Research Presession Planning Committee

NCTM Research Committee

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Announcements

- The Research Presession will be held in the Walter E. Washington Convention Center.
- Registration will be held on Concourse A. The times are Monday, 4:30 p.m.–7:00 p.m., and Tuesday, 7:00 a.m.–3:00 p.m. Registration is required for attendance, and badges must be worn for all sessions.
- On Wednesday, the Research Presession is open to all registered attendees to the NCTM Annual Meeting and the NCSM Annual Conference. Badges from these conferences will be required for attendance for all sessions on Wednesday.
- A light reception will be held on Monday evening on third floor in the prefunction area from 8:30 p.m. to 10:00 p.m. following the opening session at 7:00 p.m. in Room 202A/B.
- This year, we will have two showings of poster sessions. Research posters will be available for viewing and discussing with the presenters in the East Level 2 Overlook from 5:15 p.m. to 6:30 p.m. on Monday and from 4:45 p.m. to 6:00 p.m. on Tuesday.
- The Call for Papers for the next Research Presession, to be held in San Diego in 2010, will be available online June, 2009.
- Be sure to visit the Exhibit Hall for the NCTM Bookstore, which has a special table on research.

The publications and programs of the National Council of Teachers of Mathematics present a variety of viewpoints. The views expressed or implied in this publication, unless otherwise noted, should not be interpreted as official positions of the Council. Reference to particular commercial products by a speaker should not be construed as an NCTM endorsement of said product(s). NCTM reserves the right to change speakers, change facilities, or modify program content.

NCTM does not sell or distribute member email addresses in compliance with Federal privacy policies. However, some speakers on this program have elected to print their email addresses as a means for individual correspondence with conference attendees. Unsolicited commercial email or unsolicited bulk email, whether or not that email is commercial in nature, is expressly prohibited. Any use of email addresses beyond personal correspondence is not authorized by NCTM.
Highlighted Sessions

**Monday, April 20, 2009**

26. Opening Session  
Can Standards-Based Reform Help Close the Poverty Gap in Math?  
Adam Gamoran  
7:00 p.m.–8:30 p.m.  
Room 202 A/B

**Tuesday, April 21, 2009**

45. Mathematics Education Research: Multiple Users, Uses, and Methods  
10:30 a.m.–12:00 noon  
Room 203 B

56. Preparing a Proposal for NSF’s Division of Research on Learning  
1:00 p.m.–2:30 p.m.  
Room 202 B

58. Tools of the Trade  
1:00 p.m.–2:30 p.m.  
Room 204 C

75. Graduate Student and Junior Faculty Mentoring Session  
3:00 p.m.–4:30 p.m.  
Room 209 C

**Wednesday, April 22, 2009**

99. Identity, Equity, and Professional Development: Supporting Learning  
Plenary Session  
Megan Franke  
8:30 a.m. –10:00 a.m.  
Room 202 A

119. A Decade of Equity Research: Examining What Works  
1:00 p.m.–2:30 p.m.  
Room 201

124. Collaborating to Identify Research Priorities in Math Education  
1:00 p.m.–2:30 p.m.  
Room 209 A
1. A Framework for Conceptual Understanding in Early Algebra

**Poster Session**

The speaker and colleagues conducted a teaching experiment to develop a theory of conceptual understanding in early algebra. The experiment integrated a theoretical perspective for understanding functions with a theory of algebra-word-problem solving. The goal was to provide a framework that may help teachers build on students’ thinking in instruction.

**Milan F. Sherman**  
*University of Pittsburgh, Pittsburgh, Pennsylvania*

**Prefunction Area, Table 1, Capacity: 700**

2. Interactive Geometry in Classrooms

**Poster Session**

This poster session will describe a project that is investigating the efficacy of interactive geometry software on high school students’ geometry learning over the course of a full year. Built on supporting theoretical perspectives and empirical research, this project will determine if interactive geometry leads to students’ improved mathematics achievement.

**Brenda Strassfeld**  
*New York University, New York, New York*

**Zhonghong Jiang**  
*Texas State University—San Marcos, San Marcos, Texas*

**Prefunction Area, Table 2, Capacity: 700**

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For your safety and due to fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, it may be necessary to ask any person sitting on the floor or standing to leave the room. Please remember:

- All meeting rooms will be cleared between presentations.
- All seats are available on a first-come, first-served basis.
- Reserving spaces in line or saving seats is not permitted.
- As a courtesy to the speaker and your colleagues, please turn off your cell phone during all presentations.
3. Interactive Whiteboard Use in Math Classrooms: Grounding Theory in Practice

**POSTER SESSION**

Research on interactive whiteboard use is relatively new, since their introduction into classrooms began in this decade. The results of a mixed-methods professional development study of 12 teachers and 244 students in four school sites will be reported, and the resulting framework for interactive whiteboard use will be shared.

Catherine Diane Bruce  
*Trent University, Peterborough, Ontario, Canada*

Mary Ladky  
*Trent University, Peterborough, Ontario, Canada*

Tara Flynn  
*Trent University, Peterborough, Ontario, Canada*

Prefunction Area, Table 3, Capacity: 700

4. Is There a Relationship between Self-Worth Protection and Internalization?

Self-worth protection is when students withhold effort to protect their self-esteem. This presentation will explore the motivations of these students and the challenges of diagnosing levels of self-worth protection. The study was conducted in an under-performing, urban high school math classroom.

**POSTER SESSION**

Elizabeth Abbas  
*Chicago Public Schools, Chicago, Illinois*

Prefunction Area, Table 4, Capacity: 700

5. Latina and Latino Middle School Mathematics Students: Contexts of Success

This qualitative study will explore school experiences of five mathematically successful Latina and Latino middle school students and identify stressors that have impeded their progress and supports that have helped them achieve. A comparative case study will examine each student’s experiences in depth for commonalities and differences.

**POSTER SESSION**

Evelyn M. Gordon  
*University of North Carolina at Chapel Hill, Chapel Hill, North Carolina*

Prefunction Area, Table 5, Capacity: 700
6. Learning and Forgetting: Microgenetic Analysis of Math Learning Disability

POSTER SESSION

A longitudinal case study analysis of a student with a mathematical learning disability indicated that her knowledge is susceptible to forgetting after periods of disuse. Her explanations indicated that she encoded her mathematical understanding procedurally rather than conceptually, which may contribute to her tendency to forget.

Katherine Lewis
University of California, Berkeley, Berkeley, California

Prefunction Area, Table 6, Capacity: 700

7. Learning Fractions: The Experience of Lebanese Students

POSTER SESSION

This presentation will reveal findings of a six-week research studying the effects of using a research-based curriculum on fifth-grade, Lebanese students’ acquisition of fraction concepts. Participants will be exposed to the challenges and opportunities that teachers and students confronted when using a nontraditional, research-based curriculum.

Iman Chaïk Chahine
University of Minnesota—Twin Cities, Minneapolis, Minnesota

Prefunction Area, Table 7, Capacity: 700

9. Mathematics as Social Endeavor

POSTER SESSION

Using video data, the speaker will support the claim that because mathematics develops as contractual social action, (1) to learn mathematics successfully students must participate in similar, joint mathematical-social endeavors; and conversely, (2) various “reform” recommendations fracturing class coherence (e.g. differentiated instruction, personalized tutoring, technology) are counterproductive to mathematics learning.

Thomas Ricks
Louisiana State University, Baton Rouge, Louisiana

Prefunction Area, Table 9, Capacity: 700

**Poster Session**

This historical investigation will help participants understanding how a large, urban, grades K–12 school district addresses changes in the mathematics curriculum. This study will examine how members of its Board of School Directors gain understanding of, and make policy decisions about, mathematics instruction in the district.

Susan Regina Monaghan  
*Marquette University, Milwaukee, Wisconsin*

Prefunction Area, Table 10, Capacity: 700

11. Any Right to Get It Wrong? Beginning Teachers and Students’ Math Errors

**Poster Session**

This session will (a) report on how beginning mathematics teachers handle their students’ mathematical errors, (b) identify policy and school context factors that influence the error-handling role, and (c) describe how a sample of teachers implemented suggested best practices.

Hanna Haydar  
*City University of New York—Brooklyn College, Brooklyn, New York*

Sunita Vatuk  
*MetroMath, City University of New York—Graduate Center, New York, New York*

Prefunction Area, Table 11, Capacity: 700

12. Connecting Students’ Engagement and Math Identity to Mathematics Learning

**Poster Session**

A recent research study evaluated middle school students’ perspectives of their engagement in the mathematics classroom (community of practice) and its impact on students’ sense of themselves as mathematics learners (math identity). Students’ engagement in mathematics is influenced by their prior experiences, personal attitudes, social interactions, and cultural norms.

Tracey Keck  
*Winston-Salem State University, Winston-Salem, North Carolina*

Prefunction Area, Table 12, Capacity: 700
13. Connecting the Experiences of African American Students with Mathematics

**Poster Session**

The project described here gave prospective teachers opportunities to understand African American students better and focus better on how they learn mathematics. Consequently, the teachers have come to realize that African American students have academic potential and that unveiling said potential is accelerated when effective teaching principles are applied.

**Peter Sheppard**  
*University of Louisiana at Lafayette, Lafayette, Louisiana*

Prefunction Area, Table 13, Capacity: 700

14. Cultivating Scholars in Mathematics Education: An HBCU Perspective

**Poster Session**

This session will highlight the challenges and opportunities faced by a historically black college or university (HBCU) offering graduate programs in mathematics education and initiatives implemented to support students’ success. Study results of the four students’ experiences will be presented with implications for other programs highlighted.

**Roni Ellington**  
*Morgan State University, Baltimore, Maryland*

**Kyle Turman**  
*Morgan State University, Baltimore, Maryland*

Prefunction Area, Table 14, Capacity: 700
15. Cultural “Mathprehension”: Connecting Mathematics to Social Justice

**Poster Session**
This presentation will look at teaching mathematics as a means of addressing social issues with preservice teachers. The session will present a mathematics educator’s perspective of an investigation of the effects of integrating mathematics and social issues.

**Summer Bateiha**  
*University of Oklahoma, Norman, Oklahoma*

Prefunction Area, Table 15, Capacity: 700

16. Deaf and Hearing Students’ Use of Visual Aids in Solving Math Problems

**Poster Session**
This study examined the use of spatial-relational representation by deaf and hearing students while solving mathematical problems. Hearing subjects used spatial-relational representations to a greater extent than deaf subjects. The use of spatial-relational representations was a stronger predictor of performance for deaf students on this mathematical problem-solving task.

**Gary C. Blatto-Vallee**  
*Center for Education Research Partnerships, National Technical Institute for the Deaf, Rochester, New York*

Prefunction Area, Table 16, Capacity: 700

17. Defining and Developing Teachers’ Curriculum Capacity

**Poster Session**
This study explored the construct of “curriculum capacity,” defined as teachers’ ability to access, understand, and use curriculum materials in ways that support coherent mathematics for all students. In particular, the speaker will discuss ways in which individual and contextual strategies for curriculum use support or constrain teachers’ curriculum capacity.

**Corey Drake**  
*Iowa State University, Ames, Iowa*

Prefunction Area, Table 17, Capacity: 700
18. Designing Applets to Support the Development of Covariational Reasoning

**Poster Session**

This presentation will discuss the ways in which five Java-based applets supported students’ increasingly sophisticated reasoning about function concerning covarying quantities. Discussion will focus on a design framework that anticipates the types of questions and discussions that will cause perturbations in students’ thinking.

