

# SREE

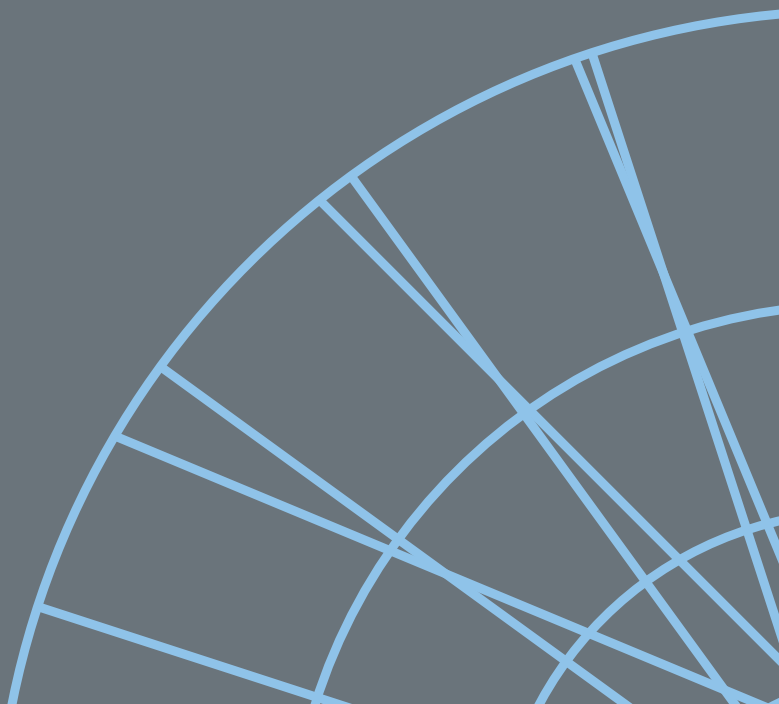
*Advancing Education Research*

Fall 2011 Conference

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*Improving Mathematics and Science  
Education for All Students*

PROGRAM



## **SREE Membership**

The Society for Research on Educational Effectiveness brings together individuals interested in the use of causal inference to improve educational practice. SREE provides a forum to engage with a community of researchers, practitioners, policymakers, and students united in a desire to advance education research.

### **Member - \$150 per calendar year**

Individual members in SREE have backgrounds in a diverse range of areas, including, but not limited to, education, economics, medicine, psychology, public policy, sociology, and statistics. They include researchers investigating causal relations in education, professionals active in school settings, and public officials and others instrumental in translating research into practice.

### **Student Member - \$100 per calendar year**

Student members must be enrolled in a degree-granting program at an accredited institution. The Graduate Student Organization exists to provide an organizational venue where students may begin the career-long process of establishing networks that foster their intellectual growth and maximize the utility of their research.

### **Institutional Members - \$1500 per calendar year**

Educational institutions, government agencies, nonprofit organizations, and for-profit organizations are encouraged to join SREE and designate an individual to represent their interests in the Society.

## **How to Join SREE or Renew Membership**

### *By credit card:*

All major credit cards are accepted at the conference registration desk or via SREE's secure site:

<https://www.sree.org/members/payment/>

### *By check:*

Checks made out to SREE are accepted at the conference registration desk or may be mailed to:

Society for Research on Educational Effectiveness

2040 Sheridan Rd.

Evanston, IL 60208

The logo for the Society for Research on Educational Effectiveness (SREE) consists of the letters "SREE" in a large, bold, sans-serif font, enclosed within a thin black rectangular border.

## THURSDAY SEPTEMBER 8, 2011

### 9:00 AM - 12:00 PM: Workshops

*Workshops require an additional fee.*

#### Workshop A

*Unpacking the Black Box of Causality:*

*The Latest Developments of Mediation Analysis*

Kosuke Imai, Princeton University

Roosevelt

#### Workshop B

*Value-Added Models for Analyzing Teacher Effectiveness*

Daniel McCaffrey, RAND

Executive Forum

#### Workshop C

*Propensity Score Methods for Estimating Causal Effects:*

*The Why, When, and How*

Elizabeth Stuart, Johns Hopkins University

Culpeper

#### Workshop D

*Constructing Measures: A Basis for IRT Models*

Karen Draney, University of California - Berkeley

Latrobe

### 12:00 PM - 1:00 PM: Program Committee Lunch

### 1:00 PM - 3:00 PM: Session 1

#### Program note:

*Invited symposium* designates a session that was organized by the program committee.

Attendance at an invited symposium is open to all conference participants.

## **1A. Early Childhood Symposium**

### **Early Mathematics Education For All:**

#### **Evaluation of an Intervention Using Multiple Methodologies and Outcomes**

Dumbarton - 3rd Floor

Organizer: Douglas Clements, University at Buffalo

*A Regression Discontinuity Analysis of the Impact of Building Blocks in an Urban Public Prekindergarten Program and Associations between Fidelity-to-Curriculum and Child Outcomes*  
Christina Weiland, Hadas Eidelman, & Hirokazu Yoshikawa, Harvard University

*The Effect of Time Spent on Mathematics-Related Computer Activities on Children's Achievement Outcomes in Pre-Kindergarten*

Karen Anthony, Amy Holmes, Dale Farran, & Mark Lipsey, Vanderbilt University,  
Douglas H. Clements & Julie Sarama, University at Buffalo, and Kerry Hofer, Vanderbilt University

*Measurement of Fidelity of Implementation to a Core Technology Component and Effects on Outcomes in an Early Mathematics Intervention*

Douglas H. Clements, Julie Sarama, & Mary Elaine Spitler, University at Buffalo,  
Christopher B. Wolfe, Indiana University - Kokomo,  
and Alissa Lange, National Institute for Early Education Research

Discussant: Christopher Hulleman, James Madison University

## **1B. Early Childhood**

### **Curricular Approaches and Related Factors in Science Classrooms**

Longworth

Chair: Kimberly Brenneman, National Institute for Early Education Research

*Preschool Teachers' Attitudes and Beliefs Toward Science: Development and Validation of a Questionnaire*

Michelle F. Maier, University of Virginia, Daryl B. Greenfield &  
Rebecca J. Bulotsky-Shearer, University of Miami

*Ramps and Pathways: Evaluation of an Inquiry-Based Approach to Engaging Young Children in Physical Science*

