakeview Room <i>Research Briefs</i>	8:00 – 8:20 am Examining Novice Secondary Mathematics Teachers’ Use of Support Networks <i>Fahmil Shah</i>	9:00 – 9:20 am Middle Grades Teachers’ Evaluative Listening and Questioning <i>Eloise Ania Kuehnert, Colleen Eddy, Sarah Pratt</i>	10:00 – 10:20 am Motivators or Conceptual Foundation? Teacher Beliefs about Context Problems <i>Luke Reinke, Amanda Casto</i>
			10:30 – 10:50 am Learning to Teach Math through “Playing” in the Pre-School <i>Georgia Cobbs</i>
Walden	Conceptualizing and Investigating Mathematics Teacher Learning of Practice <i>Jared Webb</i>		Counting Units of Double Number Lines <i>Eric Siy</i>
Salon I <i>Research Briefs</i>	8:00 – 8:20 am Ranking the Cognitive Demand of Tasks Across Mathematical Domains <i>Samantha Kelly</i>	9:00 – 9:20 am Gladys’s Lesson Plan: A Culturally Relevant Exemplar <i>Nickolaus Ortiz</i>	10:00 – 10:20 am Representations: Improving CKT in Grades 4-8 <i>Tommy Smith</i>
	8:30 – 8:50 am Prospective Teachers’ Knowledge of Cognitive Demand of Mathematical Tasks <i>Kaylee Tuttle, Michelle Chamberlin</i>	9:30 – 9:50 am Pre-service teachers’ beliefs about teaching English learners <i>Anthony Fernandes</i>	10:30 – 10:50 am Examining Mathematical Modeling of Fifth Graders Using Computer-Simulation <i>Azin Sanjari, Ayse Ozturk</i>
Keynes	Examining Storylines and Positionings in a Secondary Mathematics Classroom <i>Megan Martin, P. Holt Wilson</i>	Lesson Experiments: Examining Factors that Influence Mathematics Learning <i>Michelle Chamberlin</i>	Validation as Design-Based Research: Examples from Building the PSMs <i>Jonathan Bostic, Gabriel Matney</i>
Salon III & IV <i>Research Briefs</i>	8:00 – 8:20 am Assessing the Emporium Model through Student Persistence <i>Kathy Cousins-Cooper, Katrina Nelson</i>	9:00 – 9:20 am Assessing rural students’ prop reasoning in an era of Accountability <i>James Telese, Jair Aguilar</i>	10:00 – 10:20 am Where’d They Go? Sustaining and Growing Interest in Mathematics Teaching <i>Keith Hubbard</i>
		9:30 – 9:50 am Follow-Up Conversations: Inside or Outside of Children’s Strategy Details? <i>Vicki Jacobs</i>	10:30 – 10:50 Understanding the Probability Literacy of High School Students <i>Fred Coon</i>
Burnham	Social Justice Through Mathematics or Teaching Math for Social Justice <i>Taajah Witherspoon</i>	Elementary Students Understanding of Fractions on the Number Line <i>Taajah Witherspoon</i>	Secondary Rehearsal-Analysis of a New Model for Instructional Activities <i>Casey Hawthorne, John Gruver</i>

RESEARCH POSTER PRESENTATIONS

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #1: Parents’ Beliefs in Teaching Young Children Mathematics	
Frederique Yova, Temple Walkowiak Vicki Jacobs	North Carolina State University UNC Greensboro
This study examined parents’ beliefs about young children’s mathematical thinking and how their beliefs evolved once they were exposed to their own child’s mathematical thinking.	

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #2: Pre-Service Teachers Support of Argumentation During a Co-Planned Lesson	
Brittain McKenzie	Clemson University
This poster represents preliminary research investigating the support of argumentation through questioning enacted by three pre-service teachers in a secondary mathematics classroom. The purpose of this study was to look at type and frequency of questions asked by pre-service teachers during a mathematical lesson, specifically looking at how through their questioning pre-service teachers highlight different aspects of a coplanned lesson. Using the Teacher Support for Collective Argumentation framework by Conner et al. (2104), I will analyze the questions asked by each pre-service teacher. This study found pre-service teachers mostly ask less cognitively demanding questions. Pre-service teachers should be better prepared to ask questions that allow students to describe, elaborate, and evaluate their work.	

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #3: Lesson Study’s Role in Teacher Dialogue about SMPs	
Chelsea Caswell, Gabriel Matney	Bowling Green State University
We will share research on the dialogue of teachers related to the Standards for Mathematical Practices during the post-lesson debrief of an Open-Approach Lesson Study.	

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #4: Preservice Teachers Making Sense of Measurement Division with Fractions	
Gayle Millsaps	Eastern Washington University
This study examines preservice elementary teachers' conceptual understanding of measurement division of fractions by asking them to create situations, labeled visual images, and written explanations. The analysis of PTs' work reveals the range their understanding of measurement division and how different representations reveal and contribute to their understanding.	

RESEARCH POSTER PRESENTATIONS

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #5: Community Outreach Experiences for Math K-6 & 4-8 Pre-service Teachers	
Winifred Mallam	Texas Woman’s University
As mathematics educators, we assign projects that pre-service mathematics educators can implement in their future classrooms. The poster highlights projects assigned and interactions with K-8 students.	

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #6: The Corequisite Model for First-Year College Level Mathematics	
Lucas Foster	Northeastern State University
This paper will present quantitative analysis of the corequisite model at a regional Midwestern four-year university to evaluate its effectiveness.	

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #7: HLM analysis of Math Talk and Representations in Elementary Classrooms	
Reema Alnizami	North Carolina State University
Results of HLM analysis revealed a correlation of teacher use of representations with math talk and other significant results relating to math strand and grade.	

Time: 4:00–5:20 pm	Location: Lakeshore Ballroom Salon III & IV
Session #24: The Impact of Mathematics Teachers on Student Learning and Motivation	
Danya Corkin	University of Houston - Downtown
This study examines the degree to which mathematics teacher qualifications, characteristics, and instructional practices influence high school students’ mathematics learning and motivation.	

