International Society of the Learning Sciences

ICLS

CHICAGO 2010

Learning in the Disciplines

June 29 - July 2, 2010

9th International Conference of the Learning Sciences

hosted by

University of Illinois at Chicago
Learning Sciences Research Institute

Conference Program

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Welcome

On behalf of the entire Organizing Committee, we are delighted to welcome a record number of participants to Chicago for the 9th International Conference of the Learning Sciences. The ICLS 2010 program, with its theme Learning in the Disciplines, features a broad range of keynotes, symposia, papers and posters that will engender an exciting exploration of important issues in the learning sciences, disciplinary and professional learning. In addition to keynotes by three pre-eminent scholars in their fields - Carl Wieman, Koeno Gravemeijer, and Pam Grossman, and five invited, theme-related symposia, the schedule contains 149 papers, 25 multi-paper symposia, 7 poster symposia and 109 posters. All of that preceded by 8 pre-conference workshops plus the Doctoral Consortium and Early Career Workshop. We anticipate that the ICLS 2010 Conference week will be packed with engaging and informative discussions and exchanges on critical issues in learning, teaching, instructional and materials design, technology, assessment, and evaluation.

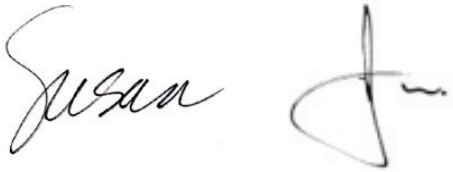
The conference location at the historic Palmer House Hilton Hotel puts you in the heart of Chicago's loop with access to numerous cultural and entertainment venues as well as excellent restaurants and shopping. Just a few blocks away from the Palmer House you will find the Art Institute of Chicago and its recently opened Modern Art Wing designed by Enzo Piano. Just across the street from the Art Institute and across Michigan Avenue is Millenium Park with its iconic sculptures, gardens, fountains, and the Priztker Music Pavilion designed by Frank Gehry. Coinciding with ICLS 2010 is Taste of Chicago, an annual event that offers a variety of free musical performances and lots of places to sample foods from vendors throughout the city. Your registration packet contains a variety of informational materials and maps that elaborate on the many attractions of Chicago, including a restaurant list. Hopefully, you'll find some time to enjoy the wonders of Chicago's downtown and loop area just outside your hotel doorstep.

A conference of this magnitude does not happen without the hard work of many individuals. This one is no exception. We have been most fortunate to collaborate with a super Conference Organizing Committee. We are deeply appreciative of the countless hours, tireless effort, and energy that they have dedicated to all aspects of this Conference. We especially want to acknowledge the Learning Sciences Research Institute's Associate Director, Deana Donzal, who took on the role of Business Manager for the Conference and navigated the complex web of contracts, financial arrangements, and details associated with this event. Finally, other LSRI staff and graduate student volunteers from the Learning Sciences programs at UIC and Northwestern have been working behind the scenes to prepare for this meeting and will be available to assist you throughout the Conference. (Look for the folks in Conference Staff shirts!)

The Conference is also fortunate to have a number of sponsors whose material support is contributing to several major conference events, including the Keynote speaker series, the Doctoral Consortium and Early Career Workshop, the evening receptions, and a major social event on Thursday. And in the priceless category: ICLS2010 – There's an App for that – thanks to Inquirium LLC.

But you can't build a conference unless there are people interested in and willing to co-construct it. To all of you our deep thanks for contributing to what we hope will be a very successful conference that attests to the presence and impact of the learning sciences community. In celebration of that community we invite everyone to join us Thursday evening in the Preston Bradley Hall of the historic Chicago Cultural Center for an evening of music, food, drink and dancing.

Welcome to Chicago and ICLS 2010



Susan R. Goldman & James W. Pellegrino
ICLS 2010 Conference Chairs
June 28, 2010

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Keynote Speakers

Sponsored by the Spencer Foundation

Dr. Carl Wieman

Distinguished Professor of Physics
University of Colorado
University of British Columbia

The Learning Sciences And Learning In The Sciences— The Perspective From Post-Secondary Science Education

Tuesday 4:00-5:30pm, Red Lacquer Ballroom

Over the past few years Dr. Carl Wieman has become increasingly involved with trying to improve undergraduate physics education and has been balancing his time between that and his research. He has been examining alternative curricula and learning about the research in physics education as to how students do and do not learn. A particular concern has been improving how physics is taught to students who are not planning to become physicists, in the hope of one day making physics understandable, useful, and interesting to a large fraction of the population. His efforts have ranged from working with national organizations pursuing widespread change in undergraduate physics education to developing useful innovations in the individual courses that I teach. Because of his particular concerns, these courses have lately been large introductory courses primarily for nonscience students. Wieman currently serves as Chair of the Board on Science Education of the National Academy of Sciences. In 2007, Wieman was awarded the Oersted Medal, which recognizes notable contributions to the teaching of physics, by the American Association of Physics Teachers (AAPT). In 2004 he was named United States professor of the year. He was awarded the Nobel Laureate in Physics in 2001.

Dr. Koeno Gravemeijer

Professor of Science and Technology Education
Eindhoven School of Education
Eindhoven University of Technology

Instructional design, theory and practice in mathematics education

Thursday 8:30-10:00am, Red Lacquer Ballroom

Dr. Gravemeijer currently is Professor of Science and Technology Education at the Eindhoven University of Technology. Earlier he was affiliated with the Freudenthal Institute of Utrecht University, and with Vanderbilt University. At that time his primary focus was on mathematics education. His research interests focus on curriculum development, instructional design, domain-specific instruction theories (such as the theory for realistic mathematics education, RME), teacher professional development, and students' use of symbols and modeling. In relation to the latter he developed the 'emergent modeling' design heuristic. His interest in instructional design is not only theoretical. He headed a team that developed a textbook series for primary school, in the Netherlands, and he was part of the group that developed the NSF-funded, Middle School, textbook series, 'Mathematics in Contexts'. His current research involves using design-based research to develop local theories of instruction as a means to understand and support learning processes.

Dr. Pamela Grossman

Nomellini-Olivier Professor of Education
Stanford University

Learning to Ponder: The Puzzle and Pleasure of Literary Text

Friday 8:30-10:00am, Red Lacquer Ballroom

Pam Grossman is the Nomellini-Olivier Professor of Education at the Stanford University School of Education. Her research interests include teacher education and professional education more broadly, teacher knowledge, and the teaching of English in secondary schools. Along with her colleagues Don Boyd, Hamilton Lankford, Susanna Loeb, and James Wyckoff, she has been engaged with a five year study of pathways into teaching in New York City schools, focusing on the features of preparation that affect student achievement. She is currently investigating the classroom practices of middle-school English teachers that are associated with student achievement. She is the co-Principal Investigator of the Teachers for a New Era project at Stanford, funded by the Carnegie Corporation, and is the Faculty Director of the new Center to Support Excellence in Teaching. A former high school English teacher, Grossman also teaches the prospective English teachers in Stanford's teacher education program.

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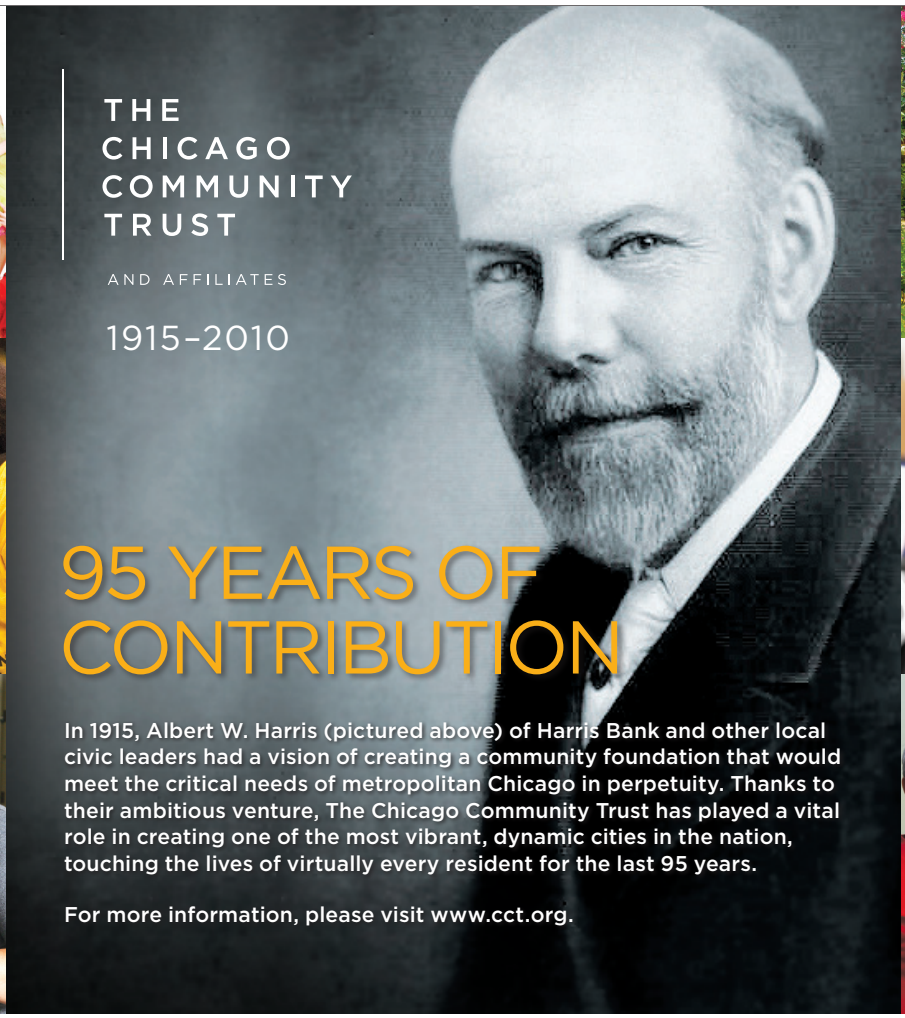
The Spencer Foundation was established in 1962 by Lyle M. Spencer. The Foundation received its major endowment upon Spencer's death in 1968 and began formal grant making in 1971. Since that time, the Foundation has made grants totaling approximately $250 million. The Foundation is intended, by Spencer's direction, to investigate ways in which education, broadly conceived, can be improved around the world. From the first, the Foundation has been dedicated to the belief that research is necessary to the improvement in education. The Foundation is thus committed to supporting high-quality investigation of education through its research programs and to strengthening and renewing the educational research community through its fellowship and training programs and related activities.