**Janet Bowers**  
*San Diego State University, San Diego, California*

**Kay McClain**  
*Arizona State University, Tempe, Arizona*

**David Yang**  
*San Diego State University, San Diego, California*

Prefunction Area, Table 18, Capacity: 700

19. Disrupting the Diagram: Semiotic Tools for Mathematics Teachers

**Poster Session**

This session emerges from a research project in which beginning middle school mathematics teachers participated in a lesson study group that was focused on the semiotics of problem solving and lesson design. Samples of teachers’ work that reveal enhanced capacity to decode and manipulate diagrams will be discussed.

**Elizabeth Mary de Freitas**  
*Adelphi University, New York, New York*

**Betina Zolkower**  
*City University of New York—Brooklyn College, Brooklyn, New York*

Prefunction Area, Table 19, Capacity: 700
20. Early Algebra: Case Studies of Problem Situations in Elementary School Textbooks

**POSTER SESSION**

This study examined the differences in the use of problems between U.S. and Chinese elementary school textbooks when introducing and developing two fundamental mathematics ideas: (1) the inverse relationship between addition and subtraction, and (2) the distributive property. These cases illustrate alternative ways to prepare students with algebraic readiness.

**Xiaobao Li**  
*University of Houston, Houston, Texas*

**Meixia Ding**  
*University of Nebraska—Lincoln, Lincoln, Nebraska*

Prefunction Area, Table 20, Capacity: 700

21. Elementary School Students and the Process of Generalization

**POSTER SESSION**

Generalization is an important component of the elementary school classroom. This study documents the different ways that elementary school students develop generalizations, the struggles they must overcome, and effective teacher interventions. Implications for the introduction of generalization into the elementary school classroom will also be provided.

**Chepina Witkowski**  
*Illinois State University, Normal, Illinois*

**David Barker**  
*Illinois State University, Normal, Illinois*

**Saad El-Zanati**  
*Illinois State University, Normal, Illinois*

**Cynthia Langrall**  
*Illinois State University, Normal, Illinois*

**Jeffrey E. Barrett**  
*Illinois State University, Normal, Illinois*

Prefunction Area, Table 21, Capacity: 700
22. Elementary School Textbook Use and Influential Factors: Cognitive Demand

**Poster Session**

This study examined elementary school teachers’ textbook use patterns and influential factors. Analyses across the cases revealed that some teachers maintained the higher level of textbook problems and questions in teaching, whereas others decreased its cognitive level. The alignment of teachers’ goals with textbooks was found to be a crucial factor.

**Ji-Won Son** 
*University of Tennessee, Knoxville, Tennessee*

Prefunction Area, Table 22, Capacity: 700

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23. Exploring Mathematical Knowledge for Teaching Geometry in Indonesia

**Poster Session**

This study examined the U.S.-based construction of mathematical knowledge for teaching (MKT) by investigating (1) factors influencing Indonesian elementary school teachers’ knowledge for teaching geometry and (2) how an adapted version of the MKT measures performed in evaluating a professional development program that focused on geometry.

**Dicky Ng** 
*Boston University, Boston, Massachusetts*

Prefunction Area, Table 23, Capacity: 700
24. Graphing Calculators in High School Algebra: Promotion, Perception, and Use

POSTER SESSION
How do teachers promote technology use for problem solving? In what ways does teachers’ promotion influence students’ decisions regarding technology use for problem solving? Results will be reported from a mixed-methods study on the comparison of a teacher and her students’ values and beliefs regarding graphing calculator use.

Allison McCulloch  
North Carolina State University, Raleigh, North Carolina

Matthew Campbell  
North Carolina State University, Raleigh, North Carolina

Prefunction Area, Table 24, Capacity: 700

25. Integers on the Number Line: Students’ Understanding of Linear Unit

POSTER SESSION
This session will report results from studies of fifth graders’ understandings of linear units on the number line. Evidence from students’ responses to nonroutine number-line representations indicates that many students inappropriately use a marked interval length as the linear unit when placing numbers on the line.

Geoffrey B. Saxe  
University of California, Berkeley, Berkeley, California

Meghan M. Shaughnessy  
University of California, Berkeley, Berkeley, California

Maryl Gearhart  
University of California, Berkeley, Berkeley, California

Lina Haldar  
University of California, Berkeley, Berkeley, California

Darrell Earnest  
University of California, Berkeley, Berkeley, California

Yasmin Sitabkhan  
University of California, Berkeley, Berkeley, California

Prefunction Area, Table 25, Capacity: 700
26. Can Standards-Based Reform Help Close the Poverty Gap in Math?

Opening Session

Pervasive inequality is the most pressing problem facing U.S. schools. Will standards-based reforms such as those enacted under No Child Left Behind result in lower inequality in mathematics performance? Higher-quality implementation of reforms coupled with richer assessments could help reduce the poverty gap in mathematics achievement in the future.

Adam Gamoran  
Director, Wisconsin Center for Education Research; University of Wisconsin—Madison, Madison, Wisconsin

202 A/B, Capacity: 700
27. A New Measure of Preschool Teachers’ Beliefs on Teaching and Learning Math

**INDIVIDUAL PAPER SESSION**

This session will report evidence of the validity of a new measure of pre- and in-service preschool teachers’ beliefs about teaching and learning mathematics. ANOVA results comparing cohorts indicated that teachers’ educational background, including preparation in early childhood mathematics education, was associated with teachers’ beliefs.

**Linda Michele Platas**
*University of California, Berkeley, Berkeley, California*

203 A, Capacity: 53

28. A Possible Model for Developing Conjectures in Dynamic Geometry®

**INDIVIDUAL PAPER SESSION**

This talk will describe preliminary results from a study on conjecturing and proving in dynamic geometry. The speakers hypothesized that abduction, and consequently the development of mathematical conjectures, can be fostered by certain dragging schemes that students seem to develop spontaneously when investigating open-problem situations.

**Anna Baccaglini-Frank**
*Università di Siena, Siena, Tuscany, Italy; University of New Hampshire, Durham, New Hampshire*

**Maria Alessandra Mariotti**
*Università di Siena, Siena, Tuscany, Italy*

203 B, Capacity: 53
29. The Impact of Black Parents’ Use of “Capital” on Students’ Success

**INDIVIDUAL PAPER SESSION**

This session will highlights findings from historical and case-study research documenting African American parents’ individual and collective use of social and cultural capital to cultivate positive learning experiences and outcomes for their children, particularly in mathematics. Ideas for how this research can be used to empower minority parents will be highlighted.

**Roni Ellington**  
*Morgan State University, Baltimore, Maryland*

**Rona Frederick**  
*Catholic University of America, Washington, D.C.*

8:30 a.m. – 10:00 a.m.

30. Behind the Indicators: Using Video Contrasts to Examine Effective Practice

**WORK SESSION**

Participants will be invited to examine recursively a series of classroom video vignettes in which questions of curriculum-instruction interaction, teachers’ use of guiding questions, and same lesson-different teacher contrasts will be examined. The researchers expect to benefit from this focusing of expert eyes on several previously analyzed cases.

**Jon Rahn Manon**  
*University of Delaware, Newark, Delaware*

**Linda Dager Wilson**  
*Project 2061, American Association for the Advancement of Science, Washington, D.C.*

**Kathleen M. Morris**  
*Project 2061, American Association for the Advancement of Science, Washington, D.C.*

201, Capacity: 180
31. The Cycle of Innovation: A Framework for Linking Research to Practice

RESEARCH SYMPOSIUM

The speakers will describe the “theory of action,” embodied in an innovation cycle, developed for funding educational research in programs sponsored by NSF’s Division of Research on Learning in Formal and Informal Settings. The presentation will use examples of funded mathematics projects to illustrate the variety of research supported.

Janice Earle
National Science Foundation, Arlington, Virginia

Karen Marrongelle
National Science Foundation, Washington, D.C.

Joan Ferrini-Mundy
National Science Foundation, Arlington, Virginia

Discussant: Jere Confrey
North Carolina State University, Raleigh, North Carolina

Discussant: Tom Loveless
Brookings Institution, Washington, D.C.

Discussant: Finbarr Sloane
Arizona State University, Phoenix, Arizona
32. Transforming Curriculum for Constructing Lesson Instruction in China

Research Symposium

This session will examine mathematics teachers’ practices in constructing and implementing quality lesson instruction valued in China with the use of curriculum materials. The study will highlight aspects of teachers’ practices and thinking in transforming curriculum for teaching fraction division.

Yeping Li  
Texas A&M University, College Station, Texas

Xi Chen  
Texas A&M University, College Station, Texas

Song An  
Texas A&M University, College Station, Texas

Rongjin Huang  
Texas A&M University, College Station, Texas

Discussant: Irving Brown  
Texas A&M University, College Station, Texas

Discussant: Glenda Lappan  
Past President, National Council of Teachers of Mathematics; Michigan State University, East Lansing, Michigan
33. Lessons Learned: Researching Latinos, Language, and Culture in Mathematics

Research Symposium

This symposium will present research focused on understanding the role of bilingualism and culture in the mathematics education of Latinos and Latinas, highlighting the cruciality of teacher preparation for working with Latinos, the importance of teacher-parent coalitions on problem solving, and the organization of environments where students can learn mathematics successfully.

Higinio Dominguez
University of Illinois at Chicago, Chicago, Illinois

Eugenia Vomvoridi-Ivanovic
University of Illinois at Chicago, Chicago, Illinois

Carlos López-Leiva
University of Illinois at Chicago, Chicago, Illinois

Alexander Radosavljevic
University of Illinois at Chicago, Chicago, Illinois

Discussant: Lena Licón Khisty
University of Illinois at Chicago, Chicago, Illinois
34. Improving Mathematics Teaching and Teacher Education through Specification

**WORK SESSION**

The lack of a knowledge base for teaching creates challenges for reliable and wide-scale development of high-quality instruction and the preparation of effective teachers. This session will consider the “specification” of teaching practice as a way to address these challenges and whether this is a promising direction for teacher education.

**Kara Suzuka**  
*University of Michigan, Ann Arbor, Michigan*

**Deborah Loewenberg Ball**  
*University of Michigan, Ann Arbor, Michigan*

**James Hiebert**  
*University of Delaware, Newark, Delaware*

**Jennifer Lewis**  
*University of Michigan, Ann Arbor, Michigan*

**Anne Morris**  
*University of Delaware, Newark, Delaware*

**Annette Roskam**  
*University of Delaware, Newark, Delaware*

**Laurie Sleep**  
*University of Michigan, Ann Arbor, Michigan*

204 C, Capacity: 90
35. Multiple Methods for Analyzing Mathematics Classroom Discourse

**Research Symposium**
This symposium will highlight four discourse-analytic methods used to examine middle-grades mathematics classroom discourse. The speakers will illustrate the methods using data from a five-year project and share how project teachers engaged with some of the information. Discussion will focus on affordances and constraints of each of the methods.

**Beth Herbel-Eisenmann**  
*Michigan State University, East Lansing, Michigan*

**Lorraine M. Males**  
*Michigan State University, East Lansing, Michigan*

**Samuel Otten**  
*Michigan State University, East Lansing, Michigan*

**Michelle Cirillo**  
*Iowa State University, Ames, Iowa*

209 A, Capacity: 92

36. Mathematics Education Research Funding Opportunities at the IES

**Research Symposium**
The Institute of Education Sciences supports research to develop and evaluate mathematics interventions, to develop and validate measurement instruments, and to gain fundamental understanding of the processes that underlie variations in the effectiveness of education programs, practices, policies, and approaches in mathematics.