FOUNDER’S LECTURE: *Dr. Rose Sinicrope* 5:30 – 6:30 PM
Introduction by: Dr. Catherine Schwartz
Location: Lakeshore Ballroom Salon III & IV

WELCOME RECEPTION (with heavy hors d’oeuvres) 6:30 – 8:30 PM
Location: Lakeshore Ballroom Salon III & IV

BREAKOUT SESSION #1 – FRIDAY MORNING

Time: 8:00 – 8:50 am	Location: Welwyn
Session #8: This Teaching Moves and Rationales of Preservice Elementary School Teachers	
Montana Smithey	UNC Greensboro
Presentation will highlight a range of teaching moves and rationales preservice teachers used during 1:1 problem-solving interviews with children.	

Time: 8:00 – 8:20 am (research brief)	Location: Lakeview
Session #9: Designing and Evaluating OERs for Effective Teaching and Learning	
Marnie Phipps, Patty Wagner	University of North Georgia
This session is designed to stimulate discussion about open educational resource and how they can promote effective teaching and learning practices.	

Time: 8:30 – 8:50 am (research brief)	Location: Lakeview
Session #10: Co-Defining High Quality Mathematics Instruction in an Online Community	
Lauren Baucom, P. Holt Wilson	UNC Greensboro
This presentation uses organizational learning to discuss how individuals within an online community collectively defined high quality mathematics instruction through the use of social networking.	

Time: 8:00–8:50 am	Location: Walden
Session #11: Cross-Sectional Study: Preservice Teachers’ Beliefs about Mathematics	
Jennifer Cribbs, John Weaver, Juliana Utley	Oklahoma State University
Elementary preservice teachers were surveyed across their education program to explore changes in their mathematics related beliefs.	

Time: 8:00 – 8:20 am (research brief)	Location: Salon III & IV
Session #12: Mathematical Mindsets and Visions of Effective Classroom Practice	
Ashley Whitehead	Appalachian State University
This session presents the results of preservice elementary teachers’ visions of effective classroom practice while learning about growth mindsets.	

Time: 8:30 – 8:50 am (research brief)	Location: Salon III & IV
Session #13: Visions and Implementation of Mathematical Tasks: A Longitudinal Study	
Ashley Whitehead	Appalachian State University
Temple Walkowiak	North Carolina State University
This session presents the results of three preservice elementary teachers and their visions and implementation of tasks throughout a three year study.	

Time: 8:00–8:50 am	Location: Keynes
Session #14: Fostering Modeling Discussion through Examining Migrant Mortality Data	
Stephen Lewis	The PAST Foundation
Ayşe Ozturk	The Ohio State University
In this session we illustrate how the context of migrant mortality can foster deep mathematical discussion in learners.	

BREAKOUT SESSION #1 – FRIDAY MORNING CONTINUED

Time: 8:00 – 8:20 am (research brief)	Location: University Ballroom E
Session #15: Using the Q-Sort for Professional Development: A Card-Sorting Tool	
Dana Franz	Mississippi State University
Drew Polly	UNC Charlotte
This proposal presents results from our use of the Q-sort, a card-sorting tool, used to promote teachers' reflection on their teaching practices during professional development.	
Time: 8:30 – 8:50 am (research brief)	Location: University Ballroom E
Session #16: The Challenges of Automaticity: Teaching and Learning Multiplication Facts	
Barbara Allen-Lyall	Manhattanville College
Teachers reflect on strategies employed and challenges encountered when guiding students toward multiplication facts understanding and automaticity.	
Time: 8:00–8:50 am	Location: Burnham
Session #17: Numeric Relational Reasoning Learning Progressions: K-2 Protocols	
Eloise Ania Kuehnert	Southern Methodist University
Questioning protocols were designed to elicit empirical evidence for K-2 learning progressions focused on numeric relational reasoning.	

BREAKOUT SESSION #2 – FRIDAY MORNING CONTINUED

Time: 9:00–9:50 am	Location: Welwyn
Session #18: Connecting Observation Protocols and Post-Observation Feedback	
Robert Petrusis Duncan Wright	EPRE Consulting LLC University of South Carolina
Two universities generated an observation protocol and a post-observational feedback structure. Results indicate certain feedback led to improvement across multiple observations.	

Time: 9:00 – 9:20 am (research brief)	Location: Lakeview
Session #19: Teachers’ Knowledge of Modeling: A Scale Development with Factor Analysis	
Reuben Asempapa	Penn State Harrisburg
This presentation shares findings from a study aimed to develop an instrument that examines teachers’ knowledge of modeling. Cronbach’s alpha for the scale was .80. The findings suggest a psychometrically reliable tool for measuring teachers’ knowledge of modeling and have implications for mathematics learning.	
Time: 9:30 – 9:50 am (research brief)	Location: Lakeview
Session #20: The Impact of Reflection on Developmental Mathematics Students	
Hannah Grant, Eileen Faulkenberry	Tarleton State University
This study examines the impact that reflection has on student achievement and attitudes in a developmental mathematics classroom.	

Time: 9:00–9:50 am	Location: Walden
Session #21: Research Into Practice: 29 Years of Classroom Teaching	
Daniel Brahier	Bowling Green State University
Reflecting on 29 years of K-12 teaching, we will focus on how these experiences can and should impact preparation of mathematics teacher preparation.	

Time: 9:00 – 9:20 am (research brief)	Location: Salon III & IV
Session #22: Preservice Teachers Perspectives on Teaching Mathematics for Social Justice	
Stacy R. Jones, Carlos Nicolas Gomez	Clemson University
This study examined how preservice teachers built their critical consciousness during a mathematics methods course with a philosophy of Teaching Mathematics for Social Justice.	
Time: 9:30 – 9:50 am (research brief)	Location: Salon III & IV
Session #23: Student Experiences of Learning Math via a Social Justice Framework	
Denice Hurlbut, Darlinda Cassel	University of Central Oklahoma
An analysis of student responses. Did they perceive the activities as “math lessons”? Did they feel engaged and learn the targeted math principles?	

