

## REESE at AERA 2012

The 2012 Annual Meeting of the American Educational Research Association (AERA) will take place Friday April 13 through Tuesday April 17 in Vancouver, British Columbia, Canada. The following schedule contains details sessions that include presentations on REESE projects and their findings, as well as presentations by NSF of potential interest to REESE PIs. For additional information on AERA 2012, please visit <http://aera.net/Default.aspx?id=10412>. To add presentations highlighting REESE project work to this list, please contact ARC Research Assistant Lucas Woolums ([Woolums-Lucas@norc.org](mailto:Woolums-Lucas@norc.org)).

### FRIDAY, April 13

12:00 – 1:30pm

#### **Large-Scale Studies in Mathematics Education**

Building/Room: Sheraton Wall Centre, Third Level / South Pavilion Ballroom D

*Learning Mathematics Using Standards-Based and Traditional Curricula: An Analysis of Homework Problems*

Jinfa Cai, Bikai Nie, John Moyer, and Ning Wang

#### **Motivation and Learning in STEM**

Building/Room: Sheraton Wall Centre, Third Level / North Junior Ballroom D

*Linking Instruction to Knowledge Construction in the Engineering Classroom*

Jonathan C. Hilpert, and Jenefer E. Husman

2:15pm - 3:45pm

#### **Symposium: Argument Evaluation in Education**

Building/Room: Sheraton Wall Centre / South Pavilion Ballroom B

*Standards for Evaluating Evidence in Arguments*

Clark A. Chinn

#### **Symposium: Innovations in STEM Education Evaluation: Enhancing the Quality of Evidence Available to Assess the Impacts of Research Portfolios**

Building/Room: Marriott Pinnacle, Third Level / Pinnacle III

*Using Bibliometric Data for Program Evaluation: A Citation Analysis of the National Science Foundation's Program on Research and Evaluation on Education in Science and Engineering*

James S. Dietz, and Kevin L. Brown

*Developing a Rubric for Assessing the Methodological Rigor of Research Portfolios: Insights from a Pilot Project*

Barbara L. Schneider, and Sarah-Kathryn McDonald

*Advancing Innovations in STEM Education Evaluation: Program, Portfolio, and Project Evaluation Initiatives in the National Science Foundation's Education and Human Resources Directorate*

Janice M. Earle

Chair: Finbarr C. Sloane

Discussant: Finbarr C. Sloane

Discussant: Stephen J. Hegedus

## **SATURDAY, April 14**

8:15am - 9:45am

### **Students' Mathematical Thinking and Learning**

Building/Room: Sheraton Wall Centre / North Port McNeill

*Preschool and Kindergarten Children's Understanding of Fraction and Fair Sharing Concepts*

Julie C. Cwikla, and Jennifer Vonk

10:35am - 12:05am

### **Framing and Epistemology and Theories of Learning**

Building/Room: Sheraton Wall Centre, Third Level / North Parksville

*Explaining How Expansive Framing Fosters Transfer: The Case of Elaine*

Diane Lam, Xenia S. Meyer, Randi A. Engle, Lloyd Goldwasser, Sarah Perez, Kathleen Zheng, Jim Clark, Erica Naves, Hernan Rosas, and Danny Tan

### **Elementary Preparation for Learning Algebra Concepts**

Building/Room: Sheraton Wall Centre / North Junior Ballroom C

*Algebra in Preschool: Emerging Understanding of Patterns in Four-Year-Olds*

Bethany Rittle-Johnson, Emily Fyfe, Laura McLean, and Katherine McEldoon

**Invited Session: Public Understanding and Public Engagement with Science**

Building/Room: Sheraton Wall Centre, Grand Ballroom Level / North Grand Ballroom B

*Theme 1: Characteristics of a Scientifically Informed Public*

William A. Sandoval

*Theme 2: Understanding and Evaluating Sources of Scientific Information*

Rainer F. Bromme

*Theme 3: Impact of Internet and Media on Public Engagement with Science*

Susan R. Goldman

*Theme 4: Communicating and Mediating Scientific Information for Understanding and Engagement*

Anne Britt

Discussant: Janice M. Earle

Discussant: Anne Brüggemann

Chair: Gale M. Sinatra

**Poster Session: Science Curriculum and Instructional Interventions**

Building/Room: Vancouver Convention Centre, First Level / East Ballroom B

*How to Get Real: The Authenticity of Computer-Based Science Labs*

Megan Sauter, Michael Downing, Kemi Jona, David Henry, and David Rapp

12:25 - 1:55pm

**Visual Displays**

Building/Room: Sheraton Wall Centre, Third Level / South Pavilion Ballroom B

*Effectiveness of Student-Constructed Diagrams Versus Self-Explanation Instruction*

