Program for the Research Presession

April 19–21, 2010

NCTM®
NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

Research Planning Committee

NCTM Research Committee

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South Redford School District/University of Michigan

Pat Baltzley (2009–12)
Baltimore County Public Schools

Jere Confrey (2007–10)
North Carolina State University

Dan Heck (2009–12)
Horizon Research

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Indigo Esmonde (2009–11), Electronics
Ontario Institute for Studies in Education, University of Toronto

Corey Drake (2008–10), Awards
Iowa State University

Jeff Shih (2009–11), Events
University of Nevada, Las Vegas

Announcements

- The Research Presession will be held at the San Diego Convention Center.
- Registration will be held in the Ballroom Lobby. The times are Monday, 4:30 p.m. to 7:00 p.m., and Tuesday, 7:00 a.m. to 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 in Room 6B from 8:30 p.m. to 10:00 p.m. following the opening session at 7:00 p.m. in Room 6A.
- Research posters will be available for viewing and discussing with the presenters in Room 6B 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 Indianapolis, Indiana in 2011, will be available online in June 2010.
- Be sure to visit the Exhibit Hall for the NCTM Bookstore, which has a special table on research.
- This year, the program committee has added round-table sessions to the program. These sessions are designed for a more intimate discussion of a research paper. The speaker will present the paper to a small table of attendees, with time for questions. For this year, the topics of the round-table sessions will focus on mathematics content and issues of equity. These sessions will run concurrently on Tuesday morning from 8:30 a.m. to 10:00 a.m. in room 8.

Invited Sessions

1. Negotiating Positive Relationships between Math Education and Neuroscience
Opening Session
Monday, April 19, 7:00 p.m.— 8:30 p.m.
San Diego Convention Center / 6A

12. Research Agenda Conference Report
Tuesday, April 20, 8:30 a.m. –10:00 a.m.
San Diego Convention Center / 11a

13. Tools of the Trade, Part 2
Tuesday, April 20, 8:30 a.m.–10:00 a.m.
San Diego Convention Center / 10

31. What Do We Know about Early Algebra: Reflecting on a Decade of Research?
Tuesday, April 20, 10:30 a.m.–12:00 noon
San Diego Convention Center / 6A

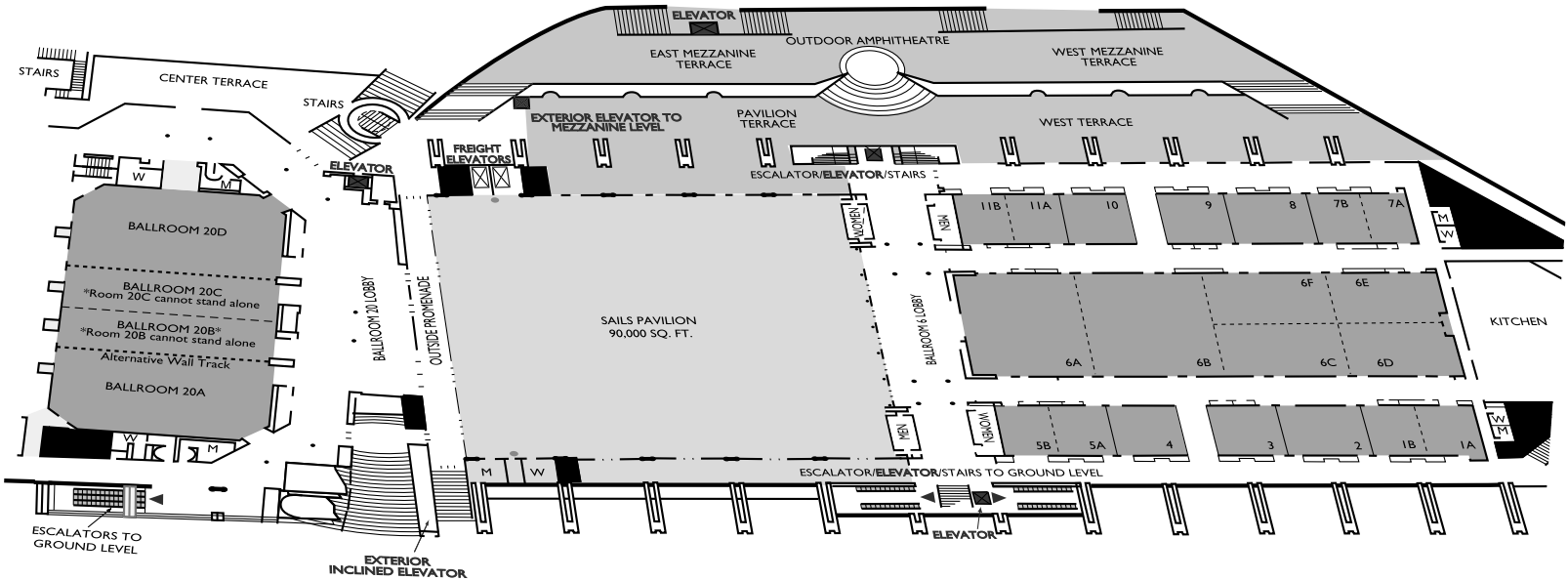
59. Accumulating and Providing Access to Mathematics Education Research
Tuesday, April 20, 3:00 p.m.–4:30 p.m.
San Diego Convention Center / 6A

95. Stimulus Money Stimulates Research: Upcoming Opportunities
Plenary Session
Wednesday, April 21, 8:30 a.m.–10:00 a.m.
San Diego Convention Center / 6A

98. Plenary Follow-Up Discussion
Wednesday, April 21, 10:30 a.m.–12:00 noon
San Diego Convention Center / 4

113. Keeping the Mathematics in Mathematics Education Research
Wednesday, April 21, 1:00 p.m.–2:30 p.m.
San Diego Convention Center / 6A

124. A Discussion about Standards
Wednesday, April 21, 3:00 p.m. – 4:30 p.m.
San Diego Convention Center / 6B



Floor Plan

San Diego Convention Center
Upper Level

On behalf of Research Committee of the National Council of Teachers of Mathematics (NCTM) and the Special Interest Group/Research in Mathematics Education of the American Educational Research Association, we welcome you to NCTM's Research Presession. The Research Presession serves multiple purposes. First, it brings researchers together annually to examine and discuss current issues in mathematics education. Second, it is an opportunity for researchers to receive feedback on their work and to benefit from exposure to alternative points of view. Third, it affords beginning scholars opportunities to interact and network with veteran researchers in the field. Finally, it is an opportunity to capitalize on the collective wisdom available when researchers and practitioners come together to discuss mathematics education and research.

We would like to thank the members of NCTM's Research Committee, members of the executive board for the SIG/RME, and other members of the research community who served as reviewers. Your work is greatly valued and appreciated. Moreover, we would like to thank the staff at NCTM for helping us with the logistics of the conference, registration, printing the program, and so on. Also, we would like to thank all the presenters for agreeing to participate. Finally, we would like to thank everyone in attendance, and we hope that you will find the conference helpful to you in a number of ways.

Sincerely,

Tim Boerst
NCTM Research Committee, Chair

Arthur B. Powell,
AERA SIG/RME, Cochair

Judith Reed Quander
NCTM Research Committee, Staff Liaison

Monday, April 19, 2010

7:00p.m.-8:30p.m.

1.
Negotiating Positive Relationships between Math Education and Neuroscience

New measurement tools have changed the face of psychology, not only in what serves as data and how it is acquired, but also in the nature of explanation. This talk will describe a few aspects of cognitive neuroscience methods and discuss possibilities for mutual influence by neuroscience and mathematics education.

Opening Session

Daniel Schwartz
Stanford University, Palo Alto, California

6A, Capacity: 826

Tuesday, April 20, 2010

8:30a.m.-9:10a.m.

2.
The Effects of Solve It! on Middle School Students' Math Problem Solving

This presentation describes a research study that demonstrated the effectiveness of Solve It!, an instructional program designed to improve mathematical problem solving of students at risk for math failure and students with learning disabilities. Students who received the intervention significantly improved in math problem solving compared with other students.

Individual Paper Session

Marjorie Montague
University of Miami, Miami, Florida

3, Capacity: 96

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.
A Cross-Disciplinary Approach to Proportionality and Data Literacy

This session will report on the Thinking with Data (TWD) project, which leverages content and contexts from across the disciplines to increase students' data literacy. A quasiexperimental study found that TWD increased students' understanding of proportionality and data literacy.

Round-table Session

Phil Vahey
SRI International, Menlo Park, California

Ken Rafanan
SRI International, Menlo Park, California

Karen Swan
University of Illinois Springfield, Springfield, Illinois

Charles Patton
SRI International, Menlo Park, California

Mark van 't Hooft
Research Center for Educational Technology, Kent, Ohio

Annette Kratcoski
Research Center for Educational Technology, Kent, Ohio

Tina Stanford
SRI International, Menlo Park, California

Dale Cook
Research Center for Educational Technology, Kent, Ohio

8 Table 1, Capacity: 8

4.
A Story of African American Females as Mathematical Learners

This session will describe African American females' problem-solving strategies, their understanding of rational number concepts, their description of what it means to understand mathematics, how they best learn and prefer to learn mathematics, and how their teachers help them understand mathematics better.

Round-table Session

Crystal Hill
Indiana University Purdue University Indianapolis, Indianapolis, Indiana

8 Table 2, Capacity: 8

5.
Students' Use of Givens When Proving: Context Matters

This session will present results from an exploratory study examining the effects of mathematical context on middle school students' use of given statements when justifying and proving. Differences in how students use given statements when justifying in number and geometry contexts, and implications for curriculum and instruction, will be discussed.

Round-table Session

Kristen Bieda
Michigan State University, East Lansing, Michigan

Jerilynn Lepak
Michigan State University, East Lansing, Michigan

8 Table 3, Capacity: 8

6.
Connecting Culture and Mathematics: The Development of a Dreamkeeper

This session will share the results of a professional development research project with grades K–2 teachers, focused on the tenets of culturally relevant pedagogy as they relate to the teaching and learning of mathematics. In addition to reporting research findings, project teachers share their experiences.

