RESEARCH PRESESSION

The 71st Annual Meeting of the National Council of Teachers of Mathematics

Monday, 29 March to Wednesday, 31 March 1993

Seattle Sheraton/Convention Center
Seattle, Washington

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
Monday, March 29, 1993

7:15 - 7:30  West Ballroom (Sheraton)
Welcome
Alan Schoenfeld, University of California at Berkeley
Chair NCTM Research Advisory Committee

Thomas J. Cooney, University of Georgia
Co-Chair, SIG/RME of AERA

7:30 - 9:00  West Ballroom (Sheraton)
Speaker: Gloria Ladson-Billings
University of Wisconsin

Skills and Other Dilemmas Revisited:
Mathematics and cultural diversity

What implications do mathematics reform, standards, and
assessment have for students of color who have traditionally not
performed well in mathematics? Like an earlier reform in
literacy (e.g., process writing, whole language), these reforms
may prove to be a two-edged sword for African American
students. This talk raises questions about how mathematics
educators should address issues of equity in the mathematics
classroom.

A Cash Bar Will Be Held
in the Cirrus Room (Sheraton)
Following the Address by Dr. Ladson-Billings
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**Tuesday, March 30, 1993**

**Room 602**

**Open-ended Tasks and Assessment: The nettle or the rose?**

**Organizer/Presenter**
David Clarke, Australian Catholic University

**Presenter**
Alan Schoenfeld, University of California, Berkeley

**Discussant**
Phil Daro, University of California

**Thematic Presentation**
Significant funds and personnel are being committed to the development and implementation of assessment systems employing open-ended mathematics tasks. The session will address the question of whether research supports the use of open-ended tasks for mathematics assessment.

**Room 617**

**Developmental According to Whom?**
**Using Data to Build Developmental Schemes for Teachers**

**Organizer/Presenter**
Doug Jones, University of Kentucky

**Presenters**
William S. Bush, University of Kentucky
Rebecca B. Corwin, TERC
Karen Schultz, Georgia State University

**Discussant**
Thomas A. Romberg, University of Wisconsin

**Research Symposium**
The participants will discuss strategies and problems in identifying developmental stages through which teachers might go as they change instructional practices. The discussant will comment on the presentations and raise further issues for discussion.
On Learning Abstract Algebra

Organizer/Presenter: Rina Zazkis, Simon Fraser University

Presenters: Jennie Dautermann, Miami University, Ohio
Ed Dubinsky, Purdue University

Discussant: Stephon Monk, University of Washington

Research Symposium: This symposium will explore undergraduate abstract algebra concepts, the nature of instructional environments that promote those constructions, and specific research techniques that can lead to a fuller understanding of the way students deal with abstract algebra.

Telling in Teaching? Thoughts on Teacher Telling in Constructivist-Influenced Teaching

Organizer/Presenter: Daniel Chazan, Michigan State University

Presenters: Deborah Ball, Michigan State University
Paul Cobb, Vanderbilt University
Erna Yackel, Purdue-Calumet University
Jere Confrey, Cornell University
John Smith, Michigan State University
Marcella Perlwitz, Purdue University

Discussant: Robert Davis, Rutgers University

Work Session: In this session, we will counterpose telling and constructivist-influenced teaching. The goal is to examine and problematize (a) the forms telling may take in both traditional and innovative constructivist-influenced mathematics teaching; (b) the decisions entailed in moment-to-moment practice that shape telling when teaching mathematics, and (c) students' interpretations of instances of "telling."

Teachers as Researchers: Lessons from the classroom

Organizer/Presenter: Patricia Tinto, Syracuse University

Presenters: J. Michael Shaughnessy, Portland State University
Barbara A. Shelly, Westhill High School, Syracuse, NY
Nancy J. Zarach, Nottingham High School, Syracuse, NY
Starla Manchester, Hough Elementary School, Vancouver, WA
Lani Davidson, Hough Elementary School, Vancouver, WA
Sandy Detroit, Hallinan Elementary School, Lake Oswego, OR
Pam Alexander, Welches Middle School, Welches, OR
Barbara Olson, River Mill Elementary School, Estacada, OR
Sue Arbrams, West Linn High School, West Linn, OR
Tricia Stevens, Bend Junior High School, Bend, OR

Work Session: This session uses case studies of mathematics classrooms to explore the development of teachers as researchers. Interactive thematic groups allow participants, together with presenters, to discuss critical issues, both research and practice, that underlie the development of teachers as researchers.
10:45 am - 12:15 pm  
Room 602

Children's Construction of Fractional Schemes in Computer Microworlds

Organizer/Presenter  Leslie P. Steffe, University of Georgia

Presenters  John Olive, University of Georgia  
Bill Whitmire, University of Georgia  
Denise Spangler, University of Georgia

Discussants  Merlyn Behr, Louisiana State University  
Gershon Harel, Purdue University

Thematic Presentation  Rather than interfere with the construction of fractional schemes, we show how children can use their number sequences in conjunction with subdivision operations in computer microworlds to construct iterative and measurement fractional schemes. Each scheme type and its construction is illustrated using video-tapes of children along with an analysis of the constructive process.