Please visit us at our website at www.spencer.org



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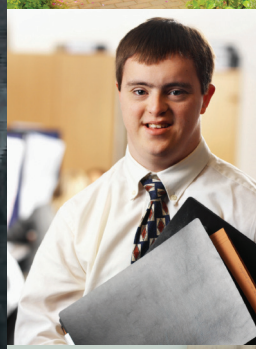
95 YEARS OF CONTRIBUTION

In 1915, Albert W. Harris (pictured above) of Harris Bank and other local civic leaders had a vision of creating a community foundation that would meet the critical needs of metropolitan Chicago in perpetuity. Thanks to their ambitious venture, The Chicago Community Trust has played a vital role in creating one of the most vibrant, dynamic cities in the nation, touching the lives of virtually every resident for the last 95 years.

For more information, please visit www.cct.org.



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Building the Field of Digital Media and Learning

Through its digital media and learning initiative, the MacArthur Foundation is funding research that is yielding new information, insights and ideas about learning in a digital world. More information at **www.macfound.org/education**.

The MacArthur Foundation is proud to support the new YOUmedia "teen space" at the Chicago Public Library. It is an innovative, 21st century learning space created to connect young adults to books, media, mentors, and institutions throughout the city of Chicago. More information at **www.youmediachicago.org**.

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9th International Conference of the Learning Sciences

education.nationalgeographic.com

Program

Monday, June 28

9:00 AM - 5:30 PM PRECONFERENCE WORKSHOPS

DOCTORAL CONSORTIUM | Supported by National Science Foundation — **SALON 4**

Organizers: Cindy Hmelo-Silver, Rutgers University; Jerry Andriessen, Wise & Munro Learning Research
Participants: Lauren Barth-Cohen, University of California Berkeley; Crina Damsa, University of Oslo; Deborah Fields, University of California Los Angeles; Celso Goncalves, University of Grenoble; Alan J. Hackbarth, University of Wisconsin-Madison; Alecia Marie Magnifico, University of Wisconsin-Madison; Yvonne Mulder, University of Twente; Antti Rajala, University of Helsinki; Beat Schwendimann, University of California Berkeley; Suparna Sinha, Rutgers University; Kenneth Tang, University of Michigan; Richard Vath, University of Michigan; Megan Wawro, San Diego State University ; Kristen B. Wendell, Tufts University; Naxin Zhao, OISE University of Toronto

EARLY CAREER WORKSHOP | Supported by National Science Foundation — **SALON 3**

Organizers: Susan A. Yoon, University of Pennsylvania; Paul Kirschner, Open University of the Netherlands
Participants: Janice Anderson, University of North Carolina at Chapel Hill; Ayelet Baram-Tsabari, Technion; Jana Bouwma-Gearhart, University of Kentucky; Leah A. Bricker, Loyola University Chicago; Cheryl Cohen, Michigan Technological University; Edward Dieterle, SRI International; Mingfong Jan, University of Wisconsin-Madison; Matthew Kam, Carnegie Mellon University; Ben Kehrwald, Massey University; Ingo Kollar, University of Munich; Victor Lee, Utah State University; Molly Phipps, Science Museum of Minnesota; Julia Plummer, Arcadia University; Gabriel Reedy, King's College London; Margarida Romero, Universitat Autònoma de Barcelona; Cianan Russell, Georgia Institute of Technology; Ji Shen, University of Georgia; Carrie Tzou, University of Washington Bothell; Carla van de Sande, Arizona State University; Heather Toomey Zimmerman, Pennsylvania State University

WORKSHOP 1: PRODUCTIVE MULTIVOCALITY IN THE ANALYSIS OF COLLABORATIVE LEARNING — **SALON 12**

Organizers: Nancy Law, University of Hong Kong; Kristine Lund, University of Lyon; Carolyn Rosé, Carnegie Mellon University; Daniel Suthers, University of Hawaii; Christopher Teplovs, University of Toronto

WORKSHOP 2: THREE PERSPECTIVES ON TECHNOLOGY SUPPORT IN INQUIRY LEARNING - PERSONAL INQUIRY, MOBILE COLLABORATORIES AND EMERGING LEARNING OBJECTS — **SALON 2**

Organizers: Astrid Wichmann, University of Duisberg-Essen; Daniel Spikol, Linnaeus University; Stamatina Anastopoulou, University of Nottingham; Ulrich Hoppe, University of Duisberg-Essen; Marcelo Milrad, Linnaeus University; Roy Pea, Stanford University; Ton de Jong, University of Twente; Heidy Maldonado, Stanford University; Mike Sharples, University of Nottingham

WORKSHOP 3: IT'S ABOUT TIME - PURPOSE, METHODS AND CHALLENGES OF TEMPORAL ANALYSES OF MULTIPLE DATA STREAMS — **SALON 6**

Organizers: Britte Cheng, SRI International; Inge Molenaar, University of Amsterdam; Ming Ming Chiu, State University of New York Buffalo; Vanessa Svihla, University of California Berkeley; Alyssa Wise, Simon Fraser University; Vanessa Peters, University of Toronto; Katerina Zourou, University of Luxembourg

WORKSHOP 5: ENGINEERING LEARNING — **SALON 9**

Organizers: Aditya Johri, Virginia Tech; Barbara Olds, Colorado School of Mines

WORKSHOP 6: COLLABORATIVE LEARNING WITH INTERACTIVE SURFACES - AN INTERDISCIPLINARY AGENDA — **SALON 7**

Organizers: Michael Evan s, Virginia Tech; Jochen Rick, Open University

Registration Open
Monday 8am- Thursday 2pm

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The Northwestern Learning Sciences Graduate Program is proud to sponsor the 9th International Conference of the Learning Sciences.

LEARNING SCIENCES

University of Illinois at Chicago

The UIC Learning Sciences Graduate Program is proud to sponsor the 9th International Conference of the Learning Sciences.

Tuesday, June 29

9:00 AM - 12:30 PM Preconference Workshops

Doctoral Consortium | Supported by National Science Foundation — **Salon 4**

Organizers: Cindy Hmelo-Silver, Rutgers University; Jerry Andriessen, Wise & Munro Learning Research
Participants: Lauren Barth-Cohen, University of California Berkeley; Crina Damsa, University of Oslo; Deborah Fields, University of California Los Angeles; Celso Goncalves; Alan J. Hackbarth, University of Wisconsin-Madison; Alecia Marie Magnifico, University of Wisconsin-Madison; Yvonne Mulder; Antti Rajala; Beat Schwendimann, University of California Berkeley; Suparna Sinha, Rutgers University; Kenneth Tang; Richard Vath; Megan Wawro, San Diego State University ; Kristen B. Wendell, Tufts University; Naxin Zhao

Early Career Workshop | Supported by National Science Foundation — **Salon 3**

Organizers: Susan A. Yoon, University of Pennsylvania; Paul Kirschner, Open University of the Netherlands
Participants: Janice Anderson, University of North Carolina at Chapel Hill; Ayelet Baram-Tsabari, Technion; Jana Bouwma-Gearhart, University of Kentucky; Leah A. Bricker, Loyola University Chicago; Cheryl Cohen, Michigan Technological University; Edward Dieterle, SRI International; Mingfong Jan, University of Wisconsin-Madison; Matthew Kam, Carnegie Mellon University; Ben Kehrwald, Massey University; Ingo Kollar, University of Munich; Victor Lee, Utah State University; Molly Phipps, Science Museum of Minnesota; Julia Plummer, Arcadia University; Gabriel Reedy, King's College London; Margarida Romero, Universitat Autònoma de Barcelona; Cianan Russell, Georgia Institute of Technology; Ji Shen, University of Georgia; Carrie Tzou, University of Washington Bothell; Carla van de Sande, Arizona State University; Heather Toomey Zimmerman, Pennsylvania State University

Workshop 1: Productive multivocality in the analysis of collaborative learning — **Salon 12**

Organizers: Nancy Law, University of Hong Kong; Kristine Lund, University of Lyon; Carolyn Rosé, Carnegie Mellon University; Daniel Suthers, University of Hawaii; Christopher Teplovs, University of Toronto

Workshop 7: Striking a Balance Between Free and Guided Exploration - Conceptualizing Support in Exploratory Environments (ISEE'10) — **Salon 9**

Organizers: Ido Roll, University of British Columbia; Manolis Mavrikis, University of London; Sergio Gutierrez Santos, University of London

Workshop 8: Growing the Learning Sciences - Brand or Big Tent? Implications for graduate education — **Salon 7**

Organizers: Mitchell Nathan, University of Wisconsin-Madison; Nikol Rummel, Ruhr University Bochum; Kenneth Hay, Indiana University

Workshop 9: Hands-on introduction to creating intelligent tutoring systems without programming using the Cognitive Tutor Authoring Tools — **Salon 2**

Organizers: Vincent Aleven, Carnegie Mellon University; Jonathan Sewall, Carnegie Mellon University

4:00 PM - 5:30 PM Opening Session and Keynote — Red Lacquer Ballroom

Keynote 1

Chair: James Pellegrino, University of Illinois at Chicago

The Learning Sciences And Learning In The Sciences— The Perspective From Post-Secondary Science Education

Carl Wieman, *University of Colorado and University of British Columbia*
Reactor: Richard Duschl, Pennsylvania State University

Sponsored by the Spencer Foundation

5:30 PM - 7:00 PM Reception and Poster Session — Salons 4-9

Poster Session 1

1.1 Children Learning Science through Engineering: An Investigation of Four Engineering-Design-Based Curriculum Modules
Kristen B. Wendell, Kathleen G. Connolly, Christopher G. Wright, Linda Jarvin, Chris Rogers

1.2 Expertise in Engineering Learning: Examining Engineering Students' Collaborative Inquiry of Computer Systems
Yuen-Yan Chan

1.3 Robot Diaries: Encouraging and Enabling Technological Creativity
Debra Bernstein

1.4 Incorporating Affect in an Engineering Student's Epistemological Dynamics
Brian A. Danielak, Ayush Gupta, Andrew Elby

1.5 Reflection Tools in Modeling Activities
Nora Siewiorek, Mary Besterfield-Sacre, Eric Hamilton, Larry J. Shuman

1.6 Development of Engineering Design Modules for Middle School Students: Design principles and Some initial Results
James Van Haneghan, Susan Pruet, Rhonda Waltman