Round-table Session

Patricia L. Marshall,
North Carolina State University, Raleigh, North Carolina

Allison W. McCulloch
North Carolina State University, Raleigh, North Carolina

8 Table 4, Capacity: 8

7.
The Associative Property: What Do Teachers Know, and How Do Textbooks Help?

A survey of preservice elementary schoolteachers' knowledge of, and for, teaching the associative property of multiplication indicated common misconceptions. Examining mathematics methods and content books and elementary school mathematics textbook series revealed that the textbooks teachers use do not help. Instead, the textbooks may reinforce preservice teachers' misconceptions.

Round-table Session

Meixia Ding
University of Nebraska—Lincoln, Lincoln, Nebraska

Xiaobao Li
University of Houston, Houston, Texas

8 Table 5, Capacity: 8

8:30a.m.-10:00a.m.

8.
Design Recommendations for Improving Research on Curricular Effectiveness

This session will offer research design recommendations from an ongoing, longitudinal study of curricular effectiveness in secondary schools in three areas: developing "fair" assessments, measuring curriculum implementation in valid and reliable ways, and using hierarchical, linear modeling of students' achievement in relation to student- and teacher-level data.

Research Symposium

Douglas Grouws
University of Missouri—Columbia, Columbia, Missouri

Oscar Chavez
University of Missouri—Columbia, Columbia, Missouri

James Tarr
University of Missouri—Columbia, Columbia, Missouri

Robert Reys
University of Missouri—Columbia, Columbia, Missouri

Melissa McNaught
University of Iowa, Iowa City, Iowa

Daniel James Ross
University of Missouri—Columbia, Columbia, Missouri

Ruthmae Sears
University of Missouri—Columbia, Columbia, Missouri

Ira Papick
University of Nebraska—Lincoln, Lincoln, Nebraska

Discussant: Frank K. Lester
Indiana University Bloomington, Bloomington, Indiana

9, Capacity: 208

9.

Preparing Teachers to Connect Multiple Funds of Knowledge in Instruction

Presenters will describe efforts to design and research ways to effectively prepare pre-service teachers to implement mathematics instruction that connects children's mathematical thinking and their home and community-based funds of knowledge. Participants will discuss initial research findings and share their own perspectives on preparing pre-service teachers for diverse schools.

Work Session

Erin E. Turner
University of Arizona, Tucson, Arizona

Corey Drake
Iowa State University, Ames, Iowa

Amy Roth McDufffie
Washington State University Tri-Cities, Richland, Washington

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

Julia Aguirre
University of Washington, Tacoma, Tacoma, Washington

Tonya Gau Bartell
University of Delaware, Newark, Delaware

4, Capacity: 96

10.

Pursuing a Ph.D. in Math Education: The Varieties of Research Experience

Research preparation of mathematics education doctoral candidates is diverse across and within institutions. Representatives from one institution will discuss their research assistantships that support linking current issues in mathematics education to teachers' practices and the research community. Discussion will focus on participants' experiences in the roles of research preparation.

Research Symposium

Steven Ziebarth
Western Michigan University, Kalamazoo, Michigan

Nicole Fonger
Western Michigan University, Kalamazoo, Michigan

Alden J. Edson
Western Michigan University, Kalamazoo, Michigan

James Lyle Kratky
Western Michigan University, Kalamazoo, Michigan

Jonathan Avery Engelman
Western Michigan University, Kalamazoo, Michigan

5A, Capacity: 208

11.
Gender Equity: Are We There Yet?

This symposium will discuss mathematics gender disparities in the United States and Australia, as well as in Iceland, where girls tend to outscore boys on mathematics assessments. The speakers will consider how and why patterns vary across contexts and discuss dilemmas of reporting gender gaps among different audiences.

Research Symposium

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

Helen Forgasz
Monash University Clayton Campus, Clayton, Victoria, Australia

Olof Steinthorsdottir
University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Corinna Crane
University of Illinois at Urbana-Champaign, Champaign, Illinois

Joseph P. Robinson
University of Illinois at Urbana-Champaign, Champaign, Illinois

Gudbjorg Palsdottir
University of Iceland, Reykjavik, Iceland, Iceland

Discussant: Joanne Rossi Becker
San Jose State University, San Jose, California

5B, Capacity: 208

12.
Research Agenda Conference Report

The writers of the NCTM Research Agenda Conference document will discuss the document and engage the audience in discussions regarding successful projects that have linked research and practice, as well as issues surrounding such linkings.

Research Symposium

Fran Arbaugh
Pennsylvania State University, University Park, Pennsylvania

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

Eric Knuth
University of Wisconsin—Madison, Madison, Wisconsin

Nora Ramirez
Arizona State University, Tempe, Arizona

Henry Kranendonk
Milwaukee Public Schools, Milwaukee, Wisconsin

11A, Capacity: 208

13.
Tools of the Trade, Part 2

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

Research Symposium

Karen Denise King
New York University, New York, New York

Richard Kitchen
University of New Mexico, Albuquerque, New Mexico

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

Michael Steele
Michigan State University, East Lansing, Michigan

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

10, Capacity: 208

14.
Division for Research on Learning in Formal and Informal Settings

This session will acquaint members of the mathematics education research community with current funding opportunities at NSF. The speakers will describe program priorities; the processes for development, submission, and review of proposals; and crucial considerations in preparing strong proposals.

Research Symposium

James Fey
National Science Foundation, Washington, D.C.

Norman L. Webb
Wisconsin Center for Education Research, Madison, Wisconsin

Patricia S. Wilson
University of Georgia, Athens, Georgia

11B, Capacity: 208

15.
Mathematical Knowledge for Teaching (MKT): Its Meaning and Sources

Three presentations share applications of a framework that unifies the Ball and Hill approach to MKT (categories of knowledge that support the work of teaching) and the Silverman-Thompson approach to MKT (schemes of understandings and ways of thinking, and images of routes to them).

Research Symposium

Patrick W. Thompson
Arizona State University, Tempe, Arizona

Christina Miller
Arizona State University, Tempe, Arizona

Ana Lage Ramirez
Arizona State University, Tempe, Arizona

Scott Courtney
Arizona State University, Tempe, Arizona

Discussant: Deborah Lowenberg Ball
University of Michigan, Ann Arbor, Michigan

Discussant: Martin Simon
New York University, New York, New York

6A, Capacity: 420

8:30a.m.-10:00a.m.

16.
Middle School Math Professional Development Impact Study

This symposium will present first-year results from the Middle School Mathematics Professional Development Impact Study, a randomized, controlled trial sponsored by the Institute of Education Sciences. The study focuses on the impact of professional development on teachers' knowledge, teachers' instructional practices, and students' achievement in rational numbers.

Research Symposium

Michael Garet
American Institutes for Research, Washington, D.C.

Kirk Walters
American Institutes for Research, Washington, D.C.

Fran Stancavage
American Institutes for Research, Palo Alto, California

Discussant: Sybilla Beckmann
University of Georgia, Athens, Georgia

Discussant: Francis Fennell
Past President, NCTM; McDaniel College, Westminster, Maryland

2, Capacity: 208

9:30a.m.-10:10a.m.

17.
Success with Diverse Student Populations: Findings from Scaling Up SimCalc

Research has shown the effectiveness of representational technologies in mathematics education, but barriers to using such technologies remain. This paper will discuss how the representational, communicative infrastructure of SimCalc met the needs of a diverse student population. The speakers will also discuss possible improvements to the intervention.

Individual Paper Session

Teresa Lara-Meloy
SRI International, Menlo Park, California

Phil Vahey
SRI International, Menlo Park, California

3, Capacity: 96

18.
A Framework for Eighth Graders' Combinatorial Reasoning

This presentation will develop a framework for analyzing eighth-grade students' combinatorial reasoning and connect this framework to the students' multiplicative and spatial reasoning. The data for the framework was drawn from five teaching episodes of an eight-month constructivist teaching experiment.

Round-table Session

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

8 Table 1, Capacity: 8

19.
An Urban Schoolteacher's Life: Extending Limits for Mathematics Students

This session will tell the story of a resilient black middle grades teacher in an urban district who answered a call to teach. She is National Board certified and devoted to rigorous mathematics practices in order to extend students' opportunities. Her support emboldens students to challenge external boundaries.

Round-table Session

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

8 Table 2, Capacity: 8

20.
On the Relationship between Procedural Skill and Understanding in Algebra

The speakers tested the impact of a framework for procedural understanding on students' learning in algebra using a treatment-control group design, documenting the fidelity of implementation using a novel digital classroom observation instrument. They will report on students' gains in skill and understanding and re-examine the link between these constructs.

Round-table Session

Jon F. Hasenbank
University of Wisconsin—La Crosse, La Crosse, Wisconsin

Jennifer Kosiak
University of Wisconsin—La Crosse, La Crosse, Wisconsin

8 Table 3, Capacity: 8

9:30a.m.-10:10a.m.

21.

Contextual Competencies in a Successful Case of Mathematics Reform

This presentation focuses on one middle grades mathematics teacher and her efforts to improve mathematics teaching and learning. Using identity to analyze the teacher's participation in multiple professional communities, this presentation provides insight into how a teacher manages potential conflicting agendas for mathematics teaching among those responsible for instruction.

Round-table Session

Thomas E. Hodges
Western Carolina University, Cullowhee, North Carolina

Geri A. Landry
University of Tennessee, Knoxville, Tennessee

8 Table 4, Capacity: 8

22.

Teaching Math in High-Poverty Schools: Practices That Discriminate Success

This study examined reported mathematics teaching in 80 high-poverty schools. Analyses identified ten reported teaching practices that identified successful teachers based on prior knowledge, curriculum implementation, and students' opportunities for reflection, communication, and practice. Implications for teaching practices in high-poverty schools will be discussed.

Round-table Session

John Tapper
University of Hartford, Hartford, Connecticut

8 Table 6, Capacity: 8

10:30a.m.-11:10a.m.

23.

Teachers' Conceptions of Integration: Uncovering the Process Standards

After a statewide implementation of an integrated mathematics curriculum, researchers studied teachers' conceptions of integrated mathematics in the context of this curriculum change. Their presentation will explore emergent themes in teachers' descriptions of an integrated mathematics curriculum and the ways integration supports NCTM's Process Standards.

Individual Paper Session

Laura Marie Singlerary
University of Georgia, Athens, Georgia

Laura Lowe
University of Georgia, Athens, Georgia

Patricia S. Wilson
University of Georgia, Athens, Georgia

Erik D. Jacobson
University of Georgia, Athens, Georgia

Zandra de Araujo
University of Georgia, Athens, Georgia

Anne Marie Marshall
University of Georgia, Athens, Georgia

5A, Capacity: 208

24.

