Research Presession Planning Committee

NCTM Research Committee

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Announcements

- Registration will be held in Prefunction Area A near Room 145 on Level 1 at the America’s Center. 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.

- A light reception will be held on Monday evening in rooms 160–163 from 8:30 p.m. to 10:00 p.m. following the opening session at 7:00 p.m. in Rooms 140–145.

- Research posters will be available for viewing and discussing with the presenters at Prefunction Area B near Room 140 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 Atlanta, Georgia, in April 2007, will be available online June 19, 2006.

- Be sure to visit the Exhibit Hall for the NCTM Bookstore, which has a special table on research.
1. Unifying Mathematics Education Research by Quantifying Qualitative Insight

**Opening Session**

Many insights from mathematics education research seem to be robust (since they have been duplicated across research studies) but simultaneously appear to be beyond measurement. These include, for example, models of student conceptual change, or understanding the relationship between situated cognition and individual cognition in mathematics. As researchers, we have sometimes bemoaned the fact that these concepts and other concepts central to the mathematical learning of students almost defy measurement (e.g., students’ use of additive versus multiplicative models when attacking mathematical problems) and modeling using the traditional techniques that we cut our research teeth on (e.g., factor analysis, analysis of variance, etc). The focus of this presentation is to outline developments in the statistical literature over the past 20 years that may allow us as a research community to bring quantitative redress to these burgeoning qualitative insights.

Barry Sloane  
finbarr.sloane@asu.edu  
*Arizona State University, Tempe, Arizona*

140-145 (America’s Center) Capacity: 1400

2. Studying the Academic Choices of Mathematically Talented College Women

**Individual Papers**

This study found that four central factors influenced mathematically talented college women’s choice of major: environment, behavior, talent, and value, where “value” had the highest relative influence. Value conflicts were often cited as the central reason (and occasionally the only reason) that a participant was not majoring in mathematics.

Judith Lynn Gieger  
lgieger@oglethorpe.edu  
*Oglethorpe University, Atlanta, Georgia*

150 (America’s Center) Capacity: 100
3. Exploring the Use of Mathematical Language: What Do Teachers Need to Know?

**Work Session**

This session investigates teachers’ use of mathematical language as one element of knowing mathematics for teaching. Using classroom video segments, participants will focus on the mathematical issues that arise in teachers’ and students’ exchanges, will consider the choices teachers face, and what this implies for the knowledge needed for teaching.

Deborah Loewenberg Ball
dball@umich.edu
*University of Michigan, Ann Arbor, Michigan*

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

152 (America’s Center) Capacity: 105


**Work Session**

This session will lay out knowledge for teaching specific to geometry and demonstrate how a geometric habits-of-mind framework contributes to teachers attaining this knowledge.

Rachel E. Wing
rwing@edc.org
*Education Development Center, Newton, Massachusetts*

Mark J. Driscoll
*Education Development Center, Newton, Massachusetts*

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

151 (America’s Center) Capacity: 100
5. The Untapped Potential of Mathematics Education Research to Address Equity

**Thematic Presentation**

This presentation provides an overview of existing literature on equity in mathematics education by examining the untapped potential within it to address issues of power, race, and access. The presenters are a subset of authors of a chapter in the forthcoming revision of the *Handbook of Research on Mathematics Teaching and Learning*.

Tonya Gau Bartell  
*tbartell@udel.edu*  
*University of Delaware, Newark, Delaware*

Vanessa R. Pitts Bannister  
*Virginia Tech, Blacksburg, Virginia*

Daniel Battey  
*Arizona State University, Tempe, Arizona*

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

Victoria Hand  
*University of Wisconsin at Madison, Madison, Wisconsin*

Danny B. Martin  
*University of Illinois at Chicago, Chicago, Illinois*

Joi Spencer  
*University of California at Los Angeles, Los Angeles, California*

140 (America’s Center) Capacity: 140
6. Understanding and Cultivating Reasoning and Proof in the Early Grades

Research Symposium

In this session, we consider issues of reasoning and proof in the early grades. We report on investigations regarding students’ reasoning and proving capabilities; the design of curriculum materials intended to develop students’ reasoning and proving capabilities; and the role of teachers in promoting students’ reasoning and proving capabilities.

Gabriel J. Stylianides  
gstylian@pitt.edu  
University of Pittsburgh, Pittsburgh, Pennsylvania

Andreas J. Stylianides  
University of California—Berkeley, Berkeley, California

Eric J. Knuth  
University of Wisconsin—Madison, Madison, Wisconsin

7. Classroom Processes and Student Learning in Mathematics

Research Symposium

This session shares empirical findings of relations between students’ development as learners of mathematics and their perceptions of instruction. We focus on students holistically, from the perspective that mathematics success is measured through gains in conceptual understanding and through improved motivation and affective regard for oneself as a mathematics learner.

Carol E. Malloy  
cmalloy@email.unc.edu  
University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Mark W. Ellis  
California State University—Fullerton, Fullerton, California

Judith Meece  
University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Jill Hamm  
University of North Carolina at Chapel Hill, Chapel Hill, North Carolina

Discussant

Edward A. Silver  
University of Michigan, Ann Arbor, Michigan

144 (America’s Center) Capacity: 126

142 (America’s Center) Capacity: 168
8. Teaching Mathematics for Social Justice in the Young People’s Project

Research Symposium
This session describes a collaboration between the Young People’s Project (YPP), youth “arm” of the Algebra Project, and a researcher-proponent of teaching mathematics for social justice. We will report initial stages, including influence on YPP instructors and students vis-à-vis mathematical understanding, sociopolitical consciousness, sense of agency, and orientations toward mathematics.

Eric H. Gutstein
gutstein@uic.edu
University of Illinois at Chicago, Chicago, Illinois

Omo Moses
Young People’s Project, Chicago, Illinois

Javier Maisonet
Young People’s Project, Chicago, Illinois

Cynthia Gonzalez
Young People’s Project, Chicago, Illinois

143 (America’s Center) Capacity: 168


Individual Papers
Project M3: Mentoring Mathematical Minds, a Javits research grant, addresses critical issues regarding curriculum and instruction for elementary school students with mathematical promise. This session presents empirical data on the implementation of a high-level curriculum focused on discourse and achievement results of a diverse cohort of students and a comparison group.

Katherine Gavin
kathy.gavin@uconn.edu
University of Connecticut, Storrs, Connecticut

Linda Jensen Sheffield
Northern Kentucky University, Highland Heights, Kentucky

150 (America’s Center) Capacity: 100
10. Engaging Preschoolers in Mathematical Discourse

**Individual Papers**

This session will describe a preschool intervention during which children modeled and discussed the mathematics embedded in everyday situations. Those who received the intervention showed larger gains than their comparison group counterparts in mathematical performance, use of mathematical language, and ability to explain and justify their thinking.

Helena P. Osana  
*osana@education.concordia.ca*  
*Concordia University, Montreal, Quebec*

Mary Ann Chacko  
*Concordia University, Montreal, Quebec*

150 (America’s Center) Capacity: 100

10:30 a.m.–11:00 a.m.

11. Improving Teachers’ Content Knowledge through Scaffolded Instruction

**Individual Papers**

This study explores language for mediation by considering the talk of scaffolding between adult learners as they develop deeper levels of mathematical understanding during a professional development program designed to increase mathematical content knowledge.

Lillie R. Albert  
albertli@bc.edu  
*Boston College, Chestnut Hill, Massachusetts*

150 (America’s Center) Capacity: 100
10:30 a.m.–12:00 noon

12. Inducting New Researchers: Mentoring Session

Mentoring Session

Graduate students and new faculty members please come and share your research and career plans with those veterans of the field listed below. They will help you to think about your plans and provide you with some suggestions for your next steps.

Marilyn E. Strutchens
strutme@auburn.edu
*Auburn University, Auburn, Alabama*

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

Glen Blume
*Pennsylvania State University, University Park, Pennsylvania*

Jinfa Cai
*University of Delaware, Newark, Delaware*

Michaele Chappell
*Middle Tennessee State University, Murfreesboro, Tennessee*

James Hiebert
*University of Delaware, Newark, Delaware*

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

Danny B. Martin
*University of Illinois at Chicago, Chicago, Illinois*

W. Gary Martin
*Auburn University, Auburn, Alabama*

James A. Middleton
*Arizona State University, Tempe, Arizona*

Lew Romagnano
*Metropolitan State College of Denver, Denver, Colorado*

151 (America’s Center) Capacity: 100
13. Communities of Practice: Learning-Site Visits and Lesson Study

**Thematic Presentation**

Strengthening mathematics teaching and learning requires focused and thoughtful collegial interactions about mathematics and how students learn that mathematics. This session focuses on two models that support these kinds of interactions, learning-site visits and lesson study, situating them in the context of the broader research framework of professional learning communities.