1.7 Learning in mathematics: Effects of procedural and conceptual instruction on the quality of student interaction
Dejana Diziol, Nikol Rummel, Hans Spada, Stephanie Haug

1.8 Mapping topological relationships between contexts
Jonathan Boxerman, Bruce Sherin

1.9 Math Anxiety in Middle School Math Teachers: Implications for Teacher Practice and Professional Development
Nicole Shechtman

1.10 Virtual Math Teams: An Online Tool for Collaborative Learning in the Mathematics Disciplines
Baba Kofi Weusijana, Jimmy Xiantong Ou, Gerry Stahl, Stephen Weimar

1.11 Student Understandings of Solutions
Stephanie Ryan, Donald Wink, Susan Goldman, James Pellegrino

1.12 Students' Plausibility Perceptions of Human-Induced Climate Change
Doug Lombardi, Gale M. Sinatra

1.13 Finding the "Learning" in Biology Students' Use of Learning Management Systems
Steven Lonn

1.14 Analyzing People's Views of Science Though Their Categorization of Television Science Programs
Pryce Davis

1.15 Coordination and contextuality: Revealing the nature of emergent mathematical understanding by means of a clinical interview
Mariana Levin, Rozy Brar

1.16 A Photograph-Based Measure of Students' Beliefs About Math
Lee Martin, Pamela Gourley-Delaney

1.17 The Role of Definition in Supporting Mathematical Activity
Marta Kobiela, Rich Lehrer

1.18 NetLogo HotLink Replay: A Tool for Exploring, Analyzing and Interpreting Mathematical Change in Complex Systems
Michelle Wilkerson-Jerde, Uri Wilensky

1.19 Units of length: A notational system for conceptual understanding of size and scale
Cesar Delgado

1.20 Mathematics at Play
Osvaldo Jimenez, Kristen Pilner Blair, Indigo Esmonde, Shelley Goldman, Lee Martin, Roy Pea

1.21 Students' Investigations with Physical Activity Data Devices
Victor Lee, Maneksha DuMont

1.22 Learning to Categorize Word Problems: Effects of Practice Schedules
Brian Gane, Richard Catrambone

1.23 Anomalous Graph Data and Claim Revision During Argumentation
Leema Berland, Victor Lee

1.24 Reasoning about the Seasons: Middle School Students' Use of Evidence in Explanations
Julia Plummer, Lori Agan

1.25 Student Progress in Understanding Energy Concepts in Photosynthesis using Interactive Visualizations
Kihyun (Kelly) Ryoo, Marcia Linn

1.26 Using the Activity Model of Inquiry to develop undergraduate students' views of the scientific inquiry process
Sara Marchlewicz, Donald Wink

1.27 Argumentation at the table-talk level of middle school students participating in scientific cafÈs
Gerald P. Niccolai, Zeynab Badreddine, Christian Buty

1.28 The Use of Animations and Online Communication Tools to Support Mathematics Teachers in the Practice of Teaching
Chieu Vu Minh, Patricio Herbst, Michael Weiss

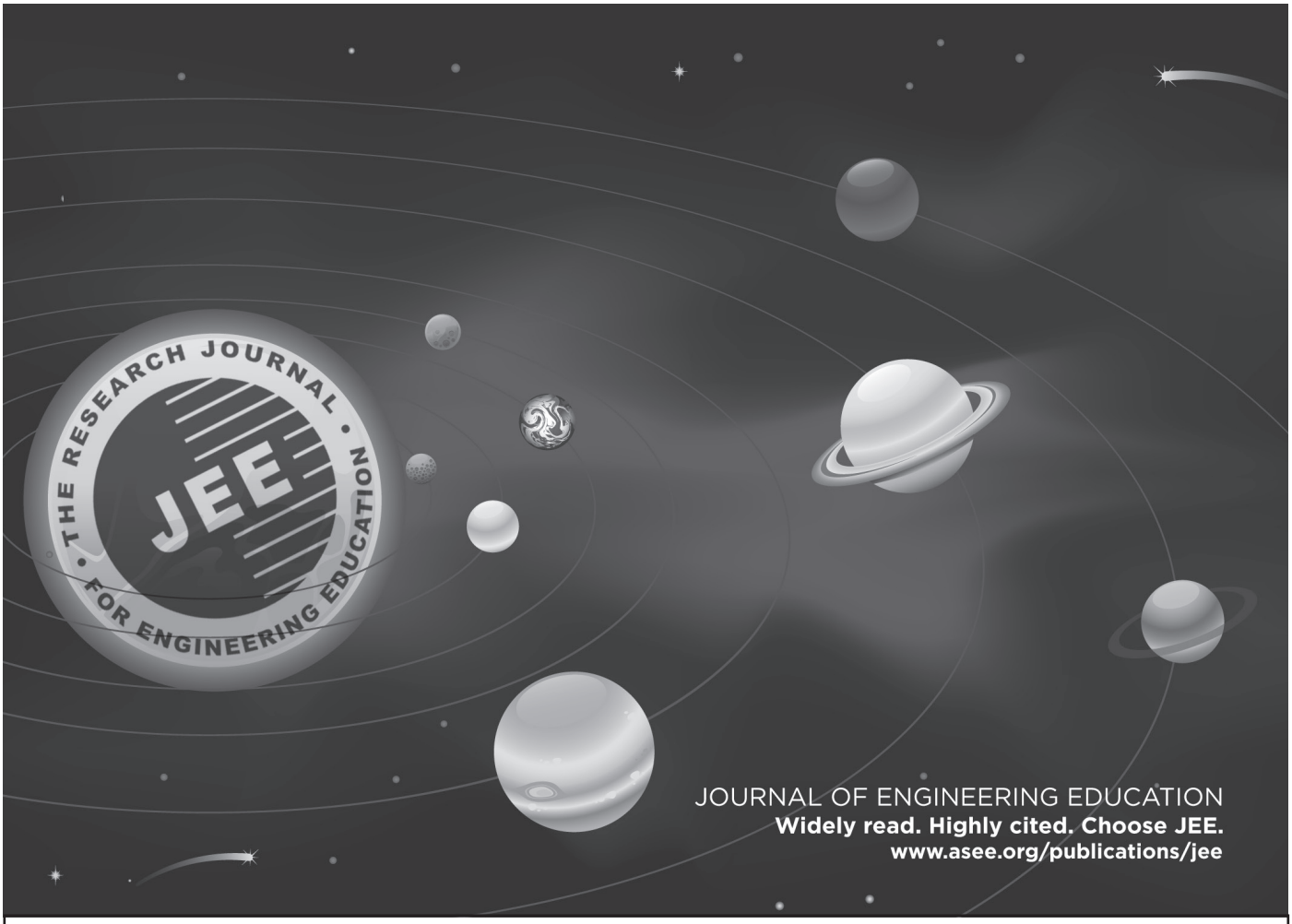
1.29 What makes a "good" scientific question? Supporting independent student-driven inquiry
Julia Svoboda, Cynthia Passmore

1.30 The Effect of Curricular Elements on Student Interest in Science
Su Swarat

1.31 Using Design Personas to Inform Refinements to Software for Science Learning
Patrik Lundh, Britte Cheng, William R. Penuel, Aasha Joshi, Hannah Lesk

1.32 - 1.36 Facilitation, Teaching, and Assistance at the Intersection of the Learning Sciences and Informal Science Education
Lisa Bouillion Diaz, Jean Creighton, Catherine Eberbach, Dean Grosshandler, Leslie Herrenkohl, Sandra Toro Martell

Internet Cafe
Salon 1
Monday 8am- Thursday 5pm



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Wednesday, June 30

7:30 AM - 8:30 AM JLS Board Meeting (closed) — Crystal Ballroom

8:00 AM - 10:00 AM Continental Breakfast — Salon Foyer

8:30 AM - 10:00 AM Parallel Sessions

Paper Session 1: Dynamics of collaborative group interactions — Salon 9

Group Awareness of Social and Cognitive Behavior in a CSCL Environment
Chris Phielix, Frans Prins, Paul Kirschner

Coordinating Collaborative Problem-solving Processes by Providing Part-task Congruent Representations
Bert Slof, Gijsbert Erkens, Paul Kirschner

Fostering Online Search Competence and Domain-Specific Knowledge in Inquiry Classrooms: Effects of Continuous and Fading Collaboration Scripts
Christof Wecker, Ingo Kollar, Frank Fischer, Helmut Prechtl

Using collaborative activity as a means to explore student performance and understanding
Marcela Borge, John M. Carroll

Paper Session 2: Trajectories of early childhood science learning — Salon 4
Chair: Philip Bell, University of Washington

Dispositions, disciplines, and marble runs: A case study of resourcefulness
Margaret Carr, Jane McChesney, Bronwen Cowie, Robert Miles-Kingston, Lorraine Sands

Scaffolding Children's Understanding of the Fit Between Organisms and their Environment In the Context of the Practices of Science
Kathleen Metz, Stephanie Sisk-Hilton, Eric Berson, Uyen Ly

Kindergarten and First-Grade Students' Representational Practices While Creating Storyboards of Honeybees Collecting Nectar
Joshua Danish, David Phelps

Interactional Arrangements for Learning about Science in Early Childhood: A Case Study Across Preschool and Home Contexts
Siri Mehus, Reed Stevens, Linda Grigholm

Paper Session 3: Science teachers' learning - Multiple perspectives — Salon 7
Chair: Joseph Krajcik, University of Michigan

Transformative professional development: Cultivating concern with others' thinking as the root of teacher identity
Rachel E. Scherr, Hunter G. Close

Activity-Theoretical Research on Science Teachers' Expertise and Learning
Cory Forbes, Cheryl Madeira, James D. Slotta

Teacher Learning about Teacher-Parent Engagement: Shifting Narratives and a Proposed Trajectory
Corey Drake, Angela Calabrese Barton

Appropriating Conceptual Representations: A Case of Transfer in a Middle School Science Teacher
Suparna Sinha, Steven Gray, Cindy Hmelo-Silver, Rebecca Jordan, Sameer Honwad, Catherine Eberbach, Spencer Rugaber, Swaroop Vattam, Ashok Goel

Paper Session 4: Home-school connections for math and science learning — Salon 8
Chair: Lisa Bouillion Diaz, University of Illinois Extension

The Impact of a Media-Rich Science Curriculum on Low-Income Preschoolers' Science Talk at Home
William R. Penuel, Lauren Bates, Shelley Pasnik, Eve Townsend, Lawrence P. Gallagher, Carlin Llorente, Naomi Hupert