Teaching toward Equity in Mathematics: Tensions and Possibilities

This study reports on elementary schoolteachers' equity-related work in mathematics teaching, with a view to understanding how they navigated the tension between mathematical content and equity. Participants in the professional development program designed "inquiry projects" to investigate what teaching toward equity in mathematics might look like in their own classrooms.

Individual Paper Session

Beverly Caswell
University of Toronto, Toronto, Ontario, Canada

Indigo Esmonde
University of Toronto, Toronto, Ontario, Canada

11A, Capacity: 208

10:30a.m.-11:10a.m.

25.

The Complexity of Enacting Inquiry Mathematics: A Large-Scale Study

The speakers will discuss the complexity of enacting inquiry-oriented mathematics practices by reporting on a large-scale research project in Ontario. Findings helped them describe classrooms that enact inquiry-oriented practices. They will use these cases to discuss the ways that new pedagogical understandings and practices can be supported.

Individual Paper Session

Christine Suurtamm
Board of Directors, NCTM; University of Ottawa, Ottawa, Ontario, Canada

Barbara Graves
University of Ottawa, Ottawa, Ontario, Canada

11B, Capacity: 208

10:30a.m.-12:00p.m.

26.

Learning from Teaching: Studying Lesson Analysis in Teacher Preparation

This session focuses on the design and study of a preservice teacher education course targeting routine practices for learning from teaching. The speakers will present a framework for guiding preservice teachers' analysis of classroom lessons and its research base, video-based activities, samples of teachers' work, and scoring rubrics.

Work Session

Rossella Santagata
University of California, Irvine, Irvine, California

Elizabeth A. van Es
University of California Irvine, Irvine, California

Discussant: Margaret Smith
University of Pittsburgh, Pittsburgh, Pennsylvania

3, Capacity: 96

27.
Functional Grammar Tools for Studying Whole-Class Conversations

Participants will analyze whole-group conversations captured in classrooms taught by experienced teachers using systemic functional linguistics tools. The guided study of these conversations as texts will focus primarily on making sense of the choices of grammar and vocabulary made by teachers during those classes.

Work Session

Betina A. Zolkower
City University of New York—Brooklyn College, Brooklyn, New York

Elizabeth de Freitas
Adelphi University, New York, New York

4, Capacity: 96

28.
Using Psychometrics to Advance Assessment in Mathematics Education

The symposium will bring together four current NSF-funded projects that are harnessing psychometrics to develop assessments in mathematics education. The projects have been carefully chosen to illustrate the range of possibilities for harnessing psychometric models to address significant challenges in assessing K–12 students and teachers.

Research Symposium

Andrew Izsak
San Deigo State University, San Diego, California

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

Chandra Orrill
University of Georgia, Athens, Georgia

Raven McCrory
Michigan State University, East Lansing, Michigan

Discussant: Anthony Kelly
George Mason University, Fairfax, Virginia

5B, Capacity: 208

29.
From Dissertation to JRME Publication

Three researchers who turned their dissertations into accepted articles for *Journal for Research in Mathematics Education (JRME)* will share insights and experiences and respond to questions. Participants will learn about the *JRME* submission and review process and characteristics of a strong manuscript. The session will end with small-group discussions.

Work Session

Denise Mewborn
University of Georgia, Athens, Georgia

Amy Ellis
University of Wisconsin—Madison, Madison, Wisconsin

Eva Thanheiser
Portland State University, Portland, Oregon

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

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

8, Capacity: 96

30.
A Research Synthesis on the Impact of Curriculum on Mathematics Achievement

This symposium will share research findings from a curriculum synthesis investigating the impact of curriculum on mathematics achievement, specifically curriculum features and associated achievement. Participants will discuss challenges in conducting and reporting curriculum research, directions for further research, and the use of such syntheses to enhance achievement.

Research Symposium

Denisse R. Thompson
University of South Florida, Tampa, Florida

Kate Kline
Western Michigan University, Kalamazoo, Michigan

Lisa Anne Kasmer
Auburn University, Auburn, Alabama

Patricia Diane Hunsader
University of South Florida, Sarasota-Manatee, Sarasota, Florida

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

10, Capacity: 208

31.
What Do We Know about Early Algebra: Reflecting on a Decade of Research

This session will focus on what we've learned from a decade of work in the area of early algebra and the impact—realized and potential—of this work on students' preparation for and success in more formal algebra in secondary school.

Research Symposium

Maria Blanton
University of Massachusetts, Dartmouth, North Dartmouth, Massachusetts

Barbara Brizuela
Tufts University, Medford, Massachusetts

Barbara J. Dougherty
Iowa State University, Ames, Iowa

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

Discussant: Diane Briars
Iowa State University, Ames, Iowa

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

6A, Capacity: 420

10:30a.m.-12:00p.m.

32.
Students' Experiences in Critical Mathematics Learning Environments

This research symposium will highlight analyses of grades K–12 students' critical mathematics education experiences. The presenters will describe four distinct studies focused on the influences of critical in- and out-of-school mathematics environments on students' beliefs and dispositions, mathematics learning and social reality, agency, identities, and participation.

Research Symposium

Rodrigo Jorge Gutiérrez
University of Arizona, Tucson, Arizona

Erin E. Turner
University of Arizona, Tucson, Arizona

Eric Gutstein
University of Illinois—Chicago, Chicago, Illinois

Anita Balasubramanian
University of Illinois—Chicago, Chicago, Illinois

Patricia Buenrostro
University of Illinois—Chicago, Chicago, Illinois

Tal Sutton
University of Arizona, Tucson, Arizona

Maura Varley Gutiérrez
University of Arizona, Tucson, Arizona

Maria Zavala
University of Washington, Seattle, Washington

2, Capacity: 208

11:30a.m.-12:10p.m.

33.
The Mathematics Coach: Considering Roles in Context

This session will consider the roles three mathematics coaches assumed while working in grades K–8 schools and explore the ways in which these contexts affected the coaching process. Findings suggest that multiple coaching roles fragment mathematics coaching, yet the peripheral tasks coaches often perform helped them create positive staff relationships.

Individual Paper Session

Joanne C. Caniglia
Kent State University, Kent, Ohio

5A, Capacity: 208

34.
Facilitating Mathematical Discussions: Results from a Teachers' Study Group

This session will report the findings from the analysis of a third-grade, bilingual teacher study group as they acted and reflected on attempts to include research-based best practices of discussion facilitation in their weekly small-group problem-solving sessions. Recommendations for English language learner classrooms will be shared.

Individual Paper Session

Luz Angelica Maldonado
University of Texas at Austin, Austin, Texas

11A, Capacity: 208

35.
The Development of Preservice Teachers' (PSTs') Motivation in Mathematics

PSTs' motivation to learn mathematics may affect their learning in math content courses and in their future careers. This study examined how two aspects of PSTs' motivation (mathematics self-efficacy and learning goals) developed over time. Results suggest ways that teacher educators could influence PSTs' motivation.

Individual Paper Session

Christine M. Phelps
Central Michigan University, Mt. Pleasant, Michigan

11B, Capacity: 208

1:00p.m.-1:40p.m.

36.
Effects of STEM Faculty Engagement in Math and Science Partnership Program

The presentation explores the effect of involving university science, technology, engineering, and mathematics faculty in Math and Science Partnership program. The findings suggest that both K–12 teachers and university faculty benefited from the engagement in various ways. Student achievement improved although direct attribution to faculty involvement is somewhat unclear.

Individual Paper Session

Xiaodong Zhang
Westat, Inc., Rockville, Maryland

Joseph McInerney,
Westat, Inc., Rockville, Maryland

5A, Capacity: 208

37.
The Impact of Inquiry-Based Instruction on Students' Achievement

Does inquiry-based mathematics instruction improve students' achievement? This session will investigate relationships between challenging, inquiry-based instruction and students' achievement using classroom observations and state test data. Results show that students in settings with a high level of implementation of challenging, inquiry-based instruction showed more growth in test scores.

Individual Paper Session

Rachel Cochran
Center for Educational Accountability, Birmingham, Alabama

John Mayer
University of Alabama at Birmingham, Birmingham, Alabama

Bernadette Mullins
Birmingham-Southern College, Birmingham, Alabama

11A, Capacity: 208

38.
National Evaluation of Elementary School Math Curricula

This session will present the second round of results from a national study of four elementary school math curricula, sponsored by the U.S. Department of Education. The study is examining whether some early elementary school math curricula are more effective at improving student math achievement, and includes four commercially-available curricula.

Individual Paper Session

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

Roberto Agodini
Mathematica Policy Research, Princeton, New Jersey

11B, Capacity: 208

39.
The Role of the Teacher Educator in Online Mathematics Teacher Education

The speakers will discuss an ongoing study of online mathematics teacher education, emphasizing on the role of the teacher educator in online mathematics teacher education. They will identify ways that residue from mathematical collaboration can serve as seeds for second-order conversations focusing on significant mathematical or pedagogical issues.

Individual Paper Session

Jason Silverman
Drexel University, Philadelphia, Pennsylvania

Ellen Clay
Drexel University, Philadelphia, Pennsylvania

2, Capacity: 208

1:00p.m.-2:30p.m.

40.
Publishing Your Research in the NCTM School-Based Journals

The Editorial Panels of *Teaching Children Mathematics, Mathematics Teaching in the Middle School,* and *Mathematics Teacher* 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.

Work Session

Patricia Trafton
Lincoln Middle School, Schiller Park, Illinois

Jacqueline Goodloe Smith
Scott Montgomery Elementary School, Washington, D.C.

Christine D. Thomas
Georgia State University, Atlanta, Georgia

Judith Zawojewski
Illinois Institute of Technology, Chicago, Illinois

3, Capacity: 96

41.

Measuring Discussions in Mathematics Classrooms

Participants will use, analyze, and discuss a measure of classroom discussion currently in development that has been designed to capture the range of ways in which teachers seek to initiate participation in the classroom and respond to students' contributions made during a discussion.

Work Session

Margaret Smith
University of Pittsburgh, Pittsburgh, Pennsylvania

Mary Kay Stein
University of Pittsburgh, Pittsburgh, Pennsylvania

Richard Correnti
University of Pittsburgh, Pittsburgh, Pennsylvania

Jimmy Scherrer
University of Pittsburgh, Pittsburgh, Pennsylvania

4, Capacity: 96

42.

