

**PRELIMINARY PROGRAM  
FOR THE  
RESEARCH PRESESSION**

*The 75th Annual Meeting of the National  
Council of Teachers of Mathematics*

*April 15-16, 1997*

*Minneapolis Hyatt  
Minneapolis, MN*

*Sponsored by*

*Research Advisory Committee of the  
National Council of Teachers of Mathematics*

*Special Interest Group for Research  
in Mathematics Education  
of the American Educational  
Research Association*

**NCTM Research Advisory Committee**

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Vanderbilt University

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Cambridge, Massachusetts

**Michaele Chapelle**  
University of South Florida

**Jim Stigler**  
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Educational Development Center

**Announcements**

The Tuesday pm and all Wednesday sessions will be held in the Minneapolis Hyatt. See the final NCTM program for location of the Thursday sessions.

Informal meetings may be held on Wednesday in the Mirage Room, Second Level.

**Tuesday, April 15, 1997**

7:00 - 9:00 pm

Nicolétt Grand Ballroom First Level

**Welcome**

Organizers: **Paul Cobb, Vanderbilt University**  
*Chair, NCTM Research Advisory*  
**Patricia S. Wilson, University of Georgia**  
*Co-Chair, SIG/RME of AERA*

*Opening Plenary Address*

Presenter: **Pascal D. Forgione**  
**Commissioner**  
**National Center for Education Statistics**

*A reception will be held from 9:00 - 11:00 pm following the opening session.*



8:30 - 10:00 am

Greenway Ballroom F, G & H

*From Whole Number Sequences to the Rational Numbers of Arithmetic*

Organizer: **Adalira Saenz-Ludlow**, University of North Carolina at Charlotte

Presenters: **Leslie P. Steffe**, University of Georgia  
**John Olive**, University of Georgia  
**Robert Hunting**, East Carolina University

Discussant: **Tom Kieren**, University of Alberta

The session will present four papers analyzing children's constructions of fraction concepts and schemes. These children participated in three research projects with a constructivist theoretical framework albeit different in the learning environments designed for the children and the way in which the researches worked with the students.

8:30 - 10:00 am

Greenway Ballroom E

*The Multi-Dimensional Impact of the Research Process: Examples and Issues from Teacher Education*

Organizer/Presenter: **Thomas J. Cooney**, University of Georgia

Presenters: **Patricia S. Wilson**, University of Georgia  
**Bridget Arvold**, University of Georgia  
**Vivian Moody**, University of Georgia

Discussants: **Frank Lester**, Indiana University

The participants will discuss the impact of the research process on the reconceptualization of theories, ongoing instruction of preservice secondary teacher, professional growth of researchers, and teacher development.

10:30 - 12:00 noon

Greenway Ballroom B & C

*Algebra for All Students--An Analysis of Implementation*

Organizer: **Lynae Sakshaug**, Western Illinois University

Presenters: **Gwen Crawford**, North Carolina  
**Sid Rachlin**, East Carolina University  
**Melfried Olson**, Western Illinois University  
**Bill Scott**, North Carolina Department of Public Instruction

The state of North Carolina has adopted Algebra for All as its Algebra 1 course. Six years after the implementation of the program, teachers' attitudes are still changing. The public is reacting, as are legislators and the legal community. This session is devoted to the results of research and the ongoing debate over Algebra for All.

10:30 - 12:00 noon

Greenway Ballroom D

*Mathematics Teacher Education and Research in Ethnomathematics*

Organizer/Presenter: **Paulus Gerdes**

Discussant: **Arthur Powell**

Based on the experience with the development of Mozambique's Ethnomathematics Research Project (MERP), some ideas on mathematics teacher education in a multicultural setting and the involvement of teacher students in research on culture and mathematics education will be presented and discussed.

