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

Steve Monk, TERC
Cambridge, Massachusetts

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University of South Florida

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Steering Committee
San Diego State University

Linda Ruiz Davenport
Steering Committee
Educational Development Center

Tuesday, April 15, 1997

7:00 - 9:00 pm
Nicollet 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. Forgone
Commissioner
National Center for Education Statistics

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

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.
Wednesday, April 16, 1997

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

8:30 - 10:00 Greenway Ballroom B & C

The Use of Case Studies to Describe Large Scale Innovations

Organizer/Presenter: Max Stephens, Board of Studies
Participants: Tom Romberg, University of Wisconsin-Madison
Norman Webb, University of Wisconsin-Madison
Joan Ferrini-Mundy, National Research Council - MSEB, Washington, DC
David Robitaille, University of British Columbia

Discussant/Presider: Thomas A. Romberg, University of Wisconsin Madison

The primary goal of this symposium is to draw attention to key common questions for research methodology in describing large scale innovation. Several specific case studies have been chosen to serve as stepping-off points to raising these questions.

Greenway Ballroom D

8:30 - 10:00

Spatial Sense and Mathematics: Issues and Questions for Research and Coherent Curriculum Development

Organizer/Presenter: Lindsay A. Tartre, California State University, Long Beach

Presenters: Douglas H. Clements, SUNY at Buffalo
Lynn Friedman, University of Minnesota-Minneapolis

Discussants: Mary Lindquist, Columbus College State University
Glenda Lappan, Michigan State University

The objective of this interactive Work Session is to allow people with differing perspectives and research experiences to identify and discuss issues related to curriculum development for spatial sense mathematics.

8:30 - 10:00 am Greenway Ballroom I & J

Symbolization with Hand-Held Technology (TI-92)

Organizer/Presenter: Rose Mary Zbiek, University of Iowa

Presenters: M. Kathleen Heid, The Pennsylvania State University
Glen Blume, The Pennsylvania State University
Brian A. Keller, Iowa State University

Discussant: Ron Wenger, University of Delaware

Hand-held technology (e.g., TI-92) provides multi-linked representations for mathematics at several levels. This session compares and contrasts the impact of this technology on symbolic sense and reasoning in high school algebra, college calculus, and teacher education mathematics courses.
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.

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.
Discovering Mathematical Potential in the “Unsuccessful”

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

Presenters:
- P. Brosman, 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.

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.
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<td>10:30 - Noon</td>
<td>Davenport, Barnett, Schifter, Bastable, Ball</td>
<td>Sakshaug, Crawford, Rachlin, Olson</td>
<td>Gerdes, Powell</td>
<td>Erchick, Damarin, Brosnan, Forrest, Lattimore, Smith</td>
<td>Ferrini-Mundy, Lindquist, Kilpatrick</td>
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<td>Using Practice-Based Materials in Professional Development</td>
<td>Algebra for All Students--An Analysis of Implementation</td>
<td>Mathematics Teacher Education and Research in Ethnomathematics</td>
<td>Discovering Mathematical Potential in the &quot;Unsuccessful&quot;</td>
<td>NCTM Standards 2000: Developing a Theoretical Perspective</td>
<td>Students Autonomy in Mathematics Classrooms: Implications for Teachers, Students, and the Curriculum</td>
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<td>1:30 - 3:00</td>
<td>Davenport, Barnett, Schifter, Bastable, Ball</td>
<td>Shaffer, Kaput, Stroup, Wilensky, Inkpen, Wolf, Middleton</td>
<td>Wilson, Peterson, Branca, Stage, Daro</td>
<td>Whitenack, McClain, Sowder</td>
<td>Ferrini-Mundy, Lindquist, Kilpatrick</td>
<td>Raymond, D’Ambrosio, Mewborn, Lambdin, Mau</td>
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<td>3:30 - 5:00</td>
<td>Simon, Tzur, Ball, Stimpson</td>
<td>Shaffer, Kaput, Stroup, Wilensky, Inkpen, Wolf, Middleton</td>
<td>Gray, Bohlin, Franke, Philipp</td>
<td>Whitenack, McClain, Sowder</td>
<td>Jones, Thornton, Langrall, Tarr, Johnson, Watson, Shaughnessy</td>
<td>Chubin</td>
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<td>Teachers’ Construction of new Models of Teaching</td>
<td>Expression in Mathematical Activity: Perspectives on Making Math Meaningful</td>
<td>Rethinking Elementary mathematics Methods courses--What are the Theoretical, Practical, and Research Issues?</td>
<td>Using Interactive Technologies to Support Teachers’ Professional Development: Thoughts and Reflections</td>
<td>Assessing and Using Students’ Probabilistic Thinking to Inform Instruction</td>
<td>Education and Human Resources at NSF: Roles of Research, Evaluation, and Communication</td>
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Using Practice-Based Materials in Professional Development

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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 Inskp, 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.

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 Sawder, 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.

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

Presider: 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.

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.

1:30-3:00 pm  Greenway Ballroom F, G, & H

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Recorders: Members of Standards 2000 Writing Groups

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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.
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.

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 presession 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.