Urban Middle Grades Mathematics Curriculum Implementation

This research symposium will present findings from a mixed methods study of middle grades mathematics teachers' use of Standards-based instructional materials and the effects on students' learning in an urban district, followed by a discussion of implications by the district mathematics coordinator.

Research Symposium

Karen Denise King
New York University, New York, New York

Monica Mitchell
QEM Network, Washington, D.C.

Candace Barriteau Phair,
New York University, New York, New York

5B, Capacity: 208

43.
Graduate Student, Junior Faculty, and Researcher Mentoring Session

Experienced faculty and researchers will provide mentoring on topics such as publishing dissertation-based manuscripts, job searching, careers in school districts and contract research, working with graduate students, the tenure process, and grant writing. Attendees will rotate among topic-focused tables. Graduate students, junior faculty, and researchers are encouraged to attend.

Work Session

Patricia C. Baltzley
Baltimore County Public Schools, Baltimore, Maryland

Daniel Heck
Horizon Research, Inc., Chapel Hill, North Carolina

8, Capacity: 96

44.
Practical Rationality and Mathematical Knowledge for Teaching

This session will elaborate on two conceptions of teacher knowledge and discuss a methodology for studying their relationships.

Research Symposium

Deborah Lowenberg Ball
University of Michigan, Ann Arbor, Michigan

Daniel Chazan
University of Maryland, College Park, Maryland

Patricio Herbst
University of Michigan, Ann Arbor, Michigan

Discussant: Randolph Philipp
San Diego State University, San Diego, California

10, Capacity: 208

1:00p.m.-2:30p.m.

45.
Defining and Implementing Learning Trajectories as Research Tools

Learning trajectories are a promising research tool in mathematics education. They specify instructional interventions coordinated with domain-specific progressions. They also allow for the practical convergence of interests in policy, curriculum, and assessment. This symposium addresses this research approach's promise while calling for rigorous definition and practice.

Research Symposium

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

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

Eric Knuth
University of Wisconsin—Madison, Madison, Wisconsin

Jeffrey E. Barrett
Illinois State University, Normal, Illinois

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

Alan Maloney
North Carolina State University, Raleigh, North Carolina

Phil Daro
University of California at Berkeley, Berkeley, California

6A, Capacity: 420

2:00p.m.-2:40p.m.

46.
Engaging STEM Faculty in K–12 Reforms: Implications for University Policies

The longitudinal study examines policies advancing partnerships between university mathematicians and scientists and grades K–12 teachers. The findings suggest that although tenure and promotion policies and faculty perceptions can impede involvement, projects funded by NSF math-science partnerships effectively offered extrinsic and intrinsic incentives to faculty engagement.

Individual Paper Session

Joseph McInerney
Westat, Inc., Rockville, Maryland

Xiaodong Zhang
Westat, Inc., Rockville, Maryland

5A, Capacity: 208

47.
Tracking Growth in Algebra: Efficacy of Brief Progress Monitoring Measures

This presentation will report the results of a quantitative study examining the use of brief assessments to monitor students' progress in algebra. Analyses addressed reliability, criterion validity, and sensitivity to changes in students' performance. Participants will review samples of the assessments and graphs of students' performance on the measures.

Individual Paper Session

Anne Foegen
Iowa State University, Ames, Iowa

11A, Capacity: 208

48.
Ontario Bansho: Teachers' Professional Learning of Math-for-Teaching

This study investigated how six teachers' implementation of Ontario bansho in professional learning groups guided their learning process concerning mathematics-for-teaching. A framework for professional learning emerged from the ways teachers think about resources, their students, and the ways in which community-based, teacher-directed inquiry contributed to their development of personal meaning.

Individual Paper Session

Glynnis Fleming
Brock University, Saint Catharines, Ontario, Canada; District School Board of Niagara, Saint Catharines, Ontario, Canada

11B, Capacity: 208

49.
Varied Approaches in Math Professional Development for Supporting ELLs

This study examines two groups of middle school mathematics teachers who explored supporting English language learners (ELLs) during professional development experiences. One group discussed ELLs implicitly through the lens of supporting all learners, whereas the other had regular, explicit discussions about ELLs and strategies for supporting them.

Individual Paper Session

Sarah Ann Roberts
University of Colorado, Denver, Denver, Colorado

2, Capacity: 208

50.

Connections between Classroom Discourse and Proof Performance

This presentation will report on a study that aims to understand some of the ways in which whole-class discourse—specifically, the form of teachers' and students' utterances—supports students' learning of proof.

Individual Paper Session

Despina Stylianou
City University of New York, New York, New York

Maria Blanton
University of Massachusetts, Dartmouth, North Dartmouth, Massachusetts

11A, Capacity: 208

51.

The Coconstruction of Identity and Engagement in Collaborative Tasks

The speaker will present a framework for understanding students' coconstruction of identity and engagement in collaborative tasks. She interprets classrooms as worlds in which students' out-of-school lives and classroom activities emerge as a hybrid mix of resources, ones students draw on to engage in tasks and position themselves and others.

Individual Paper Session

Jennifer Langer-Osuna
University of Miami, Miami, Florida

10, Capacity: 208

52.

Why Study Written Mathematics Curriculum (When You Care about Learning)?

To understand teachers' teaching and students' learning, analyses of the "enacted" curricula seem more promising than analyses of "written" curricula. While accepting the importance of the former, we review reasons why studies of the latter are equally important and engage our audience in discussion of this central issue.

Individual Paper Session

Jack Smith
Michigan State University, East Lansing, Michigan

Raven McCrory
Michigan State University, East Lansing, Michigan

11B, Capacity: 208

53.
A Learning Trajectory for Length and Area

This session will describe work on a learning trajectory for length and area based on a foundation of equipartitioning that extends to the development of fraction and ratio. It will report on findings from the construction and validation of the trajectory and piloting of diagnostic assessment items based on the trajectory.

Individual Paper Session

Kenny Nguyen
North Carolina State University, Raleigh, North Carolina

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

2, Capacity: 208

3:00p.m.-4:30p.m.

54.
Productive Disposition: The Missing Component of Mathematical Proficiency

We will use video clips of teachers engaged in small-group discussions to highlight productive disposition, the missing component of mathematical proficiency. Attendees will discuss research issues related to defining and measuring productive disposition. We will also consider how teachers, including the audience, might help students develop more productive dispositions.

Work Session

Randolph Philipp
San Diego State University, San Diego, California

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

Victoria R. Jacobs
San Diego State University, San Diego, California

Lisa Clement Lamb
San Diego State University, San Diego, California

3, Capacity: 96

55.

Toward a Description of the Mathematical Work of Leading a Discussion

Skill in using mathematical knowledge in teaching is crucial. Ability to describe the central practices of mathematics teaching, integrating attention to pedagogy and mathematics in use, is equally important. Participants will discuss examples of teachers leading mathematics discussions and tools developed to describe its composite practices.

Work Session

Timothy A. Boerst
University of Michigan, Ann Arbor, Michigan

Deborah Lowenberg Ball
University of Michigan, Ann Arbor, Michigan

Merrie Blunk
University of Michigan, Ann Arbor, Michigan

Amy Dray
University of California Berkeley, Berkeley, California

4, Capacity: 96

56.

Delineating the PCK of Beginning Secondary School Mathematics Teachers

The presenters will present three research studies, each delineating a component of pedagogical content knowledge (PCK) knowledge of students' understandings, knowledge of instructional strategies, and knowledge of assessment. Participants will discuss each study as well as how these knowledge bases are connected and the implications they have for teacher education.

Research Symposium

Fran Arbaugh
Pennsylvania State University, University Park, Pennsylvania

John Lannin
University of Missouri—Columbia, Columbia, Missouri

Kathryn Chval
University of Missouri—Columbia, Columbia, Missouri

Christa Jackson
University of Missouri—Columbia, Columbia, Missouri

Sarah Hicks
University of Missouri—Columbia, Columbia, Missouri

Matt Webb
University of Missouri—Columbia, Columbia, Missouri

5A, Capacity: 208

57.
Fostering Reflective Teaching, Identifying Predictors of Teachers' Quality

This session will share results from efforts to bridge theory and practice to improve the preparation of elementary school mathematics and science teachers. It will discuss the design and refinement of an innovative approach to field experiences that accompany courses in mathematics methods and share findings about the design's effectiveness.

Research Symposium

Enrique Galindo
Indiana University Bloomington, Bloomington, Indiana

Andrea McCloskey
Pennsylvania State University, University Park, Pennsylvania

Rick A. Hudson
Indiana University Bloomington, Bloomington, Indiana

Nancy Kathryn Essex
Indiana University Bloomington, Bloomington, Indiana

Mi-Yeon Lee
Indiana University Bloomington, Bloomington, Indiana

Samuel Tsegai
Indiana University Bloomington, Bloomington, Indiana

Discussant: Judith T. Sowder
San Diego State University, San Diego, California

5B, Capacity: 208

58.
What Does It Take for Mathematics Teachers to Use Data Effectively?

The need for data use has increased, but little information exists on how to achieve this successfully. This interactive work session is intended to expand awareness and understanding of how districts and schools can make efficient, effective use of mathematics assessment data in their efforts to improve teaching and learning.

Work Session

Pamela Paek
Center for Assessment, Austin, Texas

Terry P. Vendlinski
National Center for Research on Evaluation, Standards, and Student Testing, Los Angeles, California

8, Capacity: 96

3:00p.m.-4:30p.m.

59.

Accumulating and Providing Access to Mathematics Education Research

The history and nature of research in math education have not routinely led to the accumulation of research insights. Both researchers and practitioners benefit from access to accumulated research. Panelists will discuss the substantial work involved in accumulating and providing access to research.

Research Symposium

Barbara Reys
University of Missouri—Columbia, Columbia, Missouri

Daniel Heck
Horizon Research, Inc., Chapel Hill, North Carolina

Marjory Palius
Rutgers University, New Brunswick, New Jersey

Ted Britton
WestEd, Redwood City, California

Discussant: Frank K. Lester
Indiana University Bloomington, Bloomington, Indiana

6A, Capacity: 420

4:00p.m.-4:40p.m.

60.