Linda Ruiz Davenport  
ldavenport@boston.k12.ma.us  
*Boston Public Schools, Boston, Massachusetts*

Catherine Miles Grant  
*Education Development Center, Newton, Massachusetts*

Michael A. Carter  
*Roosevelt University, Chicago, Illinois*

Jane Gorman  
*Education Development Center, Newton, Massachusetts*

June Mark  
*Education Development Center, Newton, Massachusetts*

**144 (America's Center) Capacity: 126**
14. Building Capacities for Problem Solving in Elementary School Classrooms

WORK SESSION

A research study in two urban elementary schools examines whether possessing a set of mathematical convictions enables students to become more competent and confident problem solvers. This presentation provides a format for the research team to share initial findings and create a dialogue about building problem-solving capacities.

Judith F. McVarish
jfm7@nyu.edu
New York University, New York, New York

John Tapper
New York University, New York, New York

Patricia Birkmeier
New York City Schools, New York, New York

Anne Marie Marshall
University of Maryland, College Park, Maryland

Margot Ely
New York University, New York, New York

Belen Matias
New York University, New York, New York

152 (America’s Center) Capacity: 105

15. How Teachers and Students View Generality

THEMATIC PRESENTATION

The presenters will provide a multiperspective look at the generalization of numeric situations. First, we will look at how students view generality and discuss the impact this has on their schema. Then, we will address the challenges that teachers face as they provide instruction related to generalization.

David D. Barker
ddb21d@mizzou.edu
University of Missouri—Columbia, Columbia, Missouri

John Lannin
University of Missouri—Columbia, Columbia, Missouri
16. Randomized Trials in Mathematics Education Research

Research Symposium

Government agencies emphasize the importance of evidence-based practices and instructional materials, with randomized trials as the gold standard. Four researchers describe their own experimental studies and place them in a mathematics education research context. Discussants critique the work from perspectives of the NRC report and the What Works Clearinghouse.

Douglas H. Clements
clements@buffalo.edu
University at Buffalo, State University of New York, Buffalo, New York

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

Kenneth Koedinger
Carnegie Mellon University, Pittsburgh, Pennsylvania

Gary W. Ritter
University of Arkansas, Fayetteville, Arkansas

Sharon Senk
Michigan State University, East Lansing, Michigan

Brett Miller
17. Theoretical and Methodological Issues in Research on Teachers’ Beliefs

Research Symposium
This presentation will explore implications of looking at beliefs structures as well as content when seeking to explain and facilitate change; theoretical alternatives to viewing teachers’ beliefs and practice as inconsistent; and consequences of the theoretical and methodological assumptions implicit in typical research designs.

Keith R. Leatham
kleatham@mathed.byu.edu
Brigham Young University, Provo, Utah

Denise S. Mewborn
University of Georgia, Athens, Georgia

Natasha Speer
Michigan State University, East Lansing, Michigan

142 (America’s Center) Capacity: 168

18. Research and Future Directions on Latinos: Connecting Discourse and Practice

Research Symposium
This interactive presentation examines the criticality of academic discourse on Latinos’ learning of mathematics. Classroom videos will be analyzed by panelists and audience regarding what constitutes academic discourse and its relation among students’ first and second languages and mathematics learning.

Hector Morales
hmorales@uic.edu
University of Illinois at Chicago, Chicago, Illinois

Sylvia Celedon-Pattichis
University of New Mexico, Albuquerque, New Mexico

Diane Torres-Velasquez
University of New Mexico, Albuquerque, New Mexico

Virginia Horak
University of Arizona, Tucson, Arizona

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

140 (America’s Center) Capacity: 140
19. Balancing Conflicting Agendas in Professional Development

RESEARCH SYMPOSIUM

This symposium documents the tensions inherent in collaborating with teachers in the context of high-stakes accountability. Presenters will share analyses of their professional development collaborations. In each instance, the presenter will document the difficulties that arose when attempting to balance their agenda against the demands of the district and state.

Kay J. McClain
kay.mcclain@vanderbilt.edu
Vanderbilt University, Nashville, Tennessee

Hilda Borko
University of Colorado at Boulder, Boulder, Colorado

Jere Confrey
Washington University in Saint Louis, Saint Louis, Missouri

113 (America’s Center) Capacity: 168

11:05 a.m.–11:35 a.m.

20. The Role of Inscriptions in the Understanding of a Probability Distribution

INDIVIDUAL PAPERS

This session presents findings from a study that investigated fourth-grade students’ development of an understanding of probability distribution through a sequence of tasks. The focus of the presentation will be students’ inscriptions that are generated to support their arguments in understanding a binomial distribution on a particular task.

Sibel Kazak
skazak@wustl.edu
Washington University in Saint Louis, Saint Louis, Missouri

147 (America’s Center) Capacity: 100
21. Students’ Perspectives on Graphing Calculator Use: Before, During, and After

INDIVIDUAL PAPERS
How do students feel about graphing calculator use before, during, and after problem solving? This study presents the results of a case study of 12 students and how they perceive the graphing calculator influences their problem-solving experience.

Allison McCulloch
amccullo@eden.rutgers.edu
Rutgers University, New Brunswick, New Jersey

150 (America’s Center) Capacity: 100

22. Teacher Leaders and Distributed Leadership in Exemplary HS Math Departments

INDIVIDUAL PAPERS
This presentation explores the mathematics department chair’s role as a teacher leader and how his or her involvement has effected the development of distributed leadership within the mathematics department and how it affects student achievement and parental involvement.

Donna Numeroff
dnume@bellsouth.net
Broward Country School District—Stoneman Douglas High School, Parkland, Florida

150 (America’s Center) Capacity: 100

23. Middle Grades Students’ Algebraic Understanding of Change

INDIVIDUAL PAPERS
Using factor analysis, hierarchical linear modeling, and qualitative analyses, we will describe the breadth and depth of students’ algebraic understanding of change at seventh and eighth grades, as well as differences that may be evident between students in MiC and CMP classrooms, based on three years of data collection.
24. The U.S. “National” Curriculum: Analysis of State Mathematics Standards

A research symposium

An analysis of 43 state-level mathematics curriculum frameworks, those that include grade-by-grade learning expectations for the elementary and middle grades, will be shared. In particular, information regarding three strands (Number & Operations, Algebra, and Reasoning) will be presented including similarities and differences in learning expectations across the state documents.

Barbara J. Reys
reys.b@missouri.edu
University of Missouri—Columbia, Columbia, Missouri

Glenda Lappan
Michigan State University, East Lansing, Michigan

Ok-Kyeong Kim
Western Michigan University, Kalamazoo, Michigan

Shannon Dingman
University of Missouri—Columbia, Columbia, Missouri

Dawn Teuscher
University of Missouri—Columbia, Columbia, Missouri

Jill Newton
Michigan State University, East Lansing, Michigan

Greg Larnell
Michigan State University, East Lansing, Michigan

Lisa Kasmer
Western Michigan University, Kalamazoo, Michigan
25. NAEP Trends in Math Achievement, Instruction, & Equity: Gains & Gaps

RESEARCH SYMPOSIUM
This session will provide nationally representative evidence about the status of mathematics achievement, affect, and instruction in the U.S. Trends relating to race/ethnicity, SES, and gender will be highlighted. The session will raise important questions about recent gains in achievement and the persistence of some gaps.

Sarah T. Lubienski
stl@express.cities.uiuc.edu
University of Illinois at Urbana-Champaign, Champaign, Illinois

Peter Kloosterman
Indiana University, Bloomington, Indiana

Michele Crockett
University of Illinois at Urbana-Champaign, Champaign, Illinois

Rebecca McGraw
University of Arizona, Tucson, Arizona

William F. Tate
Washington University in Saint Louis, Saint Louis, Missouri

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26. Dissertation Year(s): Necessary Evil or Joyride? How to Start and Survive

WORK SESSION
Presenters share their experiences from the dissertation year. This work session offers graduate students strategies for identifying and narrowing their research ideas. Participants engage in an activity to help identify research interests. Time is set aside for discussion, which is encouraged throughout the session. Graduate students working on dissertations are encouraged to attend and share.

Paula R. Stickles
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Indiana University, Bloomington, Indiana

Crystal Walcott
Indiana University, Bloomington, Indiana

Shelby P. Morge
Indiana University, Bloomington, Indiana

151 (America’s Center) Capacity: 100
27. Teaching Algebra in the Elementary Grades

**WORK SESSION**

This work session is designed to give educators insight into the challenges involved in addressing the Algebra Standard for elementary grades. Participants will engage in video and other presentations featuring a collaboration of researchers and classroom teachers integrating algebra into grades 3 and 4.