Jennifer G. Cromley, Bradley W. Bergey, Shannon L. Fitzhugh, Theodore W. Wills, Mandy Kirchgessner, and Nora Newcombe

**Contextual Influences on the Career Development of Youth**

Building/Room: Pan Pacific / Pacific Rim 1

*Social Capital and Career Choice: Pathways to STEMM (Science, Technology, Engineering, Mathematics, and Medicine) Professions for Students from Noncollege Families*

Jon D. Miller, and Linda G. Kimmel

**Symposium: Learning from Others: Advancing Theory and Research on Learning from Sources**

Building/Room: Sheraton Wall Centre / North Grand Ballroom A

*The Epistemic Cognition of Evaluating Sources*

Clark A. Chinn, and Luke Andrew Buckland

1:00 – 5:00pm

**Professional Development Course Session: Developing a Competitive Educational Research Proposal for the National Science Foundation's Division of Research on Learning**

Building/Room: Fairmont Waterfront / MacKenzie 1

Director: Gavin W. Fulmer

Director: Janice M. Earle

Instructor: Celestine H. Pea

2:15 - 3:45pm

**National Science Foundation Priorities and Trajectories for Research Advancement: Leadership, Wisdom, and Perspectives**

Building/Room: Vancouver Convention Centre, Second Level / East Room 8 & 15

Chair: P. David Pearson

Participants: Joan Ferrini-Mundy, Myron P. Gutmann

Discussants: Chandra Muller, Deborah L. Vandell

**Symposium: Integrating Issues of Knowledge and Interaction in Analyses of Cognition and Learning**

Building/Room: Sheraton Wall Centre, Fourth Level / North Port McNeill

*Representations, Interlocutors, and Their Influences on Apparent Knowledgeability*

Nathaniel J. S. Brown, Joshua Adam Danish, David DeLiema, Randi A. Engle, Noel D. Enyedy, Victor R. Lee, Orit Parnafes

*Natural-Descriptive and Causal-Mechanistic Theories: A Complex Relationship Across Disciplines*

Rogers P. Hall, Ricardo Nemirovsky, Jasmine Y. Ma, Molly Kelton

**Symposium: Measuring the Impact of Teacher Education on Learning to Teach Mathematics: The Teacher Education Study in Mathematics**

Building/Room: Vancouver Convention Centre, Second Level / West Room 208 & 209

*Measuring the Impact of Teacher Education on Learning to Teach Mathematics*  
Maria Teresa Tatto

*Teacher Education Effects on Mathematics Knowledge for Teaching*  
Maria Teresa Tatto

Chair: Maria Teresa Tatto  
Discussant: James S. Dietz  
Discussant: Robert E. Floden

**Structured Poster Session: Assessing Transfer of Learning: Instructionally Sensitive Assessments, Curriculum, and Instruction**

Building/Room: Pan Pacific, Lobby Level / Oceanview 1 & 2

*Instructionally Sensitive Assessments and Curricula Characteristics: Learning Goals, Opportunities to Achieve Them, and Opportunities to Transfer Them*  
Maria Araceli Ruiz-Primo, Min Li, Michael Giamellaro, Kellie Wills, Hillary Mason, Ming-Chih Lan, and Deanna J. Sands

*Teachers' and Students' Perceptions about Instructionally Sensitive Assessments: Disentangling the Meaning of Transfer of Learning*  
Michael Giamellaro, Deanna J. Sands, Kellie Wills, Jennifer Feehan, Maria Araceli Ruiz-Primo, and Min Li

*Linking Quality of Instruction to Instructionally Sensitive Assessments*  
Ming-Chih Lan, Min Li, Maria Araceli Ruiz-Primo, Ting Wang, Michael Giamellaro, and Hillary Mason

*Instructionally Sensitive Assessments Across Three Science Units*  
Min Li, Maria Araceli Ruiz-Primo, Michael Giamellaro, and Kellie Wills

*Instructional Sensitivity and Transfer of Learning at Different Distances: Close, Proximal, and Distal Assessment Items*  
Min Li, Maria Araceli Ruiz-Primo, Michael Giamellaro, Kellie Wills, Hillary Mason, and Jennifer Feehan