Betty Zan & Lawrence Escalada, University of Northern Iowa

*Children's Question Asking and Curiosity: A Training Study*

Jamie Jirout & David Klahr, Carnegie Mellon University

*Foundations of Science Literacy: One Preschool Science Professional Development Program's Impact on Classroom Instructional Quality as Measured by the CLASS*

Stacy B. Ehrlich, Consortium on Chicago School Research, Nancy Clark-Chiarelli, Jess Gropen, Cindy Hoisington, Yen Thieu, & Janna M. Fuccillo, Education Development Center

## **1C. Elementary Grades Invited Symposium**

### **Research on Professional Development in Mathematics and Science**

Roosevelt

Organizer: Russell Gersten, Instructional Research Group

*Should We Be Thinking in New Ways about Locally-Led Professional Learning?  
A Randomized Controlled Trial of Lesson Study with Mathematical Resource Kits*  
Catherine Lewis, Rebecca Perry, & Shelley Friedkin, Mills College

*Exploring Teacher Knowledge Demands in the Use of Models for Integer Operations:  
Implications for Professional Development*  
Rebecca Mitchell, Boston College, Charalambos Charalambous &  
Heather Hill, Harvard University

*Challenges of Scaling Up and Sustaining Urban Reform:  
Evidence from a Mixed-Methods Trial of Professional Development for Science Education*  
Adam Gamoran, Geoffrey Borman, & Jill Bowdon, University of Wisconsin - Madison

*Exploring the Effects of Lesson Analysis on Instructional Quality and Student Learning*  
Jim Stigler, University of California - Los Angeles, Kathleen Roth, BSCS,  
and Nicole Kersting, University of Arizona

Discussant: Hilda Borko, Stanford University

## **1D. Secondary Grades Symposium**

### **Examining Relationships between Instructional Quality in Mathematics, Contextual Factors, and Student Achievement**

Culpeper

Organizer: Laura Neergaard, Vanderbilt University

*Impact of Organizational Supports for Math Instruction on the Instructional Quality of Beginning Teachers*  
Thomas Smith & Laura L. Neergaard, Vanderbilt University,  
and Eric Hochberg, University of Pennsylvania

*School District Curriculum Implementation:  
Explaining Differences in the Cognitive Demand of Mathematical Tasks*  
Anne L. Garrison, Vanderbilt University

*Examining Relationships between Instructional Quality and Student Achievement  
in Middle-Grades Mathematics*  
Glenn T. Colby, Vanderbilt University, Melissa D. Boston, Duquesne University,  
and Thomas Smith, Vanderbilt University

Discussant: Drew Gitomer, Rutgers University

## **1E. Secondary Grades Symposium** **Principled Assessment Designs for Simulation-Based Science Assessments**

Latrobe

Organizer: Edys Quellmalz, WestEd

*Multilevel Assessments of Science Standards*

Edys Quellmalz, Michael Timms, & Matt Silbergliitt, WestEd

*Using Machine-Learned Detectors to Assess and Predict Students' Inquiry Performance*

Janice D. Gobert, Ryan Baker, & Michael Sao Pedro, Worcester Polytechnic Institute

*Designing Dynamic and Interactive Assessments for English Learners*

*That Directly Measure Targeted Science Constructs*

Rebecca Kopriva, University of Wisconsin - Madison, David Gabel &

Catherine Cameron, Center for Applied Linguistics

*Exploring the Utility of a Virtual Performance Assessment*

Jody Clarke-Midura, Harvard University, Marty McCall, Smarter Balanced Assessment

Consortium, and Chris Dede, Harvard University

Discussant: James Pellegrino, University of Illinois - Chicago

## **1F. At-Risk or Underserved Learners Invited Symposium** **The Contributions of Cognitive Science for Understanding** **and Improving Instruction for Students with Mathematics Learning Difficulties** Sulgrave - 3rd Floor

Organizer: Nancy Jordan, University of Delaware

*Kindergarten Predictors of Math and Reading Outcomes and Difficulties*

Paul Cirino, University of Houston

*Longitudinal Studies of Cognitive and Mathematical Processing in Preschoolers with and without Neurodevelopmental Disorders Who Are at High Risk for Learning Difficulties in Mathematics*

Marcia Barnes, University of Texas Health Science Center - Houston

*Differentiating Underpinnings of Poor Performance in Mathematics: When Numbers Matter*

Michèle M. M. Mazzocco, Johns Hopkins University

Discussant: Daniel Berch, University of Virginia

*Providing Access to Important Mathematics Is Not the Solution:*

*The Perils of Overlooking the Cognitive Science Perspective*

Discussant: Kathy Mann Koepke, National Institute of Child Health & Human Development

*Approaches to the Cognitive Science of "At-Risk" Learners:*

*Finding the Sources of Learning Through Biobehavioral Research*

## **1G. Research Methods Symposium**

### **Scaling-Up: From the Laboratory to the Field Site to Multiple Sites**

Executive Forum

Organizer: Mark Davison, University of Minnesota

*Bridging the Lab and the Field with In Vivo Experimentation*

Kenneth R. Koedinger, Carnegie Mellon University

*From the Lab to the Classroom:*

*Expanding and Scaling Up the Curriculum Domain*

Mark L. Davison, Charles N. Fehr, & Benjamin E. Seipel, University of Minnesota

*Scaling Up an Evidence-Based Practice:*

*Importance of Fidelity and Flexibility*

Kristen L. McMaster, University of Minnesota, and Douglas Fuchs, Vanderbilt University

*Multisite Studies and Scaling-Up in Educational Research*

Michael Harwell, University of Minnesota

Discussant: Asha Jitendra, University of Minnesota

## **Break**

## 3:30 PM - 5:30 PM: Session 2

### **2A. Early Childhood Symposium Development, Implementation, and Evaluation of Preschool Mathematics and Science Intervention Models**

Roosevelt

Organizer: Caroline Ebanks, Institute of Education Sciences

*Early Childhood Hands-On Science:*

*The Development, Implementation, and Evaluation of A Preschool Science Curriculum*

Judy Brown, Miami Science Museum, and Chris Hulleman, James Madison University

*Foundations of Science Literacy:*

*Understanding Implementation through an Analysis of Fidelity and Mediation*

Nancy Clark-Chiarelli, Jess Gropen, Janna Marie Fuccillo, Cindy Hoisington, &  
Yen Thieu, Education Development Center

*MyTeachingPartner - Mathematics/Science:*

*Effects on Teaching Practice and Student Learning*

Mable Kinzie, Jessica Vick Whitaker, & Amanda Williford, University of Virginia,  
Carolyn R. Kilday, University at Buffalo, Patrick McGuire, University of Colorado - Colorado Springs,  
and Youngju Lee, Eonju Elementary School