**Christina Chhin**  
*Institute of Education Sciences, National Center for Education Research, Washington, D.C.*

**Robert Ochsendorf**  
*Institute of Education Sciences, National Center for Education Research, Washington, D.C.*

209 B, Capacity: 111
8:30 a.m. – 10:00 a.m.

37. Modeling Repeated Measures as an Entrée into Data Analysis

**WORK SESSION**

Participants will analyze measurement data and build runnable computer models of them. (Bring your laptops.) These activities highlight the idea of data as a combination of signal and noise. The audience will view a video of young students conducting similar explorations and discuss these investigations’ affordances for introducing fundamental statistical ideas.

**Clifford Konold**  
*University of Massachusetts Amherst, Amherst, Massachusetts*

**Richard Lehrer**  
*Vanderbilt University, Nashville, Tennessee*

209 C, Capacity: 60

9:30 a.m. – 10:10 a.m.

38. A Report on the Working Conditions Experienced by Mathematics Teachers

**INDIVIDUAL PAPER SESSION**

The conflicts and frustrations of work in schools today are especially acute for teachers in high-stakes fields like mathematics. This session will present findings from a study of the quality of work life of mathematics teachers. Participants will discuss the data as well as implications for research and practice.

**Ming Tomayko**  
*Towson University, Towson, Maryland*

203 A, Capacity: 53
39. The Role of the Graphing Calculator in Students’ Algebraic Thinking

**Individual Paper Session**

This study used task-based interviews to compare students who used graphing calculators while solving problems to those who solved the same problems without technology. Results indicate that students using graphing calculators had both changed thinking and changed performance compared to students without access to technology.

*Sandy Margaret Spitzer*
*Towson University, Towson, Maryland*

203 B, Capacity: 53

40. Race, Identity, Learning Together: Students’ Perspectives on Collaboration

**Individual Paper Session**

This session draws on interviews with students in discourse-intensive mathematics classrooms. Research questions will include how students describe group work in their mathematics class, what issues of equity students describe, and how students describe the way their identities influence group interactions in mathematics classes.

*Indigo Esmonde*
*University of Toronto, Toronto, Ontario, Canada*

204 A, Capacity: 87
41. An Evaluation of Conducting Methods Courses at Elementary School Sites

**INDIVIDUAL PAPER SESSION**

The purpose of this study was to assess the perspectives of both preservice and mentor teachers who participated in a program in which a reform-oriented undergraduate methods course was conducted at a school site. Similar professional development was also being conducted to allow for a “reform-friendly,” weekly practicum experience.

**Damon Bahr**
*Brigham Young University, Provo, Utah*

**Eula Ewing Monroe**
*Brigham Young University, Provo, Utah*

**Nancy Wentworth**
*Brigham Young University, Provo, Utah*

203 A, Capacity: 53

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42. Animation Affordances for Secondary School Mathematics Teacher Education

**WORK SESSION**

This working session will focus on understanding and assessing the affordances of rich media animations for the purpose of helping teachers and future teachers acquire mathematical knowledge for teaching. The presenters will share uses of animations developed by the Thought Experiments in Mathematics Teaching project.

**Dan Chazan**
*University of Maryland, College Park, Maryland*

**Lawrence M. Clark**
*University of Maryland, College Park, Maryland*

**Michael Kevin Weiss**
*University of Michigan, Ann Arbor, Michigan*

**Gloriana Gonzalez**
*University of Michigan, Ann Arbor, Michigan*

**Hagit Sela**
*University of Maryland, College Park, Maryland*

**Kristen Bieda**
*Michigan State University, East Lansing, Michigan*

201, Capacity: 180
43. A Learning Trajectory for Equipartitioning

**Research Symposium**
This session will describe continued work on a learning trajectory for equipartitioning for grades K-4. The speakers will report findings from three studies, one describing field testing on building a diagnostic measure, as well as from professional development studies of preservice and in-service teachers using the trajectory to guide instructional practices.

**Jere Confrey**  
*North Carolina State University, Raleigh, North Carolina*

**Gemma Mojica**  
*North Carolina State University, Raleigh, North Carolina*

**Holt Wilson**  
*North Carolina State University, Raleigh, North Carolina*

202 A, Capacity: 441

44. High School Curricula and College Mathematics Achievement and Course Taking

**Research Symposium**
This session will report on the NSF-funded Minnesota Mathematics Achievement project. Four interrelated studies, each concerned with the nature of the relationship between high school mathematics curricula and subsequent college level mathematics performance, will be discussed.

**Thomas R. Post**  
*University of Minnesota—Twin Cities, Minneapolis, Minnesota*

**Michael Harwell**  
*University of Minnesota—Twin Cities, Minneapolis, Minnesota*

**Discussant: William Bush**  
*University of Louisville, Louisville, Kentucky*

**Discussant: Robert Reys**  
*University of Missouri—Columbia, Columbia, Missouri*

202 B, Capacity: 428
45. Mathematics Education Research: Multiple Users, Uses, and Methods

**Research Symposium**

At a time when a small subset of math education research methods have been privileged by reports and funding, one must consider the multiple users and uses of research in math education. This session will discuss how different types of research are useful for different constituencies and purposes in math education.

**Michael Battista**  
*Ohio State University, Columbus, Ohio*

**Timothy A. Boerst**  
*University of Michigan, Ann Arbor, Michigan; South Redford Public Schools, Ann Arbor, Michigan*

**Linda Hallenbeck**  
*Hudson Schools, Hudson, Ohio*

**Kim Yoak**  
*Stow–Monroe Falls City Schools, Stow–Monroe Falls, Ohio*

**Brad Findell**  
*Mathematics Initiatives, Ohio Department of Education, Columbus, Ohio*

203 B, Capacity: 53

46. Mathematics Education Research for Urban Schools: Examples and Directions

**Research Symposium**

The speakers will present the work of a group of mathematics education research colleagues who are at the same urban institution and who conduct research about teaching in urban schools. This session will aim to initiate a discussion about possible directions of mathematics education research for teaching in urban schools.

**Laurie Rubel**  
*City University of New York—Brooklyn College, Brooklyn, New York*

**Betina Zolkower**  
*City University of New York—Brooklyn College, Brooklyn, New York*

**Michael Meagher**  
*City University of New York—Brooklyn College, Brooklyn, New York*

204 B, Capacity: 106
WORK SESSION
Panelists will discuss the JRME submission and review process, data about the journal, and suggestions for developing a manuscript. They will facilitate small-group discussion of specific topics, such as how to convert a dissertation into a publishable manuscript and how to write a good literature review.

Denise S. Mewborn
University of Georgia, Athens, Georgia

David Barnes
National Council of Teachers of Mathematics, Reston, Virginia

Maria Blanton
University of Massachusetts Dartmouth, North Dartmouth, Massachusetts

Glen Blume
Pennsylvania State University, State College, Pennsylvania

Beatriz S. D’Ambrosio
Board of Directors, National Council of Teachers of Mathematics; Miami University, Oxford, Ohio

M. Kathleen Heid
Pennsylvania State University, State College, Pennsylvania

Beth Herbel-Eisenmann
Michigan State University, East Lansing, Michigan

Heather C. Hill
Harvard Graduate School of Education, Cambridge, Massachusetts

Signe Kastberg
Indiana University–Purdue University Indianapolis, Indianapolis, Indiana

Richard S. Kitchen
University of New Mexico, Albuquerque, New Mexico

Jeffrey Shih
University of Nevada Las Vegas, Las Vegas, Nevada

Nathalie Sinclair
Simon Fraser University, Burnaby, British Columbia, Canada

Paola Sztajn
North Carolina State University, Raleigh, North Carolina

Rose Mary Zbiek
Pennsylvania State University, State College, Pennsylvania

204 C, Capacity: 90
48. “Good Teaching” for Whom and Why?

**Research Symposium**

This symposium will focus on practices dubbed as “good teaching.” Specific instances will be presented of teachers’ uses and attempts to use particular pedagogical strategies to engage students and to make mathematics more meaningful. The researchers will also examine how teachers’ beliefs about teaching and learning mathematics affect their instruction.

**Marilyn Elaine Strutchens**  
*Auburn University, Auburn, Alabama*

**Mary Alice Smeal**  
*Auburn University, Auburn, Alabama*

**Jacqueline Leonard**  
*Temple University, Philadelphia, Pennsylvania*

**Kara Jones Jackson**  
*Vanderbilt University, Nashville, Tennessee*

**Della R. Leavitt**  
*University of Illinois at Chicago, Chicago, Illinois*

209 A, Capacity: 92
49. Report of the NRC Committee on Early Childhood Mathematics

**Research Symposium**

This session will present the final report of the National Research Council’s (NRC) Committee on Early Childhood Mathematics. The report synthesizes research from a number of disciplinary fields, drawing implications for policy and practice and providing research-based guidance on giving an increased number of young, especially vulnerable, children a strong start.

**Douglas H. Clements**  
*University at Buffalo, State University of New York, Buffalo, New York*

**Karen Fuson**  
*Northwestern University (retired), Fallbrook, California*

**Herbert P. Ginsburg**  
*Teachers College, Columbia University, New York, New York*

**Sybilla Beckmann**  
*University of Georgia, Athens, Georgia*

**Discussant: Julie Sarama**  
*University at Buffalo, State University of New York, Buffalo, New York*

209 B, Capacity: 111

11:30 a.m. – 12:10 p.m.

50. An Investigation of Mathematical Knowledge for Teaching Algebraic Processes

**Individual Paper Session**

The speaker will share the conceptual framework, methodology, instruments, and major findings of a recent research study on secondary school teachers’ mathematical knowledge for teaching algebraic processes. The speaker will then discuss the implications of the study for conceptualizing, assessing, and developing teachers’ mathematical knowledge for teaching.

**Xuhui Li**  
*California State University—Long Beach, Long Beach, California*

203 A, Capacity: 53
51. Integrated Math and Science Instruction: Grade 3 Measurement of Achievement

**INDIVIDUAL PAPER SESSION**

This study is part of a research project consisting of reform-based, third grade curriculum units and teacher workshops designed to promote effective instruction of science while integrating measurement skills and English language development. The results provide evidence that integrated mathematics and science instruction can benefit diverse populations of students.

**Karen Adamson**  
University of Miami, Miami, Florida

**Walter G. Secada**  
University of Miami, Miami, Florida

**Okhee Lee**  
University of Miami, Miami, Florida

52. Math Faculty from Five Colleges Collaborate to Improve Their Teaching

**INDIVIDUAL PAPER SESSION**

The Professional Mathematics Educators’ Forum consisted of 18 math professors and teacher educators from five institutions of higher learning. This community of practice opened collegiate classroom doors; shared students’ work, classroom videos, and activities; and kept current on research over five years. Their evolution and changes in practice will be described.

**Julie Cwikla**  
University of Southern Mississippi Gulf Coast, Long Beach, Mississippi
53. Gender Differences in Language Used by Parents and Children in Mathematics

**Individual Paper Session**

This session will report on an NSF-funded research project on gender-related differences between parents and children that occurred as they worked together on mathematical tasks in number, geometry, and algebra. Gender differences among dyads that were found across tasks and within tasks will be discussed.

**Judith Olson**  
*Curriculum Research and Development Group*  
*University of Hawaii, Honolulu, Hawaii*

**Melfried Olson**  
*Curriculum Research and Development Group*  
*University of Hawaii at Manoa, Honolulu, Hawaii*

**Claire Okazaki**  
*Curriculum Research and Development Group*  
*University of Hawaii, Honolulu, Hawaii*

204A, Capacity: 87

1:00 p.m. – 2:30 p.m.