Math Engaged Problem Solving in Families
Shelley Goldman, Roy Pea, Kristen Pilner Blair, Osvaldo Jimenez, Angela Booker, Lee Martin, Indigo Esmonde

Paper Session 4 (continued) — **Salon 8**

Micros and Me: Leveraging home and community practices in formal science instruction
Carrie Tzou, Philip Bell

Playing with Food: Moving from Interests and Goals into Scientifically Meaningful Experiences
Tamara Clegg, Christina Gardner, Janet Kolodner

Symposium 1: Fostering the Acquisition and Application of Domain-Specific Knowledge through Concept Mapping — **Salon 2**

Fostering the Acquisition and Application of Domain-Specific Knowledge through Concept Mapping
Carmela Aprea, Hermann G. Ebner, Bert Slof, Gijsbert Erkens, Paul Kirschner, Baerbel Fuerstenau, Jeannine Ryssel, Janet Kunath

Concept Mapping versus Summary Writing as Instructional Devices for Understanding Complex Business Problems
Baerbel Fuerstenau, Jeannine Ryssel, Janet Kunath

Matching Representational Tools' Ontology to Part-task Demands to Foster Problem-solving in Business Economics
Bert Slof, Gijsbert Erkens, Paul Kirschner

Direct and Indirect Means of Scaffolding the Effective Use of Student- generated CMs in Economics Education
Carmela Aprea, Hermann G. Ebner

Symposium 2: Developing Students' Disciplinary Historical Thinking - The Role of Textual and Instructional Resources — **Salon 3**

Developing Students' Disciplinary Historical Thinking: The Role of Textual and Instructional Resources
Darin Stockdill, Byeong-Young Cho, Avishag Reisman, Amy A. Wilson

The Teen Empowerment through Reading, Research, and Action (TERRA) Project
Darin Stockdill

Historical reasoning on the Internet: How do students read and learn about socially controversial issues in new literacy environments?
Byeong-Young Cho

Reading Like a Historian: A Document-Based History Curriculum Intervention with Adolescent Struggling Readers
Avishag Reisman

Constructing History in Middle Schools: A Social Semiotic Analysis of Texts Used in Three History Classrooms
Amy A. Wilson

Poster Symposium 1: Using Visualization to Link Abstract Science and Everyday Experience — **Salon 12**
Chair: Marcia Linn, University of Califoria Berkeley
Discussant: Frank Fischer, University of Munich

Using Visualization to Link Abstract Science and Everyday Experience
Ji Shen, Hsin-Yi Chang, Jennifer Chiu, Douglas Clark, Kevin McElhaney, Keisha Varma, Eric Wiebe, Helen Zhang, Marcia Linn

Investigating the Role of Physical and Virtual Experiments in Developing Integrated Understanding of Thermal Conductivity and Equilibrium
Hsin-Yi Chang, Kun-Chen Tsai

Promoting Links and Developing Students' Criteria for Visualizations by Prompting Judgments of Fidelity
Jennifer Chiu

SURGE: Intended and Unintended Learning in Digital Games
Douglas Clark, Brian C. Nelson, Cynthia M. D'Angelo, Kent Slack, Mario Martinez-Garza

How Do Interactive Graphing Tools Help Students Interpret Virtual Experiments about Car Collisions?
Kevin McElhaney

Transformative Modeling in Learning Current Electricity: A Case Study of Preservice Teachers
Ji Shen, Rutchelle Enriquez

Poster Symposium 1(continued) — **Salon 12**

Using Interactive Models to Support Content Learning through Scientific Reasoning
Keisha Varma

Abstraction and Re-representation in Visualizations: Understanding Where the Learning Occurs
Eric Wiebe, Mike Carter, James Minogue, Lauren Madden, John Bedward

Exploring Drawing and Critique to Enhance Learning from Visualizations
Helen Zhang

Poster Symposium 2: The Educative and Scalable Functions of Authoring Tools to Support Inquiry-based Science Learning — **Salon 6**

Chair: Iris Tabak, Ben Gurion University of the Negev

The Educative and Scalable Functions of Authoring Tools to Support Inquiry-based Science Learning
Itay Asher, Iris Tabak, Vassilis Kollias, Eleni Kyza, Iolie Nicolaidou, Andreas Redfors, Lena Hansson, Sascha Schanze, Ulf Saballus

Knowledge of prior implementations leverages authoring tool efficacy: The case of the Cyprus University of Technology team (CUT)
Eleni Kyza, Iolie Nicolaidou, F. Terzian, A. Hadjichambis, D. Kafouris

Using STOCHASMOS to scaffold students in discussing key issues while retaining ownership of their learning processes: The case of the Kristianstad team (HKr)
Andreas Redfors, M. Rosberg, Lena Hansson, I. Lundh

Specialized authoring tool as boundary object: The case of the Ben Gurion team (BGU)
Iris Tabak, Itay Asher, S. Nasser, Lina Gnaim, M. Fried, I. Katz, M. Weinstock

Design foreclosure and the proliferation of offline activities: The case of the Leibniz Universität Hannover team (LUH)
Sascha Schanze, Ulf Saballus, A. Neumann, M. Manske, B. Sieve, M. Söhlke, O. Jansen

The case of the University of Thessaly team (UTH)
Vassilis Kollias, A. Matos, A. Davaris, A. Karnavas, A. Daropoulos, K. Zaganas, V. Christodoulopoulos, Th. Tsaknia

10:00 AM - 10:20 AM **Morning Break** — **Salon Foyer**

10:20 AM - 11:50 AM **Parallel Sessions**

Invited 1: ISLS Advances and Future Opportunities — **Crystal Ballroom**

Chair: Marcia Linn, University of California Berkeley
Respondents: Iris Tabak, Ben Gurion University of the Negev; Paul Kirschner, Open University of the Netherlands

An Emerging Society
Christopher Hoadley

Internationalization of Research
Pierre Dillenbourg

Leveraging New Technologies
Roy Pea

International Challenges
Claire O'Malley

Highlighting Junior Researchers
Yasmin Kafai

Collaborative Challenges
Naomi Miyake

Capitalizing on Social Networking
Marcia Linn

Wednesday, June 30

Paper Session 5: Knowledge-building communities across contexts and disciplines — **Salon 6**
Chair: Reed Stevens, Northwestern University

Social Software and Knowledge Building: Supporting Co-Evolution of Individual and Collective Knowledge
Joachim Kimmerle, Ulrike Cress, Christoph Held, Johannes Moskaliuk

Teacher-education students' views about knowledge building theory and practice
Huang-Yao Hong, Fei-Ching Chen, Ching Sing Chai, Wen-Ching Chan

Making Knowledge Building Moves: Toward Cultivating Knowledge Building Communities in Classrooms
Kate Bielaczyc, John Ow

Gaining an Insider Perspective on Learning physics in Hong Kong
Jan van Aalst

Paper Session 6: Engineering education - What is this thing called Engineering? — **Salon 3**
Chair: Paulo Blikstein, Stanford University

Disciplinary Knowledge, Identity, and Navigation: The Contributions of Portfolio Construction
Jennifer Turns, Brook Sattler, Deborah Kilgore

Contingent Identification in a Biomedical Engineering Classroom
Vanessa Svihla

Knowledge Transmission and Engineering Teaching
Sili Zhang, Monica Cardella

Cross-disciplinary practice in engineering contexts - a developmental phenomenographical perspective
Robin Adams, Tiago Forin, Saranya Srinivasan, Llewellyn Mann

Paper Session 7: Learning progressions - The state of the field — **Salon 4**
Chair: Ravit Golan Duncan, Rutgers University

Validation of a Learning Progression: Relating Empirical Data to Theory
Nicole Shea, Ravit Golan Duncan

Designing Assessments to Track Student Progress
Namsoo Shin, Shawn Stevens, Joseph Krajcik

Discourse as a lens for reframing consideration of learning progressions
Alicia C. Alonzo

A critique of how learning progressions research conceptualizes sophistication and progress
Tiffany-Rose Sikorski, David Hammer

Symposium 3: Social construction of mathematical meaning through collaboration and argumentation — **Salon 2**
Social construction of mathematical meaning through collaboration and argumentation
Baruch Schwarz, Shirley Atzmon, Rina Hershkowitz, Chris Rasmussen, Gerry Stahl, Megan Wawro, Michelle Zandieh

Computer Mediation of Collaborative Mathematical Exploration
Gerry Stahl

Brokering as a Mechanism for the Social Production of Meaning
Chris Rasmussen, Michelle Zandieh, Megan Wawro

Distinctiveness of teachers' discourse patterns and their impact on students' emergent and subsequent argumentative activities
Rina Hershkowitz, Baruch Schwarz, Shirley Atzmon

Symposium 4: Integrating Philosophy into Learning Sciences Research on Epistemic Cognition — **Salon 8**
Discussant: James Blachowicz, Loyola University Chicago

Integrating Philosophy into Learning Sciences Research on Epistemic Cognition
Clark Chinn, Luke Buckland, Ala Samarapungavan

Symposium 4 (continued) — **Salon 8**

Broadening the Scope of Research on Epistemic Cognition: Implications from Epistemology and Philosophy of Science
Clark Chinn

Implications of Philosophy for Assessing Epistemic Cognition
Luke Buckland

Underdetermination in Philosophy of Science and Science Education
Ala Samarapungavan

Symposium 5: Qualitative, Quantitative, and Data Mining Methods for Analyzing Log Data to Characterize Students' Learning Strategies and Behaviors — **Salon 7**
Discussant: Wouter van Joolingen, University of Twente

Qualitative, Quantitative, and Data Mining Methods for Analyzing Log Data to Characterize Students' Learning Strategies and Behaviors
Ryan Baker, Janice Gobert, Roger Azevedo, Ido Roll, Wouter van Joolingen

Studying the interaction between learner characteristics and inquiry skills in microworlds
Janice Gobert, Michael São Pedro, Juelaila Raziuddin, Nathan Krach

Educational Data Mining Methods For Studying Student Behaviors Minute by Minute Across an Entire School Year
Ryan Baker, Adriana M.J.B. de Carvalho, Jay Raspat, Vincent Aleven, Albert T. Corbett, Kenneth R. Koedinger, Mihaela Cocea, Arnon Hershkovitz

Deciphering the complex nature of log-file data collected during self-regulated learning with MetaTutor
Roger Azevedo, Amy Witherspoon, Amber Chauncey, Mihai Lintean, Zhiqiang Cai, Vasile Rus, Arthur Graesser