Darrell S. Earnest
dearnest@berkeley.edu
*University of California, Berkeley, Berkeley, California*

Aadina Balti
*Boston Public Schools, Boston, Massachusetts*

Michelle Anderson
*Boston Public Schools, Boston, Massachusetts*

Camille Burnett
*Tufts University, Medford, Massachusetts*

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28. The Discourse of Proof and Argumentation across the Grades

**RESEARCH SYMPOSIUM**

This symposium presents research that uses discourse to explore proof and argumentation in teaching and learning mathematics across grades K–16. It examines how the forms of proof, including the nature of argumentation and justification and what counts as proof, emerge across grades and how curriculum and instruction can support this.

Maria L Blanton
mblanton@umassd.edu
*University of Massachusetts Dartmouth, North Dartmouth, Massachusetts*

Barbara J. Dougherty
*University of Mississippi, University, Mississippi*

Kay J. McClain
*Vanderbilt University, Nashville, Tennessee*

Jennifer Christian Smith
*University of Texas at Austin, Austin, Texas*

Despina A. Stylianou
*City College—City University of New York, New York, New York*

Carolyn A. Maher
*Rutgers University, New Brunswick, New Jersey*

143 (America’s Center) Capacity: 168
29. Exploring Leakages in the Math Pipeline for African American Students

**Research Symposium**

Researchers will present a mixture of quantitative and qualitative studies that focus on the myriad of factors, such as opportunity to learn, parental involvement, peer influences, school policies, recruitment and retention initiatives, and others that help determine whether or not African American students stay in the mathematics pipeline.

Marilyn E. Strutchens  
strutme@auburn.edu  
*Auburn University, Auburn, Alabama*

W. Gary Martin  
*Auburn University, Auburn, Alabama*

Joy Black  
*University of West Georgia, Carrollton, Georgia*

Sarah K. Westbrook  
*Columbus State University, Columbus, Georgia*

Massie F. McAdoo  
*Lakeside High School, Atlanta, Georgia*

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30. Supporting Mathematics Specialist Institutes: The Successes and Challenges

**Research Symposium**

This symposium reports research and development activities of three mathematics specialist projects under way across the country. Each presenter addresses the successes and challenges associated with implementing institutes and other professional development activities to support those teachers who are or will become mathematics specialists in elementary, middle, or secondary schools.

Joy W. Whitenack  
jwwhitenack@vcu.edu  
*Virginia Commonwealth University, Richmond, Virginia*

Aimee Ellington  
*Virginia Commonwealth University, Richmond, Virginia*
In this session we report results from a two-year longitudinal study of the impact of middle school mathematics curricula on students’ performance and the classroom learning environment. We provide insights on the measurement of teachers’ “fidelity of implementation” and standards-based instructional practices and relate them to differences in student achievement.

James E. Tarr  
tarrj@missouri.edu  
University of Missouri—Columbia, Columbia, Missouri

Robert E. Reys  
University of Missouri—Columbia, Columbia, Missouri

Oscar Chavez  
University of Missouri—Columbia, Columbia, Missouri

Jeff Shih  
University of Nevada—Las Vegas, Las Vegas, Nevada

Jere Confrey  
Washington University in Saint Louis, Saint Louis, Missouri

Edward A. Silver  
University of Michigan, Ann Arbor, Michigan
32. Exploring Students’ Understanding of Trigonometry through Acoustics and Optics

**Individual Papers**

This session reports findings from a design study investigating fifth graders’ reasoning about the trigonometry underlying periodic motion, optics, and acoustics. It focuses on students’ modeling and building of inscriptions as a means to learn to create Web-based animations involving the reproduction of sound, lighting and shadows, and movement.

Alan P. Maloney
amaloney@wustl.edu
Washington University in Saint Louis, Saint Louis, Missouri

150 (America’s Center) Capacity: 100

33. Robust Mathematical Identities of African American Male Students

**Individual Papers**

This study, using qualitative action research methodology, located within a critical postmodern theoretical frame, examined the influence of sociocultural discourses on the agency of four African American men in their early twenties who achieved and persisted in school mathematics.

David W. Stinson
dstinson@gsu.edu
Georgia State University, Atlanta, Georgia

150 (America’s Center) Capacity: 100

34. K–8 Teachers’ Perceptions of Their Principals’ Leadership in Mathematics

**Individual Papers**

This session reports on teachers’ perceptions of their principals’ instructional leadership in mathematics. Findings come from surveys collected as part of a large-scale study of administrators’ “leadership content knowledge” in mathematics. The survey captures teachers’ perceptions of their principals’ overall mathematics leadership and of their supervision of mathematics instruction.
3:00 p.m.–3:30 p.m.

35. Implications of a Curriculum Design Perspective on Notions of Fidelity

**INDIVIDUAL PAPERS**

I employ a design perspective of teaching to emphasize important variation in student activity in two classrooms, both of which could be considered to be implementing a reform curriculum with fidelity. I focus on the ways that teachers’ practices influence how the curriculum structures the classroom discourse.

Jeffrey Choppin  
jchoppin@its.rochester.edu  
*University of Rochester, Rochester, New York*

36. How Do We Learn? Early Elementary School African American Students in Mathematics

**INDIVIDUAL PAPERS**

This session will present research on how early, urban, elementary school African American students negotiate, adapt to, and learn mathematics in NCTM *Standards*-oriented classrooms by describing their patterns of socialization, interaction, and engagement through the consideration of their cultural and psychological orientations.

Lanette R. Waddell  
lwaddell@dolphin.upenn.edu  
*University of Pennsylvania, Philadelphia, Pennsylvania*
37. Examining Mentor Teachers’ Deprivatization in School Communities

Work Session

Current calls for reform in professional development necessitate a better understanding of community development. We will present our research project, which investigates the deprivatization of mentor teachers’ practice within school communities. In particular, we invite participants to examine artifacts and current findings from our project for analysis and discussion.

Ginger A. Rhodes  
gar0209@uga.edu  
University of Georgia, Athens, Georgia

Thomas E. Ricks  
University of Georgia, Athens, Georgia

Dennis Hembree  
University of Georgia, Athens, Georgia

Erik Tillema  
University of Georgia, Athens, Georgia

152 (America’s Center) Capacity: 105

38. What Do We Know about Teacher Knowledge and Student Learning? Implications for Proposals to the National Science Foundation

Work Session

This session describes the research landscape related to mathematics and science teacher education and professional development. It provides advice to researchers interested in participating in various National Science Foundation programs designed to support this agenda.

Elizabeth VanderPutten  
evanderp@nsf.gov  
National Science Foundation, Arlington, Virginia

151 (America’s Center) Capacity: 100
39. Knowledge of Algebra Teaching: Framework, Item Development, Pilot Results

RESEARCH SYMPOSIUM

An update on the MSU Knowledge of Algebra for Teaching Project, including a project overview, conceptual framework for the knowledge of algebra for teaching at the middle and secondary school levels, description of assessment item development, and key findings from pilot testing of our items and test forms across the country in 2004–05.

Joan Ferrini-Mundy
jferrini@msu.edu
Michigan State University, East Lansing, Michigan

Raven McCrory
Michigan State University, East Lansing, Michigan

Sharon Senk
Michigan State University, East Lansing, Michigan

141 (America’s Center) Capacity: 168
40. Preservice Teachers’ Developing Abilities to Learn How to Learn to Teach

**Research Symposium**

We present data from an elementary teacher preparation program that aims to equip its graduates with the ability to systematically study teaching and improve their practice over time. The data show the complex, context-dependent, and fragile nature of preservice teachers’ abilities to analyze and learn from classroom practice.

James Hiebert  
hibert@udel.edu  
*University of Delaware, Newark, Delaware*

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

Dawn Berk  
*University of Delaware, Newark, Delaware*

James E. R. Beyers  
*University of Delaware, Newark, Delaware*

Yuichi Handa  
*University of Delaware, Newark, Delaware*

Stephen Hwang  
*University of Delaware, Newark, Delaware*

Elizabeth M. Sieminski  
*University of Delaware, Newark, Delaware*

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

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41. Researching the History of Mathematics Teaching: Yesterday, Today, Tomorrow

Research Symposium

In this session the editors of, and active contributors to, the new periodical The International Journal for the History of Mathematics Education address the history of mathematics teaching and learning as an emerging research field. Discussion will focus on past achievements and new directions for beginning researchers. Potential contributors’ questions are invited.

Alexander P. Karp
apk16@columbia.edu
Columbia University Teachers College, New York, New York

Gert Schubring
Bielefeld University, Bielefeld, Germany

Eileen F. Donoghue
College of Staten Island/City University of New York, Staten Island, New York

V. Frederick Rickey
United States Military Academy, West Point, New York

42. Partnerships Integrating Preservice and In-Service Mathematics Education

Research Symposium

Partnerships integrating preservice and in-service mathematics education will be presented. We will discuss findings regarding (1) the effects on children, teachers, and education students from one partnership, and (2) in-service teacher appropriation of reform-oriented practices and preservice teacher learning and perspectives about mathematics teacher practice from a second partnership.