54. Assessing Grades K-3 Teachers’ Math Content Knowledge: Practice and Theory

**Work Session**

Participants will solve, analyze, and discuss four math content items. The speakers will share teachers’, prospective teachers’, and strong math students’ data. The data highlight theoretical issues of boundaries of content knowledge and pedagogical content knowledge, as well as practical issues of assessing elementary school teachers’ knowledge in sustained professional development.

**Randy Philipp**  
*San Diego State University, San Diego, California*

**John (Zig) Siegfried**  
*San Diego State University, San Diego, California*

201, Capacity: 180
55. Assessing Mathematics Teachers’ Instructional Practices

RESEARCH SYMPOSIUM

The session will discuss the development, validation, and current research uses of a toolkit to assess instructional quality in math on the basis of classroom observations and collections of students’ work. The toolkit emphasizes students’ opportunities to engage in cognitively challenging tasks and high-level reasoning and to discuss their mathematical thinking.

Melissa Boston
Duquesne University, Pittsburgh, Pennsylvania

Glenn T. Colby
Vanderbilt University, Nashville, Tennessee

Morgan Polikoff
University of Pennsylvania, Philadelphia, Pennsylvania

Anne Garrison
Vanderbilt University, Nashville, Tennessee

Kara Jones Jackson
Vanderbilt University, Nashville, Tennessee

202 A, Capacity: 441

56. Preparing a Proposal for NSF’s Division of Research on Learning

RESEARCH SYMPOSIUM

The speakers will discuss funding opportunities in NSF’s Division of Research on Learning, which promotes innovative research, development, and evaluation of learning and teaching across science, technology, engineering, and mathematics disciplines. They will then share strategies for writing a competitive proposal and discuss the proposal peer review process.

Karen Marrongelle
National Science Foundation, Washington, D.C.

Jim Fey
National Science Foundation, Arlington, Virginia

Ferdinand Rivera
National Science Foundation, Arlington, Virginia

202 B, Capacity: 428
Mathematics Learning and Participation as Racialized Forms of Experience

**Research Symposium**

This symposium moves beyond the “gap-gazing” fetish by presenting a collection of research studies that explore “racialized” students—in this instance, African Americans—as they negotiate the racialized forms of experience present for all students in the mathematics classroom, schooling, and society in general; and as they negotiate their racialized mathematics identities.

**Danny Bernard Martin**  
*University of Illinois at Chicago, Chicago, Illinois*

**David Wayne Stinson**  
*Georgia State University, Atlanta, Georgia*

**Julius Davis**  
*Morgan State University, Baltimore, Maryland*

**Kyndall Brown**  
*University of California at Los Angeles, Los Angeles, California*

**Rochelle Gutierrez**  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

**Ebony O. McGee**  
*University of Illinois at Chicago, Chicago, Illinois*

204 B, Capacity: 106
58. Tools of the Trade

**Research Symposium**

Researchers use a variety of tools to collect data (e.g., observation protocols, assessment instruments, surveys) that address the question that is under investigation in a particular study or set of related studies. This session includes presentations from researchers who have created four different types of research tools.

**Iris Weiss**  
*Horizon Research, Inc., Chapel Hill, North Carolina*

**Deborah Loewenberg Ball**  
*University of Michigan, Ann Arbor, Michigan*

**Jere Confrey**  
*North Carolina State University, Raleigh, North Carolina*

**Daniel Heck**  
*Horizon Research, Chapel Hill, North Carolina*

**Margaret S. Smith**  
*Board of Directors, NCTM; University of Pittsburgh, Pittsburgh, Pennsylvania*

**Discussant: James A. Middleton**  
*Arizona State University, Tempe, Arizona*
59. Testing Hypotheses about Students’ Operational Development of Fractions

**RESEARCH SYMPOSIUM**

Small-group teaching experiments have generated hypotheses about students’ fractional schemes and operations. The speakers will describe quantitative methods for testing these hypotheses through written assessments. Such assessments provide economical measures of students’ operational development that can augment the usefulness of the hypotheses for classroom teaching, guiding instruction and curricular design.

**Anderson Norton**  
*Virginia Polytechnic and State University, Blacksburg, Virginia*

**Amy Hackenberg**  
*Indiana University Bloomington, Bloomington, Indiana*

**Jesse Wilkins**  
*Virginia Polytechnic and State University, Blacksburg, Virginia*

**Discussant: Leslie Steffe**  
*University of Georgia, Athens, Georgia*

209 A, Capacity: 92

60. The Use of Tools in the Learning and Teaching of Geometry

**RESEARCH SYMPOSIUM**

Tools fundamentally shape and influence learning, and their uses can both assist and constrain how one thinks about particular ideas. This session will share research about learners’ uses of tools, technological and nontechnological, and the ways in which these uses interact with the development of geometric ideas.

**Karen F. Hollebrands**  
*North Carolina State University, Raleigh, North Carolina*

**Colette Laborde**  
*Université Joseph Fourier, Grenoble, Isère, France*

**Anna Marie Conner**  
*University of Georgia, Athens, Georgia*

**Deborah Moore-Russo**  
*University at Buffalo—State University of New York, Buffalo, New York*

**Ginger Rhodes**  
*University of North Carolina at Wilmington, Wilmington, North Carolina*

**Ryan C. Smith**  
*North Carolina State University, Raleigh, North Carolina*

209 B, Capacity: 111
61. The Instructor’s Proactive Role in Supporting Teachers’ Arguments

**Work Session**
This presentation addresses how grades K–5 mathematics specialists make mathematical arguments in an Algebra and Functions course. Participants will use Krummheuer’s theory of ethnography to trace the argument that unfolded during this whole-class discussion. The speakers will also highlight the instructor’s role in supporting teachers’ mathematical activity.

**Joy Wright Whitenack**  
*Virginia Commonwealth University, Richmond, Virginia*

**Amy Ellington**  
*Virginia Commonwealth University, Richmond, Virginia*

**Laurie Cavey**  
*James Madison University, Harrisonburg, Virginia*

209 C, Capacity: 60

62. Young Children’s Understandings of Length Measurement

**Individual Paper Session**
This presentation will share the findings of a study on the development of length measurement ideas in young children. The purpose is to provide a description of the levels of thinking that compose the developmental progression, including the tasks and the “mental actions on objects” that define each level.

**Janka Szilagyi**  
*State University of New York—College at Brockport, Brockport, New York*

203 A, Capacity: 53
63. The Persistence of Student-Centeredness in Preservice Mathematics Teachers

**INDIVIDUAL PAPER SESSION**
This multiyear study of a undergraduate series of fieldwork-based seminars focused on student-centered teaching and learning shows that students in this program not only persist in this focus several years after taking the seminars, but also demonstrate a greater tendency toward this perspective than their counterparts enrolled in a credential program.

**Therese Boulanger Shanahan**  
*University of California, Irvine, Center for Educational Partnerships, Irvine, California*

**Karajean Hyde**  
*University of California, Irvine, Irvine, California*

203 B, Capacity: 53

64. Girls Perform Equally as Well as Boys on State Assessments

**INDIVIDUAL PAPER SESSION**
This study analyzed state assessment data from more than 7 million students across ten states for gender differences in mathematics achievement. The data showed no gender difference in mathematics achievement for every grade level in every state, even when cognitively complex items were considered.

**Amy Ellis**  
*University of Wisconsin—Madison, Madison, Wisconsin*

**Janet Hyde**  
*University of Wisconsin—Madison, Madison, Wisconsin*

**Sara Lindberg**  
*University of Wisconsin—Madison, Madison, Wisconsin*

**Marcia Linn**  
*University of California, Berkeley, Berkeley, California*

**Caroline Williams**  
*University of Wisconsin—Madison, Madison, Wisconsin*

204 A, Capacity: 87
65. Are Mathematics Teachers’ Instructional Improvements Sustained over Time?

**INDIVIDUAL PAPER SESSION**

This session will share the results of a follow-up study that examined whether secondary school mathematics teachers sustained instructional improvements a year after their participation in a professional development workshop focused on selecting and implementing cognitively challenging tasks. Cases of teachers who illustrate different patterns of instructional change will be presented.

**Melissa Boston**  
*Duquesne University, Pittsburgh, Pennsylvania*

**Margaret S. Smith**  
*Board of Directors, National Council of Teachers of Mathematics; University of Pittsburgh, Pittsburgh, Pennsylvania*

66. Distributional Reasoning of Middle School Teachers in a Sampling Context

**INDIVIDUAL PAPER SESSION**

This session will share written and verbal responses of middle school teachers who were reasoning distributionally during a professional development intervention, along with video of the intervention and interview excerpts. The audience will analyze the tasks used, make conjectures about how the subjects responded, and discuss the interpretation of the findings.

**Dan Canada**  
*Eastern Washington University, Cheney, Washington*

**Michael Gilbert**  
*University of Hawaii, Honolulu, Hawaii*
67. Fractions Models and Contexts: Impact on Students’ Learning

**Work Session**

Two contexts and models for developing fraction concepts and skills will form the basis for this working session. Participants will compare and contrast work samples and interview data from part-whole and measurement contexts of late elementary school students. Research venues for continuing the investigation will be discussed.

**Barbara Dougherty**  
*University of Mississippi, Oxford, Mississippi*

**Jennifer Fillingim**  
*University of Mississippi, Oxford, Mississippi*

201, Capacity: 180

68. Characterizing High School Mathematics Teachers’ Curriculum Implementation

**Research Symposium**

The speakers will report curriculum implementation of integrated and subject-specific textbooks in high school mathematics classrooms over two years, share how implementation fidelity was conceptualized and measured and how data were analyzed, and examine relationships among teachers’ characteristics, curriculum implementation, and the classroom learning environment, within and across textbook types.

**James E. Tarr**  
*University of Missouri—Columbia, Columbia, Missouri*

**Douglas A. Grouws**  
*University of Missouri—Columbia, Columbia, Missouri*

**Oscar Chavez**  
*University of Missouri—Columbia, Columbia, Missouri*

**Melissa D. McNaught**  
*University of Missouri—Columbia, Columbia, Missouri*

**Maryann Huey**  
*University of Missouri—Columbia, Columbia, Missouri*

**Dan Ross**  
*University of Missouri—Columbia, Columbia, Missouri*

202 A, Capacity: 441
3:00 p.m. – 4:30 p.m.

69. Curricular Effect on Algebra Learning: A Three-Year, Longitudinal Study

**Research Symposium**
This symposium will present longitudinal data from a three-year, large-scale, urban project that examined the impact of the Connected Mathematics Program and more traditional middle school mathematics curricula on students’ algebra learning. Implementation conditions and the nature of urban classroom instruction will be essential elements of the analysis.

**Janice Earle**  
*National Science Foundation, Arlington, Virginia*

**Jinfa Cai**  
*University of Delaware, Newark, Delaware*

**John C. Moyer**  
*Marquette University, Milwaukee, Wisconsin*

**Ning Wang**  
*Widener University, Chester, Pennsylvania*

**Bikai Nie**  
*University of Delaware, Newark, Delaware*

**Discussant: Jeremy Kilpatrick**  
*University of Georgia, Athens, Georgia*

**Discussant: Jeffrey Shih**  
*University of Nevada Las Vegas, Las Vegas, Nevada*
70. Teachers and Teaching in Mathematics with “Minority” Students

RESEARCH SYMPOSIUM

The mathematics performance of Latina, Latino, and African American students is a persistent issue. Traditional perspectives have focused on the students and their communities. However, much remains to be understood about classroom instructional processes and the role of teachers. This symposium presents three papers that add to knowledge about instruction.