BREAKOUT SESSION #2 – FRIDAY MORNING CONTINUED

Time: 9:00 – 9:20 am (research brief)	Location: University Ballroom E
Session #25: Opportunity to Learn Surface Area and Volume Concepts in Textbooks	
Sofia Hatziminadakis	University of South Florida
The level of mathematical complexity of surface area and volume tasks within middle-grades textbook series were examined using the National Assessment of Educational Progress framework.	
Time: 9:30 – 9:50 am (research brief)	Location: University Ballroom E
Session #26: Developing Pedagogical Content Knowledge for Remedial Instruction	
Jessie Store	Alma College
This study reports affordances of using error patterns and concept maps when teaching pre-service teachers to make responsive instructional plans for remedial instruction. Data were collected from a design experiment with 80 pre-service teachers and 35 middle to high school students. Content analysis of written artifacts and reflections were conducted qualitatively.	

Time: 9:00–9:50 am	Location: Burnham
Session #27: Students’ Proportional Reasoning with the Pantograph	
Anna Athanasopoulou	UNC Charlotte
We conducted a pilot research study on how the use of a pantograph promotes seventh grade students’ mathematical reasoning and argumentation on proportional relationships.	

BREAKOUT SESSION #3 – FRIDAY MORNING CONTINUED

Time: 10:00 – 10:20 am (research brief)	Location: Lakeview
Session #29: Technology Integration...It's Not All About the Numbers. Technology integration into Elementary Mathematics	
Brooke Rothwell	Guilford County Schools
The question of technology has been widely debated in the education field. This session addresses the issue of technology integration with special attention to elementary mathematics. Participants will be able to leave the session with actual tools and tips, including access to a shared educational learning environment, and key indicators for a successful implementation.	
Time: 10:30 – 10:50 am (research brief)	Location: Lakeview
Session #30: Addressing Culturally Responsive Teaching Beliefs	
Shelby Morge	UNC Wilmington
David Pugalee, Premkumar Pugalenth	UNC Charlotte
Undergraduate and graduate students at two universities were administered the Culturally Responsive Teaching Outcome Expectancy Scale (Siwatu, 2007). In our session we will share the results and how they were used to inform construction of course activities and assignments.	

Time: 10:00–10:50 am	Location: Walden
Session #31: How Constructing Number Sequences Affects Students' Learning of Measurement	
Tiffany LaCroix	Virginia Tech
This study explains the role and effects of number sequence in young students' construction of operational measurement and conservation of length.	
Time: 10:00 – 10:20 am (research brief)	Location: Salon III & IV
Session #32: "I Hate Math." Breaking Preconceived Attitudes	
Dena Walker	Northwestern Oklahoma State University
Some elementary-focused pre-service teachers have a negative attitude toward mathematics because they themselves struggle with mathematics. Through group discussion, the purpose of this session is to discover ideas and tools to assist pre-service teachers to make mathematics important in their classroom and not let their personal preconceived attitudes on mathematics influence their future students.	
Time: 10:30 – 10:50 am (research brief)	Location: Salon III & IV
Session #33: The Struggle is Real: Addressing Gaps in Preservice Teacher Knowledge	
Thomas Roberts	Bowling Green State University
Cathrine Maiorca	University of Central Florida California State University, Long Beach
This session shares results from a pilot study exploring how early childhood majors were prepared for success in future mathematics teaching and learning.	

BREAKOUT SESSION #3 – FRIDAY MORNING CONTINUED

Time: 10:00–10:50 am	Location: Keynes
Session #34: Teaching from the Heart: Examining K-6 Mathematics Instruction in Guatemala	
Natalia Bailey	University of Central Missouri
In this session I share my experiences researching professional development work with teachers in two schools in Guatemala: one urban, and one rural.	

Time: 10:00 – 10:20 am (research brief)	Location: University Ballroom E
Session #35: Trends in Cross-national Comparative Math Education: An Argument for Culture	
Hillary Tanck	Clemson University
A review of cross-national comparisons in top math education journals revealed an emphasis on testing and underrepresentation of certain countries.	
Time: 10:30 – 10:50 am (research brief)	Location: University Ballroom E
Session #36: Conceptualizing QuantCrit for Mathematics Education Research	
Jamaal Young	University of Iowa
This session provides an overview of the promise of QuantCrit in mathematics education and explores the possibilities for more socially just approaches to mathematics education research to support teaching and learning based on this new approach.	

Time: 10:00–10:50 am	Location: Burnham
Session #37: Investigations in Mathematics Learning: Getting Involved with Publishing and Reviewing	
Drew Polly, Jonathan Bostic, Colleen Eddy	IML Editors
Participants will learn about the journal investigations in mathematics learning and learn how to become more involved with processes related to publishing in the journal and reviewing for the journal. There also will be an opportunity to discuss possible topics for special themed issues.	

RCML BUSINESS MEETING LUNCHEON 11:00 – 12:20 PM
Location: Lakeshore Ballroom Salon I & II

BREAKOUT SESSION #4 – FRIDAY AFTERNOON

Time: 12:30 – 1:20 pm	Location: Welwyn
Session #38: The 8x8 Project: A Study of a Professional Development Project	

Cora Neal, Rachel Bachman	Weber State University
Learn about the 8x8 Project to increase implementation of the eight mathematical teaching practices and student use of the eight standards of mathematical practice.	
Time: 12:30 – 1:20 pm	Location: Olmstead
Session #39: Number Talks from S to W	
Kay Wohlhuter	University of Minnesota, Duluth
Mary Swarthout	Sam Houston State University
Examples and experiences from two educators' attempts to better prepare preservice teachers by better understanding PSTs' development of number sense.	
Time: 1:00 – 1:20 pm (research brief)	Location: Lakeview
Session #40: Innovation in STEM Education: The School of the Future Institute	
Alan Zollman	Indiana University Southeast
In mathematics education, we know the criteria for effective professional development. How do we realize a teacher institute that implements these criteria, involving multiple partners?	

Time: 12:30 – 1:20 pm	Location: Walden
Session #41: Evaluating Response Processes Validity Evidence for Problem Solving Measure	
Taylor Henry Nicholson	Bowling Green State University
Lance Kruse	University of Toledo
This research uses a large-scale quantitative study to explore the use of multiple representations as validity evidence for the Problem-Solving Measure for Grades Six.	