Effects of Asian Curriculum Materials on Teachers' Knowledge, Pedagogy

This session will report the significant effects on mathematical knowledge and pedagogy of 50 elementary schoolteachers who received systematic input on materials adapted from a Korean curriculum, designed modules and assessment instruments from the curriculum, integrated the modules into their own curricula, and reported assessment results to the project.

Individual Paper Session

Janice Grow-Maienza
Truman State University, Kirksville, Missouri

K. Scott Alberts
Truman State University, Kirksville, Missouri

Hyun-Joo Kim
Truman State University, Kirksville, Missouri

11A, Capacity: 208

61.
Preservice Teachers' and Fifth Graders' Conceptions of the Number Zero

Many students find zero to be a complex concept because of its multiple meanings. This session will report how fifth graders and preservice elementary schoolteachers understood zero. Participants will deliberate on the kinds of opportunities teacher education programs can provide in preparing students' understanding of zero, number concepts, and operations.

Individual Paper Session

Jean S. Lee
Indiana University Bloomington, Bloomington, Indiana

10, Capacity: 208

62.
Communicating with Conclusions: Discourse at the End of Mathematical Tasks

This session will build on an existing task framework—the task as written, setup, and implemented—by considering the phase of the task conclusion. Several actual cases will be used to illustrate possible features of task conclusions and to stimulate a discussion of the roles that the conclusions can potentially play in instruction.

Individual Paper Session

Samuel Otten
Michigan State University, East Lansing, Michigan

11B, Capacity: 208

63.
Supporting Teachers' Statistical Reasoning Using Randomization Testing

Randomization testing, dynamic technological tools, and comparing distributions as a big statistical idea were used to design professional learning experiences for high school mathematics teachers. Using methods of design research, retrospective analyses suggest that randomization testing in this setting was a productive statistical and pedagogical device.

Individual Paper Session

Sandra Madden
University of Massachusetts Amherst, Amherst, Massachusetts

2, Capacity: 208

64.

A Longitudinal Analysis of Elementary School Achievement on Four Dimensions

The mathematical development of students in five U.S. elementary schools is tracked along four different dimensions of understanding (skills, properties, uses, and representations) from kindergarten through fifth grade.

Poster Session

Sarah Bleiler
University of South Florida, Tampa, Florida

Denisse R. Thompson
University of South Florida, Tampa, Florida

Room 6B Table 1, Capacity: 500

65.

A Model for Reasoning about Rate of Change

This session will describe secondary school students' reasoning about rate of change. The model used relates covariational, transformational, and proportional reasoning to quantitative reasoning about particular amounts of rate of change and qualitative reasoning about rate of change. Students' responses to mathematical tasks during individual interviews will provide empirical support.

Poster Session

Heather Lynn Johnson
Pennsylvania State University, University Park, Pennsylvania

Room 6B Table 2, Capacity: 500

66.
Algebra Achievement over Four years in TI-Navigator™-Connected Classrooms

The poster session will present significant results from four years of randomized control trial involving a national sample of U.S. algebra teachers and students. The study examines the effects of a connected classroom intervention on students' achievement and students' dispositions toward mathematics when compared to classroom instruction with graphing calculators only.

Poster Session

Douglas T. Owens
Ohio State University, Columbus, Ohio

Stephen Pape
University of Florida, Gainesville, Florida

Karen Irving
Ohio State University, Columbus, Ohio

A. Louis Abrahamson
Better Education Foundation, Yorktown, Virginia

David Silver
National Center for Research on Evaluation, Standards, and Student Testing—University of California at Los Angeles, Los Angeles, California

Vehbi A. Sanalan
Erzincan University, Erzincan, Turkey, Turkey

Room 6B Table 3, Capacity: 500

67.
An Investigation of Motivational Constructs in Mathematics

This presentation will examine how cognitive and social cognitive constructs of motivation might relate to elementary school students' math achievement. A motivation survey was constructed and administered to 1,018 students in grades 1–5. The results of this survey and implications for practice will be discussed.

Poster Session

Julie Smart
Presbyterian College, Clinton, South Carolina

Sandra Mammano Linder
Clemson University, Clemson, South Carolina

Room 6B Table 4, Capacity: 500

68.

Analyzing the Author-Classroom Teacher Partnership in Curriculum Writing

This session will present research results from a successful partnership between high school mathematics teachers and engineering and mathematics education professors. The partnership wrote, modified, implemented, and assessed a new, fourth-year high school mathematics curriculum that is based on decision making in operations research and industrial engineering.

Poster Session

Karen Keene
North Carolina State University, Raleigh, North Carolina

Richelle Dietz
North Carolina State University, Raleigh, North Carolina

Krista Holstein
North Carolina State University, Raleigh, North Carolina

William Scott
North Carolina State University, Raleigh, North Carolina

Room 6B Table 5, Capacity: 500

69.

China Unveiled: Urban School Video and Complex Commitment Patterns

Using video, images, and artifacts of urban Chinese mathematics classes, the speaker will compare multileveled Chinese educational commitments to those of the United States; demonstrate how the overlapping commitments of students, teachers, parents, classes, cohorts, schools, teaching universities, and cities help explain Chinese educational prowess; and suggest areas for U.S. improvement.

Poster Session

Thomas E. Ricks
Louisiana State University, Baton Rouge, Louisiana

Room 6B Table 6, Capacity: 500

70.
Develop EPSTs' Geometric Knowledge Needed for Teaching

The speakers will describe the perceptions of a participant-observer about a new geometry course for elementary preservice teachers (EPSTs), guided by the theory of mathematical knowledge needed for teaching, and report on the extent to which this new geometry course supports EPSTs in developing the knowledge needed for teaching geometry.

Poster Session

Kai-Ju Yang
Indiana University Bloomington, Bloomington, Indiana

Enrique Galindo
Indiana University Bloomington, Bloomington, Indiana

Room 6B Table 7, Capacity: 500

71.
Differences in Proficiencies Scores between Gifted and Nongifted Students

Gifted students have been shown to reach academic milestones quicker than average students. This session will look at differences in proficiencies scores between gifted and nongifted students, addressing the National Mathematics Advisory Panel's recommendation that gifted students be placed in an environment where they have access to acceleration and enrichment programs.

Poster Session

Jennifer Oloff-Lewis
Arizona State University, Tempe, Arizona

Room 6B Table 8, Capacity: 500

72.
Examining Elementary Teachers' Beliefs about Math During Classroom Practices

This study examined the affective side of teaching by exploring the relationship between three early career elementary teacher's beliefs about mathematics and their teaching practices. The study identified challenges that arose while beginning teachers navigate the mathematics reform movement. Implications for teacher education and professional development will be discussed.

Poster Session

Joan Gujarat
Teachers College, Columbia University, New York, New York

Room 6B Table 9, Capacity: 500

73.

Examining the Focus of Common Planning among Urban Grade 7 Teachers

This session describes a study examining the nature of grade 7 mathematics teachers' conversations during planning and how their discourse changed over time. Using a sociolinguistic framework, the study categorized teachers' discussions as shifting from teacher-focused to learner-focused planning. Attendees will share their own experiences to guide the researchers' work.

Poster Session

Dorothy Y. White
University of Georgia, Athens, Georgia

Eileen Murray
University of Georgia, Athens, Georgia

Victor Leonardo Brunaud-Vega
University of Georgia, Athens, Georgia

Room 6B Table 10, Capacity: 500

74.

Examining the Impact of Designed Supports on Project-Based Mathematics

Project-based learning (PBL) involves implementing curricula that focuses on problem solving, using new technologies, and considering real-world applications. This talk will draw on observations of five teachers implementing two project-based curricula, and interviews with these teachers and their students, to present findings and recommendations for addressing challenges associated with PBL.

Poster Session

Dionne Cross
Indiana University Bloomington, Bloomington, Indiana

Melissa Gresalfi
Indiana University Bloomington, Bloomington, Indiana

Room 6B Table 11, Capacity: 500

75.
Exploring Preservice Elementary Schoolteachers' Conceptions of Mathematics

This poster session reports on a study of four preservice elementary schoolteachers' conceptions of mathematics as they take their first content course taught by problem solving, on the students' initial conceptions, and on various factors that may have influenced changes in these conceptions.

Poster Session

Dana E. Olanoff
Syracuse University, Syracuse, New York

Room 6B Table 12, Capacity: 500

76.
First-Year Teachers' Mathematical Content Proficiency and Attitudes

The study's purpose is to understand the mathematical content proficiency middle and high school teachers have before and after their first year of teaching and taking graduate coursework in the Teach for America (TFA) program. TFA teachers' attitudes toward mathematics over the first year will be discussed.

Poster Session

Brian Evans
Pace University, New York, New York

Room 6B Table 13, Capacity: 500

77.
Introducing an Observational Measure of Mathematics Instructional Quality

This session will introduce an observational measure, Mathematics Scan (M-Scan). M-Scan assesses constructs of mathematics instructional quality, provides a framework for examining lessons holistically, and offers efficient use for large-scale studies. The processes of developing M-Scan, gathering evidence of its validity, and establishing interrater reliability will be described.

Poster Session

Temple A. Walkowiak
University of Virginia, Charlottesville, Virginia

Robert Berry
University of Virginia, Charlottesville, Virginia

Erin R. McCracken
University of Virginia, Charlottesville, Virginia

Sara E. Rimm-Kaufman
University of Virginia, Charlottesville, Virginia

Eileen Merritt
University of Virginia, Charlottesville, Virginia

Room 6B Table 14, Capacity: 500

78.
Mathematics in Preschool Classrooms and Early Mathematics Performance

This study examined classroom practices of preschool teachers and aides targeting children's understanding of number. Classroom environment and activities that supported the development of Number Understanding were examined to investigate how they influenced fall to spring changes as assessed by a standardized assessment in the beginning and end of preschool.

Poster Session

Elizabeth Todd Brown
University of Louisville, Louisville, Kentucky

Victoria Molfese
University of Louisville, Louisville, Kentucky

Room 6B Table 15, Capacity: 500

79.
Mathematics Knowledge for Teaching

This study examined the effectiveness of a mid-Atlantic university's teacher preparation program in helping its preservice grades K–8 teachers acquire mathematics knowledge for teaching. Results indicate moderate effectiveness when compared to a control group.