*Efficacy and Effective Studies of the Building Blocks Curriculum and the TRIAD Scale-Up Model*

Douglas Clements & Julie Sarama, University at Buffalo

*Closing the Socioeconomic Gap:*

*An Efficacy Study of a Mathematics Curriculum to Support the Youngest Preschool Children*

Prentice Starkey & Alice Klein, WestEd



## **2B. Elementary Grades**

### **Experimental Evaluations of Curricula and Interventions**

Latrobe

Chair: Scott Baker, University of Oregon

*Curriculum Matters: Evidence from a Randomized Control Trial  
of Four Elementary School Math Curricula*

Barbara Harris & Roberto Agodini, Mathematica Policy Research

*A Randomized Control Trial of Two Online Mathematics Curricula*

Haiwen Wang & Katie Woodworth, SRI International

*Implications of a Cognitive Science Based Model for Integrating Science and Literacy in Grades 3-5:  
Replication of Multiyear Direct and Transfer Effects in Science and Reading from Grades 3-5 to 6-8*

Michael Vitale, East Carolina University, and Nancy Romance, Florida Atlantic University

*Examining the Impact of Child X Instruction Interactions in First Grade*

Elizabeth Coyne Crowe & Carol McDonald Connor, Florida State University,  
and Michèle M. M. Mazzocco, Johns Hopkins University

## **2C. Elementary Grades**

### **New Directions in Math Assessment**

Sulgrave - 3rd Floor

Chair: Ben Clarke, University of Oregon

*The Impact of Indiana's System of Diagnostic Assessments on Mathematics Achievement*

Spyros Konstantopoulos, Michigan State University,

Shazia Miller & Arie van der Ploeg, American Institutes for Research,

Cheng-Hsien Li & Anne Traynor, Michigan State University

*Diagnostic Learning Progressions Framework:*

*Developing an Embedded Formative and Summative Assessment System to Improve Learning  
Outcomes for Elementary and Middle School Students with Mathematics Learning Disabilities*

Kavita Seeratan, SRI International

*Preschool Rating Instrument for Science and Mathematics (PRISM)*

Kimberly Brenneman, Kwanghee Jung, Judi Stevenson-Garcia, &

Ellen Frede, National Institute for Early Education Research

*Assessing Data Modeling and Statistical Reasoning*

Richard Lehrer, Vanderbilt University, Mark Wilson &

Elizabeth Ayers, University of California - Berkeley, and Min-joung Kim, Vanderbilt University

## **2D. Secondary Grades Invited Symposium**

### **Applying Cognitive Principles to Improve Science and Math Curricula**

Executive Forum

Organizer: Steven Schneider, WestEd

*Using Research on Analogical Reasoning, Diagrammatic Reasoning,  
and Prior Knowledge to Improve Middle School Science Outcomes*

Nora Newcombe, Temple University

*Applying Principles of Worked Examples, Visual Mapping, Formative Assessment,  
and Spacing to Improve Middle School Math Outcomes*

James Pellegrino, University of Illinois - Chicago

*Measuring Efficacy of Principle-Based Redesign of Science Curricula*

Laura Desimone, University of Pennsylvania

*Measuring Efficacy of Principle-Based Redesign of the CMP Math Curriculum*

Jodi Davenport, WestEd

Discussant: Phil Kellman, University of California - Los Angeles

## **2E. Secondary Grades**

### **Improving Instruction and Learning in Secondary Mathematics**

Culpeper

Chair: Mike Garet, American Institutes for Research

*Assessing Early Impacts of School-of-One: Evidence from the Three School-Wide Pilots*

James Kemple, Micha D. Segeritz, &

Rachel Cole, Research Alliance for New York City Schools

*How Can We Design Effective Instructions to Promote Transfer?*

Hee Seung Lee, Shawn Betts, & John R. Anderson, Carnegie Mellon University

*Improving Foundational Number Representations through Simple Arithmetical Training*

Arava Y. Kallai, Christian D. Schunn, Andrea L. Ponting, &

Julie A. Fiez, University of Pittsburgh

*Democratizing Access to Core Mathematics across Grades 9-12*

Stephen Hegedus, Sara Dalton, & Arden Brookstein, University of Massachusetts - Dartmouth,

John Tapper & Eric Heller, University of Massachusetts - Donahue Institute

## **2F. At-Risk or Underserved Learners**

### **Effective Instructional Practices for At-Risk Learners across the Grades**

Longworth

Chair: Asha Jitendra, University of Minnesota

*Which Teacher Instructional Practices Most Effectively Help 1st Grade Students with and without Mathematics Difficulties?*

Paul Morgan, Pennsylvania State University, George Farkas, University of California - Irvine, and Steven Maczuga, Pennsylvania State University

*The Math Learning Companion: Initial Research into Two Curriculum Components*

Lindy Crawford, Texas Christian University, and Barbara Freeman, Digital Directions International

*Investigating the Effectiveness of SW-PBIS on School's Accountability at Both Elementary and Middle Schools*

Ji Hoon Ryoo, University of Nebraska - Lincoln, and Saahoon Hong, University of Minnesota

*Implementing Student-Level Random Assignment during Summer School:*

*Lessons Learned from an Efficacy Study of Online Algebra I for Credit Recovery*

Jessica Heppen, American Institutes for Research, Elaine Allensworth, Consortium on Chicago School Research, Kirk Walters, American Institutes for Research, Amber Stitzel Pareja, Consortium on Chicago School Research, Anja Kurki, American Institutes for Research, Takako Nomi, Consortium on Chicago School Research, and Nicholas Sorensen, American Institutes for Research

## **2G. Research Methods**

### **Observational Studies: Matching, Weighting, and Density Regression**

Dumbarton - 3rd Floor

Chair: Beth Ann Griffin, RAND

*Propensity Score Weighting with Error-Prone Covariates*

Daniel McCaffrey, J.R. Lockwood, & Claude Messan Setodji, RAND

*Using Quasi-Experimental Methods to Select Comparison Schools for an Evaluation of the Northeast Tennessee College and Career Ready Consortium*

Christine Mokher & Linda Cavalluzzo, CNA Education

*Bayesian Unimodal Density Regression for Causal Inference*

George Karabatsos, University of Illinois - Chicago, and Stephen G. Walker, University of Kent, Canterbury