BREAKOUT SESSION #4 – Friday Afternoon CONTINUED

Time: 12:30 – 12:50 pm (research brief)	Location: Salon III & IV
Session #42: Designing Algebra Materials for Struggling Learners	
Linda Venenciano	University of Hawai'i at Mānoa
We describe our curriculum development process aimed toward addressing the needs of struggling learners in a first year high school algebra course.	
Time: 1:00 – 1:20 pm (research brief)	Location: Salon III & IV
Session #43: Engaging in Early Algebra Discussions during Tier 2 Small-group Instruction	
Kristen Keels	The University of Georgia
This study explores how fifth graders who are at risk for mathematics disabilities settle mathematical disagreements during early algebra instruction.	

Time: 12:30 – 1:20 pm	Location: Keynes
Session #44: New Teachers' Development of Mathematical Explanations through Game Play	
Ryan Fox	Belmont University
How can new teachers connect the experiences of play to math activity? This report describes initial results from a small study of new math teachers.	

Time: 1:00 – 1:20 pm (research brief)	Location: University Ballroom E
Session #45: Middle School Students' Mindsets Before and After Open-Ended Problems	
Micah Stohlmann	The University of Nevada, Las Vegas
This study explored students' mindsets and quality of solutions from a four week Saturday program that incorporated open-ended problems.	

Time: 12:30 – 1:20 pm	Location: Burnham
Session #46: Investigations in Mathematics Learning: Getting Involved with Publishing and Reviewing	
Drew Polly, Jonathan Bostic, Colleen Eddy	IML Editors
Participants will learn about the journal investigations in mathematics learning and learn how to become more involved with processes related to publishing in the journal and reviewing for the journal. There also will be an opportunity to discuss possible topics for special themed issues.	

BREAKOUT SESSION #5 – FRIDAY AFTERNOON CONTINUED

Time: 1:30 – 2:20 pm	Location: Welwyn
Session #47: Developing A College Quantitative Literacy Course: Assessing Student Change	
Ryan Fox, Brad Schleben	Belmont University
We discuss rationale and implementation of a new introductory math course. We assess students' changes in knowledge and beliefs using a pre-/post-test.	

Time: 1:30 – 2:20 pm	Location: Olmstead
Session #48: Learn to Write Mathematics: Revision in the Mathematics Classroom	
Melissa Gunter, Stacy Reeder	University of Oklahoma
Results from a research study in which students participated in mathematical writing and additional resources for integrating the practice into your own classroom will be shared.	

Time: 1:30 – 1:50 pm (research brief)	Location: Lakeview
Session #49: Design of Instructional Tasks for an Authentic STEM Integration	
Premkumar Pugalenti, Michelle Stephan, David Pugalee	UNC Charlotte
This session will share how students conceptions of angles and parallel lines were used to develop instructional tasks within an engineering context.	

Time: 2:00 – 2:20 pm (research brief)	Location: Lakeview
Session #50: Draw a Mathematician: How Female Secondary Students View Mathematicians	
Sandra Trowell	Valdosta State University
Female secondary mathematics students were asked to Draw a Mathematician. The use of drawings and brief narratives were examined to make sense of current students' beliefs and attitudes about mathematicians and thereby, assess the potential impact upon future choices and decisions.	

Time: 1:30 – 2:20 pm	Location: Walden
Session #51: Change in Discourse Dimensions in Elementary Classrooms of PD Participants	
Reema Alnizami, Anna Thorp	North Carolina State University
Results from analyzing discourse in classrooms of teachers with different levels of knowledge and practice, who participated in a math PD on discourse, are presented.	

Time: 1:30 – 1:50 pm (research brief)	Location: Salon III & IV
Session #52: Concept Maps as Content Assessment and Professional Development	
Michael Mikusa	Kent State University
Lee McEwan	The Ohio State University
While using concept maps to evaluate elementary teachers content knowledge we found it to be an effective method for teachers learning mathematics.	

Time: 2:00 – 2:20 pm (research brief)	Location: Salon III & IV
Session #53: Designing for Organizational Sensemaking of Mathematics Standards at Scale	
F. Paul Wonsavage	UNC Greensboro
This presentation uses organizational sensemaking to look at mathematics educators' engagement with an online professional development module in the context of implementing new mathematics standards.	

BREAKOUT SESSION #5 – Friday Afternoon CONTINUED

Time: 1:30 – 2:20 pm	Location: Keynes
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Session #54: The edTPA and Math Education: Perceptions, Possibilities and Problems

Tony Thompson, Kwaku Adu-Gyamfi	East Carolina University
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This presentation discusses the perceptions, possibilities and problems of the edTPA as experienced by faculty and pre-service mathematics teachers at East Carolina University.
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Time: 2:00 – 2:20 pm (research brief)	Location: University Ballroom E
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Session #55: Pre-service Teachers' Questioning Strategies to Promote Discourse

Lynn Columba	Lehigh University
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Preliminary data analysis of preservice teachers questioning and types of questions in a math talk interview.

Time: 1:30 – 2:20 pm	Location: Burnham
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Session #56: A Quantitative Measure of Teachers' SMP Knowledge: The SMP-KA

Gabriel Matney, Jonathan Bostic	Bowling Green State University
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We will share the design of the Standards for Mathematical Practice Knowledge Assessment (SMP-KA), an instrument that measures teachers' knowledge of the SMPs.

BREAKOUT SESSION #6 – Friday Afternoon CONTINUED

Time: 2:30 – 3:20 pm	Location: Welwyn
Session #57: Myths of women in mathematics: Pre-service teachers’ perceptions	
Lisa Rice, Amanda Lambertus	Arkansas State University
We present findings from studying female pre-service secondary teachers’ perceptions of mathematics and their mathematical-selves through myths surrounding women in mathematics.	

Time: 2:30 – 3:20 pm	Location: Olmstead
Session #58: Supporting Primary Teachers as They Look for the M in STEM Activities	
Suzanne Brown, Sandra Browning	University of Houston – Clear Lake
Participants will take part in a STEM activity for primary students. The presenters conducted this activity with K-2 teachers and their students. Interviews with each grade level team and their suggestions on finding the mathematics when they implement STEM activities will be shared.	

Time: 2:30 – 2:50 pm (research brief)	Location: Lakeview Room
Session #59: Exploring Students’ Statistical Reasoning	
Jessie Store	Alma College
Statistical reasoning defined as making sense of statistical investigations is essential for developing college and career ready students for the world in which data and statistics are omnipresent. This study aimed at assessing the statistical reasoning of 84 high school students and college students before taking a college statistics course. The findings reveal strong skills in computing and interpreting probabilities, and surprising lack of significant differences between statistical skills for middle school, high school, and college students. Implications for further research are discussed.	