Analysis of students' actions during online invention activities - seeing the thinking through the numbers
Ido Roll, Vincent Aleven, Kenneth R. Koedinger

Poster Symposium 3: Terra Nova Toward Terra Firma - Data On Games For Science Learning — **Salon 12**
Discussant: Yasmin Kafai, University of Pennsylvania

Terra Nova Toward Terra Firma: Data On Games For Science Learning
Douglas Clark, Noel Enyedy, Constance Steinkuehler, Daniel Hickey, Brian C. Nelson, Kurt Squire, Eric Klopfer, Jody Clarke-Midura, Diane J. Ketelhut, Mingfong Jan

The Role of Embodiment and Symbolization in Supporting Physics Learning with Games and Virtual Worlds for Young Children
Noel Enyedy

Model Based Reasoning & Use in Massively Multiplayer Online Games
Constance Steinkuehler

Current Evidence of Engagement, Understanding, and Achievement in the Taiga Curriculum in Quest Atlantis
Daniel Hickey, Eun Ju Kwon, Michael K. Filsecker

SURGE: Intended and Unintended Science Learning in Games
Douglas Clark, Mario Martinez-Garza, Brian C. Nelson, Cynthia M. D'Angelo, Kent Slack

Learning Argumentation through a Role-playing Game-based Curriculum
Mingfong Jan, Kurt Squire

Virtual Environment-based Assessments of Science Content and Inquiry: The SAVE Science Project
Brian C. Nelson, Younsu Kim, Cecile Foshee, Diane J. Ketelhut, Catherine Schifter, Deepti Mudegowder, David Majerich, Melanie Wills, Angela Shelton, Patrick McCormack, Tera Kane, Zoe Freeman

GameBuilder: Does Reduced Software Complexity Allow More Time on Task?
Eric Klopfer, Chuan Zhang, Judy Perry, Josh Sheldon

MUVEs and Meta-Knowledge
Jody Clarke-Midura, Eugenia Garduno

Wednesday, June 30

12:00 PM - 1:15 PM **Field Trip to YOUmedia** **Location: Harold Washington Library 400 S. State Street**

YOUmedia is an innovative, 21st century learning space, housed at the Harold Washington Library in downtown Chicago. It was created to connect young adults, books, media and institutions throughout the city in one dynamic space designed to inspire collaboration and creativity. The Chicago Public Library and the John D. and Catherine T. MacArthur Foundation invite you to an open house and tour of YOUmedia. Staff will be available to offer tours and answer your questions throughout the lunch break. Please meet at YOUmedia. Directions: Head west on E. Monroe Street (away from the lake) and take the first left onto S. State Street. Continue approximately 3 blocks on S. State Street. The main entrance to YOUmedia is located on S. State Street at W. VanBuren Street.

12:00 PM - 1:15 PM **Lunch (on your own in downtown Chicago!)**

12:00 PM - 1:15 PM ISLS Board Meeting (closed) **Red Lacquer Ballroom**

1:30 PM - 3:00 PM Parallel Sessions

Invited 2: Challenges in Professional Disciplinary Preparation Crystal Ballroom

Presenters: Barbara Olds, Colorado School of Mines, Sherri Sheppard, Stanford University; Donald Wink, University of Illinois Chicago; Louis Gomez, University of Pittsburgh

Discussant: James Pellegrino, University of Illinois Chicago

Paper Session 8: Designed artifacts to support collaboration and learning **Salon 7**

Chair: Jochen Rick, Open University

Representational Technology For Learning Mathematics: An Investigation of Teaching Practices in Latino/a Classrooms
Phil Vahey, Teresa Lara-Meloy, Judit Moschkovich, Griselda Velazquez

A Tempest in a Teapot Is but a Drop in the Ocean: Action-Objects in Analogical Mathematical Reasoning
Dor Abrahamson

The Effects of Physical and Virtual Manipulatives on Students' Conceptual Learning About Pulleys
Elizabeth Gire, Adrian Carmichael, Jacquelyn J. Chini, Amy Rouinfar, Sanjay Rebello, Garrett Smith, Sadhana Puntambekar

Space And Time In Classroom Networks: Mapping Conceptual Domains In Mathematics Through Collective Activity Structures
Tobin White, Corey Brady

Paper Session 9: Classroom discourse processes - Roles, authority, and argumentation **Salon 2**

Chair: Leema Berland, University of Texas Austin

'I study features; believe me, I should know!': The mediational role of distributed expertise in the development of student authority
Jennifer Langer-Osuna, Randi Engle

Talking with your mouth full: The role of a mediating tool in shaping collective positioning
Kate Anderson, Melissa Gresalfi

Fostering meaningful scientific argumentation practices through ongoing classroom interactions
Xiaowei Tang, Janet Coffey

Listen to each other: How the building of norms in an elementary science classroom fosters participation and argumentation
Suna Ryu, William Sandoval

Wednesday, June 30

Paper Session 10: Scaffolding argumentation and shared reasoning — **Salon 4**
Chair: R. Benjamin Shapiro, Morgridge Institute for Research

Assessing Change in Learner's Causal Understanding Using Sequential Analysis and Causal Maps
Allan Jeong

Effects of On-line Collaborative Argumentation Processes on Justifications
Jingyan Lu, Ming Ming Chiu, Nancy Law

Arguing with Peers: Examining Two Kinds of Discourse and Their Cognitive Benefits
David Shaenfield

When Students Speak, Who Listens? Constructing Audience in Classroom Argumentation
Leema Berland, Andrea Forte

Paper Session 11: Spatial reasoning - Issues for teaching and learning — **Salon 9**
Chair: Frank Fischer, University of Munich

Spatial Intelligence and the Research - Practice Challenge
Moshe Krakowski, Kristin Ratliff, Louis Gomez, Susan Levine

What counts as scientific practice? A taxonomy of scientists' ways of thinking and doing
Lori Takeuchi

Students' Use of Multiple Strategies for Spatial Problem Solving
Mike Stieff, Minjung Ryu, Bonnie Dixon

Spatial and Temporal Embedding for Science Inquiry: An Empirical Study of Student Learning
Tom Moher, Jennifer Wiley, Allison Jaegar, Brenda Lopez Silva, Francesco Novellis, Deborah Kilb

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Symposium 6: The Learning Sciences as a Setting for Learning — **Salon 3**
Chair: Jorge Larreamendy, UNIANDES
Discussant: R. Keith Sawyer, Washington University in St. Louis

The Learning Sciences as a Setting for Learning
Michael Evans, Martin Packer, Reed Stevens, Cody Maddox, R. Keith Sawyer, Jorge Larreamendy

Mapping the Network of the Learning Sciences
Michael Evans

The History and Micro-Genesis of the Learning Sciences
Reed Stevens

The Constitution of a Learning Scientist
Martin Packer, Cody Maddox

Symposium 7: A Cognitive Apprenticeship for Science Literacy Based on Journalism — **Salon 6**
Chair: Joseph Polman, University of Missouri-St. Louis
Discussant:s: Kevin Leander, Vanderbilt University; William R. Penuel, SRI International

A Cognitive Apprenticeship for Science Literacy Based on Journalism
Joseph Polman, E. Wendy Saul, Alan Newman, Cathy Farrar, Nancy Singer, Eric Turley, Laura Pearce, Jen Hope, Glenda McCarty, Cynthia Graville

Toward an Articulation of Standards for Science Literacy Based on Journalism
Alan Newman, E. Wendy Saul, Nancy Singer, Eric Turley, Laura Pearce, Joseph Polman

Designing Transfer Tasks to Measure Science Literacy
Cathy Farrar, Joseph Polman, E. Wendy Saul, Alan Newman

Reframing and Measuring Engagement with Science and Technology
Jen Hope, Glenda McCarty, Joseph Polman

Building an Apprenticeship Community of Practice for Science Journalism
Joseph Polman, E. Wendy Saul, Alan Newman, Laura Pearce, Cynthia Graville

Symposium 8: Wherever you go, there you are - Examining the development and integration of identity across multiple domains and contexts — **Salon 8**

Discussant: Na'ilah Suad Nasir, University of California Berkeley

Wherever you go, there you are: Examining the development and integration of identity across multiple domains and contexts
Cynthia Carter Ching, Emily Evans, Elizabeth Faber, Deborah Fields, Na'ilah Suad Nasir

Trail guide self-perception and domain-expert identity at an environmental reserve
Emily Evans

Life maps and the multi-contextual development of undergraduate leadership identity
Elizabeth Faber

Identity confusion among teachers as professional development participants and novice bloggers
Cynthia Carter Ching

From Home to School and Back Again: Intersecting Trajectories of Identification in a Student's Development as a Writer
Deborah Fields

3:10 PM - 4:40 PM Parallel Sessions

Invited 3: Representational Practices and Modeling in the Disciplines — **Crystal Ballroom**

Presenters: Jay Lemke, University of Michigan; Rogers Hall, Vanderbilt University; Mary Nakleh, Purdue University
Discussant: Andrea DiSessa, University of California Berkeley

Paper Session 12: Learning to write and writing to learn — **Salon 2**

Chair: Kimberley Gomez, University of Pittsburgh

"Ideas First" in Collaborative Second Language (L2) Writing: An Exploratory Study
Yun Wen, Wenli Chen, Chee-Kit Looi

Romantic beats "classic": New insights on the effects of self-regulation on learning by writing
Isabel Braun, Susanne Philippi, Matthias Nückles

Children Learning Literate Practices in Spriting
Tara Rosenberger Shankar

Getting Others' Perspectives: A Case Study of Creative Writing Environments and Mentorship
Alecia Marie Magnifico

Paper Session 13: Examining and evaluating the use of CSCL tools — **Salon 6**

Chair: Gerry Stahl, Drexel University

Teachers Collaborating with Wiki: The Impact of Professional Status, Language, and Age
Yael Poyas

Preparing for the Long Tail of Teaching and Learning Tools
Charles Severance, Stephanie D. Teasley

An Overview of CSCL Methodologies
Heisawn Jeong, Cindy Hmelo-Silver

A Visualization of Group Cognition: Semantic Network Analysis of A CSCL Community
Li Sha, Christopher Teplovs, Jan van Aalst

Paper Session 14: Fostering classroom inquiry — **Salon 7**

Changes in Teachers' Ability to Design Inquiry-Based Lessons During a Two-Year Preparation Program
Augusto Macalalag Jr, Ravit Golan Duncan