*Comparing Two Experimental Designs to Evaluate Item Sensitivity*  
Kellie Wills, and Min Li

Discussant: Jim Minstrell  
Chair Maria Araceli Ruiz-Primo

4:05pm - 5:35pm

**The Social and Behavioral Sciences in STEM K-12 Education: Challenges, Issues, and Opportunities**

Building/Room: Vancouver Convention Centre, Second Level / West Room 224

Chair: Felice J. Levine

Participants: Robert M. Hauser, Myron P. Gutmann, Walter G. Secada, Lorraine M. McDonnell

**Empirical and Conceptual Views of Organizations, Actors, and Practices**

Building/Room: Vancouver Convention Centre, Third Level / West Room 304

*Defining and Measuring Sustainability of Reform: Factors That Affect Our Abilities to Generate Enduring Change*

Jeanne Rose Century, Mollie Rudnick, and Cassie Freeman

**Symposium: Interest Development and Its Relation to Academic Motivation**

Building/Room: Sheraton Wall Centre / North Grand Ballroom B

*The Reciprocal Relationship between Value, Interest, and Learning over Time*

Carol Sansone

**Invited Poster Session: Excellence in Education Research: Early Career Scholars and Their Work**

Building/Room: Vancouver Convention Centre / West Ballroom D

*Predictors and Consequences of Engagement in Mathematics: A Comparison of Girls and Boys*

Alison Elizabeth Baroody

**Poster Session: Mathematics Curriculum and Instructional Practice**

Building/Room: Vancouver Convention Centre, First Level / East Ballroom B

*Longitudinal Investigation of the Effect of Curriculum on Algebra Learning: Beyond Grade Bands*

Jinfa Cai, Ning Wang, John Moyer, and Bikai Nie

## SUNDAY, April 15

8:15 – 9:45am

### **Postsecondary Math and Science Learning and Development**

Building/Room: Vancouver Convention Centre / West Room 212 & 213

*Understanding students' beliefs about the nature of knowing in chemistry and biology: A mixed-method analysis*

Emily Tancredi-Brice Agbenyega, Ting Dai, Melissa Karakus, Erin McNamara Horvat, Jennifer G. Cromley, Anthony C. Perez, and Joseph Agyare Kumi

*The Interplay Between Contingencies of Self-worth and Test Anxiety*

Mandy Kirchgessner, Anthony C. Perez, Ting Dai, and Jennifer G. Cromley

### **Symposium: Cognitive Processes in Comprehension of Visual Representations: Art, Diagrams, Graphs, and Models**

Building/Room: Sheraton Wall Centre, Third Level / South Pavilion Ballroom C

*Five Tests of the Ability-as-Compensator Hypothesis in Diagram Comprehension Instruction*

Jennifer G. Cromley, Nora Newcombe, and Theodore W. Wills

*Beyond the Ball-and-Stick: Students' Processing of Novel STEM Visualizations*

Scott R. Hinze, David Rapp, Vickie Williamson, Mary Jane Shultz, Kenneth C. Williamson, and Ghislain Deslongchamps

### **Symposium: Understanding Emerging Opportunity Structures in STEM Education: Research Efforts to Explore School-Level Innovations**

Building/Room: Sheraton Wall Centre / North Junior Ballroom B

*Exploring Intensive Educational Experiences for Adolescents Talented in Science*

Rena F. Subotnik, and Robert H. Tai

*Understanding Implementation, Spread, and Sustainability of STEM High Schools in the Ohio STEM Learning Network*

Jeanne Rose Century

### **Structured Poster Session: New Measurement Paradigms: Psychometric Methods for Technology-Based Assessments**

Building/Room: Pan Pacific, Lobby Level / Oceanview 1&2

*Knowledge Specification: A Priori Requirement for Effective Embedded Assessment*

Debbie Denise Reese

*Knowledge Discovery From Selene Data*

Ben Hitt, and Debbie Denise Reese

**Poster Session: Contextual and Cultural Influences on Motivation, Engagement, and Affect**

Building/Room: Vancouver Convention Centre, First Level / East Ballroom B

*The Effect of Perception of Instrumentality on Self-Efficacy, Learning Strategy, and Grade Depending on Course Type*