*Using Propensity Score Methods to Approximate Factorial Experimental Designs*

Nianbo Dong, Vanderbilt University

**6:00 PM - 7:00 PM: Welcome & Opening Address - Ballroom**

**Welcome & Introduction**

Larry Hedges, SREE President

**Opening Address**

**Has the Pendulum Stopped Swinging (At Last)?**

David Klahr

Walter van Dyke Bingham Professor of Cognitive Development and Education Sciences,  
Department of Psychology, Carnegie Mellon University,  
and Education Director of the Pittsburgh Science of Learning Center

**7:00 PM - 8:00 PM: Reception - Colonnade**

Sponsor: American Institutes for Research

**8:00 PM - 9:00 PM: Graduate Student Reception - Roosevelt**

**FRIDAY SEPTEMBER 9, 2011**

**8:00 AM - 8:30 AM: Breakfast - Ballroom**

**8:30 AM - 9:30 AM: Plenary - Ballroom**  
**Using Cognitive Psychology in the Science Classroom**

Carl Wieman  
Associate Director for Science  
White House Office of Science and Technology Policy

Introduction: Alice Klein, Fall 2011 Program Chair

**10:00 AM - 11:30 AM: Session 3**

**3A. Early Childhood Symposium**  
**Issues in Assessment and Scoring of Early Numeracy Skills**  
Roosevelt

Organizer: Arthur Baroody, University of Illinois - Urbana/Champaign

*Scoring Fluency with Basic Addition Combinations in Context*  
Arthur J. Baroody, David J. Purpura, Erin E. Reid, &  
Michael D. Eiland, University of Illinois - Urbana/Champaign

*Assessing a Linear Representation of the Counting Numbers*  
Erin E. Reid, Arthur J. Baroody, &  
David J. Purpura, University of Illinois - Urbana/Champaign

*Practical Issues in Early Mathematics Assessment*  
David J. Purpura, Arthur J. Baroody, &  
Erin E. Reid, University of Illinois - Urbana/Champaign

Discussant: Herbert P. Ginsburg, Columbia University

### **3B. Elementary Grades**

#### **Classroom Research in Mathematics**

Culpeper

Chair: Prentice Starkey, WestEd

*Teaching Students What They Already Know? The Misalignment between Mathematics Instructional Content and Student Knowledge in Kindergarten*  
Mimi Engel, Vanderbilt University, Amy Claessens, University of Chicago, and Maida Finch, Vanderbilt University

*Ensuring Every Child Is in the Race To the Top: Mathematics Curricular Practices for Diverse Kindergarten Students*  
Martha Cecilia Bottia, Stephanie Moller, Roslyn Arlin Mickelson, & Elizabeth Stearns, University of North Carolina - Charlotte

*The Benefits of Teachers' Collective Pedagogical School Culture for Diverse Students' Mathematics Achievement*  
Stephanie Moller, Elizabeth Stearns, Roslyn Arlin Mickelson, Martha Cecilia Bottia, & Neena Banerjee, University of North Carolina - Charlotte

### **3C. Elementary Grades**

#### **Policy Relevant Research**

Latrobe

Chair: Sara Rimm-Kaufman, University of Virginia

*Relations between Mathematical Knowledge for Teaching, Mathematics Instructional Quality, and Student Achievement in the Context of the Responsive Classroom (RC) Approach*  
Erin Ottmar, Sara Rimm-Kaufman, Ross Larsen, & Eileen Merritt, University of Virginia

*When Does Teacher Incentive Pay Raise Student Achievement? Evidence from Minnesota's Q-Comp Program*  
Aaron Sojourner, Kristine West, & Elton Mykerez, University of Minnesota

*Preparing to Learn from Math Instruction: Mastery-Oriented Students Benefit Most from Exploratory Activities*  
Marci S. DeCaro, Vanderbilt University, Daniel A. DeCaro, Indiana University, and Bethany Rittle-Johnson, Vanderbilt University

### **3D. Secondary Grades**

#### **The Role of Professional Development in Math and Science Improvement**

Dumbarton - 3rd Floor

Chair: Thomas Smith, Vanderbilt University

*Examining the Impact of an Online Professional Development Course on Students' Genetics and Evolution Content Knowledge*

Scott Strother, Lauren Goldenberg, Alice Anderson, Camille Ferguson, & Marian Pasquale, Education Development Center

*The Impact of Curriculum-Based Professional Development on Science Instruction: Results from a Cluster-Randomized Trial*

Joseph Taylor, Susan Kowalski, Stephen Getty, Christopher Wilson, & Janet Carlson, BSCS

*The Differential Effectiveness of the M@t.abel Teacher Professional Development Program in Mathematics in Italy: Evidence from a Random Assignment Evaluation*

Gianluca Argentin, University of Milan - Bicocca, Alberto Martini, University of Piemonte, Aline Pennisi, Ministry of Finance, and Daniele Vidoni, INVALSI

### **3E. Secondary Grades**

#### **Science Programs Supporting Teaching, Learning, and College Enrollment for Secondary Students**

Decatur

Chair: Edys Quellmalz, WestEd

*Evaluating the Diagnostic Validity of the Facet-Based Formative Assessment System*

Angela DeBarger, SRI International, Louis DiBello, University of Illinois - Chicago, Jim Minstrell, FACET Innovations, William Stout & James Pellegrino, University of Illinois - Chicago, Geneva Haertel & Mingyu Feng, SRI International

*Systems and Cycles: Learning about Aquatic Ecosystems*

Cindy E. Hmelo-Silver, Rebecca Jordan, & Catherine Eberbach, Rutgers University, Spencer Rugaber & Ashok Goel, Georgia Institute of Technology

*Engaging High School Students in Advanced Math and Science Courses for Success in College: Is Advanced Placement the Answer?*

Amy Proger, Thomas Kelley-Kemple, & Melissa Roderick, University of Chicago

### **3F. At-Risk or Underserved Learners**

#### **Mathematics Learning for At-Risk Students in Kindergarten and First Grade**

Executive Forum

Chair: Russell Gersten, Instructional Research Group

*Developing Number Sense in Kindergartners at Risk for Learning Difficulties in Mathematics*

Nancy Jordan, Nancy Dyson, & Joseph Glutting, University of Delaware

*Testing the Efficacy of a Kindergarten Tier 2 Intervention Program*

Scott Baker & Ben Clarke, University of Oregon,

Keith Smolkowski, Oregon Research Institute, Hank Fien, Chris Doabler, &

Mari Strand Cary, University of Oregon, and David Chard, Southern Methodist University