Poster Session

Brian Bowen
University of Delaware, Newark, Delaware

Room 6B Table 16, Capacity: 500

80.
Multiple Perspectives on Mathematical Knowledge for Teaching

Mathematical situations from secondary school mathematics classes were analysed and used to characterize the mathematical knowledge that is useful to mathematics teachers. This session will describe the many similarities and some differences in the perspectives on mathematical knowledge of prospective teachers, practicing teachers, and mathematics educators.

Poster Session

Anna Marie Conner
University of Georgia, Athens, Georgia

Hee Jung Kim
University of Georgia, Athens, Georgia

Room 6B Table 17, Capacity: 500

81.

Pivotal Moments in Beginning Mathematics Teachers' Practice

This work addresses the current lack of practice-based research on mathematical knowledge for teaching at the secondary school level by identifying and classifying pivotal teaching moments faced by beginning secondary school mathematics teachers in their practice.

Poster Session

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

Shari L. Stockero
Michigan Technological University, Houghton, Michigan

Cynthia E. Taylor
University of Missouri—Columbia, Columbia, Missouri

Dolores Strom
Western Michigan University, Kalamazoo, Michigan

Room 6B Table 18, Capacity: 500

83.

Producing Conjectures Using Maintaining Dragging: Instrumented Abduction

The speakers will discuss some results of a study focused on the process of conjecture generation during dynamic explorations with interactive geometry after introducing specific ways of dragging points. In particular, the attempt to describe abductive reasoning better in this context led to a new notion: instrumented abduction.

Poster Session

Anna E. Baccaglini-Frank
University of New Hampshire, Durham, New Hampshire; University of Siena, Siena, Tuscany, Italy

Maria Alessandra Mariotti
University of Siena, Siena, Tuscany, Italy

Room 6B Table 20, Capacity: 500

84.
Proportionality in Middle School Textbooks

This session will present the results of an analysis of the treatment of proportion in lessons from sixth-grade textbooks. Lessons related to proportion were selected from a variety of content areas—algebra, data analysis, geometry, measurement, and probability. The speaker will analyze the types of problems presented and the solution strategies suggested.

Poster Session

Gwendolyn Joy Johnson
University of South Florida, Tampa, Florida

Room 6B Table 21, Capacity: 500

85.
Research in Math Instructional Technology: Current Trends, Future Demands

This study integrated three frameworks to examine the treatment of teacher knowledge as it relates to technology implementation in mathematics: research design framework, teachers' knowledge, and technology integration. These frameworks provided a robust perspective for analyzing instructional technology effectiveness and improving classroom instruction.

Poster Session

Robert N. Ronau
University of Louisville, Louisville, Kentucky

Christopher R. Rakes
University of Louisville, Louisville, Kentucky

Room 6B Table 23, Capacity: 500

86.
Representational Features of Graphs: Grade 6 Students Interpreting Scale

This session will analyze grade 6 students' engagement in tasks involving graphs of linear functions. This analysis will explore how students use particular representational features when engaging in such tasks, and in particular when the tasks compared graphs with different axis scales.

Poster Session

Darrell Earnest
University of California at Berkeley, Berkeley, California

Room 6B Table 22, Capacity: 500

87.

Special Educators and Reform-Based Mathematics: A Cross-Case Analysis

Special educators often face daunting challenges in adopting and implementing reform-based mathematics education. This cross-case analysis of three special educators involved alongside their general education colleagues in long-term professional development examines the nature of special educators' movement toward reform-based mathematics education and factors within professional development affecting that movement.

Poster Session

Eula Ewing Monroe
Brigham Young University, Provo, Utah

Damon Bahr
Brigham Young University, Provo, Utah

Nancy Wentworth
Brigham Young University, Provo, Utah

Lisa Ann de Garcia
Brigham Young University, Provo, Utah

Room 6B Table 24, Capacity: 500

88.

Teachers' Understanding of Students' Thinking and Their Consequent Teaching

The goal of this research was to analyze the cognitive and psychological component of teachers' conceptualizations of students' mathematical thinking and their consequent design of instruction. It found that, often, even though teachers' could correctly judge the validity of students' reasoning mathematically, they did not understand that reasoning psychologically.

Poster Session

Michael Battista
Ohio State University, Columbus, Ohio

Room 6B Table 25, Capacity: 500

89.
The Algebraic Thinking of Preservice Middle School Teachers

This study will report results of instruction focused on increasing preservice teachers' knowledge of algebraic thinking. It documents the resulting strength of preservice teachers' algebraic thinking. It also shows their ability to recognize opportunities to engage students in algebraic thinking and identify specific features of algebraic thinking in their students.

Poster Session

John Moyer
Marquette University, Milwaukee, Wisconsin

Marta T. Magiera
Marquette University, Milwaukee, Wisconsin

Leigh van den Kieboom,
Marquette University, Milwaukee, Wisconsin

Room 6B Table 26, Capacity: 500

90.
Teachers' Leadership through Inquiry Instruction: A Longitudinal Study

Teachers' leadership can potentially help retain teachers by reenergizing teachers' passion for teaching and learning. This study explores how completing a math-and-science inquiry institute affects the leadership views and activities of teachers and coaches across one state.

Poster Session

Jan A. Yow
University of South Carolina—Columbia, Columbia, South Carolina

Christine Lotter
University of South Carolina—Columbia, Columbia, South Carolina

Room 6B Table 27, Capacity: 500

91.

Using Technology to Increase Coaching Capacity in Small and Rural Districts

This session will describe preliminary findings from research on an interactive online course designed to help coaches from small or rural districts (1) deepen their understanding of grades K–8 mathematics, (2) learn and practice coaching skills to work effectively with teachers, (3) build a community of practice that transcends geographic constraints.

Poster Session

Loretta Heuer
Education Development Center, Newton, Massachusetts

Stephanie Feger
Education Alliance at Brown University, Providence, Rhode Island

Room 6B Table 28, Capacity: 500

92.

A Teacher Education and Development Study in Mathematics: First Findings

This session will discuss the design and results of a study of the preparation of prospective teachers of mathematics for primary and lower secondary schools in 17 countries. What opportunities do they have to develop mathematics knowledge for teaching? What level and depth of mathematics knowledge for teaching do they attain?

Poster Session

Sharon Senk
Michigan State University, East Lansing, Michigan

Room 6B Table 29, Capacity: 500

93.
Uncontrollable Belief-Related Behavior: The Case of an Eighth Grader

Dakarai, a high-achieving eighth grader, exhibited a series of uncooperative behaviors during a two-week teaching experiment that integrated a realistic context with interactive technologies. Retrospective analysis of various data sources suggests the existence of uncontrollable beliefs-related behavior toward the learning scenario and the use of technology.

Poster Session

Lingguo Bu
Southern Illinois University at Carbondale, Carbondale, Illinois

Maria L. Fernandez
Florida International Univeristy, Miami, Florida

Kenneth Shaw
Florida State University, Panama City, Florida

Room 6B Table 30, Capacity: 500

94.
Theoretical, Empirical Analysis of Students' Strategies for Size Estimation

This session will describe strategies 96 middle and high school students used to order by size, group by size, and estimate relative scale and absolute size of objects ranging from the atom to the Earth. Specific mathematical and logical skills will be indentified that precede and may underlie required proportional reasoning.

Poster Session

Cesar Delgado
University of Texas at Austin, Austin, Texas

Room 6B Table 31, Capacity: 500

8:30a.m.-10:00a.m.

95.

Stimulus Money Stimulates Research: Upcoming Opportunities

This panel will discuss demands and opportunities arising from Race to the Top stimulus funding—a new, unprecedented level of support for innovation and reform mathematics education. This investment includes opportunities for applying, extending, and testing research models and findings and for forming new partnerships in research and evaluation.

Plenary Session

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

William McCallum
University of Arizona, Tucson, Arizona

Joan Herman
University of California at Los Angeles, National Center for Research on Evaluation, Standards, and Student Testing, Los Angeles, California

Scott Noon
Teachscape, San Francisco, California

Virginia Stimpson
University of Washington, Seattle, Washington

Discussant: Daniel Heck
Horizon Research, Inc., Chapel Hill, North Carolina

Discussant: Patricia C. Baltzley
Baltimore County Public Schools, Baltimore, Maryland

6A, Capacity: 826

10:30a.m.-11:10a.m.

96.
A Tale of Two Algebras: Opportunities to Learn in Tracked Settings

This study will contrast opportunities to learn in two tracked algebra classrooms taught by the same teacher. The students in the classes covered the same curriculum, yet had different understandings of the content. Explanatory factors will be explored using video data of classroom activity, teachers' interviews, and student sessions.

Individual Paper Session

Mariana Levin
University of California at Berkeley, Berkeley, California

11B, Capacity: 208

10:30a.m.-12:00p.m.

97.
Feedback Essentials: Evidence from Practice of What Teachers Know and Do

Participants will examine students' selected performances to determine the nature of the feedback given by the teacher to students. A matrix of feedback based on recent literature reviews will be used to facilitate observations about the appropriateness of the feedback given the students' performances and subsequent reflections.

Work Session

Edith Stanley Gummer
Education Northwest, Portland, Oregon

Claire Gates
Education Northwest, Portland, Oregon

Karen Marrongelle
Portland State University, Portland, Oregon

Jessica Strowbridge Cohen
University of Idaho, Moscow, Idaho

Sarah Elizabeth Enoch
Portland State University, Portland, Oregon

Traci Fantz
Education Northwest, Portland, Oregon

3, Capacity: 96

98.
Plenary Follow-up Discussion

Please join us for a follow-up session to the Plenary session, to be held with round-tables for each of the five panelists and discussants. Join researchers and members of NCSM to discuss further opportunities and implications introduced in the Plenary session.

Work Session

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

Patricia C. Baltzley
Baltimore County Public Schools, Baltimore, Maryland

Daniel Heck
Horizon Research, Inc., Chapel Hill, North Carolina

William McCallum
University of Arizona, Tucson, Arizona

Joan Herman
University of California at Los Angeles, National Center for Research on Evaluation, Standards, and Student Testing, Los Angeles, California

Scott Noon
Teachscape, San Francisco, California

Virginia Stimpson
University of Washington, Seattle, Washingon

4, Capacity: 96

99.
Broadening Understandings of Mathematical Competence

Historically, mathematical competence has been narrowly viewed as, for example, a facility with numbers. In actuality, different contexts require, value, and foster different competencies. These broader notions are worth examining because they contribute to understandings of inclusive learning environments and encourage meaningful participation.