10:30 - 12:00 noon

Greenway Ballroom I & J

*Discovering Mathematical Potential in the "Unsuccessful"*

Organizer/Presenter: **Diana B. Erchick**, The Ohio State University

Presenters: **P. Brosnan**, The Ohio State University  
**D. Forrest**, The Ohio State University  
**R. Lattimore**, Wayne State University  
**J. Smith**, The Ohio State University

Discussant: **S. K. Damarin**, The Ohio State University

These five papers explore a culturally diverse selection of students defined as "unsuccessful" in mathematics. Presented findings show the "unsuccessful" know and understand mathematics, and suggest a need for a less restrictive view of what mathematics and mathematical successes are.

10:30 - 12:00 noon

Greenway Ballroom F, G, & H

*NCTM Standards 2000: Developing a Theoretical Perspective*

Organizer/Presenter: **Joan Ferrini-Mundy**, National Research Council

Presenter: **Mary Lindquist**, Columbus College State University

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

Recorders: Members of Standards 2000 Writing Groups

A first conversation with the mathematics education research community to consider what theoretical perspectives about mathematics teaching and learning should serve as the basis for the revision of the NCTM standards documents. Advance reading materials available on the Standards 2000 Website.

10:30 - 12:00 noon

Greenway Ballroom E

*Student Autonomy in Mathematics Classrooms: Implications for Teachers, Students and the Curriculum*

Organizer/Presenter: **Rodney E. McNair**, Vanderbilt University

Presenters: **Robert Balfanz**, Johns Hopkins University  
**Rochelle Gutierrez**, University of Illinois  
**Connie Kamii**, University of Alabama at Birmingham  
**Vicki Zack**, Quebec

Discussant: **James Hiebert**, University of Delaware

The session considers critical issues associated with creating mathematics classrooms where teachers grant students a high degree of self-determinacy as they engage in a shared process of critical reflection and inquiry.

12:00 noon - 1:30 pm

LUNCH

## Summary of Wednesday Sessions

8:30 - 10:00	10:30 - Noon
<b>Greenway Ballroom A</b>	
Davenport, Barnett, Schifter, Bastable, Ball	Davenport, Barnett, Schifter, Bastable, Ball
<i>Using Practice-Based Materials in Professional Development</i>	<i>Using Practice-Based Materials in Professional Development</i>
<b>Greenway Ballroom B &amp; C</b>	
Stephens, Romberg, Webb, Robitaille, Ferrini-Mundy	Sakshaug, Crawford, Rachlin, Olson
<i>The Use of Case Studies to Describe Large Scale Innovations</i>	<i>Algebra for All Students--An Analysis of Implementation</i>
<b>Greenway Ballroom D</b>	
Tartre, Clements, Friedman, Lindquist, Lappan	Gerdes, Powell
<i>Spatial sense and Mathematics: Issues and Questions for Research and Coherent Curriculum Development</i>	<i>Mathematics Teacher Education and Research in Ethnomathematics</i>
<b>Greenway Ballroom I &amp; J</b>	
Zbiek, Heid, Blume, Keller, Wenger	Erchick, Damarin, Brosnan, Forrest, Lattimore, Smith
<i>Symbolization with Hand-Held Technology (TI-92)</i>	<i>Discovering Mathematical Potential in the "Unsuccessful"</i>
<b>Greenway Ballroom F, G, &amp; H</b>	
Saenz-Ludlow, Steffe, Olive, Hunting, Kieren	Ferrini-Mundy, Lindquist, Kilpatrick
<i>From Whole Number Sequences to the Rational Numbers of Arithmetic</i>	<i>NCTM Standards 2000: Developing a Theoretical Perspective</i>
<b>Greenway Ballroom E</b>	
Cooney, Wilson, Arvold, Moody	McNair, Balfanz, Gutierrez, Hiebert, Kamii, Zack
<i>The Multi-Dimensional Impact of the Research Process: Examples and Issues from Teacher Education</i>	<i>Students Autonomy in Mathematics Classrooms: Implications for Teachers, Students, and the Curriculum</i>