Wonsik Kim, and Jenefer E. Husman

**Mentoring Session: Division L Junior Faculty Mentoring Seminar**

Building/Room: Vancouver Convention Centre, Second Level / West Room 202 & 203

Chair: Motoko Akiba

Chair: Susan J. Paik

Chair: Stacey A. Rutledge

*Working Toward Tenure*

Robert E. Floden

*Publishing in Prestigious Policy Journals*

Rick Mintrop

*Securing External Funding for Policy Research*

James S. Dietz

10:35am – 12:05pm

**Symposium: Issues in the Facilitation of Video-Based Professional Development**

Building/Room: Vancouver Convention Centre / West Room 114 & 115

*A Framework for the Facilitation of Teachers' Analysis of Video*

Elizabeth A. van Es, Jessica Tunney, Nanette M. Seago, and Lynn T. Goldsmith

12:25 – 1:55pm

**Emerging Issues and Challenges in Contemporary Science Education**

Building/Room: Sheraton Wall Centre, Third Level / North Junior Ballroom D

*Impact of Specialized Science High Schools on Talented Girls and First-Generation College Students*

Rena F. Subotnik, Robert H. Tai, John Taylor Almarode, and Edward Crowe



**Invited Session: Are You Seeking a Federal Research Grant? The Current Landscape of Federal Funding Programs and Opportunities**

Building/Room: Vancouver Convention Centre, First Level / West Room 118-120

Participant: Janice M. Earle  
Participant: James A. Griffin  
Chair: Frederick D. Erickson  
Participant: Deborah L. Speece

2:15 – 3:45pm

**Careers, Identities, and Disciplinarity in Doctoral Education**

Building/Room: Vancouver Convention Centre / West Room 214

*Mind the Gap: The Mismatch between Career Decision-Making Needs and Opportunities for Science Ph.D. Students*

Sandra Laursen, Heather Thiry, and Heidi Loshbaugh

**Symposium: Reasoning and Proving in Mathematics Textbooks across the Grades**

Building/Room: Sheraton Wall Centre / North Gulf Islands BCD

*Reasoning and Proving in Textbooks for Future Elementary Teachers*

Raven S. McCrory, and Andreas J. Stylianides

**MONDAY, April 16**

8:15am - 10:15am

**Symposium: Examining Computational Thinking in the Field**

Building/Room: Sheraton Wall Centre / North Junior Ballroom C

*Children Programming Games: A Strategy for Measuring Computational Thinking*

Jill Denner, Linda Werner, & Shannon Campe

10:35am - 12:05pm

**Symposium: Sustaining Interest in and Preparing Students for Successful Transitions to Professional Programs of Study: Insights From NSF (National Science Foundation)-Supported Engineering Education Initiatives**

Building/Room: Pan Pacific, Restaurant Level / Pacific Rim 2

*Developing a New Generation of Concept Inventories to Increase Diagnostic Capability*

Ruth A. Streveler

Chair: James S. Dietz

Discussant: James S. Dietz

**Poster Session: Investigations of Science Learning**

Building/Room: Vancouver Convention Centre / East Ballroom B

*Testing Cultural Factors as Predictors of International Differences in Academic Achievement*

Gavin W. Fulmer

12:25 - 1:55pm

**Symposium: Spatial Thinking in Chemistry**

Building/Room: Sheraton Wall Centre, Third Level / South Pavilion Ballroom C

*Spatial Abilities and Chemistry Achievement: Contributions and Limitations of Correlational Studies*

Mary Hegarty

*Sex Differences in Strategy Use for Spatial Problem Solving in Chemistry*

Mike Stieff

*Diagram Translation With Concrete Models: Why Are Helpful Tools Not Used?*

Andrew T. Stull, and Shamin Padalkar

*Models in the Classroom—Help or Hindrance? A Look at the Variables That Influence Students' Success on Representational Translation Tasks in the Chemistry Classroom*

Bryna Kumi, and Bonnie L. Dixon

2:15pm - 3:45pm

**Invited Session: What We Know About Successful STEM Education: The 2011 National Research Council Report and Beyond**

Building/Room: Vancouver Convention Centre, Third Level / West Room 306

Chair: Robert M. Hauser

Participant: Adam Gamoran

Participant: Barbara M. Means

Discussant: Janice M. Earle

Discussant: Sharon J. Lynch

Discussant: Edgar B. Hatrick

## **TUESDAY, April 17**

8:15am - 10:15am

### **Invited Session: Changing Mathematics Education with Technology through Research in Schools**

Building/Room: Vancouver Convention Centre / West Room 118-120

*Advancing Measurement of Student Learning and Engagement*

Nicole Shechtman

### **Symposium: Conceptual and Methodological Issues and Advances in Research on Epistemic Beliefs**

Building/Room: Sheraton Wall Centre / South Pavilion Ballroom C

*A Multiparameter Framework for the Design of Assessments of Epistemic Cognition*