Research Symposium

Melissa Gresalfi
Indiana University Bloomington, Bloomington, Indiana

Megan Staples
University of Connecticut, Storrs, Connecticut

Ilana Horn
Vanderbilt University, Nashville, Tennessee

Victoria Hand
University of Colorado at Boulder, Boulder, Colorado

5A, Capacity: 208

100.
Helping Teachers Support ELLs in Mathematics Classrooms

This talk will address ways of supporting teachers in professional development to promote English language learners' (ELLs) learning in mathematics. The speakers will discuss a research-and-analyses program they used to understand ELL supports in three settings. Two experts in the field will respond to and critique their work.

Research Symposium

Karen Koellner
University of Colorado, Denver, Denver, Colorado

Sarah Ann Roberts
University of Colorado, Denver, Denver, Colorado

Discussant: Judit Nora Moschkovich
University of California, Santa Cruz, Santa Cruz, California

5B, Capacity: 208

101.

Learning Ambitious Teaching through Cycles of Investigation and Enactment

Participants will engage with a model for preparing elementary schoolteachers for the practice of ambitious mathematics teaching, by discussing videos depicting the model's use in methods courses. Participants will react to what novices learn through cycles of investigation and enactment of a small set of specially designed instructional activities.

Work Session

Elham Kazemi
University of Washington, Seattle, Washington

Heather Beasley
University of Michigan, Ann Arbor, Michigan

Angela Grace Chan
University of California at Los Angeles, Graduate School for Education and Information Studies, Los Angeles, California

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

Hala Ghousseini
University of Michigan, Ann Arbor, Michigan

Magdalene Lampert
University of Michigan, Ann Arbor, Michigan

8, Capacity: 96

102.

Building Retention through Professional Development: Research, Implications

The speakers will examine how professional development affects the work and retention of new mathematics teachers, especially in urban, hard-to-hire settings. With a collection of research studies, they will analyze the dynamics of attrition and retention and suggest which professional development and in-school supports can positively influence retention.

Research Symposium

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

Barbara Johnson Penc
San Jose State University, San Jose, California

Susie Hakansson
University of California at Los Angeles, Los Angeles, California

Axelle Faughn
Western Carolina University, Cullowhee, North Carolina

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

10, Capacity: 208

103.
Math Learning in Early Childhood: Paths toward Excellence and Equity—NRC

The National Research Council (NRC) released their study of early childhood math, synthesizing and analyzing research from a number of disciplinary fields. The speakers will present results and implications for leadership, policy, and practice that will help all children, especially vulnerable children, get a strong start in learning math.

Research Symposium

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

Sybilla Beckmann
University of Georgia, Athens, Georgia

Karen C. Fuson
Northwestern University (Retired), Fallbrook, California

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

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

6A, Capacity: 420

11:30a.m.-12:10p.m.

104.
An Evolution of Mathematical Beliefs: A Case Study of Three Pre-K Teachers

This presentation will examine the findings from a case study of three prekindergarten (pre-K) teachers whose beliefs about teaching early childhood mathematics changed on (a) math resources for the pre-K classroom, (b) pushing beyond—thinking mathematically, and (c) instructional strategies used the pre-K classroom.

Individual Paper Session

Julie Herron
University of Alabama, Tuscaloosa, Alabama

11B, Capacity: 208

1:00p.m.-1:40p.m.

105.
Promoting Teachers' Development in Facilitating Mathematizing

This session will examine a tiered model for professional development, along with the coding scheme and rubric used to assess the teachers' change. The speakers will present data indicating teachers' growth in facilitating mathematizing, which was coupled with increased percents of students meeting the state learning standards for mathematics.

Individual Paper Session

Lynn D. Tarlow
City University of New York—City College, New York, New York

11A, Capacity: 208

106.
Effects of a Coding Intervention on Awareness of Learning Opportunities

The purpose of this study was to determine if the transmission model of teaching and learning can be shifted to a more interactive learning model: teachers would participate in an intervention that focuses on coding teachers' moves on transcripts of classroom lessons.

Individual Paper Session

Jimmy Scherrer
University of Pittsburgh, Pittsburgh, Pennsylvania

Mary Kay Stein
University of Pittsburgh, Pittsburgh, Pennsylvania

11B, Capacity: 208

107.
Students' Conceptions of Integers

This work session will share initial understandings about students' conceptions of integers. It will engage the audience in a discussion of what constitutes integer understanding, what integer conceptions grades K–12 students may have, and what tasks have been fruitful for eliciting these conceptions.

Work Session

Lisa Clement Lamb
San Diego State University, San Diego, California

Jessica Pierson
San Diego State University, San Diego, California

Ian Whitacre
San Diego State University, San Diego, California

3, Capacity: 96

108.
Preparing for Teaching through Playwriting

This session will introduce "lesson play," a teacher education task that juxtaposes with the more traditional "lesson plan." It involves presenting part of a lesson in a dialogue where the characters are the teacher and the student(s). The speakers will analyze lesson play and discuss its research and pedagogical affordances.

Work Session

Rina Zazkis
Simon Fraser University, Burnaby, British Columbia, Canada

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

Peter Liljedahl
Simon Fraser University, Burnaby, British Columbia, Canada

4, Capacity: 96

109.
Students' Learning as Structured Experiences in Chinese and U.S. Classrooms

This session examines students' learning as structured experiences in Chinese and U.S. classrooms from a curriculum perspective. Several research articles highlight and compare aspects of Chinese and U.S. teachers' practices and thinking in transforming curriculum for teaching and learning the content of fraction division.

Research Symposium

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

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

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

Tingting Ma
Texas A&M University, College Station, Texas

Ebrar Yetkiner
Texas A&M University, College Station, Texas

Rebecca V. Rowntree
Texas A&M University, College Station, Texas

Melanie N. Woods
Texas A&M University, College Station, Texas

Sunyoung Han
Texas A&M University, College Station, Texas

Discussant: Barbara Reys
University of Missouri—Columbia, Columbia, Missouri

5A, Capacity: 208

110.
Making Sense of Variability in Data

This symposium presents results from three studies that investigate postsecondary students' understandings of statistical variability and how they use statistics and modeling to make sense of variability. The presenters will discuss implications for statistics education and for grades pre-K–12 students' development of robust understandings of variability.

Research Symposium

Toni M. Smith
George Mason University, Fairfax, Virginia

Susan A. Peters
University of Louisville, Louisville, Kentucky

Margret A. Hjalmarson
George Mason University, Fairfax, Virginia

Tamara J. Moore
University of Minnesota—Twin Cities, Minneapolis, Minnesota

5B, Capacity: 208

111.
Studying Project-Based Mathematics Instruction in Middle and High Schools

Participants will examine data from three related research and professional development projects involving project-based instruction in middle grades and high school mathematics classrooms. They will comment on research questions, frameworks, inquiry methods, and data or evidence that would guide future research on project-based mathematics teaching and learning.

Work Session

Catherine A. Brown
Indiana University Bloomington, Bloomington, Indiana

Rick A. Hudson
Indiana University Bloomington, Bloomington, Indiana

Jean S. Lee
Indiana University Bloomington, Bloomington, Indiana

Dionne Cross
Indiana University Bloomington, Bloomington, Indiana

Loren Wood
Monroe County Schools, Bloomington, Indiana

Jacquelyn Fischvogt
Columbus Signature Academy—Central Campus, Columbus, Indiana

8, Capacity: 96

112.
Attending to Equity in District Designs for Improving Math Instruction

This symposium will develop a vision of high-quality mathematics instruction that is likely to support low-performing students' access to significant mathematical ideas, thereby improving achievement. It will suggest how districts can support teachers' development of this type of instructional practices.

Research Symposium

Kara Jackson
Vanderbilt University, Nashville, Tennessee

Paul Anthony Cobb
Vanderbilt University, Nashville, Tennessee

Lynsey Kay Gibbons
Vanderbilt University, Nashville, Tennessee

Glenn T. Colby
Vanderbilt University, Nashville, Tennessee

Lynn Hodge
University of Tennessee, Knoxville, Tennessee

Discussant: Danny Bernard Martin
University of Illinois at Chicago, Chicago, Illinois

10, Capacity: 208

113.
Keeping the Mathematics in Mathematics Education Research

This session focuses on the role of mathematics in mathematics education research. In particular, the session addresses a growing concern among many mathematics education scholars regarding the lack of attention to mathematics in much of the current work in mathematics education.

Research Symposium

Deborah Lowenberg Ball
University of Michigan, Ann Arbor, Michigan

Michael Battista
Ohio State University, Columbus, Ohio

Guershon Harel,
University of California—San Diego, San Diego, California

Patrick W. Thompson
Arizona State University, Tempe, Arizona

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

6A, Capacity: 420

2:00p.m.-2:40p.m.

114.
Shifts in Preservice Teachers' Views of Teaching Mathematics

The research presented is part of a larger study on preservice teachers' views of mathematics, teaching, and proof during a two-semester mathematics education course sequence. After the two semesters, the cohort exhibited shifts in their views of the roles of teachers and students in a student-centered classroom.

Individual Paper Session

Kelly W. Edenfield
University of Georgia, Athens, Georgia

Anna Marie Conner
University of Georgia, Athens, Georgia

11A, Capacity: 208

2:00p.m.-2:40p.m.

115.
Planning Discourse around Students' Solutions: A Data Analysis Framework

Discourse on students' work provides learning opportunities in the mathematics classroom. This session will discuss data-collection and data-analysis tools developed for research around the planning and implementation of this type of discourse. A brief research study on teachers' questions will be shown to demonstrate the use of these tools.

Individual Paper Session

Sarah Elizabeth Enoch
Portland State University, Portland, Oregon

Edith Stanley Gummer
Education Northwest, Portland, Oregon

Karen Marrongelle
Portland State University, Portland, Oregon

Jessica Strowbridge Cohen
University of Idaho, Moscow, Idaho

11B, Capacity: 208

3:00p.m.-3:40p.m.

116.
How Institutional Factors Influence Coach Centrality in Teacher Networks

This study aims to analyze mathematics coaching through the use of social network analysis in order to look at the effectiveness of a school district's coaching design and explain how aspects of the institutional setting, within schools, influence the centrality of coaches in teacher networks.