1:30 - 3:00	3:30 - 5:00
<b>Greenway Ballroom A</b>	
Davenport, Barnett, Schifter, Bastable, Ball	Simon, Tzur, Ball, Stimpson
<i>Using Practice-Based Materials in Professional Development</i>	<i>Teachers' Construction of new Models of Teaching</i>
<b>Greenway Ballroom B &amp; C</b>	
Shaffer, Kaput, Stroup, Wilensky, Inkpen, Wolf, Middleton	Shaffer, Kaput, Stroup, Wilensky, Inkpen, Wolf, Middleton
<i>Expression in Mathematical Activity: Perspectives on Making Math Meaningful</i>	<i>Expression in Mathematical Activity: Perspectives on Making Math Meaningful</i>
<b>Greenway Ballroom D</b>	
Wilson, Peterson, Branca, Stage, Daro	Gray, Bohlin, Franke, Philipp
<i>California Dreaming, or What Happened to Mathematics Reform in California?</i>	<i>Rethinking Elementary mathematics Methods courses--What are the Theoretical, Practical, and Research Issues?</i>
<b>Greenway Ballroom I &amp; J</b>	
Whitenack, McClain, Sowder	Whitenack, McClain, Sowder
<i>Using Interactive Technologies to Support Teachers' Professional Development: Thoughts and Reflections</i>	<i>Using Interactive Technologies to Support Teachers' Professional Development: Thoughts and Reflections</i>
<b>Greenway Ballroom F, G &amp; H</b>	
Ferrini-Mundy, Lindquist, Kilpatrick	Jones, Thornton, Langrall, Tarr, Johnson, Watson, Shaughnessy
<i>NCTM Standards 2000: Developing a Theoretical Perspective</i>	<i>Assessing and Using Students' Probabilistic Thinking to Inform Instruction</i>
<b>Greenway Ballroom E</b>	
Raymond, D'Ambrosio, Mewborn, Lambdin, Mau	Chubin
<i>Bridging the Gap Between Mathematics Education Research and Teaching practice Through Collaborative Action Research</i>	<i>Education and Human Resources at NSF: Roles of Research, Evaluation, and Communication</i>

8:30 - 12:00 noon; LUNCH; 1:30 - 3:00 pm

Greenway Ballroom A

*Using Practice-Based Materials in Professional Development*

Organizer/Presenter: **Linda Davenport**, Education Development Center, Inc.

Participants: **Carne Barnett**, Far West Laboratory  
**Deborah Schifter**, Mt. Holyoke College  
**Virginia Bastable**, Education Development Center  
**Deborah Ball**, University of Michigan

Discussant: **Susan Jo Russell**, TERC, Cambridge, MA

Practice-based materials can be useful tools for professional development. In this session, we explore examples of such materials, focusing on what *we* learn from them, what assumptions guided their creation, and what teachers might learn from working with these materials.

1:30 - 5:00 PM

Greenway Ballroom B & C

*Expressiveness in Mathematical Activity: Perspectives on Making Math Meaningful*

Organizer/Presenter: **David Williamson Shaffer**, Massachusetts Institute of Technology

Presenters: **James Kaput**, University of Massachusetts  
**Uri Wilensky**, Tufts University  
**Sarah Inkpen**, Seneca College of Appl. Arts & Tech.  
**Walter Stroup**, Harvard University

Discussant: **Dennie Wolf**, Harvard  
**James Middleton**, Arizona State University

This symposium presents four interventions in which students learn mathematics through activities that deliberately embody expressive and aesthetic elements.

1:30 - 5:00 pm

Greenway Ballroom I & J

*Using Interactive Technologies to Support Teachers' Professional Development: Thoughts and Reflections*

Organizer/Presenter: **Joy Whitnack**, University of Missouri--Columbia

Presenters: **Kay McClain**, Vanderbilt University  
**Linda Barron**, Vanderbilt University

Discussant: **Judith Sowder**, CRMSE/SDSU

In this session, CD-ROM packages are examined to explore avenues and facilitate discussion about using interactive technologies to enhance inservice and preservice teacher reflection.