10:45 - 12:15 pm  
Room 617

Examining Teacher Change: Models from four research perspectives

Organizer/Presenter  Kenneth L. Shaw, Florida State University

Presenters  Lynn Hart, Georgia State University  
Doug Jones, University of Kentucky  
Deborah Schifter, Mount Holyoke College

Discussant  Barbara Nelson, Education Development Center

Symposium  The participants will present different models of teacher change that have resulted from their research with in-service teachers. The discussant will comment on the frameworks and the models.

10:45 - 12:15 pm  
Room 618

Algebra for Everyone: A statewide in-service project for implementing the Standards in Algebra I

Organizer/Presenter  Ann R. Crawford, University of North Carolina at Chapel Hill

Presenters  Hunter Ballew, University of North Carolina at Chapel Hill  
Lynae Sakshaug, North Carolina State University

Discussant  James Fey, University of Maryland

Thematic Presentation  This session will focus on a statewide effort to implement various aspects of the Standards, particularly with respect to the topic of algebra.
1:30 - 3:00 pm

The Bank Street Mathematics Leadership Collaboration:
A Team-Based Approach to Reform in Urban Schools

Organizer/Presenter  | Barbara Dubitsky, Bank Street College

Presenters
| Margaret Honey, Bank Street College
| Naomi Hupert, Bank Street College

Discussants
| Barbara Nelson, Education Development Center
| Susan Jo Russell, TERC
| Joel E. Schneider, Children's Television Workshop

Thematic Presentation
| Presenters will discuss research designed to evaluate the extent to which the teachers in Bank Street's Mathematics Leadership Collaboration have been able to bring about significant reforms in their classrooms. We will explore the relationship between teachers' changing classroom practices and their ability and credibility as leaders within the larger school community.

1:30 - 3:00 pm

In-service Mathematics Teacher Education for Curriculum Reform--Research Issues

Organizer/Presenter  | Harold L. Schoen, The University of Iowa

Presenters
| Eric Hart, Maharishi International University
| Glen Blume, Penn State University
| Kathy Heid, Penn State University
| Rose Zbiek, The University of Iowa
| Margaret Kenney, Boston College

Discussant  | Joan Ferrini-Mundy, University of Delaware

Thematic Presentation
| This session will focus on research issues that are suggested by a recursive/reflective conceptual model for the development of teachers as facilitators of curriculum reform. Presenters represent three different NSF-funded Teacher Enhancement projects that aim to develop teacher leaders.
Future Directions for Research on Gender and Mathematics

Organizer/Presenter: Joanne Rossi Becker, San Jose State University

Discussants: Suzanne K. Damarin, The Ohio State University; Laurie E. Hart, University of Georgia

Work Session: In this work session, participants will discuss what directions future research on gender and mathematics should take. We plan to begin to generate an agenda for future research which utilizes the more general new scholarship on women. Participants will work.

A Bifurcation Point in Algebra Curriculum

Organizer/Presenter: David Kirshner, Louisiana State University

Presenters: Robert Davis, Rutgers University; Alan Hoffer, University of California at Irvine; John Richards, BBN Labs

Discussant: Jim Kaput, University of Massachusetts

Work Session: There is an ongoing concerted and coordinated effort to restructure school algebra. A series of papers and position statements compare the old to the new; not just as practices to be adopted or abandoned, but in terms of their underlying intentions and aspirations.

Developing a Constructivist Learning Environment in High School Geometry

Organizer/Presenter: W. Gary Martin, University of Hawaii

Presenters: Neil Pateman, University of Hawaii; M. Jayne Higa, University of Hawaii

Discussants: Douglas Clements, SUNY at Buffalo; Helen Mansfield, Curtin Institute of Technology; Les Steffe, University of Georgia

Thematic Presentation: This session will highlight issues and findings related to curriculum development based on a constructivist theory of research, teaching, and learning. The Geometry Learning Project, which is developing a high school geometry curriculum, will provide the major context for discussion.

Using Hypermedia Cases to Study Mathematics Teaching and Learning

Organizer/Presenter: Deborah Ball, Michigan State University

Presenters: Magdalene Lampert, Michigan State University; Mark Rosenberg, Michigan State University; Kara Suzuki, Michigan State University; Ruth Heaton, Michigan State University

Work Session: This session will involve using and analyzing hypermedia case materials and tools for inquiry designed by the presenters to portray new approaches to the teaching of mathematics in school. Presenters and attendees will discuss the potential of such materials and tools for doing research on teaching and learning.
3:15 - 4:45 pm

Mathematical Connections: Instances from research

Organizer/Presenter  Douglas T. Owens, The Ohio State University

Presenters  Ann Anderson, University of British Columbia
Ramakrishnan Menon, University of British Columbia
Thomas L. Schroeder, University of British Columbia

Discussant  Thomas O'Shea, Simon Fraser University

Research Symposium  This symposium will explore mathematical connections from four perspectives. The presenters will give implications from their findings dealing with mathematical connections by focusing on environments which permit or inhibit the establishment and demonstration of these connections.

Wednesday, March 31, 1993

8:30 - 10:00 am  Grand III (Westin)
RAC/SIG-RME/NCSM Joint Session

Speaker:  Philip Daro, University of California and the New American Standards Project, Oakland, California

The New American Standards Project's Mathematics Assessments

10:30 am - 12:30pm  Room 305 (Convention Center)
RESEARCH EXTENDED WORKSHOP

Speakers:  Susan Jo Russell, TERC, Cambridge, Massachusetts
Rebecca Corwin, TERC, Cambridge, Massachusetts

Talking Mathematics in Elementary Classrooms