*Understanding and Promoting First-Grade Mathematics Development:*

*A Randomized Control Trial*

Lynn Fuchs, Vanderbilt University, David Geary, University of Missouri - Columbia,

Donald Compton, Douglas Fuchs, Carol Hamlett, & Pamela Seethaler, Vanderbilt University,

and Chris Schatschneider, Florida State University

### **3G. Research Methods**

#### **Networks, Transfer, and Evaluating Fidelity**

Longworth

Chair: Claude Messan Setodji, RAND

*Rigorous Measures of Implementation:*

*A Methodological Framework for Evaluating Innovative STEM Programs*

Amy Cassata-Widera, Jeanne Century, & Dae Y. Kim, University of Chicago

*A Method for the Microanalysis of Pre-Algebra Transfer*

Philip Pavlik, Jr., Michael Yudelson, & Kenneth R. Koedinger, Carnegie Mellon University

*Modeling Intervention Effects on Social Networks in Education Research*

Tracy Morrison Sweet & Brian Junker, Carnegie Mellon University



### **3H. Research Methods**

#### **Designing Randomized Trials**

Sulgrave - 3rd Floor

Chair: Jessaca Spybrook, Western Michigan University

#### *The Challenge of Authenticity in Scale-Up Effectiveness Trials*

John F. Pane, Beth Ann Griffin, Daniel McCaffrey, & Rita Karam, RAND

#### *Designing a Sample Selection Plan to Improve Generalizations from Two Scale-Up Experiments*

Elizabeth Tipton, Northwestern University, Kate Sullivan, SEDL,

Larry Hedges, Northwestern University, Michael Vaden-Kiernan, SEDL,

Geoffrey Borman, University of Wisconsin - Madison, and Sarah Caverly, SEDL

#### *Using Mahalanobis Distance Scores for Matched Pairing of Schools in a Randomized Controlled Trial Study of Leadership and Assistance for Science Education Reform (LASER)*

Todd Zoblotsky, Carolyn Ransford-Kaldon, &

Donald Morrison, University of Memphis

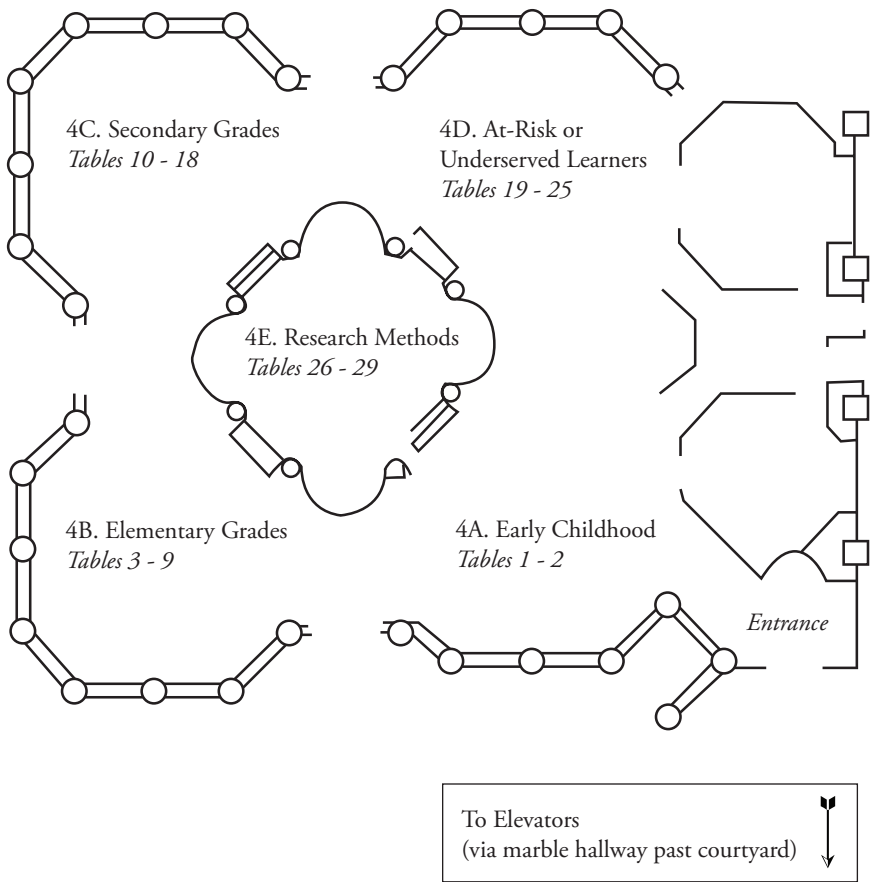
**12:00 PM - 1:00 PM: Keynote Address - Ballroom**  
**Improving Education in the Developing World**

Michael Kremer  
Gates Professor of Developing Societies  
Department of Economics  
Harvard University

Introduction: Barbara Schneider, SREE Vice President

**1:00 PM - 2:00 PM: Lunch - Ballroom**

Dessert will be served in the Colonnade.



Colonnade (Lobby Level)  
The Fairmont Washington, D.C.

## 4A. Early Childhood

### *1: The Effects of Pretests on Children's Numerical Magnitude Representations*

Lisa K. Fazio, Lauren Gumbel, & Robert S. Siegler, Carnegie Mellon University

### *2: The Relation between Parental Involvement and Math Anxiety:*

#### *Implications for Mathematics Achievement*

Steven O. Roberts & Rose K. Vukovic, New York University

## 4B. Elementary Grades

### *3: Examining the Student and Teacher Correlates of Math Achievement and Moderators of Treatment Impact for a Kindergarten Mathematics Curriculum Implemented in Whole Classroom Settings*

Hank Fien, University of Oregon, Keith Smolkowski, Oregon Research Institute, Ben Clarke, Scott Baker, & Chris Doabler, University of Oregon, Derek Kosty, Oregon Research Institute, and Mari Strand Cary, University of Oregon

### *4: To What Extent Does the Responsive Classroom Approach Modify Fifth Grade Students' Efficacy and Anxiety in Mathematics and Science?*

Marissa Swaim Griggs, Sara E. Rimm-Kaufman, Eileen G. Merritt, & Christine L. Patton, University of Virginia

### *5: Applying New Methods to the Measurement of Fidelity of Implementation: Examining the Critical Ingredients of the Responsive Classroom Approach in Relation to Mathematics Achievement*