Gina Post
gina.post@ed.utah.edu
University of Utah, Salt Lake City, Utah

Damon Bahr
Utah Valley State College, Orem, Utah

Lynette Frenette
University of Utah, Salt Lake City, Utah

Man Hung
University of Utah, Salt Lake City, Utah
43. The Effect of Professional Development and Curriculum Differences on Students’ Achievement

**Individual Papers**

This study examines how students’ scores on algebra and number concepts change over time as a result of instruction and of their teachers’ professional development (PD) experiences. Two cohorts of students (50 classrooms) were assessed during successive years, and their scores were related to their teachers’ PD by curriculum and text emphasis.

Mary Margaret Capraro  
mmcapraro@coe.tamu.edu  
*Texas A&M University, College Station, Texas*

Victor Willson  
*Texas A&M University, College Station, Texas*

Robert M. Capraro  
*Texas A&M University, College Station, Texas*

Gerald Kulm  
*Texas A&M University, College Station, Texas*

145 (America’s Center) Capacity: 170

44. Starting with the Basics to Bring Reform to the Elementary School Math Classroom

**Individual Papers**

We describe a professional development project with first- and second-grade teachers from an urban school district aimed at reducing significant and persistent achievement gaps in mathematics. The rationale of the project, how it differs from other related professional development efforts, and longitudinal data on participating students’ computational strategy development will be discussed.

Edward Rathmell  
edward.rathmell@uni.edu  
*University of Northern Iowa, Cedar Falls, Iowa*

Anthony J. Gabriele  
*University of Northern Iowa, Cedar Falls, Iowa*

150 (America’s Center) Capacity: 100
45. A Course on Rational Numer Concepts for Middle Grades Mathematics Teachers

**Poster Session**

This session will report on the progress toward the creation of mathematics courses that delve deeply into the content of middle school mathematics. In addition, we will also be discussing community participation analysis (CPA), a tool we are developing to identify the professional development needs of a group of teachers.

JoAnn Cady  
jcady@utk.edu  
*University of Tennessee, Knoxville, Tennessee*

Prefunction Area B (America's Center) Capacity: 350

46. Gender Issues in Mathematics Achievement in Tennessee

**Poster Session**

Research asking the question of how school locale intersects with gender, socio-economic status, and mathematics achievement in Tennessee found some expected and surprising results. This poster session will present the result of the initial research as well as provide some insight into preliminary results of an extension of the research.

Terri M. Hopkins  
thopkins@utk.edu  
*University of Tennessee, Knoxville, Tennessee*

Prefunction Area B (America’s Center) Capacity: 350
47. Probabilistic Misconceptions across Age and Gender

**Poster Session**

This poster presentation will address the need, methodologies, and results of the researcher’s doctoral thesis, titled “Probabilistic Misconceptions across Age and Gender.” Prior research suggests that students’ views of simple and compound events and conditional probability change across grade level and age. This study expands that idea and looks at gender as a variable.

James R. Kennis  
jugglinjim@hotmail.com  
*Columbia University Teachers College, New York, New York*

Prefunction Area B (America’s Center) Capacity: 350

48. Using Area Models to Make Sense of Fraction Multiplication in Middle School

**Poster Session**

This study explores how seventh-grade students use area models to make sense of fraction multiplication. Findings indicate that area models can support the development of measurement and operation concepts; however, conventional fraction notation may hinder students’ ability to use area models as a conceptual tool for understanding fraction multiplication.

Rozy Brar  
rozy@berkeley.edu  
*University of California, Berkeley, Berkeley, California*

Prefunction Area B (America’s Center) Capacity: 350
49. Probability in Middle Grades Textbooks, 1957–2004

Poster Session
I will discuss the findings of a content analysis of eight series of textbooks, specifically related to the portion of the text devoted to probability, and the learning expectations and levels of cognitive demand required by probability tasks. Additionally, I highlight some trends in the treatment of probability over time.

Dustin L. Jones
dljones@cmsu1.cmsu.edu
Central Missouri State University, Warrensburg, Missouri

Prefunction Area B (America’s Center) Capacity: 350

50. High School Teachers’ Beliefs: Activities, Applications, and Abstractions

Poster Session
This poster focuses on my doctoral research: investigating high school mathematics teachers’ beliefs about teaching and learning geometry. I will share some of the significant results of the quantitative analysis of my questionnaire, to which 520 mathematics teachers from the United States, Australia, England, and Canada responded.

Brenda Strassfeld
bs49@nyu.edu
New York University, New York, New York; University of Plymouth, Plymouth, England

Prefunction Area B (America’s Center) Capacity: 350

51. The Impact of Lesson Study on American Teachers and Students

Poster Session
This poster session will share how the researcher sought to examine the effects lesson study would have on mathematics teachers and students in a large urban school district. The researcher will share the methodology used as well as research results related to engagement, collaboration, conceptual understanding, and student achievement.

Rachelle D. Meyer
rachelle_meyer@baylor.edu
Baylor University, Waco, Texas

Prefunction Area B (America’s Center) Capacity: 350
52. Developmental Mathematics: It’s Time to Talk

**Poster Session**

Although more than 70 percent of high school graduates move on to higher education, 40 to 50 percent require remediation. Research results of an analysis of fall 2004 developmental mathematics classes at a state university provide a basis for discussion. I will provide an overview of interesting student profiles and review some surprising research results.

Jane Keleher  
j.keleher@comcast.net  
*York College, City University of New York, Jamaica, New York*

Prefunction Area B (America’s Center) Capacity: 350

53. A Framework for Evaluating Textbook Assessments: Lessons Learned

**Poster Session**

This session will explore findings regarding the extent to which the NCTM *Standards* are reflected in textbook publishers’ assessments. Participants will consider the use of the *Principles and Standards for School Mathematics* framework for determining the strengths and weaknesses of classroom assessments and for highlighting potential modifications that will enhance instruction.

Morgan Avon Platt  
phunsader@aol.com  
*Polk County Schools, Bartow, Florida*

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

Patricia D. Hunsader  
*University of South Florida, Tampa, Florida*

Prefunction Area B (America’s Center) Capacity: 350
54. Teachers’ Beliefs about Conceptual Understanding in Mathematics

**Poster Session**

This study investigates teachers’ beliefs about what constitutes a mathematical understanding and what they believe indicates student understanding in the moment-to-moment flow of the classroom. Participants described the performances, verbalizations, and affect that they read as indicators that their students understood the concepts presented.

Stephen D. Lovelace  
stevel@wymast.org  
*University of Wyoming, Laramie, Wyoming*

Prefunction Area B (America’s Center) Capacity: 350

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55. Mathematics Anxiety Perceptions of College Students

**Poster Session**

This poster focuses on our doctoral research investigating conceptions of beginning calculus and liberal arts mathematics college students about mathematics anxiety. The poster includes goals of our research, interview protocol with responses, themes found to be prevalent, and implications. The results indicate instructors influence student mathematics anxieties in several ways.

Debbie W. Waggoner  
debbie.waggoner@eku.edu  
*Eastern Kentucky University, Richmond, Kentucky*

Courtenay Mayes  
*Great Oaks Institute of Technology, Cincinnati, Ohio*

Sharilyn Granade  
*Wilkes Community College, Wilkesboro, North Carolina*

Paula Schlesinger  
*Mayland Community College, Spruce Pine, North Carolina*

Prefunction Area B (America’s Center) Capacity: 350
56. Exploring Critical Theories of Race in Mathematics Education for Black Students

Poster Session

To better understand the experiences of African American students who participate in mathematics learning, educators need to adopt a critical perspective that dissects the realities of race in their schooling process. The role of race and racial identity—that is, the extent to which societal and personal meanings for race influence a person’s self-concept and consequent behavior—in the lives of African American students is an understudied and undertheorized phenomenon, particularly in mathematics education. I will draw from emerging work on African American race and racial identity development in mathematics education, which has acknowledged the relevance of race and racial identity in mathematics learning and participation.

Ebony O. McGee
emcgee2@uic.edu
University of Illinois at Chicago, Chicago, Illinois

Prefunction Area B (America’s Center) Capacity: 350

57. The Frequency of High-Level Questioning in Middle School Math Classrooms

Poster Session

High-level questions involve students in thinking and excite student interest. But are these questions truly taking hold in today’s middle school math classroom? I observed in 11 middle school math classrooms and recorded teachers’ questioning practices in an attempt to answer this question.

Kyle L. Sonnedecker
ksonnede@usd497.org
Sunflower Elementary School, Lawrence, Kansas

Prefunction Area B (America’s Center) Capacity: 350
58. TI-Technology, the Ark of Achievement for African American Students?