Time: 2:30 – 3:20 pm	Location: Walden
Session #60: Scaling Up Mathematics Methods Practices that Support Ambitious Teaching	
Monica Gonzalez, Catherine Schwartz, Leigh Belford	East Carolina University
Implementing mediated field experiences and cycles of enactment during elementary mathematics methods courses in a large university setting is difficult. We share successes and challenges.	

Time: 3:00 – 3:20 pm (research brief)	Location: Salon III & IV
Session #61: Problem Posing in a University Developmental Math Course	
John Sevier Anthony Fernandes	Appalachian State University UNC Charlotte
This presentation will outline the preliminary results of a pilot study that engages developmental mathematics students in problem posing. The results will also touch on the effect on students’ abilities, beliefs and understanding.	

BREAKOUT SESSION #6 – Friday Afternoon CONTINUED

Time: 2:30 – 3:20 pm	Location: Keynes
Session #62: Supporting Preservice Teachers’ Strategic Competence in a Non-routine Task	
Catherine Schwartz, Kwaku Adu-Gyamfi, Rose Sinicrope	East Carolina University
<p>We share elementary PT’s approaches to and attitudes toward a non-routine task that supports use of multiple representations and development of strategic competence.</p>	

Time: 2:30 – 2:50 pm (research brief)	Location: University Ballroom E
Session #63: Children’s Conveyed Multiplicative Meaning Across Models	
Judy Benjamin	Kent State University
<p>Evidence suggests that visual models used to represent multiplication are not always interpreted multiplicatively. This study examined the strategies elicited by various models.</p>	

Time: 3:00 – 3:20 pm (research brief)	Location: University Ballroom E
Session #64: Unpacking and Decompressing Integer and Binomial Multiplication	
Sarah Pratt, Colleen Eddy Eloise Kuehnert	University of North Texas Southern Methodist University
<p>Results for using area models in a series of mathematical tasks unpack and decompress MTCs’ conceptual understandings of integer and binomial multiplication will be shared.</p>	

Time: 2:30 – 3:20 pm	Location: Burnham
Session #65: Representations: Teacher Expectations, Beliefs, Instructional Practices	
Kwaku Adu-Gyamfi, Tony Thompson	East Carolina University
<p>The association between translation fluency and mathematics learning, as well as the push from national standards, makes the development of students’ translation fluency a central goal in today’s mathematics classroom (Gagatsis & Shiakalli, 2004; Janvier, 1987). The session details a study that investigated teacher beliefs, expectations and instructional practices with respect to mathematical translations and student success. The session includes an opportunity to examine data samples and discuss strategies for mathematics teacher education and future research.</p>	

WILSON MEMORIAL LECTURE: *Dr. Joseph Graves 4:30 – 5:30 PM*
 Introduction by: Dr. Jared Webb
Location: Lakeshore Ballroom Salon III & IV

BREAKOUT SESSION #7 – Saturday Morning

Time: 8:00 – 8:50 am	Location: Welwyn
Session #66: Activities for PSTs' Understanding of Fraction Multiplication and Division	
Shawn Broderick	Weber State University
Ryan Fox	Belmont University
In this session, we will explore which activities PSTs deemed most effective to deepen their knowledge of fraction multiplication and division.	

Time: 8:00 – 8:20 am (research brief)	Location: Lakeview
Session #67: Examining Novice Secondary Mathematics Teachers' Use of Support Networks	
Fahmil Shah	Boston University
This research investigates mathematics teachers' use of support networks to overcome their challenges as novice teachers, as well as the challenges that remain unaddressed.	

Time: 8:00 – 8:50 am	Location: Walden
Session #68: Conceptualizing and Investigating Mathematics Teacher Learning of Practice	
Jared Webb	North Carolina A & T State University
This presentation addresses calls for a conceptual model of teaching that can support design and research of teacher learning of core practices of ambitious teaching.	

Time: 8:00 – 8:20 am (research brief)	Location: Salon I
Session #69: Ranking the Cognitive Demand of Tasks Across Mathematical Domains	
Samantha Kelly	Virginia Tech
Connecting units coordination and m-capacity in a task analysis allows for the clear definition of a middle school-aged student's mathematics ability.	

Time: 8:30 – 8:50 am (research brief)	Location: Salon I
Session #70: Prospective Teachers' Knowledge of Cognitive Demand of Mathematical Tasks	
Kaylee Tuttle, Michelle Chamberlin	University of Wyoming
I present findings that show the positive impact of prospective secondary teachers learning about the cognitive demand of mathematical tasks through the Task Analysis Guide.	

Time: 8:00 – 8:50 am	Location: Keynes
Session #71: Examining Storylines and Positionings in a Secondary Mathematics Classroom	
Megan Martin, P. Holt Wilson	UNC Greensboro
We use Positioning Theory to highlight storylines and afforded positions in a classroom as the teacher engaged in ongoing PD on instructional practice.	

BREAKOUT SESSION #7 – SATURDAY MORNING CONTINUED

Time: 8:00 – 8:20 am (research brief)	Location: Salon III & IV
Session #72: Assessing the Emporium Model through Student Persistence	
Kathy Cousins-Cooper, Katrina Nelson	North Carolina A & T State University
The Mathematics Emporium Model was implemented to improve the student course success rate, student retention, and individualized student experience.	

Time: 8:00 – 8:50 am	Location: Burnham
Session #73: Social Justice Through Mathematics or Teaching Math for Social Justice	
Taajah Witherspoon	University of Alabama at Birmingham
Teaching math for social justice is a progressive approach that is underutilized in today’s classrooms. Most often math and social justice concepts are taught in isolation.	

Time: 9:00 – 9:50 am	Location: Welwyn
Session #74: Educative Disruption: Theories of Violence, Slavery, and Mathematical Tasks	
S. Megan Che	Clemson University
This presentation illustrates the use of educative psychic violence (Leonardo & Porter, 2010) in the implementation of several mathematical tasks and posits a different type of educational disruption, humanizing violence, as a more generative space for mathematics learning.	