Tashia D. S. Abry, Sara E. Rimm-Kaufman, Ross A. Larsen, & Alix J. Brewer, University of Virginia

### *6: Math Monster Mystery: A Formative Assessment in Game Format for Grade 4 Mathematics*

Nora S. Reynolds, Scott Brewster, & Robert Brown, Triad Interactive Media

### *7: Does Spatial Training Improve Children's Mathematics Ability?*

Yiling Cheng & Kelly Mix, Michigan State University

### *8: What Drives Alignment between Teachers' Survey Self-Reports and Classroom Observations of Standards-Based Mathematics Instruction?*

Julia Kaufman & Brian Junker, Carnegie Mellon University

### *9: Battleship Numberline: A Digital Game for Improving Estimation Accuracy on Fraction Number Lines*

J. Derek Lomas, Carnegie Mellon University, Dixie Ching, New York University, Eliane Stampfer, Melanie Sandoval, & Ken Koedinger, Carnegie Mellon University

#### 4C. Secondary Grades

*10: Variation in Content Coverage by Classroom Composition:*

*An Analysis of Advanced Math Course Content*

Elizabeth Covay, University of Pennsylvania

*11: BioBridge Professional Development:*

*Bringing Innovative Science into the Classroom*

Jeremy Babendure & Loren Thompson, University of California - San Diego,

Karen Peterman, Karen Peterman Consulting,

Leanne Jacobson Teiper, Goodman Research Group, Heather Gastil, Heather Liwanag, &

Shelley Glenn Lee, University of California - San Diego

*12: New Instruments That Can Be Used by Researchers to Assess*

*Three Different Aspects of Science Proficiency*

Victor Sampson, Jonathon Grooms, & Patrick Enderle, Florida State University

*13: Does Money Matter? The Impact of Educational Expenditures on International Science Test Scores*

Anthony Derriso, University of Alabama

*14: How Do Students' Problem Solving Strategies and Preference for Learning Environments Relate to Mathematical Performance? A Comparative Study between South Korea and the United States*

Christine Yang, Northwestern University

*15: Can Comparison of Contrastive Examples Facilitate Graph Understanding?*

Linsey A. Smith & Dedre Gentner, Northwestern University

*16: Developments for a Diagnostic System to Assess Sources of Mathematical Difficulties*

Susan Embretson, Georgia Institute of Technology

*17: The First Wave of School Sanctions:*

*A Regression Discontinuity Study of Being on a Probationary List*

Guan Kung Saw, I-Chien Chen, Barbara L. Schneider, &

Kenneth A. Frank, Michigan State University

*18: Choosing a STEM Path: Course-Selection in High School and Postsecondary Outcomes*

Jonghwan Lee & Justina Judy, Michigan State University

#### **4D. At-Risk or Underserved Learners**

*19: Predicting First Graders' Development of Calculation versus Word-Problem Performance: The Role of Dynamic Assessment*

Pamela M. Seethaler, Lynn S. Fuchs, Douglas Fuchs, & Donald L. Compton, Vanderbilt University

*20: Effects of Cognitive Strategy Interventions on Word Problem Solving and Working Memory in Children with Math Disabilities*

H. Lee Swanson, Cathy Lussier, & Michael Orosco, University of California - Riverside

*21: Comparison of Chronic and Acute Models of Risk on Mathematics Achievement and Growth*

Christopher Desjardins, J.J. Cutuli, & Janette E. Herbers, University of Minnesota, Chi-Keung Chan, Elizabeth Hinz, & David Heistad, Minneapolis Public Schools, Jeffrey D. Long, University of Iowa, and Ann S. Masten, University of Minnesota

*22: Using a Scientific Process for Curriculum Development and Formative Evaluation: Project FUSION*

Christian Doabler, Mari Strand Cary, Benjamin Clarke, Hank Fien, Scott Baker, & Kathy Jungjohann, Center on Teaching and Learning

*23: The Contribution of Mathematics Instructional Quality and Class Size to Student Achievement for Third Grade Students from Low-Income Families*

Eileen Merritt, Sara Rimm-Kaufman, & Robert Berry, University of Virginia, Temple Walkowiak, North Carolina State University, and Ross Larsen, University of Virginia

*24: The Policy Choices of Effective Principals*

Sarah Cannon & David Figlio, Northwestern University, and Tim Sass, Florida State University

*25: The Effects of Teachers' Gender-Stereotypical Expectations on the Development of the Math Gender Gap*

Joseph P. Robinson, Sarah T. Lubienski, & Yasemin Copur, University of Illinois at Urbana-Champaign

#### **4E. Research Methods**

*26: Modeling Students' Response to Intervention Using an Individualized Piecewise Growth Model*

Keith Zvoch & Joseph Stevens, University of Oregon

*27: Calculating State-Level Grade Retention Rates*

John Robert Warren & Jim Saliba, University of Minnesota

*28: Crowdsourcing the Rating of Open-Response Mathematics Questions*

Nathan VanHoudnos, Carnegie Mellon University, Lindsey Smith, Propel EAST Charter School, Jamie Callan, Laura Dabbish, & Brian Junker, Carnegie Mellon University

*29: Using a New Reading Comprehension Assessment to Measure Discourse Representations and Identify Types of Comprehenders*

Sarah Carlson, Ben Seipel, & Kristen McMaster, University of Minnesota

## 3:00 PM - 5:00 PM: Session 5

### 5A. Early Childhood Invited Symposium

#### Assessment in Early Childhood Mathematics and Science

Executive Forum

Organizer: Daryl Greenfield, University of Miami

*Mathematics Assessment Along Pre-K to Primary Learning Trajectories:  
From Rasch to Rule Space Models*

Julie Sarama & Douglas Clements, University at Buffalo, Christina Weiland &  
Hiro Yoshikawa, Harvard University,  
Curtis Tatsuoaka, Case Western Reserve University,  
and Kikumi Tatsuoaka, Columbia University

*Child Math Assessment: The Development of a Broad Measure  
of Children's Informal Mathematical Knowledge*

Alice Klein & Prentice Starkey, WestEd

*Happy Birthday: An Assessment Tool That Helps Teachers  
Understand and Promote Young Children's Math Learning*

Herb Ginsburg, Sandra Pappas, & Young-Sun Lee, Columbia University,  
and Cynthia Chiong, Joan Ganz Cooney Center

*Lens on Science: A Touch Screen, Computer Adaptive System  
for Assessing Science in Young Children*