**Poster Session**

This project investigates the impact and relationship, if any, between handheld technology and the mathematical achievement of African American students in a suburban school system.

Christian Anderson  
christian_anderson_2000@yahoo.com  
*Morgan State University, Baltimore, Maryland*

Prefunction Area B (America’s Center) Capacity: 350

59. Engaging Teachers in the Collaborative Evaluation of Mathematics Programs

**Poster Session**

This session presents a model for providing mathematics teachers with professional growth by improving their capacity to use evaluation data and engage in continuous improvement through data-based decision making. Our work with two urban elementary schools through the Collaborative Evaluation Communities in Urban Schools project funded by NSF will be described.

Kelli R. Thomas  
kthomas@ku.edu  
*University of Kansas, Lawrence, Kansas*

Lesa Covington Clarkson  
*University of Minnesota, Minneapolis, Minnesota*

Prefunction Area B (America’s Center) Capacity: 350

60. Shooting for the Stars: The Mathematics Success of an African American Male

**Poster Session**

This poster documents the mathematics success of an African American male high school student and in so doing, identifies key themes that inform current understanding of the mathematics achievement and career attainment of African American male students.

LaTasha Renee Thompson  
thompson3921@hotmail.com  
*Morgan State University, Baltimore, Maryland*

Prefunction Area B (America’s Center) Capacity: 350
61. A Study of Computational Estimation Processes of Preservice Teachers

**Poster Session**

This poster session will provide results of a study conducted with preservice elementary and special education teachers concerning computational estimation. A computational test helped identify good and poor estimators. Good and poor estimators were interviewed using an interview format to compare and contrast strategies used by both types of estimators.

Robert Q. Berry  
rqb3e@virginia.edu  
*University of Virginia, Charlottesville, Virginia*

Prefunction Area B (America's Center) Capacity: 350

62. All-Boy Mathematics Classes in Middle School

**Poster Session**

Investigations focused on six teachers in three schools and their implementation of a gendered class program. The five interwoven strands of mathematics proficiency and standards-based teaching guided observational analysis. Textbook use, time allocation, and teachers’ beliefs were also considered, and findings include details of teaching strategies that were successful with middle school boys.

Amanda N. Davis  
amandand@verizon.net  
*University of Louisville, Louisville, Kentucky*

Prefunction Area B (America’s Center) Capacity: 350
63. Sixth-Grade Students’ Understanding of the Density of the Rational Numbers

**Poster Session**

A fundamental idea in K–12 mathematics instruction is developing an understanding of the real number system. This study explores sixth-grade students’ understanding of one key aspect of the real number system—the density of the rational numbers. The explanations used by students are highlighted. Educational implications are discussed.

Meghan M. Shaughnessy
mshaughn@berkeley.edu
University of California, Berkeley, Berkeley, California

Prefunction Area B (America's Center) Capacity: 350

64. Exploring One Teacher’s Experiences Implementing Reform-Based Mathematics

**Poster Session**

This case study illustrates a teacher’s experiences with the implementation of reform-based mathematics. Given that reform-based mathematics is quite complicated, we seek to understand how we can support teachers with the complex challenges associated with its implementation. Our findings showcase the necessity for integrating metacognitive skills into teachers’ learning opportunities.

Nicole Alaine Davis
nicdavis@u.washington.edu
University of Washington, Seattle, Washington

Prefunction Area B (America's Center) Capacity: 350

65. A Critical Social Lens on Young Children’s Everyday Mathematical Events

**Poster Session**

This session presents findings from a research project that investigated young children’s everyday mathematical activities. Drawing on ethnographic approaches, this study aimed to understand the mathematical events and practices of four-year-old African American children, from various social and economic backgrounds, as situated within their immediate (e.g., home) and broader societal contexts.

Grace M. Benigno
grace@umd.edu
University of Maryland, College Park, Maryland

Prefunction Area B (America's Center) Capacity: 350
Poster Sessions

4:45 p.m.–6:00 p.m. (continued)

66. Effects of the TI-Navigator on Attitudes, Achievement, and Formative Assessment

Poster Session

This poster session will present data on the effects of using a TI-Navigator System on the teacher’s use of formative assessment, students’ understanding of matrices, students’ beliefs about mathematics, and students’ confidence in their mathematical ability.

Judith Olson
jkolson@hawaii.edu
University of Hawaii at Manoa, Honolulu, Hawaii

Melfried Olson
University of Hawaii at Manoa, Honolulu, Hawaii

Irene MacKay
University of Hawaii at Manoa, Honolulu, Hawaii

Prefunction Area B (America’s Center) Capacity: 350

67. Prospective Secondary School Teachers’ Precollegiate Mathematical Content

Poster Session

How competent are today’s prospective secondary school mathematics teachers to teach under the pressures of No Child Left Behind? This session will present the results of a descriptive study on 29 prospective college students’ knowledge of mathematical content and vocabulary identified as prime content on Pennsylvania’s secondary school state assessments. A comparative analysis was also performed.

Jane M. Wilburne
jmw41@psu.edu
Pennsylvania State University at Harrisburg, Middletown, Pennsylvania

Prefunction Area B (America’s Center) Capacity: 350
68. Mathematics Education in Transition: The Experience of Post-Soviet Kazakhstan

**POSTER SESSION**

Contemporary issues in mathematics education in post-Soviet Kazakhstan as seen through the lens of NCTM’s *Principles and Standards for School Mathematics* are explained. The poster examines dramatic changes related to equity, curriculum, and assessment issues that have occurred during the transition from Russian to Kazakh as the language of instruction and the transition to a free market economy.

Zaur Berkaliev
berkaliev@iit.edu
*Illinois Institute of Technology, Chicago, Illinois*

Prefunction Area B (America’s Center) Capacity: 350

69. Mathematics for Mathematics Educators: A Course for Ph.D. Students

**POSTER SESSION**

This poster session presents aspects of a two-semester course for Ph.D. students in mathematics education. The goal of the course was for participants to develop strategies that support lifelong learning of mathematics; particularly of mathematics related to their professional work. Instructors and students present posters.

Sarah Sword
ssword@edc.org
*Education Development Center, Newton, Massachusetts*

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

Eden M. Badertscher
*University of Maryland, College Park, College Park, Maryland*

Anne Marie Marshall
*New York University, New York, New York*

Michael Lueke
*University of Maryland, College Park, College Park, Maryland*

Christy Graybeal
*University of Maryland, College Park, College Park, Maryland*

Prefunction Area B (America’s Center) Capacity: 350
70. Survey of Instructional Practices in Early School Mathematics

Poster Session
This presentation will describe the development of a survey of instructional practices in the preschool through primary years.

Brenda L. Wolodko  
brenda.wolodko@utoledo.edu  
University of Toledo, Toledo, Ohio

Sally M. Atkins-Burnett  
University of Toledo, Toledo, Ohio

Prefunction Area B (America’s Center) Capacity: 350

71. Factors That Support or Inhibit Preservice Teachers’ Participation in Discussions

Poster Session
A group of 148 preservice teachers completed a questionnaire about their experiences participating in classroom discussions during mathematics content courses in their elementary school teacher-education program. Responses were qualitatively analyzed for factors that support and inhibit their participation. Results suggest the importance of social factors and beliefs about learning through communication.

Amanda J. Hoffmann  
ajh@udel.edu  
University of Delaware, Newark, Delaware

Prefunction Area B (America’s Center) Capacity: 350

72. The Pershing/Rice University Math Partnership

Poster Session
Pershing Middle School, of the Houston Independent School District with support from the Rice University School Mathematics Project, was awarded a Focused
Impact Grant by the Houston A+ Challenge. The research conducted as part of the evaluation of the program during its first year of operation will be presented.

Richard Parr  
rparr@rice.edu  
*Rice University, Houston, Texas*

Caren Grant  
*Houston Independent School District, Houston, Texas*

Prefunction Area B (America’s Center) Capacity: 350

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**73. Transforming Teaching by Modeling Constructivist Principles**

**POSTER SESSION**

This poster presentation will present the findings of a study on transforming teaching within a preservice constructivist mathematics course from the perspective of the preservice teacher. Artifacts will be presented that capture transformative teaching.

Maria T. Mitchell  
mtmmmit@aol.com  
*Central Connecticut State University, New Britain, Connecticut*

Prefunction Area B (America’s Center) Capacity: 350

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**74. Teachers as Professional Developers: What Do They Learn?**

**POSTER SESSION**

Six elementary school teachers led 40-hour Cognitively Guided Instruction (CGI) workshops for teachers from another district. We will report on the learning of the staff developers during the project, focusing on their beliefs, knowledge, and practice.