Time: 9:00 – 9:20 am (research brief)	Location: Salon II
Session #75: Middle Grades Teachers’ Evaluative Listening and Questioning	
Eloise Ania Kuehnert Colleen Eddy, Sarah Pratt	Southern Methodist University University of North Texas
A conceptual framework for listening and questioning was developed to encourage purposeful questions and meaningful classroom conversations.	

Time: 9:00 – 9:20 am (research brief)	Location: Salon I
Session #76: Gladys's Lesson Plan: A Culturally Relevant Exemplar	
Nickolaus Ortiz	Michigan State University
Pre-service teachers enrolled in a mathematics problem solving course were given the directive to design a lesson plan with a culturally relevant teaching scheme in mind. The current research articulates elements of one exemplar in a sample of lesson plans that align closely with the tenets of culturally relevant pedagogy. The contention herein is that one prerequisite to implementing a holistic form of this pedagogy is for PSTs to plan spaces, opportunities, and lessons for making cultural connections. I share the successes that one PST had in addressing this task and propose a few additional suggestions.	

Time: 9:30 – 9:50 am (research brief)	Location: Salon I
Session #77: Pre-service Teachers’ Beliefs about Teaching English Learners	
Anthony Fernandes	UNC Charlotte
This talk will report on a study that examined mathematics preservice teachers’ beliefs about the teaching and learning of mathematics to English learners.	

BREAKOUT SESSION #8 - SATURDAY MORNING CONTINUED

Time: 9:00 – 9:50 am	Location: Keynes
Session #78: Lesson Experiments: Examining Factors that Influence Mathematics Learning	
Michelle Chamberlin	University of Wyoming
I present the lesson experiment process, a method for studying one’s own teaching, in the context of examining prospective teachers’ understandings of area units.	

Time: 9:00 – 9:20 am (research brief)	Location: Salon III & IV
Session #79: Assessing Rural Students’ Proportional Reasoning in an Era of Accountability	
James Telese, Jair Aguilar	University of Texas – Rio Grande Valley
This project assessed rural, Hispanic middle school students’ level of proportional reasoning by examining how rural middle school students solved proportions with various numeric structures.	

Time: 9:30 – 9:50 am (research brief)	Location: Salon III & IV
Session #80: Follow-Up Conversations: Inside or Outside of Children’s Strategy Details?	
Vicki Jacobs	UNC Greensboro
Explore how teachers’ attention to the details in children’s problem-solving strategies connects with how they anticipate follow-up conversations.	

Time: 9:00 – 9:50 am	Location: Burnham
Session #81: Elementary Students Understanding of Fractions on the Number Line	
Taajah Witherspoon	University of Alabama at Birmingham
In this session participants discuss the results of research projects conducted in elementary with an emphasis on understanding fractions.	

BREAKOUT SESSION #9 – Saturday Morning CONTINUED

Time: 10:00 – 10:50 am	Location: Welwyn
Session #82: The Impact of Number Talks on Student Achievement	
Taajah Witherspoon, Ann Dominick	University of Alabama at Birmingham
In this session participants discuss the results of research projects conducted in inner city schools in which Number Talks are a new routine.	

Time: 10:00 – 10:20 am (research brief)	Location: Lakeview
Session #83: Motivators or conceptual foundation? Teacher beliefs about context problems	
Luke Reinke, Amanda Casto	UNC Charlotte
Teachers’ views about context problems shifted while implementing context problem-based sequences. Initially, teachers viewed contexts as motivators. Later, they viewed context-problems as conceptual "foundations."	

Time: 10:30 – 10:50 am (research brief)	Location: Lakeview
Session #84: Learning to Teach Math through “Playing” in the Pre-School	
Georgia Cobbs	University of Montana
Pre-service teachers (PSTs) learn the importance of play while observing in the university’s pre-school. Then PSTs develop and implement their own math-focused learning center	

Time: 10:00 – 10:50 am	Location: Walden
Session #85: Counting Units of Double Number Lines	
Eric Siy	University of Georgia
I present three kinds of units prospective middle school teachers used when solving division and proportion problems using double number lines.	

Time: 10:00 – 10:20 am (research brief)	Location: Salon I
Session #86: Representations: Improving CKT in Grades 4-8	
Tommy Smith	University of Alabama at Birmingham
This session explores improving the Content Knowledge for Teaching algebraic reasoning among preservice teachers through multiple representations.	

Time: 10:30 – 10:50 am (research brief)	Location: Salon I
Session #87: Examining Mathematical Modeling of Fifth Graders Using Computer-Simulation	
Azin Sanjari, Ayse Ozturk	The Ohio State University
This research study seeks to investigate how computer-based simulations can help students solve mathematical modeling problems.	

BREAKOUT SESSION #9 - SATURDAY MORNING CONTINUED

Time: 10:00 – 10:50 am	Location: Keynes
Session #88: Validation as Design-Based Research: Examples from Building the PSMs	
Jonathan Bostic, Gabriel Matney	Bowling Green State University
Learn how validation is an ongoing process and something all scholars are capable of doing. Bring ideas and questions about your own work!	

Time: 10:00 – 10:20 am (research brief)	Location: Salon III & IV
Session #89: Where'd They Go? Sustaining and Growing Interest in Mathematics Teaching	
Keith Hubbard	Michigan State University
We examine where math majors intending to teach leave the teaching trajectory using longitudinal quantitative methods, supported by case studies.	
Time: 10:30 – 10:50 am (research brief)	Location: Salon III & IV
Session #90: Where'd They Go? Sustaining and Growing Interest in Mathematics Teaching	
Fred Coon	UNC Charlotte
This study is wanting to understand the collection of knowledge, skills, attitudes, and habits of mind that are collectively probability literacy.	

Time: 10:00 – 10:50 am	Location: Burnham
Session #91: Secondary Rehearsal-Analysis of a New Model for Instructional Activities	
Casey Hawthorne John Gruver	Furman University Michigan Technological University
We explore affordances of an instructional activity used to support teachers to elicit and respond to student thinking during instruction of a complex mathematical topic.	

End of Conference
Box Lunch (for those who ordered)
Location: Midway
 Thank you for attending and we will see you in Las Vegas for the 2020 conference!