Daryl Greenfield, University of Miami, Ximena Dominguez, SRI,  
Janna Fuccillo, Education Development Center,  
Michelle Maier, University of Virginia, and Ariela Greenberg, American Institutes for Research

Discussant: Paul Morgan, Pennsylvania State University

## **5B. Elementary Grades Symposium**

### **Evaluations of Elementary Science Curricula and Instructional Practices**

Roosevelt

Organizer: Christina Chhin, Institute of Education Sciences

*Year 1 of an Efficacy Trial of the Promoting Science among English Language Learners (P-SELL) Intervention in Grade 5 Classrooms: Intervention, Results, and Limitations*

Randall Penfield & Okhee Lee, University of Miami

*Using an Argument-Based Inquiry Approach to Learn Science:*

*Year 1 Results of the Science Writing Heuristic (SWH)*

Mary Grace Villanueva, Brian Hand, William Therrien, &  
Jonte Taylor, University of Iowa, and Mack Shelley, Iowa State University

*An Efficacy Study of the FOSS/ASK Diagnostic Embedded Classroom Assessment -  
Lessons Learned in Implementation*

Cathy Ringstaff, Michael Timms, & Steven Schneider, WestEd

Discussant: Joseph Taylor, BSCS

## **5C. Elementary Grades**

### **Instructional Design**

Longworth

Chair: Nicholas Gage, University of Connecticut

*Aligning the Structural Components across Learning Tasks of Case Comparisons*

Louis Alfieri, Timothy J. Nokes, &

Christian D. Schunn, University of Pittsburgh

*The Effects of Feedback during Exploratory Math Practice*

Emily Fyfe, Bethany Rittle-Johnson, & Marci DeCaro, Vanderbilt University

*How to Schedule Multiple Graphical Representations?*

*A Classroom Experiment with an Intelligent Tutoring System for Fractions*

Martina Rau & Vincent Alevan, Carnegie Mellon University,  
and Nikol Rummel, Ruhr-Universität Bochum, Germany



## **5D. Middle and Secondary Grades Symposium**

### **Supporting Elementary and Middle-School Students' Development of Science Reasoning Skills**

Latrobe

Organizer: Stephanie Siler, Carnegie Mellon University

*Using Model-Tracing to Conduct Performance Assessment of Students' Inquiry Skills Within a Microworld*

Janice D. Gobert, Worcester Polytechnic Institute,  
and Kenneth R. Koedinger, Carnegie Mellon University

*Deconstructing the Instruction of the Control of Variables Strategy: Key Components of Science Instruction*

Benjamin D. Freer, Elizabeth P. Lorch, Robert F. Lorch, Jr., &  
William Calderhead, University of Kentucky

*The Effect of Scaffolded Causal Identification in the Transfer of Experimental Design Skills*

Stephanie A. Siler, David Klahr, Kevin Willows, &  
Cressida Magaro, Carnegie Mellon University

*Improving Students' Problem Solving in a Virtual Chemistry Simulation through Metacognitive Messages*

Carole R. Beal, University of Arizona, and Ronald H. Stevens, University of California - Los Angeles

Discussant: Sandra Katz, University of Pittsburgh

## **5E. Middle and Secondary Grades Symposium**

### **Middle School Mathematics Professional Development Study:**

#### **Findings after the Second Year of Implementation**

Sulgrave - 3rd Floor

Organizer: Mike Garet, American Institutes for Research

*Middle School Mathematics Professional Development Impact Study:*

*Design and Measures*

James Taylor & Fran Stancavage, American Institutes for Research, and Fred Doolittle, MDRC

*Middle School Mathematics Professional Development Impact Study:*

*Intervention Overview and Implementation Results*

Kirk Walters & Steven Hurlburt, American Institutes for Research

*Middle School Mathematics Professional Development Impact Study: Summary of Findings*

Andrew Wayne, Mengli Song, & Seth Brown, American Institutes for Research,  
Susan Sepanik & Pei Zhu, MDRC

Discussant: Peter Youngs, Michigan State University

## **5F. At-Risk or Underserved Learners Symposium**

### **Findings from Three Federally Funded Mathematics Intervention Studies Focusing on Students at Risk for Math Failure and Students with Learning Disabilities**

Dumbarton - 3rd Floor

Organizer: Marjorie Montague, University of Miami

*Effects of an Early Numeracy Intervention on the Performance of Second-Grade Students with Mathematics Difficulties*

Diane Pedrotty Bryant, Brian R. Bryant, Greg Roberts,

Kathleen Hughes Pfannenstiel, & Jennifer Porterfield, University of Texas - Austin

*The Impact of Small-Group Tutoring Interventions on the Mathematical Problem Solving and Achievement of Third Grade Students with Mathematics Difficulties*

Asha Jitendra, University of Minnesota

*The Effects of Solve It! Instruction on Math Problem Solving of Middle School Students of Varying Ability: An Efficacy and Replication Study (2007-2010)*

Marjorie Montague, University of Miami

Discussant: Scott Baker, University of Oregon

## **5G. Research Methods Invited Symposium**

### **Permutation Test for Education Research**

Culpeper

Organizer: Daniel McCaffrey, RAND

*A Comparison of Permutation and Mixed-Model Regression Methods for Group-Randomized Trials*

David Murray, Ohio State University, and Dongyue Fu, Quintiles Corporation

*Multiple Testing in a Hierarchy*

S. Stanley Young, National Institute of Statistical Sciences

*A New Method for Anchor Item Selection in Differential Item Functioning Analysis Using Permutation Tests*

Claude Messan Setodji, RAND, Steven P. Reise, University of California - Los Angeles,

Leo S. Morales, Group Health Research Institute, Marie N. Fongwa, Azusa Pacific University, and Ron D. Hays, University of California - Los Angeles

Discussant: Spyros Konstantopoulos, Michigan State University

## SATURDAY SEPTEMBER 10, 2011

### 9:00 AM - 12:00 PM: Short Courses, Part I

*Short courses require an additional fee.*

#### Short Course 1: Research Design - Sulgrave - 3rd Floor

Larry Hedges, Northwestern University

Christopher Rhoads, University of Connecticut

#### Short Course 2: Hierarchical Linear Modeling - Dumbarton - 3rd Floor

Michael Seltzer, University of California - Los Angeles

Jordan Rickles, University of California - Los Angeles

### 12:00 PM - 1:00 PM: Short Course Lunch

1: Lindens - 3rd Floor, 2: Potomac - 3rd Floor

### 1:00 PM - 5:00 PM: Short Courses, Part II

1: Sulgrave - 3rd Floor, 2: Dumbarton - 3rd Floor

*The short courses which began on Saturday morning continue through Sunday afternoon.*