Janet E. Warfield  
jwarfie@ilstu.edu  
*Illinois State University, Normal, Illinois*

Cheryl A. Lubinski  
*Illinois State University, Normal, Illinois*

Prefunction Area B (America’s Center) Capacity: 350
75. A Step Toward Closing the Gap between University Programs and Schools

**Poster Session**

This presentation will include the design, findings, and implications of a qualitative research study that intended to explore the nature of communications between two middle school mathematics student teachers and their cooperating teachers in meetings with and without the university supervisor.

Evrim Erbilgin  
eree0565@garnet.acns.fsu.edu  
*Florida State University, Tallahassee, Florida*

Maria L. Fernandez  
*Florida State University, Tallahassee, Florida*

Prefunction Area B (America's Center) Capacity: 350

76. Key Elements of a Mathematics Intervention Program for Girls

**Poster Session**

This presentation will share critical program elements of the Northern Nevada Girls Math & Technology Program. Data collected since 1998 include recent interviews with the program’s first participants and their parents. The presentation will focus on the program’s impact and, in particular, key program elements associated with the program’s success.

Lynda R. Wiest  
wiest@unr.edu  
*University of Nevada, Reno, Reno, Nevada*

Prefunction Area B (America's Center) Capacity: 350
77. Teachers as Learners Learning Mathematics: Impact on Students’ Achievement

**Poster Session**

This session presents results from a yearlong study of the impact of teachers’ professional development in mathematics on students’ mathematics achievement. The presenter will share findings from quantitative and qualitative data analysis relative to teachers’ professional development learning and students’ achievement in this experimental project.

Thomasenia Lott Adams
tla@coe.ufl.edu
University of Florida, Gainesville, Florida

Prefunction Area B (America’s Center) Capacity: 350

78. What Is Data Literacy? Analyzing Social Studies Data in Mathematics Class

**Poster Session**

In the Thinking With Data project, we have designed and implemented a theory-based cross-disciplinary curricular unit that is anchored in the use of real-world data to teach data literacy. We report on students’ learning, as well as on important and unexpected implications for standards that foster data literacy.

Philip J. Vahey
philip.vahey@sri.com
SRI International, Menlo Park, California

Prefunction Area B (America’s Center) Capacity: 350

79. Watching Them Grow: An Empirical Study of Students’ Progress in Algebra

**Poster Session**

This study involved tracking students’ progress in algebra using brief assessments. Eighty-eight prealgebra and Algebra I students completed two types of measures across two months. Analyses of students’ growth revealed growth on one measure but not on the other. Discussion will focus on implications for teachers regarding monitoring students’ progress.

Anne Foegen
afoeegen@iastate.edu
Iowa State University, Ames, Iowa

Prefunction Area B (America’s Center) Capacity: 350
80. Adaptation, Formulation, and Balance: Teaching with Contextual Problems

**Poster Session**

This presentation highlights the instructional practices of six high school mathematics teachers with reputations for using contextual problems on a nearly daily basis—how they (a) adapted and used contextual problems from textbooks and other sources, (b) helped the students formulate the problem, and (c) balanced time and attention to the context and the mathematics.

Holly Garrett Anthony
hanthony@tntech.edu
Tennessee Technological University, Cookeville, Tennessee

Prefunction Area B (America’s Center) Capacity: 350

81. Investigating Changes in Teachers’ Algebra Knowledge for Teaching

**Poster Session**

As part of a study of what teachers learn from professional development based on classroom artifacts, teachers participated in professional development focusing on algebraic thinking. This session presents data regarding the “algebra for teaching” knowledge that teachers developed during the seminars.

Johannah Nikula
jnikula@edc.org
Education Development Center, Newton, Massachusetts

Nanette Seago
WestEd, Riverside, California

Zuzka Blasi
Education Development Center, Newton, Massachusetts

Prefunction Area B (America’s Center) Capacity: 350
82. The Calculus of Race and Ethnicity (CORE) Project: Ethnographic Experiences

POSTER SESSION

The CORE project is an ethnographic study of mathematics students and teachers at a local high school near a university campus. This three-year project report describes the elusive changes in personal and cultural behavior among minority communities in mathematics education programs that often escape the notice of observers and participants alike.

Dylan Eret
dr_eret@mac.com
University of California, Berkeley, Berkeley, California

Prefunction Area B (America’s Center) Capacity: 350

83. Fourth- and Fifth-Grade Mathematics Teaching: The Representation of Mathematics

POSTER SESSION

Quantitative data from a three-year study of fourth- and fifth-grade mathematics will be used to describe aspects of mathematics classroom instruction, such as attention to connections, procedures versus concepts versus linking, amount of time on various concepts, and classroom organization.

Anna O. Graeber
annagrac@umd.edu
University of Maryland, College Park, Maryland

Prefunction Area B (America’s Center) Capacity: 350

End of Poster Sessions
84. Linking Research and Practice from the Practitioners’ Perspective

**Plenary Session**

One of NCTM’s strategic priorities is the linking of research and practice. This session will focus on what it means to link research and practice from the perspective of teachers and teacher leaders; crucial questions from practice for research to address will be discussed; and the challenges of researchers and practitioners forming constructive partnerships in the current environment will be examined.

Diane Briars
dbriars1@pghboe.net
*Pittsburgh Board of Education, Pittsburgh, Pennsylvania*

Ruth Heaton
*University of Nebraska—Lincoln, Lincoln, Nebraska*

Matt Larson
*Lincoln Public Schools, Lincoln, Nebraska*

160-163 (America’s Center) Capacity: 580

85. Communication Theory as a Lens to Understand Teachers’ Verbal Messages

**Individual Papers**

This session uses communication theory to discuss mathematics teachers’ verbal communication. Message design logic, found in constructivist communication literature, is first shared. Afterward, message design logics of mathematics teachers are presented, along with a discussion of the endorsed NCTM communication practices. This leads to a discussion challenging communication assumptions.

Denise B. Forrest
forrest.7@osu.edu
*Ohio State University Newark, Newark, Ohio*

150 (America’s Center) Capacity: 100
86. Getting Published: Conversations with JRME Panel Members

WORK SESSION

The JRME Editor and Editorial Panel members will facilitate large- and small-group discussions to answer participants’ questions about publishing their work. Topics to be discussed include (1) the types of manuscripts JRME accepts; (2) the manuscript review process; and (3) pitfalls common to rejected manuscripts. Bring ideas and questions!

Sarah T. Lubienski  
stl@express.cites.uiuc.edu  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Steve Williams  
*Brigham Young University, Provo, Utah*

Arthur J. Baroody  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Olive Chapman  
*University of Calgary, Calgary, Alberta*

Tom Dick  
*Oregon State University, Corvallis, Oregon*

Ed Esty  
*Consultant, Chevy Chase, Maryland*

Peter Kloosterman  
*Indiana University, Bloomington, Indiana*

Cindy Langrall  
*Illinois State University, Normal, Illinois*

Gwen Lloyd  
*Virginia Tech, Blacksburg, Virginia*

Carolyn A. Maher  
*Rutgers University, New Brunswick, New Jersey*

150 (America’s Center) Capacity: 100
87. Developing Teacher Educators: Learning in and from Practice

Research Symposium

Examining a professional development experience for mathematics teacher educators who used a laboratory class of prospective elementary school teachers, we discuss theories of design, identify five features used to enhance participants’ ability to study teaching, and explore participants’ interactions with learning opportunities. We will study a video of practice during this session.

Teresa A. McMahon
teresam@umich.edu
University of Michigan, Ann Arbor, Michigan

145 (America’s Center) Capacity: 170

88. Creating and Using Representations of Instruction to Probe Hypotheses

Work Session

This work session showcases a research agenda for the study of mathematics teaching and illustrates a methodology based on the creation of animated representations of possible classroom stories and their use to prompt conversations among teachers.

Pat Herbst
pgherbst@umich.edu
University of Michigan, Ann Arbor, Michigan

Daniel Chazan
University of Maryland, College Park, Maryland

Gloriana Gonzalez
University of Michigan, Ann Arbor, Michigan

Michael Weiss
University of Michigan, Ann Arbor, Michigan

Dara Sandow
University of Maryland, College Park, Maryland

Talli Nachlieli
University of Michigan, Ann Arbor, Michigan

Michael Lueke
University of Maryland, College Park, Maryland

Wendy Aaron
University of Michigan, Ann Arbor, Michigan

Discussant

David Pimm
University of Alberta, Edmonton, Canada

152 (America’s Center) Capacity: 105
89. Examining Mathematics Curriculum Implementation from Multiple Perspectives

Thematic Presentation

There are fundamental questions—of both practice and research—associated with issues of mathematics curriculum enactment and the identification of factors that affect the use of curriculum at all grade levels in diverse school contexts and classroom settings. This session brings together researchers, teachers, and administrators to examine these critical issues.