2018 RCML BOARD MEETING MINUTES: FEBRUARY 23, 2018

Call to Order

Dan called the meeting to order at 12:05pm CST
Recognition of first time attendees and returning attendees.
Overview of the Executive Committee.

Approval of March 2017 Business Meeting minutes

Eileen Faulkenberry moved to approve, and Kathy Smith seconded. Motion carried unanimously.

Membership report

Kerri Richardson shared that membership is at 200 members.

Treasurer report

Kerri shared that the organization is at a yearly net of \$10,392.

Election results

Dan shared election results of the conference committee (Travis Mukina & Jamaal Young), publications committee (Jennifer Cribbs & Colleen Eddy), president elect (Megan Che), VP conferences (Sarah Pratt), and Treasurer (Kerri Richardson).

Dan noted that the nominations for the 2019 slate of officers was available, and forms could be given to Juliana Utley or to Megan Che.

Conference leadership

Kansas Conrady recognized David Kirshner and Angela Webb as conference co-chairs, and Sarah Pratt and Colleen Eddy as program co-chairs. She also recognized the conference committee. Kansas noted that there were 137 registered for the conference.

Kansas shared the future RCML conferences will be in Charlotte and Las Vegas, and solicited proposals for future sites.

Publications

Gabriel Matney recognized Linda Venenciano, Adrienne Redmond-Sanogo, and Nick Wong for their service to editing and producing the proceedings. Gabriel shared that there are 22 manuscripts accepted with a 63% acceptance rate. He announced that in 2019, the editors will be Adrienne Sanogo and Jennifer Cribbs.

Gabriel shared his experience being mentored in the RCML organization. He discussed the road to publications he has experienced from presentations, to proceedings, to IML. He encouraged membership to seek mentorship and provide mentorship among the members.

Gabriel noted the session later in the day focused on publishing in the IML journal. He also noted that the organization has launched a search for Associate Editors for IML. He noted that the highest international downloads came from Australia, and noted the article Area Models to

Image Integer and Binomial Multiplication had the highest Altmetrics rating. Additionally, the article Moving Forward: Instruments and Opportunities for Aligning Current Practices with Testing Standards was the most downloaded in 2017.

Special issue volume 10 will be coming out soon focused on students with disabilities. Gabriel encouraged members to sign up to be reviewers.

Gabriel recognized the service of the Publications Committee and the work that they do. He also recognized Bill McGalliard as the editor of the newsletter and the work he does. He noted that changes are coming to the newsletter, and solicited responses to the survey distributed on each table.

Recognition of memorial scholarship awardees

Dan shared that this year the scholarship was split between two scholarships. He recognized Nicholas Wong and Christie Martin.

Recognition of RCML service

Dan recognized members who are concluding their roles on various committees:

- Tyrette Carter and Rachel Bachman, Publications Committee, 2016-2018
- Hope Marchionda and Bill McGalliard, Conference Committee, 2015-2018
- Linda Venenciano – Conference Proceedings Editor 2018
- Adrienne Redmond-Sanogo – Conference Proceedings Co-Editor 2018
- David Kirshner – 2018 Conference Chair
- Sarah Pratt – 2018 Conference Program Chair
- Colleen Eddy and Eloise Kuehnert, 2018 Conference Program Co-Chairs
- Kerri Richardson – Treasurer and Membership Coordinator, 2016-2018
- Kansas Conrady – VP Conferences, 2016-2018 - Juliana Utley – Past-President, 2017-2018

Old business

Dan recognized the adhoc communications committee formed last year for their work – Rachel Bates, Glenn Phillips, Jim Telese, and Kay Wolhuter. He also noted that the memorial scholarships have been expanded to include both non-tenured faculty and graduate students. He also recognized the Executive Board and Makenna Geise for their work in digitizing archives and past data.

New business

Dan noted that there will be a new distinguished service award to honor Jim Heddens.

The newsletter will be revised, as well as all electronic communications. Dan opened the floor for other new business from the membership.

Strategic goals

Dan shared the strategic goals for 2018-19:

Make Handbook Revisions

- Revise annual timelines for Board member activities to clarify tasks and timing of annual work (roles, responsibilities, timelines)
- Revise Conference Planning Guide

Improve Communications

- Revisit the purpose/length/necessity of Newsletter in light of a new website format
- Comprehensively plan communications efforts, from social media to newsletter, website, and email
- Define what we do better/differently than other organizations (and how to market accordingly)

Address Membership

- Examine what can be done to attract and retain graduate students in the organization -
Plan for reaching out to first-time conference attendees

Adjourn Dan adjourned the meeting at
12:45pm CST.

INDEX OF PRESENTERS

Listed: Last Name, First Name, Email, & Session Number(s)