Eliciting and Developing Students' Ideas and Questions in a Learner-Centered Environmental Biology Unit
Christopher J. Harris, Rachel S. Phillips, William R. Penuel

Implementing a Lesson Plan Vs. Attending to Student Inquiry: The Struggle of a Student-Teacher During Teaching Science
Loucas T. Louca, Maria Santis, Dora Tzialli

Paper Session 14: (continued) — **Salon 7**

Fostering Mathematical Inquiry: Focus on Teacher's Interventions
Mara Martinez, Wenjuan Li

Paper Session 15: Instructional design in higher education — **Salon 8**

Stressed yet Motivated: Web-Based Peer Assessed Competition as an Instructional Approach in Higher Education
Ronen Hammer, Miky Ronen, Dan Kohen-Vacs

Distributed Creativity Within a Community of Student Instructional Designers
Richard West

The Role of Concretization in Acquiring Design Knowledge
Tamar Ronen-Fuhrmann, Yael Kali

Sharing Educational Scenario Designs in Practitioner Communities
Astrid Wichmann, Jan Engler, Ulrich Hoppe

Symposium 9: Understanding a future with multiple pasts - Projects on metahistorical understanding — **Salon 3**
Chair: D. Kevin O'Neill, Simon Fraser University
Discussant: Susan Goldman, University of Illinois Chicago

Understanding a future with multiple pasts: Projects on metahistorical understanding
D. Kevin O'Neill, Yifat Ben-David Kolikant, Joseph Polman, Josh Radinsky

"Compassionate Canada?"
D. Kevin O'Neill

"Doing history together": A collaborative investigation by Israeli Jewish and Arab students of their shared past of conflict
Yifat Ben-David Kolikant

Narrative metacognition and story diagrams as scaffolds for the critique and construction of history narratives
Joseph Polman

Building nuanced historical narratives around geographic data
Josh Radinsky

Symposium 10: On the Process and Outcomes of Inquiry Learning - Changing Approaches to Assessment — **Salon 4**
On the Process and Outcomes of Inquiry Learning: Changing Approaches to Assessment
Shaaron Ainsworth, Ton de Jong, Cindy Hmelo-Silver, Pascal Wilhelm, Daniel Hickey, Michael Filsecker, Eun Ju Kwon, Stamatina Anastopoulou, Mike Sharples, Charles Crook

Participatory Assessment: Supporting Engagement, Understanding, and Achievement in Scientific Inquiry
Daniel Hickey, Michael Filsecker, Eun Ju Kwon

Engaging students with assessment: Inquiry cartoons
Shaaron Ainsworth, Stamatina Anastopoulou, Mike Sharples, Charles Crook, Claire O'Malley

Measuring Inquiry: New Methods, Promises & Challenges
Jody Clarke-Midura, Michael Mayrath, Chris Dede

Poster Symposium 4: Energy across the Curriculum - Cumulative Learning Using Embedded Assessment Results — **Salon 12**
Energy across the Curriculum: Cumulative Learning Using Embedded Assessment Results
Vanessa Svihla, Libby Gerard, Kihyun (Kelly) Ryoo, Elissa Sato, Tammie Visintainer, Hillary Swanson, Marcia Linn, Hee-Sun Lee, Ou Lydia Liu, Chad Dorsey

Promoting Cumulative Learning
Marcia Linn, Chad Dorsey

Teacher Perspectives on Cumulative Learning
Libby Gerard

Eliciting Energy Ideas in Thermodynamics
Hillary Swanson

Redesigning Plate Tectonics for Cumulative Learning
Elissa Sato

Poster Symposium 4 (continued) — **Salon 12**

Redesigning Global Climate Change for Cumulative Learning
Tammie Visintainer, Vanessa Svihla

New Assessments of Cumulative Learning in Photosynthesis
Kihyun Ryoo

Measuring Cumulative Understanding: Item Formats
Hee-Sun Lee, Ou Lydia Liu

Measuring Cumulative Learning Across Disciplines
Vanessa Svihla

4:40 PM - 5:00 PM **Afternoon Break** — **Salon Foyer**

5:00 PM - 6:30 PM **Parallel Sessions**

IJCSCL Editorial Board Meeting (closed) — **Crystal Ballroom**

Paper Session 16: Scaffolding scientific reasoning and explanations — **Salon 7**
Chair: Mike Stieff, University of Illinois at Chicago

Explaining across contrasting cases for deep understanding in science: An example using interactive simulations
Catherine C. Chase, Jonathan T. Shemwell, Daniel L. Schwartz

Scaffolding students in evaluating the credibility of evidence using a reflective web-based inquiry environment on Biotechnology
Iolie Nicolaidou, Eleni Kyza, Frederiki Terzian, Andreas Hadjichambis, Dimitris Kafouris

Tracing knowledge re-organization - a fine grain analytical framework for looking at students' developing explanations
Orit Parnafes

The impact of web-based collaborative inquiry for science learning in secondary education
Annelies Raes, Tammy Schellens, Bram De Wever

Paper Session 17: Embodied learning processes — **Salon 12**
Chair: Joshua Danish, Indiana University

The use of a digital dance mat for training kindergarten children in a magnitude comparison task
Ulrike Cress, Ursula Fischer, Moeller Korbinian, Sauter Claudia, Nuerk Hans-Christoph

Using conceptual blending to describe emergent meaning in wave propagation
Michael Wittmann

Embodied Experiences within an Engineering Curriculum
Molly Bolger, Marta Kobiela, Paul Weinberg, Rich Lehrer

Made by Hand: Gestural Practices for the Building of Complex Concepts in Face-to-Face, One-on-One Learning Arrangements
Stephanie Scopelitis, Siri Mehus, Reed Stevens

Paper Session 18: Learning to read - and reading to learn from - informational texts — **Salon 2**
Chair: Kimberley Gomez, University of Pittsburgh

The Influence of Presentation Format and Subject Complexity on Learning from Illustrated Texts in Biology
Mareike Florax, Rolf Ploetzner

Delinquent or criminal? - How to foster conceptual understanding of technical terms in computer-mediated collaborative learning.
Elisabeth Paus, Gisela M. Gerhards, Regina Jucks

Paper Session 18 (continued) — **Salon 2**

A Web-based Reading Environment Designed to Fundamentally Extend Readers' Interaction with Informational Texts
Khusro Kidwai

The Effectiveness of Reading Comprehension Strategies in High School Science Classrooms
Phillip Herman, Kristen Perkins, Martha Hansen, Louis Gomez, Kimberley Gomez

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Paper Session 19: Making students' thinking visible for reflection and learning — **Salon 6**
Chair: Alicia C. Alonzo, Michigan State University

Measuring Transformative Modeling: A Framework of Formatively Assessing Students' Deep Conceptual Understanding in Physical Sciences
Ji Shen, Ou Lydia Liu, Hsin-Yi Chang

Student learning through journal writing in a natural science course for pre-elementary education majors
Michael Dianovsky, Donald Wink

Using Knowledge Space Theory to Analyze Concept Maps
Laura Cathcart, Mike Stieff, Gili Marbach-Ad, Ann Smith, Kenneth Frauwirth

Conceptual Change and Epistemic Growth Through Reflective Assessment in Computer-Supported Knowledge Building
Carol KK Chan, IvanCK Lam

Symposium 11: Transformative Play - Games as 21st Century Curriculum — **Salon 4**
Chair: Sasha Barab, Indiana University

Transformative Play: Games as 21st Century Curriculum
Sasha Barab, Melissa Gresalfi, Anna Arici, Adam Ingram-Goble, Patrick Pettyjohn

Taiga Fishkill: Example 1 of Transformational Play
Sasha Barab, Anna Arici, Daniel Hickey

Ander City: Example 2 of Transformational Play
Sasha Barab, Melissa Gresalfi, Anna Arici, Adam Ingram-Goble, Patrick Pettyjohn

Modern Prometheus: Example 3 of Transformational Play
Patrick Pettyjohn, Sasha Barab

Symposium 12: Internationalizing the Learning Sciences from Formal to Informal Learning Environments — **Salon 8**
Chairs: Carolyn Rosé, Carnegie Mellon University; Matthew Kam, Carnegie Mellon University
Discussant: Christopher Hoadley, New York University

Symposium: Internationalizing the Learning Sciences from Formal to Informal Learning Environments
Carolyn RosÈ , Matthew Kam, Therese Laferriere, Nancy Law, Neema Moraveji, Ravi Vatrapu, Christopher Hoadley

LearnLab India: Towards "In Vivo" International Comparative Education Research
Carolyn Rosé, Matthew Kam

Knowledge Building International Project (KBIP): a Nested Network of Learning and Knowledge Creation
Therese Laferriere, Nancy Law

Supporting and Measuring Global Information Literacy Through Cross-cultural Studies of Web Search
Neema Moraveji

Comparative Informatics: Investigating Cultural and Linguistic Influences in Computer Supported Collaborative Learning
Ravi Vatrapu

Language and Literacy Learning in Developing Communities via Cellphones
Matthew Kam

Symposium 13: Increasing Rigor and Generativity in Learning: Connections Between the Disciplines, Children's Lived Experience and Everyday Knowledge — **Salon 3**

Chair: Megan Bang, American Indian Center
Discussant: Beth Warren, TERC

Increasing Rigor and Generativity in Learning: Connections Between the Disciplines, Children's Lived Experience and Everyday Knowledge
Megan Bang, Christopher G. Wright, Eli Tucker-Raymond, Folashade Solomon Cromwell

Learning to "see" sound: Meaning-making about sound through architectural diagrams among elementary school Black boys
Christopher G. Wright

History in Schools, Teachers, and Students: Identities and Meaning Making in Middle School Social Studies
Eli Tucker-Raymond, Maria Rosario

A Writer's Way: One Teacher's Experience Learning to See Her Students' Intellectual Strengths
Folashade Solomon Cromwell

Symposium 14: Content Analysis of Collaboratively Constructed Knowledge Artifacts: Issues and Opportunities for Research — **Salon 9**

Discussant: Christine Greenhow, University of Maryland

Content Analysis of Collaboratively Constructed Knowledge Artifacts: Issues and Opportunities for Research
Bram De Wever, Hilde Van Keer, Vanessa Peters, James D. Slotta, Elizabeth Charles, Nathaniel Lasry, Chris Whittaker, Crina Damsa, Patrick Sins, Bert Reijnen

Development of a Content Analysis Approach for Collaboration in a Wiki Environment
Bram De Wever, Hilde Van Keer