Phillip K. Kisunzu  
*University of Illinois at Chicago, Chicago, Illinois*

Mary Marshall  
*University of New Mexico, Albuquerque, New Mexico*

Anita Balasubramanian  
*University of Illinois at Chicago, Chicago, Illinois*

71. Math Experiences for Math Educators: Exploring Open Mathematical Spaces

RESEARCH SYMPOSIUM

This session will engage participants in discussing mathematical experiences for mathematics education doctoral students. The speakers will discuss courses in which students explore mathematics through problem posing and engage in doing personally relevant mathematics mirroring that of mathematics researchers. Participants will engage in mathematics and discuss the course experience.

Michael Steele  
*Michigan State University, East Lansing, Michigan*

Amanda Jansen  
*University of Delaware, Newark, Delaware*

Alfinio Flores  
*University of Delaware, Newark, Delaware*

Kristie Jones Newton  
*Temple University, Philadelphia, Pennsylvania*

Trena L. Wilkerson  
*Baylor University, Waco, Texas*

Sarah Sword  
*Education Development Center, Newton, Massachusetts*

Beth Herbel-Eisenmann  
*Michigan State University, East Lansing, Michigan*
3:00 p.m. – 4:30 p.m.

72. Institutional Arrangements and Mathematics with Latino and ELL Students

**Work Session**

This working session is designed to engage participants actively in extended analysis and discussion of contextual factors contributing to the failure of mathematics teaching and learning with Latina and Latino and English language learner (ELL) students. Participants will observe videos of classrooms and collectively identify potential directions of future research and teachers’ preparation and professional development.

**Lena Licón Khisty**  
*University of Illinois at Chicago, Chicago, Illinois*

**Kathryn B. Chval**  
*University of Missouri—Columbia, Columbia, Missouri*

204 C, Capacity: 90

73. Fundamental Pedagogical Understandings for Teaching Mathematics

**Research Symposium**

The speakers will articulate the conception of teaching that underlies their research on teachers’ learning, identifying fundamental pedagogical understandings necessary to teach consistently with that conceptualization. The intent is to stimulate discussion about the value of working on conceptualizations of teaching and important pedagogical understandings.

**Martin Simon**  
*New York University, New York, New York*

**Kay McClain**  
*Arizona State University, Tempe, Arizona*

**Laura R. Van Zoest**  
*Western Michigan University, Kalamazoo, Michigan*

**Shari L. Stockero**  
*Michigan Technological University, Houghton, Michigan*

209 A, Capacity: 92
74. Symposium on the National Mathematics Panel

Research Symposium
This workshop will address issues raised in the National Mathematics Advisory Panel report. Panelists, in an interactive format, will address the panel’s recommendations and the use of scientifically based research to advance the teaching and learning of mathematics in order to improve mathematics achievement for all students.

Anthony E. Kelly
George Mason University, Fairfax, Virginia

Paul Cobb
Vanderbilt University, Nashville, Tennessee

Finbarr Sloane
Arizona State University, Phoenix, Arizona

Jeremy Roschelle
SRI International, Menlo Park, California

Joanne Lobato
San Diego State University, San Diego State, California

Jo Boaler
University of Sussex, Brighton, East Sussex, United Kingdom

Patrick Thompson
Arizona State University, Tempe, Arizona

209 B, Capacity: 111

75. Graduate Student and Junior Faculty Mentoring Session

Work Session
Experienced faculty will provide mentoring on topics such as publishing dissertation-based manuscripts, job searching, working with graduate students, the tenure process, grant writing, and others. This session includes a round-table format for attendees to rotate among topic-focused tables. Graduate students and junior faculty are encouraged to attend.

Eric Knuth
University of Wisconsin—Madison, Madison, Wisconsin

Dorothy Y. White
University of Georgia, Athens, Georgia

209 C, Capacity: 60
4:00 p.m. – 4:40 p.m.

76. Beyond Sheltered Instruction: A Case Study

**INDIVIDUAL PAPER SESSION**

This exploratory case study describes and explores the Critical Pedagogy practices of a Latino algebra teacher who has created a classroom environment where his English learners not only thrive academically but also contribute to the development of a learning community in the classroom.

**Adelina Alegria**  
*Occidental College, Los Angeles, California*

203 A, Capacity: 53

77. Field Experience: An Analysis of Teacher Candidates’ Mathematical Learning

**INDIVIDUAL PAPER SESSION**

This is a qualitative study of teacher candidates’ learning about teaching and learning mathematics through field experience. Teacher candidates participated in an intensive study of mathematics teaching and learning. The focus and nature of their learning will be discussed. Participants will discuss the findings and future directions for field work.

**Margaret Irene Ford**  
*Duquesne University, Pittsburgh, Pennsylvania*

203 B, Capacity: 53

4:45 p.m. – 6:00 p.m.

78. Messages Middle School Math Teachers Interpret from Curricular Resources

**POSTER SESSION**

What messages about mathematics and mathematics teaching do middle school mathematics teachers interpret from their students’ textbooks, school districts’ curriculum guides and assessments, states’ assessments and curriculum framework, a master’s degree program in which they were enrolled, and other resources? Answers to this question and implications will be discussed.

**Christy Danko Graybeal**  
*Hood College, Frederick, Maryland*

Prefunction Area, Table 1, Capacity: 700
79. Subject Matter Knowledge for Teaching Statistical Association

**Poster Session**

A practice-based approach was used to study the knowledge secondary school teachers need to teach statistical association. Through observations of three teachers during their teaching of statistical association and interviews following each class session, a description of the knowledge needed by teachers was created.

**Stephanie Casey**
*Illinois State University, Normal, Illinois*

Prefunction Area, Table 2, Capacity: 700

80. The Numeric Development of Struggling First-Grade Students

**Poster Session**

This poster session will describe our work with students who were struggling with counting and early number. Example tasks and students’ work will be shared related to findings from an intervention that targeted specific aspects of computational fluency. Differences in students’ initial reasoning and post-intervention reasoning will be explored.

**John Lannin**
*University of Missouri—Columbia, Columbia, Missouri*

**Delinda van Garderen**
*University of Missouri—Columbia, Columbia, Missouri*

**Christa Jackson**
*University of Missouri—Columbia, Columbia, Missouri*

**Kelley Buchheister**
*University of Missouri—Columbia, Columbia, Missouri*

**Matt Switzer**
*University of Missouri—Columbia, Columbia, Missouri*

Prefunction Area, Table 3, Capacity: 700
81. The Role of Explanation in Mathematics Courses for Preservice Teachers

POSTER SESSION

This session will present findings from a study of what mathematics teacher educators attended to while observing a mathematics content course for preservice elementary school teachers. They found that the teacher’s focus on explanation enabled the observers to access the students’ mathematical thinking, prompting rich discussions of students’ mathematical ideas.

Kyle T. Schultz  
University of Georgia, Athens, Georgia

Ginger Rhodes  
University of North Carolina at Wilmington, Wilmington, North Carolina

Allyson Hallman  
University of Georgia, Athens, Georgia

Prefunction Area, Table 4, Capacity: 700

82. Three Upper Elementary School Children’s Mathematical Connections

POSTER SESSION

In an effort to promote children’s proportional reasoning, a team of undergraduate researchers and the speaker taught three children during one summer week, focusing activities on connections among measurement, rational numbers, and multiplicative reasoning. Findings point to the role the children’s mathematical play had in supporting their developing mathematical connections.

Jacob T. Klerlein  
Middle Tennessee State University, Murfreesboro, Tennessee

Prefunction Area, Table 5, Capacity: 700
83. Tracing the Transformation of Homework Tasks: Textbook, School, and Home

**Poster Session**

This session examines how homework tasks from a reform-oriented, elementary school mathematics curriculum are constructed and reconstructed by curriculum designers, teachers, parents, and students. The speakers will track homework tasks from their representation in written materials, to how teachers set them up, to how they are enacted in the home.

**Enakshi Bose**  
*University of Pennsylvania, Graduate School of Education, Philadelphia, Pennsylvania*

**Jacqueline Flicker**  
*University of Pennsylvania, Graduate School of Education, Philadelphia, Pennsylvania*

Prefunction Area, Table 6, Capacity: 700

84. Transitioning from Additive to Proportional Reasoning to Prepare for Slope

**Poster Session**

This presentation will discuss middle school students’ conceptual difficulties with using proportional reasoning in a missing-value proportionality problem involving the steepness of two lines. Grade 7 students showed the highest frequencies of additive reasoning; in group settings they were able to challenge one another to engage in proportional reasoning.

**Polina Sabinin**  
*Boston University, Boston, Massachusetts*

**Diana S. Cheng**  
*Boston University, Boston, Massachusetts*

Prefunction Area, Table 7, Capacity: 700
85. Vocabulary Instruction in Elementary School Math Classes

**Poster Session**

Do words play a role in math class? The researcher will present implications of her study on instructional practices used to teach vocabulary in elementary school math classes. Recommendations for vocabulary instruction and assessment will be discussed in the broader context of bringing Response to Intervention research in math into practice.

Laura Hauerwas  
*Providence College, Providence, Rhode Island*

Prefunction Area, Table 8, Capacity: 700

86. Young Children’s Embodied Reasoning

**Poster Session**

How can educators observe and assess young children’s mathematical reasoning, particularly in settings where activities are open-ended? This study draws on embodied cognition literature to examine young children’s mathematical reasoning as successfully directed movement toward relevant and immediate issues and concerns.

Lynn McGarvey  
*University of Alberta, Edmonton, Alberta, Canada*

Prefunction Area, Table 9, Capacity: 700

87. National Evaluation of Early Elementary School Math Curricula

**Poster Session**

This session will present findings from a large-scale national evaluation of early elementary school math curricula. The study uses experimental methods to evaluate four curricula that use varying approaches to develop students’ math skills, to determine if a particular approach to math instruction is more effective at raising students’ achievement.

Roberto Agodini  
*Mathematica Policy Research, Princeton, New Jersey*

Barbara Harris  
*Mathematica Policy Research, Washington, D.C.*

Prefunction Area, Table 10, Capacity: 700
88. Preparing GED Students: Students’ Performance on GED and HSAP Items

POSTER SESSION
What types and levels of mathematical thinking, reasoning, and knowledge do General Educational Development (GED) and state-level examinations target? Is there a difference between GED students’ mathematics performance on GED and High School Assessment Program (HSAP) items? What reasons do GED and Adult Basic Education students give for not finishing school?

S. Megan Che
Clemson University, Clemson, South Carolina

Prefunction Area, Table 11, Capacity: 700

89. Problematizing Mathematics in Preservice Teacher Education

POSTER SESSION
This session will report on a semester course on young children’s mathematics education. The primary goal—to support preservice teachers’ developing knowledge of mathematics for teaching—is related to assumptions about teaching and learning for understanding. The speaker will discuss four instructional phases designed to promote participants’ re-examination of their disciplinary content knowledge.

Nina Knapp
Vanderbilt University, Nashville, Tennessee

Prefunction Area, Table 12, Capacity: 700

90. Prospective Middle Grades Teachers’ Mathematical Connections in Geometry

POSTER SESSION
An exploratory investigation of twenty-eight prospective middle grades teachers’ specialized content knowledge for teaching geometry and mathematical connection making was conducted at a large public southeastern university. Preliminary data analysis suggests mathematical connections made are procedural rather than conceptual. Specific examples of students’ work will be presented.