Mary Ann Huntley
huntley@math.udel.edu
University of Delaware, Newark, Delaware

Kathryn Chval
University of Missouri—Columbia, Columbia, Missouri

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

James Hiebert
University of Delaware, Newark, Delaware

Janine Remillard
University of Pennsylvania, Philadelphia, Pennsylvania

142 (America’s Center) Capacity: 168

90. Connecting Discourse, Teaching, and Curriculum

Research Symposium

This symposium will explore the nature and impact of discourse practices and the challenges of implementing the discourse recommendations in the NCTM’s Principles and Standards for School Mathematics (2000). The panel explores how discourse affords and constrains mathematical activity, the growth and impact of teachers’ knowledge and practices, and forms of student participation.

Beth A. Herbel-Eisenmann
bhe@iastate.edu
Iowa State University, Ames, Iowa

Jeffrey Choppin
Rochester University, Rochester, New York
91. Standards-Based Curricula: Linking Teachers’ Use and Students’ Learning

RESEARCH SYMPOSIUM

We will present findings from a multifaceted investigation of a standards-based elementary school mathematics curriculum. The investigation consists of four studies: the Implementation Study, Whole Number Study, Fraction and Proportionality Study, and Video Study. Each study documented different aspects of teachers’ use of the curriculum, students’ learning, and the relationship between the two.

Stacy Ann Brown
stbrown@uic.edu
University of Illinois at Chicago, Chicago, Illinois

Catherine Kelso
University of Illinois at Chicago, Chicago, Illinois

Jennifer Bay-Williams
Kansas State University, Manhattan, Kansas

Catherine Ditto
University of Illinois at Chicago, Chicago, Illinois

Reality Canty
University of Illinois at Chicago, Chicago, Illinois

Kathleen Cramer
University of Minnesota, Minneapolis, Minnesota

Terry Wyberg
University of Minnesota, Minneapolis, Minnesota

Lucia M. Flevares
University of Illinois at Urbana-Champaign, Champaign, Illinois
92. Prospective Secondary Mathematics Teachers’ Ways of Mathematical Thinking

Research Symposium

Research teams associated with the Mid-Atlantic Center for Mathematics Teaching and Learning have been investigating the mathematical (and statistical) understandings of prospective secondary school mathematics teachers (PSMTs). We have observed the ways that PSMTs understand mathematics. We will generate some hypotheses about characteristics of the mathematical thinking of PSMTs.

M. Kathleen Heid
mkh2@psu.edu
Pennsylvania State University, University Park, Pennsylvania

Ismail Ozgur Zembat
Hacettepe University, Ankara, Turkey

Susan Peters
Pennsylvania State University, University Park, Pennsylvania

Patrick Sullivan
Pennsylvania State University, University Park, Pennsylvania

Neil Portnoy
Stony Brook University, Long Island, New York

Patricia S. Wilson
University of Georgia, Athens, Georgia

140 (America’s Center) Capacity: 140

93. Status and Social Networks: A New Approach to Cooperative Group Work

Individual Papers

This study applies tools from social network analysis to reconceptualize status in cooperative groups in mathematics classes. I describe the varied social networks in the classrooms in this study and explore how these networks of relationships affected students’ participation in group work.

Indigo Esmonde
esmonde@berkeley.edu
University of California, Berkeley, Berkeley, California

150 (America’s Center) Capacity: 100
94. Insight into the Motivation of Mathematics Learners through Double-Blind Experiments

**Individual Papers**

Do problems with counterintuitive results or from social justice paradigms create more than “traditional” problems? Double-blind experiments (No Child Left Behind’s best scientifically based research) disguised as surveys yield quantitative and qualitative insights on the motivation of mathematics learners in five sections of a university introductory statistics course. We will discuss results, interpretations, and curricular implications.

Lawrence Mark Lesser  
lesser@utep.edu  
*University of Texas at El Paso, El Paso, Texas*

150 (America’s Center) Capacity: 100

95. Teaching the Turnarounds: Collective Responsibility for Students’ Learning

**Individual Papers**

I examine how teachers’ practices of collective responsibility made a difference for students who entered high school with weak mathematical preparation but who nonetheless managed to succeed in their first year of college preparatory mathematics. These turnaround students illuminate the ways in which the teachers’ practices can support students’ achievement.

Ilana S. Horn  
lanihorn@u.washington.edu  
*University of Washington, Seattle, Washington*

150 (America’s Center) Capacity: 100
96. Developments in Early Number Sense

**Research Symposium**

The symposium consists of three papers on key aspects of early number sense development: Two- and three-year-olds’ ability to focus spontaneously on number, a case study of the critical role of verbal numbers in number development, and four- to six-years-olds’ understanding of the addition-subtraction inverse principle.

Arthur J. Baroody  
baroody@uiuc.edu  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Xia Li  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Yingying Su  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Luisa Rosu  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Meng-lung Lai  
*University of Illinois at Urbana-Champaign, Champaign, Illinois*

Alison Elizabeth Baroody  
*Purdue University, West Lafayette, Indiana*

143 (America’s Center) Capacity: 168

97. Supporting the Development of Mathematical Communication in an Urban School

**Work Session**

Participants will examine the artifacts of practice generated by urban middle school teachers as they learned to support the interrelated development of students’ mathematical understandings and their abilities to communicate mathematically. These artifacts led to the development of teaching practices that are sensitive to the literacy demands of reform-based curricula.

Helen M. Doerr  
hmdoerr@syr.edu  
*Syracuse University, Syracuse, New York*

Alana Castrello  
*Frazer School, Syracuse, New York*
98. Implementing Design-Based Research: Research That Changes Practice

Work Session

The focus of this session is design-based research conducted in a course for preservice elementary school teachers. Lessons learned through the course of the project will be highlighted and the potential impact on practice will be shared. Participants will engage in discussion related to reducing barriers in conducting university-specific design-based research.

Juli K. Dixon
jkdixon@mail.ucf.edu
University of Central Florida, Orlando, Florida

Janet B. Andreasen
University of Central Florida, Orlando, Florida

Debbie Wheeldon
University of Central Florida, Orlando, Florida

Michelle Stephan
Seminole County Public Schools, Orlando, Florida

George Roy
University of Central Florida, Orlando, Florida
99. High Achievement in Mathematics: What Does This Mean, and How Do We Realize It?

Research Symposium
In this session we look at mathematical practices in a number of countries that are typically considered “high achieving,” including China and India. In addition to reporting on specific lessons learned from these countries, we will provide a meta-analysis of the methodologies used to conduct international comparisons.

Manya J. Raman
mjraman@rci.rutgers.edu
Rutgers University, New Brunswick, New Jersey

Jerry Becker
Southern Illinois University, Carbondale, Illinois

Jian Wang
University of Nevada, Las Vegas, Las Vegas, Nevada

Emily Lin
University of Nevada, Las Vegas, Las Vegas, Nevada

Jinfa Cai
University of Delaware, Newark, Delaware

145 (America's Center) Capacity: 170

100. Teacher-Interns Studying Students’ Reasoning

Research Symposium
Teachers will report on research sessions that they facilitated and analyzed with urban sixth-grade students in an after-school mathematics program funded by NSF. Results indicate that the students displayed increasing skill in making and supporting conjectures and in sharing their reasoning with peers.

Alice S. Alston
alston@rci.rutgers.edu
Rutgers University, New Brunswick, New Jersey

140 (America’s Center) Capacity: 140
101. The Development of Probabilistic Reasoning among Urban Students

Research Symposium

This symposium links researchers investigating the development of probabilistic ideas and reasoning of urban, middle school African American and Latino students who exercise their intellectual initiative to work on hands-on experimentations and computer simulations. We discuss results that suggest how students connect empirical data and theoretical probability in the context of computer simulations.

Arthur B. Powell
abpowell@andromeda.rutgers.edu
Rutgers University, Newark, New Jersey

Carolyn A. Maher
Rutgers University, New Brunswick, New Jersey

Keith Weber
Rutgers University, New Brunswick, New Jersey

Lou Pedrick
Plainfield Public Schools, Plainfield, New Jersey

John M. Francisco
Rutgers University, New Brunswick, New Jersey

Kathy Shay
Rutgers University, New Brunswick, New Jersey

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

143 (America’s Center) Capacity: 168

102. Publishing Your Research in Teacher-Friendly Articles

Research Symposium

The editorial panels of Teaching Children Mathematics, Mathematics Teaching in the Middle School, the Mathematics Teacher, and ON-Math will present tips and techniques for writing about research for a teacher audience, followed by a question-and-answer period. Participants are encouraged to bring specific ideas for discussion in individual or small groups.