Individual Paper Session

Lynsey Kay Gibbons
Vanderbilt University, Nashville, Tennessee

Annie Garrison
Vanderbilt University, Nashville, Tennessee

11A, Capacity: 208

117.
Developing a Qualitative Geometry from the Conceptions of Young Children

This study has identified in children aged 5–8 years intuitive and significant conceptions that form the content of a new, developing, nonmetric geometry that the speaker calls *qualitative geometry.* These conceptions were elicited, in part, through a dynamic geometry environment developed for this study.

Individual Paper Session

Steven Greenstein
University of Texas at Austin, Austin, Texas

11B, Capacity: 208

3:00p.m.-4:30p.m.

118.
Latino/Latina Learners, Resources, and Mathematical Reasoning

The session will use CEMELA studies to consider instructional resources for supporting Latino and Latina students in developing mathematical understanding. Six empirical studies describing the resources students used during problem solving, including the use of Spanish or English, an adult, or a peer, will be presented and used to ground discussion.

Work Session

Judit Nora Moschkovich
University of California, Santa Cruz, Santa Cruz, California

Laura Burr
University of New Mexico, Albuquerque, New Mexico

Gabriela Dumitrascu
University of Arizona, Tucson, Arizona

Carlos Lopez Leiva
University of Illinois at Chicago, Chicago, Illinois

Kathleen Ross
University of Arizona, Tucson, Arizona

Tal Sutton
University of Arizona, Tucson, Arizona

Belin Tsinnajinnie
University of Arizona, Tucson, Arizona

Griselda Velazquez
University of California, Santa Cruz, Santa Cruz, California

William Zahner
University of California, Santa Cruz, Santa Cruz, California

3, Capacity: 96

119.

A Research-Based, Elementary School Curriculum on Integers and Fractions

The Learning Mathematics through Representations project is developing a research-based, elementary school curriculum on integers and fractions using the number line as the principal representational context. This session will engage participants is an approach to curriculum research and development, supported by samples of students' work, videoclips, lesson materials, and teachers' guides.

Work Session

Geoffrey Saxe
University of California at Berkeley, Berkeley, California

Maryl Gearhart
University of California at Berkeley, Berkeley, California

Yasmin A. Sitabkhan
University of California at Berkeley, Berkeley, California

Darrell Earnest
University of California at Berkeley, Berkeley, California

Lina Chopra Haldar
University of California at Berkeley, Berkeley, California

Katherine Lewis
University of California at Berkeley, Berkeley, California

Meghan Shaughnessy
University of Michigan, Ann Arbor, Michigan

Ying Zheng
University of California at Berkeley, Berkeley, California

4, Capacity: 96

120.

Constructing a Multidimensional Learning Progression of Data Modeling

This symposium will report on a multiyear collaboration among researchers and teachers to integrate educational studies of learning about data and chance with psychometric approaches to modeling students' knowledge and skill. The symposium is organized around three themes: design studies of learning, brokering professional development, and psychometric modeling.

Research Symposium

Rich Lehrer
Vanderbilt University, Nashville, Tennessee

Mark Wilson
University of California at Berkeley, Berkeley, California

Min-Joung Kim
Vanderbilt University, Nashville, Tennessee

Marta Kobiela
Vanderbilt University, Nashville, Tennessee

Bob Schwartz
University of California at Berkeley, Berkeley, California

Kristen Burmester
University of California at Berkeley, Berkeley, California

Discussant: Cliff Konold
University of Massachusetts Amherst, Amherst, Massachusetts

Discussant: Leona Schauble
Vanderbilt University, Nashville, Tennessee

5A, Capacity: 208

121.
On the Nature of Secondary School Mathematics Classroom Discourse

This symposium, based on a study of secondary (grades 6–10) mathematics classroom discourse, presents findings from analyses of different-sized language units: words, recurring groupings of words, semantics of mathematical terms, and activity structures. The speakers will discuss what each unit contributes to understanding mathematics classroom discourse.

Research Symposium

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

Samuel Otten
Michigan State University, East Lansing, Michigan

Lorraine Males
Michigan State University, East Lansing, Michigan

Discussant: David Pimm
University of Alberta, Edmonton, Alberta, Canada

5B, Capacity: 208

122.
Beyond Mathematical Content Knowledge: Beginners Present Mathematical Tasks

This work session will address important pedagogical content knowledge that may go unnoticed when mathematical content knowledge becomes the focus of research on mathematical knowledge for teaching. Specifically, the session will address the pedagogical content knowledge needed to present mathematical tasks to elementary school students.

Work Session

Aaron Brakoniecki
Michigan State University, East Lansing, Michigan

Sandra Crespo
Michigan State University, East Lansing, Michigan

Ann M. Lawrence
Michigan State University, East Lansing, Michigan

Discussant: Megan Franke
University of California at Los Angeles, Los Angeles, California

8, Capacity: 96

123.
Professional Development Integrating Equity and Mathematics

This symposium will share findings from five professional development programs focused on integrating equity and mathematics. The studies explore how these factors influence teachers' conceptions of equity in (a) identity and local context, (b) artifacts, and (c) understanding students' competencies.

Research Symposium

Anita Wager
University of Wisconsin—Madison, Madison, Wisconsin

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

Ann Ryu Edwards
University of Maryland, College Park, Maryland

Vanessa Pitts Bannister
Virginia Polytechnic and State University, Blacksburg, Virginia

Kristine Michelle Ho
University of California at Los Angeles, Los Angeles, California

Jessica Quindel
Berkeley High School, Berkeley, California

10, Capacity: 208

124.
A Discussion about Standards

Representatives from the writing teams for NCTM's *Principles and Standards for School Mathematics, Curriculum Focal Points,* and *Focus in High School Mathematics: Reasoning and Sense Making,* as well as a representative from the Common Core Standards group, will describe their publications and suggest how they present opportunities for further research.

Research Symposium

Henry Kepner
President, NCTM; University of Wisconsin—Milwaukee, Milwaukee, Wisconsin

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

Glenda Lappan
Past President, NCTM; Michigan State University, East Lansing, Michigan

Patrick W. Thompson
Arizona State University, Tempe, Arizona

Gary Martin
Auburn University, Auburn, Alabama

Room 6B, Capacity: 400

4:00p.m.-4:40p.m.

125.
Influences on Mathematics Textbook Selection: What Really Matters?

What factors shape districts' decisions about mathematics instructional materials? How is research used, and does it matter? What are curriculum leaders' questions about materials under consideration? This session will share findings from an NSF-funded study investigating curricular decision making and explore implications for those involved in curriculum research.

Individual Paper Session

June Mark
Education Development Center, Newton, Massachusetts

Julie Koehler Zeringue
Education Development Center, Newton, Massachusetts

Katherine Schwinden
Education Development Center, Newton, Massachusetts

11A, Capacity: 208

126

Documenting the Trajectory of Children's Own Methods for Calculation

When children are supported in developing their own methods of addition and subtraction, documenting their progress and trajectory becomes methodologically messy. This session will present and verify a new framework that uses a longitudinal video study to examine children's strategies, big ideas, and mathematical models over two years.

Individual Paper Session

Alex Lawson
Lakehead University, Thunder Bay, Ontario, Canada

11B, Capacity: 208

Index of Session Participants

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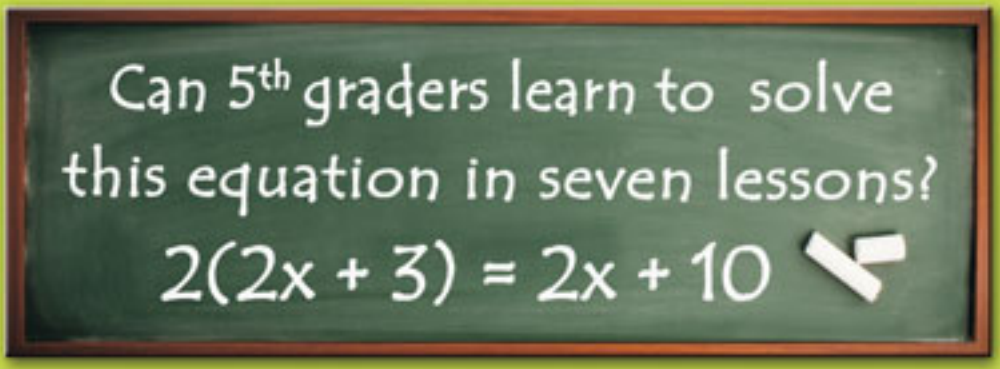


THE BAD NEWS:
According to the *Final Report of the National Mathematics Advisory Panel*, (pages 26 and 32):

- Many middle school students do not understand mathematical equality.
- Many students do not understand procedures for transforming equations.

THE GOOD NEWS:
Hands-On Equations solves both of these problems easily and quickly in grades 3 - 8.

THE PROOF:
In Broward County*, 74% of the 84 average 5th graders participating in the study correctly answered the above equation on a three-week retention test administered ***without*** the game pieces following the first seven lessons of Hands-On Equations. 87% correctly answered the equation $4x + 3 = 3x + 8$ on the same retention test.

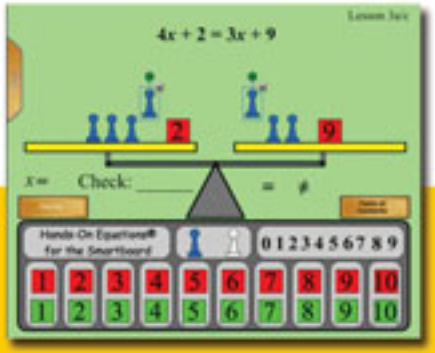
*Borenson, Henry and Larry W. Baeber. 2008. The Effect of Hands-On Equations® on the Learning of Algebra by 4th and 5th Graders of the Broward County Public Schools. Borenson and Associates, Inc., Allentown, PA.

Hands-On Equations® demystifies the learning of algebra!

Shirley Frye, former NCTM President, teaching 4th graders how to solve $3x + 4 = 8 + x$.

NEW! **Hands-On Equations® for the SMART Board!**

(Also available for the Interactive Whiteboard …can be used with the Promethean Board)



Dr. Henry Borenson

Attend our Exhibitor Sessions at the NCTM Annual Meeting on Thursday and Friday from 10:00 a.m. to 11:00 a.m. or visit our booth #423 & #425 for a short demonstration.

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