Jennifer Ann Eli
University of Kentucky, Lexington, Kentucky

Margaret Joan Mohr
University of Kentucky, Lexington, Kentucky

Prefunction Area, Table 13, Capacity: 700
91. Research on Pre-K Teachers’ and Classrooms’ Characteristics and Children’s Learning

**Poster Session**

The session will focus on research into prekindergarten (pre-K) teachers’ characteristics, their beliefs about mathematics and literacy, their efficacy in teaching mathematics, and their experience and background that may influence the classroom environment and that, in turn, may influence pre-K students’ learning outcomes in mathematics and literacy.

**Elizabeth Todd Brown**  
*University of Louisville, Louisville, Kentucky*

**Victoria Molfese**  
*University of Louisville, Louisville, Kentucky*

**Eunjoo Jung**  
*University of Louisville, Louisville, Kentucky*

Prefunction Area, Table 14, Capacity: 700


**Poster Session**

Providing opportunity for teachers to reflect on their beliefs about effective mathematics instruction and to observe their actual classroom practices helps increase congruence between the two. This study examines this process’s effects for a group of upper elementary school teachers who are involved in collaborative evaluation.

**Kelli Thomas**  
*University of Kansas, Lawrence, Kansas*

**Karen A. Lombardi**  
*University of Kansas, Lawrence, Kansas*

Prefunction Area, Table 15, Capacity: 700
93. Secondary School English Learners’ Reading Comprehension of Algebra Assessment Items

**Poster Session**
The speaker will present and discuss the study and its findings. He will share study-based applications for assessment item writers, secondary school mathematics teachers, and secondary mathematics teacher educators.

**Carl Lager**  
*University of California, Santa Barbara, Santa Barbara, California*

**Prefunction Area, Table 16, Capacity: 700**

94. Situations and Circumstances That Elicit Metacognitive Behaviors

**Poster Session**
The speaker examined situations and circumstances that elicit metacognitive behaviors in students who are collaboratively solving mathematical modeling problems. He will report on social and self-based patterns that emerged from students’ explanations of their thinking and on characteristics of social and self-based situations that appear to elicit metacognitive thinking.

**Leigh A. van den Kieboom**  
*Marquette University, Milwaukee, Wisconsin*

**Marta T. Magiera**  
*Marquette University, Milwaukee, Wisconsin*

**Prefunction Area, Table 17, Capacity: 700**

96. Studying Preservice Teachers’ Beliefs and Attitudes about Learning Geometry

**Poster Session**
This study reports findings of moderately changing elementary school preservice teachers’ (PSTs) beliefs and attitudes about learning geometry through cognitive dissonance, offering PSTs new experience conflicting with their previous ones. Four approaches of helping PSTs understand geometry were used: The Geometer’s Sketchpad, hands-on activities, constructions, and proof.

**Kai-Ju Yang**  
*Indiana University Bloomington, Bloomington, Indiana*

**Prefunction Area, Table 19, Capacity: 700**
97. Teachers’ Moves That Support Students’ Success with Relational Thinking

**POSTER SESSION**

The speakers will examine norms and teachers’ moves that support all students’ equitable participation and growth in a third-grade, inclusion classroom during a routine focus on relational thinking. An analysis of classroom video supports findings that a highly conceptual approach like relational thinking can be used successfully in an inclusion classroom.

**Mary Q. Foote**  
*City University of New York—Queens College, New York, New York*

**Rachel Lambert**  
*City University of New York—Graduate Center, New York, New York*

Prefunction Area, Table 20, Capacity: 700

98. Teachers’ Knowledge of Fraction Operations with Drawn Representations

**POSTER SESSION**

This study addresses thirteen middle grades teachers’ problem-solving strategies in interpreting multiple-choice, rational-number items that require an analysis of drawn representations. Teachers’ attention to the referent unit emerged as crucial component of teachers’ knowledge in making sense of drawn representations.

**Soojin Lee**  
*University of Georgia, Athens, Georgia*

**Chandra Orrill**  
*University of Georgia, Athens, Georgia*

**Rachael Brown**  
*University of Georgia, Athens, Georgia*

**Susan Sexton**  
*University of Georgia, Athens, Georgia*

Prefunction Area, Table 21, Capacity: 700
99. Identity, Equity, and Professional Development: Supporting Learning

Plenary Session
This session will draw on data from a series of research studies examining issues of identity, mathematical learning, and professional development to create a discussion around supporting teachers to meet the needs of each student. Narratives from Joi Spencer and La Mont Terry’s research will frame the session.

Megan Franke
University of California, Los Angeles, Los Angeles, California

100. Academic Youth Development: Increasing Students’ Engagement in Mathematics

Individual Paper Session
This session will describe the Academic Youth Development (AYD) initiative, give results from a study, and end with a group discussion. AYD centers on improving students’ academic engagement and cultivating academic identities. Results indicate that AYD is related to significant positive changes in students’ engagement and attitudes.

Pamela L. Paek
Charles A. Dana Center, University of Texas at Austin, Austin, Texas

Lisa Brown
Charles A. Dana Center, University of Texas at Austin, Austin, Texas
101. Pedagogical Choices and MKT of NYC Teaching Fellows

**INDIVIDUAL PAPER SESSION**

The New York City (NYC) Teaching Fellows program supplies more than 60 percent of new mathematics teachers in New York each year. The speakers closely analyze Fellows’ attempts to implement NCTM recommended pedagogical paths, demonstrating specific ways in which they are inadequately supported by the Fellows’ mathematical knowledge for teaching (MKT).

**Sunita Vatuk**  
MetroMath, City University of New York—Graduate Center, New York, New York

**Michael Meagher**  
City University of New York—Brooklyn College, Brooklyn, New York

203 B, Capacity: 53

102. How “Them as Got, Gets” in the U.S. System of Mathematics Education

**INDIVIDUAL PAPER SESSION**

The speakers will present a review of the research on equity and mathematics education grounded in the Reproduction Theory tradition of Pierre Bourdieu. The review will be summarized by a two-level, structural equation model based on data from the grade 8 National Assessment of Educational Progress dataset.

**Tom Munk**  
Westat, Durham, North Carolina

**Marciea McMillian-Robinson**  
Durham, North Carolina

204 A, Capacity: 87
103. Relationships between Students’ Fractional Knowledge and Equation Solving

**INDIVIDUAL PAPER SESSION**

This session will present results from a clinical interview study that assessed relationships between ninth graders’ fractional knowledge and their algebraic reasoning in equation solving. Not having constructed improper fractions, fractions as quotients, and fractions as multiplicative operations influenced how students formulated and solved basic linear equations.

Amy Hackenberg  
*Indiana University Bloomington, Bloomington, Indiana*

209 C, Capacity: 60

10:30 a.m. – 12:00 p.m.

104. Publishing Your Research in the NCTM School-Based Journals

**WORK SESSION**

The Editorial Panels of *Teaching Children Mathematics, Mathematics Teaching in the Middle School, Mathematics Teacher*, and *On-Math* will present tips for writing for a teacher audience, followed by a question-and-answer period. They encourage you to bring specific ideas for discussion in small, journal-specific groups.

Karen F. Hollebrands  
*North Carolina State University, Raleigh, North Carolina*

Blake E. Peterson  
*Brigham Young University, Provo, Utah*

Trena L. Wilkerson  
*Baylor University, Waco, Texas*

Robert Q. Berry  
*University of Virginia, Charlottesville, Virginia*

201, Capacity: 180
105. Examining Classroom Discourse through Study Groups and Action Research

**Research Symposium**

This symposium will explore aspects related to action research projects on classroom discourse practices. The speakers will talk about the journey of reflecting on their discourse practices over time, practices they have found productive for students’ sense making, and questions and dilemmas that arose as they changed their discourse practices.

**Beth Herbel-Eisenmann**  
*Michigan State University, East Lansing, Michigan*

**Jean Krusi**  
*Ames Middle School, Ames, Iowa*

**Lana Lyddon Hatten**  
*Des Moines Central Academy, Des Moines, Iowa*

**Angie Marie Shindelar**  
*Nodaway Valley Schools, Fontanelle, Iowa*

**Michelle Cirillo**  
*Iowa State University, Ames, Iowa*

**Jeff A. Marks**  
*Des Moines Public Schools, Des Moines, Iowa*
106. Factors Contributing to the Preparation of Quality Mathematics Teachers

**Research Symposium**

The speakers will discuss (1) factors that contribute to preparing quality elementary school mathematics teachers and (2) indicators used to measure teachers’ quality. They will share results from a project in which preservice teachers learned to build models of students’ mathematics concepts and to use that knowledge to plan lessons.

**Enrique Galindo**  
*Indiana University Bloomington, Bloomington, Indiana*

**Anderson Norton**  
*Virginia Polytechnic and State University, Blacksburg, Virginia*

**Andrea McCloskey**  
*Pennsylvania State University, State College, Pennsylvania*

**Kathryn Essex**  
*Indiana University Bloomington, Bloomington, Indiana*

**Rick Alan Hudson**  
*Indiana University Bloomington, Bloomington, Indiana*

**Leslie Steffe**  
*University of Georgia, Athens, Georgia*
107. Mathematics Education for Immigrant Families and Borderland Communities

Research Symposium

This symposium presents current research on creating and sharing an integrated model in mathematics education that connects teaching mathematics to the cultural, social, and linguistic experiences of Latino and Latina students. This holistic perspective centers on four areas: students’ learning, community and parents, teaching and teacher education, and policy.

José María Menéndez  
*University of Arizona, Tucson, Arizona*

Jesus Acosta-Iriqui  
*University of Arizona, Tucson, Arizona*

Heather Cavell  
*University of Arizona, Tucson, Arizona*

Maura Varley  
*University of Arizona, Tucson, Arizona*

Kathleen Ross  
*University of Arizona, Tucson, Arizona*

Discussant: Dorothy Y. White  
*University of Georgia, Athens, Georgia*
108. A Processes Lens for Prospective Secondary School Teachers’ Mathematics

**WORK SESSION**

Attendees and organizers will analyze the Mathematical Processes Approach through three case-study examples. The goal is to refine the approach as a tool for investigating how prospective secondary school mathematics teachers understand and engage in mathematics, how mathematics unfolds in classrooms, and relationships between teachers’ mathematics and that of their classrooms.

**Rose Mary Zbiek**  
*Pennsylvania State University, State College, Pennsylvania*

**M. Kathleen Heid**  
*Pennsylvania State University, State College, Pennsylvania*

**Glen Blume**  
*Pennsylvania State University, State College, Pennsylvania*

**Susan A. Peters**  
*Pennsylvania State University, University Park, Pennsylvania*

204 C, Capacity: 90

109. Studying Large-Scale Reform Efforts

**RESEARCH SYMPOSIUM**

Many districts and schools are engaged in efforts to implement and use curriculum and instruction that promote learning with understanding. This panel will discuss theoretical and methodological issues of large-scale efforts and the impact of material expenditures, human and social resources, and policy actions on the enacted curriculum and instruction.