Joseph Zilliox
zilliox@hawaii.edu
University of Hawaii, Honolulu, Hawaii

144 (America’s Center) Capacity: 126
103. Building Subject Matter and Learning Communities Simultaneously

Research Symposium

We present insights from the first two years of an approach to creating communities of secondary school mathematics teachers who take the profound understanding of mathematical ideas as their core commitment. The project’s theoretical grounding, design of a course on covariational reasoning and functions and of Reflection on Practice sessions are discussed.

Patrick W. Thompson
thompson@asu.edu
Arizona State University, Tempe, Arizona

Marilyn P. Carlson
Arizona State University, Tempe, Arizona

Yang P. Kuang
Arizona State University, Tempe, Arizona

Nora G. Ramirez
Arizona State University, Tempe, Arizona

Frank E. Cox, III
Chandler-Gilbert Community College, Chandler, Arizona

Edward E. Coe
Scottsdale Community College, Scottsdale, Arizona

141 (America’s Center) Capacity: 168

1:35 p.m.–2:05 p.m.

104. A Quantitative Approach to Analyzing the Structure of Representations

Individual Papers

The presentation will provide an analysis of the structure of teachers’ representations of rational numbers from two perspectives by using a structural equation-modeling (SEM) approach. The results suggest that teachers are more cognizant of the mathematical content they are representing than the appropriateness of the mode of representation that they use.

Ye Sun
ye.sun@mail.wvu.edu
West Virginia University, Morgantown, West Virginia

Gerald Kulm
Texas A&M University, College Station, Texas

150 (America’s Center) Capacity: 100
105. The Influence of Standards-Based Curricula on Questioning in the Classroom

**INDIVIDUAL PAPERS**

Results involving the levels of questions posed in courses taught with either a traditional text or a textbook from the Core-Plus Mathematics Project (CPMP) will be presented. Although higher levels of questions occurred more frequently in CPMP courses, the actions of one particular teacher question the impact of the textbook.

Tim Jacobbe
tjacobbe@ets.org
*Clemson University, Clemson, South Carolina*

150 (America’s Center) Capacity: 100
106. Pressing Practitioner Questions: Can Research Provide Answers?

Research Symposium
This interactive session brings researchers and practitioners together to discuss how research can (and cannot) provide answers to teachers’ most pressing questions. Researchers from the JRME Editorial Panel and NCTM’s Research Committee will provide research-based answers to practical questions, such as “How do you motivate students?” Bring your questions.

Chair
Sarah T. Lubienski
stl@express.cites.uiuc.edu
University of Illinois at Urbana-Champaign, Champaign, Illinois

Presenters
James A. Middleton
Arizona State University, Tempe, Arizona

Arthur J. Baroody
University of Illinois at Urbana-Champaign, Champaign, Illinois

Cindy Langrall
Illinois State University, Normal, Illinois

Panelists
Olive Chapman
University of Calgary, Calgary, Alberta

Tom Dick
Oregon State University, Corvallis, Oregon

Ed Esty
Consultant, Chevy Chase, Maryland

Pete Kloosterman
Indiana University, Bloomington, Indiana

Gwen Lloyd
Virginia Tech, Blacksburg, Virginia

Carolyn A. Maher
Rutgers University, New Brunswick, New Jersey

Steve Williams
Brigham Young University, Provo, Utah

150 (America’s Center) Capacity: 100
Reform efforts suggest that classroom discourse situating the teacher as an orchestrator of student interactions may give students a more active role in explaining mathematics. We investigate the role rich mathematical discourse plays in middle school algebra, number, and data lessons.

Robert M. Capraro  
rcapraro@coe.tamu.edu  
*Texas A&M University, College Station, Texas*

Mary Margaret Capraro  
*Texas A&M University, College Station, Texas*

Adam Harbaugh  
*University of North Carolina at Charlotte, Charlotte, North Carolina*

Tamara Carter  
*Oklahoma City Community College, Oklahoma City, Oklahoma*

Diana Piccolo  
*Texas A&M University, College Station, Texas*
108. Justifying Generalizations, K–5: An Examination of Teacher Moves

**Work Session**

Presenters share examples of how elementary-level mathematics students justify general claims, and presenters and audience, together, study a case to examine what a teacher does to promote the development of proof in an elementary school classroom.

Deborah Schifter  
dschifter@edc.org  
*Education Development Center, Newton, Massachusetts*

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

Susan Jo Russell  
*TERC, Cambridge, Massachusetts*

151 (America’s Center) Capacity: 100

109. Developing Mathematical Understanding through Measurement

**Work Session**

This work session presents research from Measure Up on the development of mathematical understandings in grades 1–4 from a measurement and algebra perspective using a theoretical framework from Davydov’s, Vygotsky’s, and Krutetskii’s works. Audience members will have an opportunity to examine and discuss students’ work from this project.

Barbara J. Dougherty  
bdougher@olemiss.edu  
*University of Mississippi, University, Mississippi*

Hannah Slovin  
*University of Hawaii, Honolulu, Hawaii*

151 (America’s Center) Capacity: 100
110. Practice into Research

Thematic Presentation
Situating research within the context of schools and the work of practicing teachers provides a rich environment for studying the learning and teaching of mathematics. A panel will stimulate group discussion by sharing research investigating the learning of mathematics as an intentional component of field experiences in high schools.

Patricia S. Wilson
pswilson@uga.edu
University of Georgia, Athens, Georgia

Ginger Rhodes
University of Georgia, Athens, Georgia

Kanita Kimmons DuCloux
University of Georgia, Athens, Georgia

Janet Tomlinson
North Oconee High School, Bogart, Georgia

Frances R. Curcio
Queens College/City University of New York, Flushing, New York

Alice F. Artzt
Queens College/City University of New York, Flushing, New York

140 (America’s Center) Capacity: 140

111. Clearer Pictures of Performance: Assessing Content and Process over Time

Work Session
Clearer pictures of students’ performance develop as students are assessed with tasks that attend to the robustness of students’ understanding over time. Linkages between the mathematical interaction that transpires during instruction and student assessment responses add further clarity to students’ performance. Explore tasks, student responses, and classroom practices in this session.

Mary C. Shafer
shafer@math.niu.edu
Northern Illinois University, De Kalb, Illinois

Annette Hill
South Dade Senior High School, Homestead, Florida

152 (America’s Center) Capacity: 105
112. The Impact of “Math Pathways & Pitfalls” Lessons on Mathematics Learning

Research Symposium
This session reports findings from a cluster randomized experiment to test the effectiveness of the Math Pathways & Pitfalls lessons. The presenters will discuss the theoretical foundation for the lessons, analyze the lessons’ embedded language support, and describe an experiment that demonstrated measurable impact for second, fourth, and sixth grades.

Carne Barnett-Clarke
cbarnet@WestEd.org
WestEd, Oakland, California

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

Joan I. Heller
Heller Research Associates, Oakland, California

Alma B. Ramirez
WestEd, Oakland, California

Chair and Discussion Moderator
Mary Kay Stein
University of Pittsburgh, Pittsburgh, Pennsylvania

145 (America’s Center) Capacity: 170

113. Issues of Equity in Preservice Mathematics Teachers’ Developing Practice

Research Symposium
Issues of equity in preservice elementary school mathematics teachers’ (PSTs’) developing practice are explored in a pair of studies examining PSTs’ observations of, and interactions with, children. The studies provide two different perspectives on PSTs’ development toward equitable practices as mathematics teachers as they make sense of children’s mathematics learning.

Signe E. Kastberg
skastber@iupui.edu
Indiana University–Purdue University Indianapolis, Indianapolis, Indiana
114. Learning through Mathematical Exploration in Open-Ended Problem Situations

This symposium investigates the connections among exploration, learning, and open-ended problem-solving situations—situations in which the solver must reformulate the problem to develop solution strategies. We do so by presenting three different studies that analyzed the students’ solution processes as they solved open-ended mathematics problems.

Jinfa Cai
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University of Delaware, Newark, Delaware

Vic Cifarelli
University of North Carolina at Charlotte, Charlotte, North Carolina

Keith Weber
Rutgers University, New Brunswick, New Jersey

Frank Lester
Indiana University, Bloomington, Indiana
115. Connecting Families and Communities to Improve Urban Mathematics Learning

**Research Symposium**

This session presents research studies sponsored by MetroMath: The Center for Mathematics in America’s Cities. The four studies in this session represent different approaches taken within the center to uncover and forge connections between mathematics practices and learning opportunities outside of schools and those that take place in formal classrooms.

Janine Remillard
janiner@gse.upenn.edu
University of Pennsylvania, Philadelphia, Pennsylvania

Lynda Ginsburg
Rutgers University, New Brunswick, New Jersey

Kara Jackson
University of Pennsylvania, Philadelphia, Pennsylvania

Yakov Epstein
Rutgers University, New Brunswick, New Jersey

Christine Massey
University of Pennsylvania, Philadelphia, Pennsylvania

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

Danny B. Martin
University of Chicago, Chicago, Illinois

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