1:30 - 3:00 pm

Greenway Ballroom E

*Bridging the Gap Between Mathematics Education Research and Teaching Practice Through Collaborative Action Research*

Presenter: **Sue Tinsley Mau**, IUPUI

Presenters: **Anne M. Raymond**, Keene State College  
**Beatriz D'Ambrosio**, IUPUI  
**Denise S. Mewborn**, University of Georgia

Discussant: **Diana Lambdin**, Indiana University

This symposium will take a close look at collaborative action research by examining three examples of action research in mathematics classrooms. The focus of the ensuing discussion will be characterizations of, goals for, and implications of mathematics action research.

1:30 - 3:00 pm

Greenway Ballroom D

*California Dreaming, or What Happened to Mathematics Reform in California?*

Organizer/Presenter: **Suzanne M. Wilson**, Michigan State University

Presenter: **Penelope Peterson**, Michigan State University

Discussants: **Nicholas Branca**, California State University  
**Elizabeth Stage**, New Standards Project, UCOP  
**Phil Daro**, New Standards Project, UCOP

We propose to synthesize and present the major findings from these studies, exploring the lessons learned about mathematics education reform and its inherent challenges. Our analysis will draw both on current research (surveys, interviews, observations, and document analysis), as well as an historical analysis.

1:30-3:00 pm

Greenway Ballroom F, G, & H

*NCTM Standards 2000: Developing a Theoretical Perspective*

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

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3:30-5:00 pm

Greenway Ballroom A

*Teachers' Construction of New Models of Teaching*

Organizer/Presenter: **Martin A. Simon**, The Pennsylvania State University

Presenter: **Ron Tzur**, Penn State University

Discussant: **Deborah L. Ball**, University of Michigan  
**Virginia Stimpson**, Mercer Island High School

Case studies of three elementary teachers will be discussed to explore the pedagogical problems generated by teachers participation in cultures involved in the mathematics education reform and the types of practice that these teachers develop to address these problems.

3:30 - 5:00 pm

Greenway Ballroom F, G & H

*Assessing and Using Students' Probabilistic Thinking to Inform Instruction*

Organizer: **Graham A. Jones**, Illinois State University

Presenters: **Carol A. Thornton**, Illinois State University  
**Cynthia W. Langrall**, Illinois State University  
**James Tarr**, Middle Tennessee State University  
**Todd Johnson**, Illinois State University

Discussants: **Kathleen Hart**, Shell Centre for Mathematical Education

**J. Michael Shaughnessy**, Portland State University

The session reports on a four-year program of research on probability in the elementary and middle grades. It examines instructional programs in probability that were informed by a research-based framework on students' probabilistic thinking.

3:30 - 5:00 pm

Greenway Ballroom D

***Rethinking Elementary Mathematics Methods Courses--What are the Theoretical, Practical, and Research Issues?***

Organizer: **Lynne Gray**, San Jose State University

Facilitators: **Carol Fry Bohlin**, Fresno State University  
**Megan Franke**, University of California--Los Angeles  
**Randy Philipp**, San Diego State University

Video clips will provide a shared context for discussing issues related to the reform of Elementary Math Methods courses. Brief think pieces will be offered by each panel member as springboards for extended dialogue on specific issues. Participants are encouraged to share their data, thoughts, experiences, and syllabi.

3:30 - 5:00 pm

Greenway Ballroom E

***Education and Human Resources at NSF: Roles of Research, Evaluation, and Communication***

Presiders: **James Hiebert**  
**Patricia Wilson**

Presenter: **Daryl Chubin**, National Science Foundation

The EHR Division of Research, Evaluation and Communication (REC) supports NSF's K-16 systemic reform programming. The pre-session will highlight REC's activities in educational technology, program evaluation, and research on education policy and practice. The benefits of this \$50M investment in a \$600M dollar a year portfolio -- at a time of fiscal constraint, heightened accountability, and rising expectations for student achievement in math and science -- will be discussed.

**Announcements**

**Research Highlights**

In line with its charge within the newly-formed Policy and Planning Cluster, the Research Advisory Committee will not be producing the annual "Research Highlights" booklet in the future. The information typically included in this booklet will be placed on NCTM's web page and will be regularly updated.

**Thanks**

Thanks to Clarice Thompson and Michelle Kilgo, University of Georgia, for their help in publishing this program.

**Notes**

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