Analyzing Student Collaborations in a Wiki-based Science Curriculum
Vanessa Peters, James D. Slotta

Does Scale Matter: Using Different Lenses to Understand Collaborative Knowledge Building
Elizabeth Charles, Nathaniel Lasry, Chris Whittaker

Learning Through Collaborative Creation of Shared Knowledge Objects: Technological Support and Analytic Challenges
Crina Damsa, Patrick Sins, Bert Reijnen

6:30 PM - 8:00 PM **Reception And Poster Session** — **Red Lacquer Ballroom**

Poster Session 2

2.1 Aggregation in the blog-o-sphere
Richard Alterman, Johann Larusson

2.2 Oh god, please don't let me hurt them!: Assessing Self-Regulated Learning in Medical School Education
Ted Hanss, Stephanie D. Teasley

2.3 Cutting the Distance in Distance Learning: Perspectives on Effective Online Learning Environments
Erica Boling, Mary Hough, Hindi Krinsky, Hafiz Saleem, Maggie Stevens

2.4 Understanding Formative Instruction By Design
R. Benjamin Shapiro, Peter Wardrip

2.5 Community knowledge advancement and individual learning
Nancy Law, Johnny Yuen, Jing Leng, Wing O W Wong

2.6 Facilitation of reform based teacher identity development in pre-service teachers using post-activity reflection debriefs
Michael Occhino, April Lynn Luehmann

2.7 Structural validation of a feedback perceptions questionnaire
Jan-Willem Strijbos, Ron J. Pat-El, Susanne Narciss

2.8 Designing Environments to Encourage Collaborative Creativity: Two Case Studies in Higher Education
Richard West, Geoff Wright, Isaku Tateishi, Dan Randall

2.9 Robotics and environmental sensing for low-income populations: design principles, impact, technology, and results
Arnan Sipitakiat, Paulo Blikstein

2.10 Model-Evidence Link Diagrams: A Scaffold for Model-Based Reasoning
Luke Buckland, Clark Chinn

2.11 Predicting Social Influence and Project Influence in Online Communities of Creators
Elisabeth Sylvan

2.12 Effects of Case-Based Professional Development on Teacher Technological Pedagogical Content Knowledge
Chrystalla Mouza

2.13 Beyond epistemological deficits: Incorporating flexible epistemological views into fine-grained cognitive dynamics
Ayush Gupta, Andrew Elby

2.14 Investigating teacher growth in the context of content innovation
Sao-Ee Goh, Susan A. Yoon

2.15 Impasses to innovation in the development and design of new media curriculum
Kimberly Richards, Kimberley Gomez

2.16 From Visualization to Logical Necessity Through Argumentative Design
Naomi Prusak, Rina Hershkowitz, Baruch Schwarz

2.17 Improvising in music: A learning biography study to reveal skill acquisition
Iwan Wopereis, Jeroen van Merriënboer, Paul Kirschner

2.18 The Video Mosaic: Design and Preliminary Research
Cindy Hmelo-Silver, Carolyn Maher, Grace Agnew, Marjory Palius, Sharon Derry

2.19 From Gettysburg to the Cuban Missile Crisis: Designing for historical reenactments with Twitter
Tom Caswell, Marion Jensen, Victor Lee, Brett Shelton

2.20 The CORDTRA Analysis Tool in Action: Experiences and Suggestions
Andri Ioannou-Nicolaou, Agni Stylianou-Georgiou

2.21 Using Video-Based Examples of Peers' Performance on a Task to Support Prospective Educators' Interpersonal Skill Development
Joan Walker, Benjamin Dotger

2.22 Explanation as a guide to learning
Cristine Legare, Tania Lombrozo

2.23 The role of explanation in discovery and generalization: evidence from category learning
Joseph Williams, Tania Lombrozo

2.24 Teachers' Pedagogical Content Knowledge of Students' Science Writing and Talk
Katherine McNeill, Amanda Knight

2.25 Toward an emphasis on evidence and explanation in K-5 science teaching
Carla Zembal-Saul

2.26 Disentangling conceptual and epistemic influences on scientific explanation
William Sandoval, Jarod Kawasaki, Tina Stanford, Sara Carriere, Bladimir Lopez-Predo

2.27 Towards a Taxonomy of Explanations in Science Education
Barbara White, Jennifer L. Chiu, Lauren Barth-Cohen, Beat Schwendimann, Eric Berson, Jennifer King Chen, Hillary Swanson

2.28 Connecting Brain and Learning Sciences: An Optical Brain Imaging Approach to Monitoring Development of Expertise in UAV Piloting
Murat Cakir, Hasan Ayaz, Justin Menda, Kurtulus Izzetoglu, Banu Onaral

2.29 Activating childhood expertise to engage with disciplinary concepts
Sasha Palmquist

2.30 Knowledge eCommons: Merging Computer Conferencing and Wikis
Jim Hewitt, Earl Woodruff

2.31 21st Century Assessment: Redesigning to Optimize Learning
Vanessa Svihla, Drue Gawel, Nancy Vye, Megan Brown, Allison Moore, John Bransford

2.32 Unpacking the Design Process in Design-based Research
Mingfong Jan, Yam San Chee, Ek Ming Tan

2.33 The elusive link between emotion and self-regulated learning: How does emotion affect metacognition, study-time, and performance during multimedia learning?
Amber Chauncey, Roger Azevedo

2.34 Validity Evidence for Games as Assessment Environments
Girlie C. Delacruz, Gregory K.W.K. Chung, Eva L. Baker

2.35 Learning inter-related concepts in mathematics from videogames
Hee Seung Lee, Belinda Thompson, Keith Holyoak, James Stigler

2.36 Rhythm Games and Learning
Matthew Gaydos

2.37 Neighborhood Investigations and Game Design Using Mobile Media
James Mathews, Mark Wagler

2.38 Sources of Evidence for Embedded Assessment in Immersive Games
Brian C. Nelson, Benjamin Erlandson, Andre Denham

2.39 Improving the Language Ability of Deaf Signing Children through an Interactive American Sign Language-Based Video Game
Kimberly A. Weaver, Harley Hamilton, Zahoor Zafrulla, Helene Brashear, Thad Starner, Peter Presti, Amy Bruckman

2.40 Identity Supportive Games as a Tool to Learn about Asian-American Stereotypes and Self-Concept
Joey Lee

2.41 Building Creativity: Collaborative Learning and Creativity in a Virtual Gaming Environment
Kylie Peppler, Maria Solomou

2.42 Small Groups, Big Mistakes: The Emergence of Faulty Rules During a Collaborative Board Game
Matthew Berland, Victor Lee, Maneksha DuMont

2.43 Student Conceptions of Number in Solutions Chemistry
Stephanie Ryan, Donald Wink

Registration Open
Monday 8am- Thursday 2pm

Thursday, July 1

7:30 AM - 8:30 AM CSCL 2011 Program Committee Meeting — Crystal Ballroom

8:00 AM - 10:00 AM Continental Breakfast — Red Lacquer Ballroom

8:30 AM - 10:00 AM Keynote 2 — Red Lacquer Ballroom

Chair: Alison Castro-Superfine, University of Illinois at Chicago

Instructional design, theory and practice in mathematics education

Koeno Gravemeijer, *Eindhoven University of Technology*

Reactor: Danny B. Martin, University of Illinois Chicago

Sponsored by the Spencer Foundation

10:00 AM - 10:15 AM Morning Break — Red Lacquer Ballroom

10:15 AM - 11:45 AM Parallel Sessions

Invited 4: Identity as a Lens on Learning in the Disciplines — Crystal Ballroom

Chair: Josh Radinsky, University of Illinois Chicago

Presenters: Na'ilah Suad Nasir, University of California Berkeley; Reed Stevens, Northwestern University; Avi Kaplan, Temple University

Discussant: Stanton Wortham, University of Pennsylvania

Paper Session 20: Scripts, prompts, and feedback as scaffolds for learning — Salon 4

Chair: Erica Rosenfeld Halverson, University of Wisconsin-Madison

Known Knowns and Unknown Knowns: Multiple Memory Routes to Improved Numerical Estimation
Dav Clark, Michael Ranney

Representational Scripting to Support Students' Online Problem-solving Performance
Bert Slof, Gijsbert Erkens, Paul Kirschner

Fading Instructional Scripts: Preventing Relapses into Novice Strategies by Distributed Monitoring
Christof Wecker, Frank Fischer

Promoting Learning in Complex Systems: Effect of Question Prompts versus System Dynamics Model Progressions as a Cognitive-Regulation Scaffold in a Simulation-Based Inquiry-Learning Environment
Deniz Eseryel, Victor Law

Paper Session 21: Knowledge construction and online inquiry — Salon 6

Group Micro-creativity in Online Discussions: Effects of New Ideas and Social Metacognition
Gaowei Chen, Ming Ming Chiu, Zhan Wang

Analyzing Collaborative Knowledge Construction in Secondary School Biology
Vanessa Peters, James D. Slotta

Analyzing Equality of Participation in Collaborative Inquiry: Toward a Knowledge Community
Hedieh Najafi, James D. Slotta

Paper Session 22: Learning to attend to students' thinking — Salon 7

Chair: Ravit Golan Duncan, Rutgers University

Exploring how novice teachers learn to attend to students in analyzing case studies of classroom teaching and learning
Daniel Levin, Jennifer Richards

Using changes in framing to account for differences in a teacher's classroom behavior
Jennifer Lineback, Fred Goldberg

Paper Session 22 (continued) — **Salon 7**

Examining Preservice Teachers' Ability to Attend and Respond to Student Thinking
Vicky Pilitsis, Ravit Golan Duncan

Dynamics of disciplinary understandings and practices of attending to student thinking in elementary teacher education
Janet Coffey, Ann Edwards, Carla Finkelstein

Paper Session 23: Methodological issues and challenges for the Learning Sciences — **Salon 8**
Chair: William R. Penuel, SRI International

Where to Find the Mind: Identifying the Scale of Cognitive Dynamics
Luke Conlin, Ayush Gupta, David Hammer

Adapting Workflow Technology to Design-Based Research: Development of a Method for Organizing the "Messiness" of Research in Technology-Rich Online Learning Environments
Alan J. Hackbarth, Sharon Derry, Brendan R. Eagan, Julia Gressick

Finding Transactive Contributions in Whole Group Classroom Discussions
Hua Ai, Marietta Sionti, Yi-Chia Wang, Carolyn Rose