**Jeffrey Choppin**  
*University of Rochester, Rochester, New York*

**Karen King**  
*New York University, New York, New York*

**Mary Kay Stein**  
*University of Pittsburgh, Pittsburgh, Pennsylvania*

**Paul Cobb**  
*Vanderbilt University, Nashville, Tennessee*

**James E. Tarr**  
*University of Missouri—Columbia, Columbia, Missouri*

209 A, Capacity: 92
110. Using a Mathematical Toolkit to Support Teachers’ Learning

**Research Symposium**

This symposium will highlight two perspectives on teachers’ learning from participation in lesson study, supported by research-based, “toolkit” materials: (1) that of researchers responsible for toolkit development and study in multiple sites, and (2) that of teachers from one site using the materials to support their learning and development.

Rebecca Perry  
*Mills College, Oakland, California*

Patricia Burge  
*Joseph A. Brown School, Chelsea, Massachusetts*

Jill Bombardier  
*Joseph A. Brown School, Chelsea, Massachusetts*

Christina DiCalogero  
*Joseph A. Brown School, Chelsea, Massachusetts*

Discussant: Catherine Lewis  
*Mills College, Oakland, California*

111. Coconstructing Understanding in Middle School Mathematics

**Individual Paper Session**

This presentation will share episodes that illustrate the ways in which the collaboration of inner-city, middle school students led to the coconstruction of arguments and the use of various forms of reasoning. The speakers will describe the conditions that promoted this culture of reasoning and facilitated the learning of mathematics.

Mary Frances Mueller  
*Seton Hall University, South Orange, New Jersey*

Carolyn Maher  
*Rutgers University, New Brunswick, New Jersey*
112. Preservice Teachers’ Recognition of Evidence of Conceptual Understanding

**INDIVIDUAL PAPER SESSION**

This session will examine preservice teachers’ ability to recognize evidence of children’s conceptual understanding of mathematics, taking into account the role of content knowledge and particular features of children’s mathematical work. Results of an intervention and implications for teacher education research and practice will be discussed.

**Tonya Bartell**  
*University of Delaware, Newark, Delaware*

**Brian Bowen**  
*University of Delaware, Newark, Delaware*

**Nancy Ileen Dyson**  
*University of Delaware, Newark, Delaware*

**Corey Webel**  
*University of Delaware, Newark, Delaware*

113. African American Girls’ Positioning as Mathematics and Science Learners

**INDIVIDUAL PAPER SESSION**

This study explores how African American girls in impoverished communities position themselves in relation to mathematics and science learning and the impact of teachers, counselors and parents’ positionality. The focus will be on the girls and their engagement in mathematics and science as they transition from elementary school to middle school.

**Thomasenia Lott Adams**  
*University of Florida, Gainesville, Florida*

**Cirecie West-Olatunji**  
*University of Florida, Gainesville, Florida*

**Rose Pringle**  
*University of Florida, Gainesville, Florida*
114. Simulation Design and Conceiving Probabilistic Experiments and Expectation

**INDIVIDUAL PAPER SESSION**

The speaker will describe a teaching experiment that engaged a group of high school students in designing sampling simulations as a means for exploring questions like “Is event x unusual?” Results document students’ thinking around two themes: conceiving expectation as a statistical quantity, and construing situations as idealized, stochastic experiments.

**Luis Saldanha**  
*Arizona State University, Tempe, Arizona*

209 C, Capacity: 60

1:00 p.m. – 1:40 p.m.

115. Comparing U.S. and Singapore Curricula: The Case of Spatial Measurement

**INDIVIDUAL PAPER SESSION**

U.S. mathematics educators’ interest in the Singapore curriculum is increasing, because of the curriculum’s high standing in the TIMSS cross-national comparison. This session will present a fine-grained comparison of the spatial measurement content in the elementary grades in the United States and Singapore.

**Kosze Lee**  
*Michigan State University, East Lansing, Michigan*

203 A, Capacity: 53

116. Connecting Understanding to Form in Elementary School Fractions Instruction

**INDIVIDUAL PAPER SESSION**

The speakers will describe the effects of connecting students’ thinking and symbolic representations at three pedagogical “sites” during fractions instruction. The students’ ability to link conceptual understanding with formal representations, compared to that of a control group, was significantly enhanced. Theoretical and practical implications will be addressed.

**Helena Patricia Osana**  
*Concordia University, Montreal, Quebec, Canada*

**Nicole Pitsolantis**  
*Lower Canada College, Montreal, Quebec, Canada*

203 B, Capacity: 53
117. Mathematical Equity for Immigrant Students through Formative Assessment

**INDIVIDUAL PAPER SESSION**

For bilingual, Mexican immigrant students, many question the validity and reliability of mathematics tests that determine levels of proficiency solely through students’ written responses. This research study will demonstrate that the use of an interactive interview protocol provides opportunities for these students to communicate their mathematical understanding.

**Laura Burr**  
*University of New Mexico, Albuquerque, New Mexico*

**Richard S. Kitchen**  
*University of New Mexico, Albuquerque, New Mexico*

118. Social Metacognition and Microcreativity: A Statistical Discourse Analysis

**INDIVIDUAL PAPER SESSION**

Four groups of 20 algebra students worked on a problem, yielding 2,951 videotaped turns. Justifications, correct evaluations, polite disagreements, and wrong, new ideas increased microcreativity 4 to 36 percent; agreements and rude disagreements reduced it 4 to 5 percent. Correct evaluations’ effects lasted longest. Effects differed across time and across groups.

**Ming Ming Chiu**  
*University at Buffalo—State University of New York, Buffalo, New York*
119. A Decade of Equity Research: Examining What Works

Research Symposium
The session will begin with an overview of diverse students’ status in mathematics, followed by research studies that highlight what is working to achieve equity in mathematics education. The speakers will analyze what they have learned and discuss where research efforts need to continue.

Carol E. Malloy
University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Rochelle Gutierrez
University of Illinois at Urbana-Champaign, Champaign, Illinois

Sarah Lubienski
University of Illinois at Urbana-Champaign, Champaign, Illinois

Patricia F. Campbell
University of Maryland, College Park, Maryland

Yasemin Copur
University of Illinois at Urbana-Champaign, Champaign, Illinois

Discussant: Jacqueline Leonard
Temple University, Philadelphia, Pennsylvania
120. Eighth Graders’ Reasoning about Quadratic Functions

Research Symposium
The speakers will present results from four independent research studies with eighth-grade students. Each researcher used eighth-grade students’ quantitative reasoning as a basis for having them reason about quadratic functions. The studies’ findings will be used to discuss how to design productive algebra learning environments.

Erik S. Tillema
Indiana University at Indianapolis, Indianapolis, Indiana

Amy Ellis
University of Wisconsin—Madison, Madison, Wisconsin

Joanne Lobato
San Diego State University, San Diego State, California

Charles Hohensee
San Diego State University, San Diego, California

202 A, Capacity: 441
121. Learning and Teaching Mathematics in a TI-Navigator™-Connected Classroom

Research Symposium
Three studies with various methods and perspectives will be discussed: a multiyear study with mixed methods in three schools; a multiyear, randomized, control field trial with a national sample; and a study using discourse-analysis methods to study participation and identification with mathematics.

Douglas T. Owens  
Ohio State University, Columbus, Ohio

Margaret Sinclair  
York University, Toronto, Ontario, Canada

Stephen J. Pape  
University of Florida, Gainesville, Florida

Karen E. Irving  
Ohio State University, Columbus, Ohio

Stephen Hegedus  
University of Massachusetts Dartmouth, North Dartmouth, Massachusetts

William R. Penuel  
SRI International, Menlo Park, California

Discussant: Jeremy Roschelle  
SRI International, Menlo Park, California

202 B, Capacity: 428
122. Studying Teachers’ Rationality Using Representations of Teaching

Research Symposium

This session will showcase theoretical and methodological issues related to research involving conversations among teachers triggered by representations of teaching such as video, narratives, or animations.

Pat Herbst
University of Michigan, Ann Arbor, Michigan

Michael Kevin Weiss
University of Michigan, Ann Arbor, Michigan

Gloriana Gonzalez
University of Michigan, Ann Arbor, Michigan

Takeshi Miyakawa
University of Michigan, Ann Arbor, Michigan

Wendy Aaron
University of Michigan, Ann Arbor, Michigan

Discussant: Dan Chazan
University of Maryland, College Park, Maryland

204 B, Capacity: 106
123. Math Teachers’ On-the-Job Learning: Perspectives on Theory and Evidence

**Work Session**

This working session will describe an ongoing synthesis of research on mathematics teachers’ on-the-job learning and engage the audience in a discussion of both the conceptual framing and preliminary results of reviews regarding the development of teachers’ observation skills, effective professional development, and longitudinal evidence for teachers’ learning.

**Helen M. Doerr**  
*Syracuse University, Syracuse, New York*

**Catherine Lewis**  
*Mills College, Oakland, California*

**Lynn T. Goldsmith**  
*Education Development Center, Inc., Newton, Massachusetts*

**Discussant: Iris Weiss**  
*Horizon Research, Inc., Chapel Hill, North Carolina*

**Discussant: Margaret S. Smith**  
*Board of Directors, National Council of Teachers of Mathematics; University of Pittsburgh, Pittsburgh, Pennsylvania*

204 C, Capacity: 90

124. Collaborating to Identify Research Priorities in Math Education

**Research Symposium**

The presenters will give an update on an NCTM project that brought together researchers and practitioners to identify priorities in mathematics education research based on the needs of the practitioner community. Work done at series of conferences will be presented. Participants will be asked to provide feedback and engage in conversation.

**Judith Reed Quander**  
*National Council of Teachers of Mathematics, Reston, Virginia*

**Fran Arbaugh**  
*University of Missouri—Columbia, Columbia, Missouri*

209 A, Capacity: 92
125. Teacher Leadership in School Reform: Highlighted Strategic Approaches

**RESEARCH SYMPOSIUM**

The sustainability of teacher leadership in mathematics initiatives is often an outcome of crucial strategic decisions by initiative leaders. This symposium will present a case methodology that highlighted particular strategic approaches from five math-science initiatives, to showcase how those approaches influenced teacher leadership.

**Neil Schiavo**  
*Education Development Center, Newton, Massachusetts*

**Barbara Miller**  
*Education Development Center, Newton, Massachusetts*

**Discussant: Bill Haver**  
*Virginia Commonwealth University, Richmond, Virginia*

**Discussant: Alicia Parra**  
*El Paso Collaborative for Academic Excellence, El Paso, Texas*

209 B, Capacity: 111

2:00 p.m. – 2:40 p.m.

126. Getting Connected: The Relationship of the Content Strands

**INDIVIDUAL PAPER SESSION**

Should separate strand scores be reported, or does one score describe a student’s mathematical development? A recent research study concluded that one score appears to describe a student’s mathematical achievement for grades 3–8. This is also supportive evidence for the development of the Connections process strand.

**Samantha Burg**  
*MetaMetrics, Inc., Durham, North Carolina*

203 A, Capacity: 53
127. Purposeful Teaching: Emergence of Organized Routines of Practice

**INDIVIDUAL PAPER SESSION**

This research looks at the development of middle grades mathematics teachers’ conceptualization of one lesson, taught and analyzed three times across a four-month period, in an effort to identify routines of practice and develop a prototypical model of effective teaching practices associated with this lesson.

**Debra I. Johanning**  
*University of Toledo, Toledo, Ohio*

203 B, Capacity: 53

128. Scaling Up High-Quality Mathematics for All Children

**INDIVIDUAL PAPER SESSION**

The speakers evaluated the TRIAD model for scaling up math interventions. TRIAD had a substantial positive effect on teaching quality and students’ mathematics achievement. Evidence showed that it was equally successful for all, including those of low socioeconomic status and limited English proficiency, and particularly for African American students.