## SUNDAY SEPTEMBER 11, 2011

### 9:00 AM - 12:00 PM: Short Courses, Part III

1: Dumbarton - 3rd Floor, 2: Sulgrave - 3rd Floor

*The short courses which began on Saturday morning continue through Sunday afternoon.*

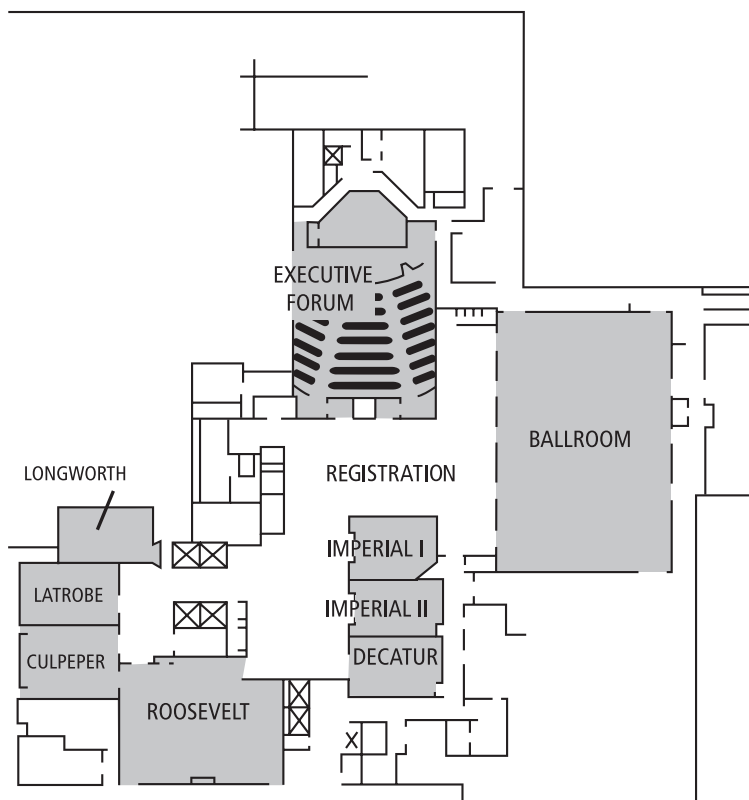
### 12:00 PM - 1:00 PM: Short Course Lunch

1: Potomac - 3rd Floor - 3rd Floor, 2: Lindens - 3rd Floor

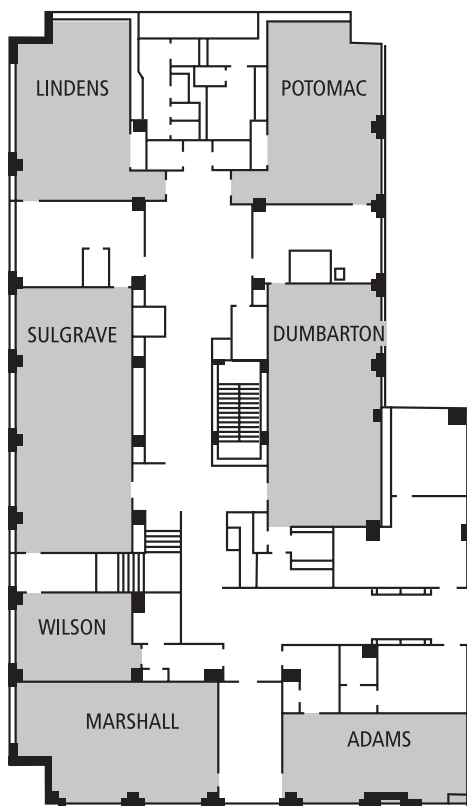
### 1:00 PM - 5:00 PM: Short Courses, Part IV

1: Dumbarton - 3rd Floor, 2: Sulgrave - 3rd Floor

*The short courses which began on Saturday morning continue through Sunday afternoon.*



## Ballroom / Meeting Rooms (Ballroom Level) The Fairmont Washington, D.C.



To Elevators  
(via hallway overlooking lobby)

## Meeting Rooms / Executive Rooms (Third Floor) The Fairmont Washington, D.C.

# SREE

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Advancing Education Research

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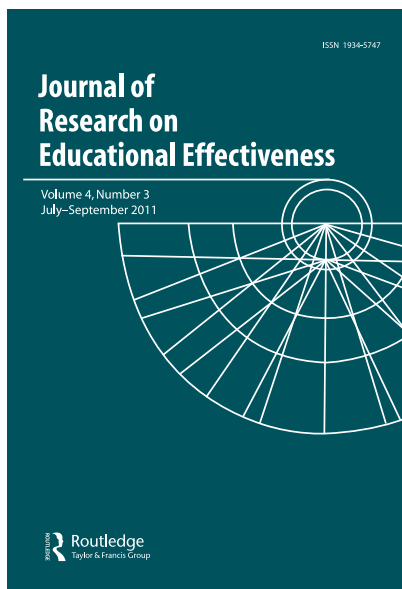


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## INTERVENTION, EVALUATION, AND POLICY STUDIES

### **Effective Classroom Instruction: Implications of Child Characteristics by Reading Instruction Interactions on First Graders' Word Reading Achievement**

*Carol McDonald Connor, Frederick J. Morrison, Christopher Schatschneider, Jessica R. Toste, Erin Lundblom, Elizabeth C. Crowe, and Barry Fishman*

### **An Experimental Study of Scheduling and Duration of "Tier 2" First-Grade Reading Intervention**

*Carolyn A. Denton, Paul T. Cirino, Amy E. Barth, Melissa Romain, Sharon Vaughn, Jade Wexler, David J. Francis, and Jack M. Fletcher*

### **A Randomized Experiment of a Cognitive Strategies Approach to Text-Based Analytical Writing for Mainstreamed Latino English Language Learners in Grades 6 to 12**

*James S. Kim, Carol Booth Olson, Robin Scarcella, Jason Kramer, Matthew Pearson, David van Dyk, Penny Collins, and Robert E. Land*

## METHODOLOGICAL STUDIES

### **Assessing Effects of Schooling With Cross-Sectional Data: Between-Grades Differences Addressed as a Selection-Bias Problem**

*Hans Luyten and Bernard Veldkamp*

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