- Adu-Gyamfi, Kwaku, adugwamfik@ecu.edu, 54, 62, 65
Aguilar, Jair, jair.aguilar@utrgv.edu, 79
Allen-Lyall, Barbara, Barbara.AllenLyall@mville.edu, 16
Alnizami, Reema, rkalniza@ncsu.edu, 7, 51
Asempapa, Reuben, rsa26@psu.edu, 19
Athanasopoulou, Anna, aathanas@uncc.edu, 27
Bachman, Rachel, rachelbachman1@weber.edu, 38
Bailey, Natalia, nbailey@ucmo.edu, 34
Baucom, Lauren, lnbaucom@uncg.edu, 10
Belford, Leigh, belford114@ecu.edu, 60
Benjamin, Judy, jtracy@kent.edu, 63
Bostic, Jonathan, bosticj@bgsu.edu, 37, 46, 56, 88
Brahier, Daniel, brahier@bgsu.edu, 21
Broderick, Shawn, shawnbroderick@weber.edu, 66
Brown, Suzanne, browns@uhcl.edu, 58
Browning, Sandra, browning@uhcl.edu, 58
Cassel, Darlinda, dcassel2@uco.edu, 23
Casto, Amanda, acasto2@uncc.edu, 83
Caswell, Chelsea, ccaswel@bgsu.edu, 3
Chamberlin, Michelle, mchambe5@uwyo.edu, 70, 78
Che, S. Megan, sche@clemsun.edu, 74
Cobbs, Georgia, georgia.cobbs@mso.umt.edu, 84
Columba, Lynn, hlc0@lehigh.edu, 55
Corkin, Danya, corkind@uhd.edu, 24
Coon, Fred, fcoon@uncc.edu, 90
Cousins-Cooper, Kathy, cousinsk@ncat.edu, 72
Cribbs, Jennifer, jennifer.cribbs@okstate.edu, 11
Dominick, Ann, adominc@uab.edu, 82
Eddy, Colleen, colleen.eddy@unt.edu, 37, 46, 64, 75
Faulkenberry, Eileen, efaulkenberry@tarleton.edu, 20
Fernandes, Anthony, anthony.fernandes@uncc.edu, 61, 77
Foster, Lucas, fosterlb@nsuok.edu, 6
Fox, Ryan, ryan.fox@belmont.edu, 44, 47, 66
Franz, Dana, dana.pomykal.franz@colled.msstate.edu, 15
Gomez, Carlos Nicolas, carlos@clemsun.edu, 22
Gonzalez, Monica, gonzalezmo18@ecu.edu, 60
Gunter, Melissa, melissa.gunter@ou.edu, 48
Grant, Hannah, sw_hgrant@tarleton.edu, 20
Gruver, John, jgruver@mtu.edu, 91
Hatziminadakis, Sofia, sofia6@mail.usf.edu, 25
Hawthorne, Casey, casey.hawthorne@furman.edu, 91
Hubbard, Keith, hubbardke@sfasu.edu, 89
Hurlbut, Denice, dlhurlbut@gmail.com, 23
Jacobs, Vicki, vrbjacs@uncg.edu, 1, 80
Jones, Stacy R., stacy9@clemsun.edu, 22
Keels, Kristen, ksk06155@uga.edu, 43
Kelly, Samantha, samck275@vt.edu, 69
Kruse, Lance, lance.kruse@utoledo.edu, 41
Kuehnert, Eloise Aniag, ekuehnert@smu.edu, 17, 64, 75
Lambertus, Amanda, alambertus@astate.edu, 57
LaCroix, Tiffany, tlacroix@vt.edu, 31
Lewis, Stephen, slewis@pastfoundation.org, 14
Maiorca, Cathrine, Cathrine.Maiorca@csulb.edu, 33
Mallam, Winifred, wmallam@twu.edu, 5
Martin, Megan, m_reid@uncg.edu, 71
Matney, Gabriel, gmatney@bgsu.edu, 3, 56, 88
McEwan, Lee, mcewan@math.ohio-state.edu, 52
McKenzie, Brittain, mhoxit@g.clemsun.edu, 2
Mikusa, Michael, mmikusa@kent.edu, 52
Millsaps, Gayle, gmillsaps@ewu.edu, 4
Morge, Shelby, morges@uncw.edu, 30
Neal, Cora, cneal@weber.edu, 38
Nelson, Katrina, kvnelson@ncat.edu, 72
Nicholson, Taylor, thnico@bgsu.edu, 41
Ortiz, Nickolaus, ortizni2@msu.edu, 76
Ozturk, Ayse, ozturk.25@osu.edu, 14, 87
Petruilis, Robert, Robert.Petruilis@EPREconsulting.com, 18
Phipps, Marnie, marnie.phipps@ung.edu, 9
Polly, Drew, drew.polly@uncc.edu, 15, 37, 46
Pratt, Sarah, sarah.pratt@unt.edu, 64, 75
Pugalee, David, dkpugale@uncc.edu, 30, 49
Pugalethi, Premkumar, ppugalen@uncc.edu, 30, 49
Reeder, Stacy, reeder@ou.edu, 48
Reinke, Luke, lreinke@uncc.edu, 83

Rice, Lisa, lrice@astate.edu, 57
Roberts, Thomas, otrober@bgsu.edu, 33
Rothwell, Brooke, rothweb@gcsnc.com, 29
Sanjari, Azin, sanjaripirmahaleh.1@osu.edu, 87
Schleben, Brad, brad.schleben@belmont.edu, 47
Schwartz, Catherine, schwartzca@ecu.edu, 60, 62
Sevier, John, sevierjn@appstate.edu, 61
Shah, Fahmil, fshah@bu.edu, 67
Sinicrope, Rose, sinicroper@ecu.edu, 62
Siy, Eric, ericsiy@uga.edu, 85
Smith, Tommy, tsmith@uab.edu, 86
Smithey, Montana, m_smithe@uncg.edu, 8
Stephan, Michelle, mstepha1@uncc.edu, 49
Stohlmann, Micah, micah.stohlmann@unlv.edu, 45
Store, Jessie, storejc@alma.edu, 26, 59
Swarthout, Mary, MBS001@shsu.edu, 39
Tanck, Hillary, htanck@g.clemson.edu, 35
Tchoshanov, Mourat, mouratt@utep.edu, 60, 70
Telese, James, james.telese@utrgv.edu, 79
Thompson, Tony, thompsonan@ecu.edu, 54, 65
Thorp, Anna, akbaucom@ncsu.edu, 51
Trowell, Sandra, strowell@valdosta.edu, 50
Tuttle, Kaylee, kayleertuttle@gmail.com, 70
Utley, Juliana, Juliana.utley@okstate.edu, 11
Venenciano, Linda, lhirashi@hawaii.edu, 42
Wagner, Patty, patty.wagner@ung.edu, 9
Walker, Dena, dewalker@nwsu.edu, 32
Walkowiak, Temple, tawalkow@ncsu.edu, 1, 13
Weaver, John, john.weaver@okstate.edu, 11
Webb, Jared, jnwebb@ncat.edu, 68
Whitehead, Ashley, whiteheadan@appstate.edu, 12, 13
Wilson, P. Holt, phwilson@uncg.edu, 10, 71
Witherspoon, Taajah, taajah@uab.edu, 73, 81, 82
Wohlhuter, Kay, kwohlhut@d.umn.edu, 39
Wonsavage, F. Paul, fpwonsav@uncg.edu, 53
Wright, Duncan, dw7@math.sc.edu, 18
Young, Jamaal, jamaal-young@unt.edu, 36
Yova, Frederique, fcyova@ncsu.edu, 1
Zollman, Alan, alanzoll@ius.edu, 40

Map of Conference Rooms at Hilton Charlotte University Place