**Julie Sarama**  
*University at Buffalo, State University of New York, Buffalo, New York*

**Douglas H. Clements**  
*University at Buffalo, State University of New York, Buffalo, New York*

**Mary Elaine Spitler**  
*University at Buffalo, State University of New York, Buffalo, New York*

**Anastasia Riazantseva**  
*University at Buffalo, State University of New York, Buffalo, New York*

204 A, Capacity: 87
129. Toward a Didactic Model for the Instruction of Prime Numbers

**INDIVIDUAL PAPER SESSION**

Centered on prime numbers, the Primes in Context Using Technology design provides a realistic instructional framework to reconceptualize the teaching and learning of several fundamental ideas of number theory. A two-week teaching experiment revealed the nature of students’ learning and the emergent mathematical conceptions in a technology-integrated environment.

**Lingguo Bu**  
*Southern Illinois University Carbondale, Carbondale, Illinois*

**Maria Lorelei Fernandez**  
*Florida International University, Miami, Florida*

209 C, Capacity: 60

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3:00 p.m. – 3:40 p.m.

130. Establishing a Longitudinal Efficacy Study Using SimCalc MathWorlds®

**INDIVIDUAL PAPER SESSION**

Preliminary results will be presented of a four-year, longitudinal efficacy study implementing dynamic mathematic software and wireless networks in Algebra 1 and 2 classrooms. The speakers will focus on students’ learning and motivation over time and on issues of effective implementation in establishing a longitudinal study.

**Stephen Hegedus**  
*University of Massachusetts Dartmouth, North Dartmouth, Massachusetts*

**Sara Dalton**  
*University of Massachusetts Dartmouth, North Dartmouth, Massachusetts*

**Arden Brookstein**  
*University of Massachusetts Dartmouth, North Dartmouth, Massachusetts*

203 A, Capacity: 53
131. Exploring Latino Students’ Thinking on NAEP Measurement Problems

**INDIVIDUAL PAPER SESSION**

This talk will showcase the resources used by Latino and Latina students as they solved National Assessment of Educational Progress (NAEP) measurement problems and discussed their thinking in one-on-one interviews. Implications of this study as a bridge between instruction and assessment will be discussed.

**Anthony Fernandes**  
*University of North Carolina at Charlotte, Charlotte, North Carolina*

**Cynthia Anhalt**  
*University of Arizona, Tucson, Arizona*

**Marta Civil**  
*University of Arizona, Tucson, Arizona*

132. The Influence of a Math Methods Course on Preservice Teachers’ Efficacy

**INDIVIDUAL PAPER SESSION**

Previous research reveals that mathematics methods courses and fieldwork can increase the development of both preservice teachers’ mathematics content knowledge and their efficacy. This finding is consistent with prior findings suggesting the malleability of these constructs during preservice experiences.

**Jacqueline Leonard**  
*Temple University, Philadelphia, Pennsylvania*

**Brian Evans**  
*Pace University, New York, New York*

**Kristie Jones Newton**  
*Temple University, Philadelphia, Pennsylvania*

**Julie Eastburn**  
*Temple University, Philadelphia, Pennsylvania*
133. Rural High School Students’ Epistemological Beliefs of Mathematics

INDIVIDUAL PAPER SESSION

A study compared students’ epistemological beliefs of mathematics when taught using a traditional curriculum (Glencoe Mathematics) versus a reform-oriented curriculum (College Preparatory Mathematics Program). The study was based on direct observations responses to a questionnaire administered to eleventh-grade students and teachers in four rural New England high schools.

Glenn T. Colby
Vanderbilt University, Nashville, Tennessee

209 C, Capacity: 60

3:00 p.m. – 4:30 p.m.

134. From Arithmetic to Algebra: Building the Foundation for All Students

WORK SESSION

What are the primary aspects of work in elementary school arithmetic that foster a transition to algebra for all students? Using classroom examples that include a range of students, participants will consider five aspects of arithmetic experience that may be crucial to this transition.

Susan Jo Russell
TERC, Cambridge, Massachusetts

Deborah Schifter
Education Development Center, Newton, Massachusetts

Virginia Bastable
SummerMath for Teachers, South Hadley, Massachusetts; Mount Holyoke College, South Hadley, Massachusetts

201, Capacity: 180
135. Studying and Supporting Video-Based Learning for Teachers

Research Symposium

Four research groups have contributed to the research base on the use of videocases to support mathematics teacher learning. The speakers will discuss their current thinking about the use of video, theoretical and analytical frameworks they use in their work, and preliminary findings of their ongoing studies.

Shari L. Stockero  
*Michigan Technological University, Houghton, Michigan*

Laura R. Van Zoest  
*Western Michigan University, Kalamazoo, Michigan*

Cynthia Taylor  
*University of Missouri—Columbia, Columbia, Missouri*

Judith Mumme  
*WestEd, Sheridan, Montana*

Catherine Carroll  
*WestEd, Redwood City, California*

Rossella Santagata  
*University of California, Irvine, Irvine, California*

Katherine Linsenmeier  
*New Trier High School, Winnetka, Illinois*

Miriam Gamoran Sherin  
*Northwestern University, Evanston, Illinois*
WORK SESSION

MCC is one of the few reform-oriented math projects that made a statistically significant difference for Yup’ik students. It simultaneously improved the performance of other indigenous, minority, and Caucasian students. MCC’s math content knowledge, pedagogy, and cultural relevance makes more of a difference than the module or professional development alone.

Lou Matthews  
*Georgia State University, Atlanta, Georgia*

Anthony Rickard  
*University of Alaska Fairbanks, Fairbanks, Alaska*

Evelyn Yanez  
*University of Alaska Fairbanks, Fairbanks, Alaska*

Dora Andrew-Ihrke  
*University of Alaska Fairbanks, Fairbanks, Alaska*

Jerry M. Lipka  
*University of Alaska Fairbanks, Fairbanks, Alaska*
137. Technology, Pedagogy, and Content Knowledge for Mathematics Teachers

**Research Symposium**

The symposium brings together several perspectives and research activities on technology, pedagogy, and content knowledge (TPACK) for mathematics teachers. Together the research can show what we know about TPACK that is specific to mathematics teachers.

**Hollylynne Stohl Lee**  
*North Carolina State University, Raleigh, North Carolina*

**Karen F. Hollebrands**  
*North Carolina State University, Raleigh, North Carolina*

**Sarah E. Ives**  
*North Carolina State University, Raleigh, North Carolina*

**Ryan C. Smith**  
*North Carolina State University, Raleigh, North Carolina*

**Janet Bowers**  
*San Diego State University, San Diego, California*

**Maggie Niess**  
*Oregon State University, Corvallis, Oregon*

**Discussant: Rose Mary Zbiek**  
*Pennsylvania State University, State College, Pennsylvania*

209 A, Capacity: 92
**138. Proof in Secondary School Mathematics**

**Research Symposium**

This symposium presents research focused on proof and proving in secondary school classrooms. The presenters will share findings from five studies related to proof and proof-related tasks in secondary school, preservice and in-service, algebra and geometry classrooms. This session will raise important questions for teacher educators, researchers, and curriculum developers.

**Kristen Bieda**  
*Michigan State University, East Lansing, Michigan*

**Michelle Cirillo**  
*Iowa State University, Ames, Iowa*

**Jill Newton**  
*Purdue University, West Lafayette, Indiana*

**Mara Vanina Martinez**  
*University of Illinois at Chicago, Chicago, Illinois*

**Michael Steele**  
*Michigan State University, East Lansing, Michigan*

**Eric Knuth**  
*University of Wisconsin—Madison, Madison, Wisconsin*

209 B, Capacity: 111

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**139. Graphing in Groups: Collaborative Learning in a Classroom Network**

**Individual Paper Session**

This session will explore the potential of a classroom network to support collaboration in small groups. The speakers will describe a design for collaborative investigations of linear functions and present findings from its implementation in three high school algebra classrooms.

**Tobin White**  
*University of California, Davis, Davis, California*

**Matt Wallace**  
*University of California, Davis, Davis, California*

203 A, Capacity: 53
140. Culturally Relevant Pedagogy through “Taking Action”

**INDIVIDUAL PAPER SESSION**

Taking Action, as practiced in six-week units in three urban, grades K–8 schools, will be described and analyzed for the ways in which it actualizes Gloria Ladson-Billings’ six habits of highly effective teachers.

**Peter Appelbaum**  
*Arcadia University, Philadelphia, Pennsylvania*  
203 B, Capacity: 53

141. Mathematics and the Teacher: A Textual Analysis of a Reform Curriculum

**INDIVIDUAL PAPER SESSION**

This session will examine the ideational, interpersonal, and textual functions of one unit in a Standards-based high school mathematics curriculum. This framework will help determine the nature of mathematics presented in the materials as well as the role of the teacher conceptualized by the textbook authors.

**Jon D. Davis**  
*Western Michigan University, Kalamazoo, Michigan*  
204 A, Capacity: 87

142. Teaching Rational Number Concepts for Understanding in Middle School

**INDIVIDUAL PAPER SESSION**

This study focuses on the extent to which a team of grade 7 math teachers understood and implemented the core content and pedagogical content elements of a yearlong, rational-number-focused professional development program. The session uses data from classroom observations, assessments of teachers, and interviews during the 2007–08 school year.

**Kirk Walters**  
*American Institutes for Research, Washington, D.C.*  
209 C, Capacity: 60
## Index of Speakers by Session

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Session No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Aaron, Wendy</td>
<td>122</td>
</tr>
<tr>
<td>Abbas, Elizabeth</td>
<td>4</td>
</tr>
<tr>
<td>Acosta-Iriqui, Jesus</td>
<td>107</td>
</tr>
<tr>
<td>Adams, Thomasenia Lott</td>
<td>113</td>
</tr>
<tr>
<td>Adamson, Karen</td>
<td>51</td>
</tr>
<tr>
<td>Agodini, Roberto</td>
<td>87</td>
</tr>
<tr>
<td>Alegria, Adelina</td>
<td>76</td>
</tr>
<tr>
<td>An, Song</td>
<td>32</td>
</tr>
<tr>
<td>Andrew-Ihrke, Dora</td>
<td>136</td>
</tr>
<tr>
<td>Anhalt, Cynthia</td>
<td>131</td>
</tr>
<tr>
<td>Appelbaum, Peter</td>
<td>140</td>
</tr>
<tr>
<td>Arbaugh, Fran</td>
<td>124</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Baccaglini-Frank, Anna</td>
<td>28</td>
</tr>
<tr>
<td>Bahr, Damon</td>
<td>41</td>
</tr>
<tr>
<td>Balasubramanian, Anita</td>
<td>70</td>
</tr>
<tr>
<td>Ball, Deborah Loewenberg</td>
<td>34, 58</td>
</tr>
<tr>
<td>Barker, David</td>
<td>21</td>
</tr>
<tr>
<td>Barnes, David</td>
<td>47</td>
</tr>
<tr>
<td>Barrett, Jeffrey E</td>
<td>21</td>
</tr>
<tr>
<td>Bartell, Tonya</td>
<td>112</td>
</tr>
<tr>
<td>Bastable, Virginia</td>
<td>134</td>
</tr>
<tr>
<td>Bateiha, Summer</td>
<td>15</td>
</tr>
<tr>
<td>Battista, Michael</td>
<td>45</td>
</tr>
<tr>
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<td>47, 108</td>
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<td>18, 137</td>
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**C**

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<td>42, 122</td>
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<td>35, 105, 138</td>
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<td>74, 109</td>
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**D**

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**E**

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