Clark A. Chinn, and Luke Andrew Buckland

### **Poster Session: Cognition and Motivation in STEM**

Building/Room: Vancouver Convention Centre, First Level / East Ballroom B

*Cognitive and Motivational Predictors of First-Year Science Grades*

Jennifer G. Cromley, Erin McNamara Horvat, Anthony C. Perez, Emily Tancredi-Brice, Theodore W. Wills, Jacqueline Tanaka, Denis Dumas, Reham Raja, and Dar Sheth

*Change in Implicit Self-Beliefs About Ability in Biology and Its Effect on Retention in STEM Majors: A Latent Growth Modeling Approach*

Ting Dai, Jennifer G. Cromley, and Mandy Kirchgessner

*Mathematical Dispositions and Student Learning: A Metaphorical Analysis*

Jinfa Cai, Victoria Robison, John Moyer, Ning Wang, and Bikai Nie

10:35am - 12:05pm

### **Symposium: STEM Policies and Pathways in Two Cities Differently Positioned in the Global Economy**

Building/Room: Vancouver Convention Centre, Second Level / East Room 11

*Proliferation of STEM High School Policies and Opportunity Structures: The Denver Case*

Margaret A. Eisenhart, Jarrod Hanson, and Sarah Ohle

*The Intensification of STEM-Related Inequalities in Global Context: The Buffalo Example*

Lois Weis, Amy Elizabeth Stich, Kristin Cipollone, and Andrea Nikischer

*Cultures of STEM and Schooling: Figured Worlds, Positioning, and Authoring in Global Context*

Margaret A. Eisenhart, Ruth Maria Lopez, and Michael Suarez

*Figured Worlds of STEM in High Schools and Among Students in Buffalo*  
Amy Elizabeth Stich, Kristin Cipollone, Andrea Nikischer, and Lois Weis

Chair: Margaret A. Eisenhart

Discussant: Jacquelynne Eccles

Discussant: Nailah Suad Nasir

**Roundtable Session: Schooling in the Middle and Then in High School: Studying the Importance of School Settings**

Building/Room: Vancouver Convention Centre / East Ballroom C

*Computer-Based Collaboration in Middle School: A Sociocultural Perspective on Pair Programming With Mexican-Heritage and European-Heritage Students*

Omar Ruvalcaba, Linda Werner, Shannon Campe, and Jill Denner

**Poster Session: What Do We Know About Mathematics Curriculum? Comparative Studies**

Building/Room: Vancouver Convention Centre / East Ballroom B

*Pedagogical and Mathematical Analyses of Teaching Equation-Solving in Standards-Based and Traditional Curricula*

Bikai Nie, Jinfa Cai, and John Moyer

12:25 - 1:55pm

**Symposium: Connecting the Moving Dots: Comparing Approaches to Coordinating Temporal Analyses of Groups and Individuals**

Building/Room: Sheraton Wall Centre / South Pavilion Ballroom B

*Four Lenses for Examining Individual and Collective Level Mathematical Progress*

Chris Rasmussen, Megan Wawro, and Michelle Zandieh

**Roundtable Session: Effective Mathematics Teaching: Is There a Best Approach?**

Building/Room: Vancouver Convention Centre / East Room 1

*Small-Group Learning Versus Lecture-Based Instruction in Mathematics College Classrooms: A Meta-Analysis*

Rafa M. Kasim, and Sema A. Kalaian

**Poster Session: Cognitive Processes and Self-Regulated Learning**

Building/Room: Vancouver Convention Centre, First Level / East Ballroom B

*Do Spatial Abilities Matter for Teaching Diagram Comprehension? A Test of the Ability-  
as-Compensator Hypothesis*

Jennifer G. Cromley, Theodore W. Wills, Bradley W. Bergey, Shannon L. Fitzhugh, and  
Nora Newcombe

ARC is a National Science Foundation funded initiative that supports education researchers in science, technology, engineering, and mathematics (STEM). Headquartered at NORC at the University of Chicago's Hyde Park campus offices, ARC is committed to capitalizing on and sharing the insights, methods, and results that help to build an *arc of knowledge* across STEM fields.

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