Arts and Learning: A Review of the Impact of Arts and Aesthetics on Learning and Opportunities for Further Research
Kylie Peppler, Heidi Davis

Paper Session 24: Processes of co-construction in groups — **Salon 2**
Chair: David Uttal, Northwestern University

Exploring Convergence of Science Ideas through Collaborative Concept Mapping
Dana Gnesdilow, Anushree Bopardikar, Sarah Sullivan, Sadhana Puntambekar

What Are They Talking About? Findings from an Analysis of the Discourse in Peer-Led Team Learning In General Chemistry
Patrick Brown, R. Keith Sawyer, Regina Frey, Daniel Gealy, Sarah Luesse

Multiple Conceptual Coherences in the Speed Tutorial: Micro-processes of Local Stability
Brian Frank

Science Learning as the Objectification of Discourse
Valerie Otero

Symposium 15: A New Age in Tangible Computational Interfaces for Learning — **Salon 12**
Chair: Paulo Blikstein, Stanford University
Discussant: Edith Ackermann, Massachusetts Institute of Technology School of Architecture

A New Age in Tangible Computational Interfaces for Learning
Paulo Blikstein, Leah Buechley, Michael Horn, Hayes Raffle

Topobo: programming by example to create complex behaviors
Hayes Raffle

LilyPad Arduino: rethinking the materials and cultures of educational technology
Leah Buechley

Connecting the science classroom and tangible interfaces: the Bifocal Modeling framework
Paulo Blikstein

Tangible Programming in Formal and Informal Educational Environments
Michael Horn

Symposium 16: Are We Managing Learning with Learning Management Systems? — **Salon 3**
Chair: Stephanie D. Teasley, University of Michigan
Discussant: James Laffey, University of Missouri

Are We Managing Learning with Learning Management Systems?
Stephanie D. Teasley, Tanya Cleveland Solomon, Andrew E. Krumm, Steven Lonn, Kara Makara, Diana Perpich, James Laffey

Symposium 16 (continued) — **Salon 3**

A Multi-Institutional Analysis of Interactions Supported by a LMS
Andrew E. Krumm, Steven Lonn

Commuter vs. Residential: LMS Perceptions & Use on Two Campuses
Steven Lonn, Andrew E. Krumm

How Does LMS Use Affect Instructional Time?
Tanya Cleveland Solomon, Kara Makara

The Gifts We Give Ourselves: Embedding Disciplinary Tools in LMS
Diana Perpich

11:45 AM - 1:00 PM Lunch (on your own in downtown Chicago!)

ISLS Education Committee Meeting (closed) — **Crystal Ballroom**

ISLS Conference Committee Meeting (closed) — **Salon 3**

ISLS Membership Committee Meeting (closed) — **Salon 6**

1:10 PM - 2:40 PM Parallel Sessions

Invited 5: Geography Education Reform: A Cinderella Story in the Making? — **Crystal Ballroom**
Chair: Daniel Edelson, National Geographic Society
Presenters: David Uttal, Northwestern University; Josh Radinsky, University of Illinois Chicago; David Rutherford, University of Mississippi
Discussant: Clare Brooks, University of London

Paper Session 25: Learning in video game authoring, design, training, and play — **Salon 12**
Chair: Dor Abrahamson, University of California Berkeley

"Let the Players Play!" and Other Earnest Remarks about Videogame Authorship
Paul Teske, Teale Fristoe

Leading to Win: The Influence of Leadership Styles on Team Performance during a Computer Game Training
Anna Siewiorek, Andreas Gegenfurtner

First-Year Engineering Students' Environmental Awareness and Conceptual Understanding with Participatory Game Design as Knowledge Elicitation
Melissa Dyehouse, Nicole Weber, Jun Fang, Constance Harris, Annette Tomory, Johannes Strobel

Reading in the Context of Online Games
Constance Steinkuehler, Catherine Compton-Lilly, Elizabeth King

Paper Session 26: Disciplinary lenses and epistemologies shaping conceptual learning — **Salon 3**
Chair: Leema Berland, University of Texas Austin

Conceptual Confusion in the History Classroom
Chava Shane-Sagiv

Perceptions of the relationship between evolutionary theory and biblical explanations of the origins of life and their effects on the learning of evolution among high school students
Pratchayapong Yasri, Rebecca Mancy

Which science disciplines are pertinent? -Impact of epistemological beliefs on students' choices
Torsten Porsch, Rainer Bromme

Discipline-specific Socialization: A Comparative Study
Iris Tabak, Michael Weinstock, Hilla Zviling-Beiser

Paper Session 27: Exploring learning possibilities with handheld technologies — **Salon 7**
Chair: Paula Hooper, Exploratorium

Facilitating Group Learning in Science Laboratory Courses Using Handheld Devices
Chen-Wei Chung, Wang-Hsin Kuo, Chen-Chung Liu

Paper Session 27 (continued) — **Salon 7**

Students' Meaning Making in a Mobile Assisted Chinese Idiom Learning Environment
Lung-Hsiang Wong, Chee-Kuen Chin, Chee-Lay Tan, May Liu, Cheng Gong

Extending Students' learning Spaces: Technology-Supported Seamless Learning
Wenli Chen, Peter Sen Kee Seow, Hyo-Jeong So, Yancy Toh, Chee-Kit Looi

Quiet Captures: A Tool for Capturing the Evidence of Seamless Learning with Mobile Devices
Ivica Boticki, Hyo-Jeong So

Symposium 17: Scaling Practices of Spatial Analysis and Modeling — **Salon 2**
Chair: Rogers Hall, Vanderbilt University
Discussant: Reed Stevens, Northwestern University

Scaling Practices of Spatial Analysis and Modeling
Rogers Hall, Jasmine Ma, Kevin Leander, Katie Taylor, Nathan Phillips

Shifting Between Person, Structure and Settlement Scales in Anthropological Field Work
Jasmine Ma, Rogers Hall, Kevin Leander

Changing the Structure of Planning Participation by Moving Across Scales
Katie Taylor, Rogers Hall, Kevin Leander

Modality and Scale at AirMed
Nathan Phillips, Kevin Leander

Symposium 18: Understanding Families' Educational Decision-Making Along Extended Learning Pathways — **Salon 4**
Discussant: Brigid Barron, Stanford University

Understanding Families' Educational Decision-Making Along Extended Learning Pathways
Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Negotiating Identity and Expertise in a Vietnamese Immigrant Family
Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Orienting Children Towards Science: Influences of Parental Values and Family History on How Parents Arrange Children's Educational Experiences
Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

Examining the Complex Ecologies Associated with Immigrant Youth and Family Educational Decision Making
Leah A. Bricker, Heather Toomey Zimmerman, Suzanne Reeve, Philip Bell

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Symposium 19: Adaptive human guidance of computer-mediated group work — **Salon 6**
Chair: Baruch Schwarz, Hebrew University of Jerusalem
Discussant: Annemarie Palincsar, University of Michigan

Adaptive human guidance of computer-mediated group work
Baruch Schwarz, Christine Wang, Ming Ming Chiu, Cynthia Ching, Kenneth Koedinger, Erin Walker, Nikol Rummel, Baruch Schwarz, Christa Asterhan, Michael Baker

Statistical Discourse Analysis of Young Children's Peer Tutoring at Computers
Christine Wang, Ming Ming Chiu, Cynthia Ching

Automated Adaptive Support for Peer Tutoring in High-School Mathematics
Erin Walker, Nikol Rummel, Kenneth Koedinger

Human guidance of synchronous discussions: A nascent school practice
Baruch Schwarz, Christa Asterhan

Buds, flowers and fruit: potentialities for guidance in collaborative argumentation-based learning
Michael Baker

Symposium 20: Learning about Dynamic Systems by Drawing — **Salon 9**
Learning about Dynamic Systems by Drawing
Shaaron Ainsworth, Mitchell Nathan, Peggy van Meter, Helen Zhang, Marcia Linn, Arzoo Buksh, Chelsea Johnson, Wouter van Joolingen, Lars Bollen, Frank Leenaars

Symposium 20 (continued) — **Salon 9**

How can selection and drawing support learning from dynamic visualizations?
Helen Zhang, Marcia Linn

Can self-explanation help learners draw to learn?
Shaaron Ainsworth, Arzoo Buksh

Drawing Inferences about Students' Mental Models of Dynamic Processes Depicted in Scientific Drawings: The Role of Gestures and Speech
Mitchell Nathan, Chelsea Johnson

Interactive drawing tools to support modeling of dynamic systems
Wouter van Joolingen, Lars Bollen, Frank Leenaars

2:40 PM - 3:00 PM **Afternoon Break** — **Salon Foyer**

3:00 PM - 4:30 PM **Parallell Sessions**

Paper Session 28: Knowledge-building communities and collaborative discourse — **Salon 2**
Chair: David Schaenfield, Teachers College Columbia University

An invisible preference for intrinsic motivation in Computer-Mediated Communication
Bart Rienties, Dirk Tempelaar, Bas Giesbers, Mien Segers, Wim Gijselaers

Collaborative Productivity as Self-Sustaining Processes in a Grade 4 Knowledge Building Community
Jianwei Zhang, Richard Messina

Examining the Role of Verbal Interaction in Team Success on a Design Challenge
Xornam S. Apedoe, Kristina V. Mattis, Bianca Rowden-Quince, Christian D. Schunn

Software-Based Scaffolding: Supporting the Development of Knowledge Building Discourse in Online Courses
Nobuko Fujita, Christopher Teplovs

Paper Session 29: Professional vision as a lens on learning in the disciplines — **Salon 3**
Chair: Phillip Herman, University of Pittsburgh

Assessing the Development of Expertise in an Historical-Based Science: The Case of Integrative Archeology
Inbal Flash Gvili, Jeff Dodick

Tension resolution as pattern for practice transformation in interdisciplinary teamwork in professional development
Patrick Sins

The Many Dimensions of Having a Good Eye: A Methodological Reflection of Metaphors in Visual Cognition Analysis
Andreas Gegenfurtner, Anna Siewiorek

The Epistemography of Journalism 335: Complexity in developing journalistic expertise
David Hatfield, David Williamson Shaffer

Paper Session 30: Trajectories of math and science learning — **Salon 4**

Centering a Professional Learning Community on a Learning Progression for Natural Selection: Transforming Community, Language, and Instructional Practice
Erin Marie Furtak, Deborah Morrison, Kathleen Henson, Sarah A. Roberts

A Longitudinal Approach to Appropriation of Science Ideas: A Study of Students' Trajectories in Thermodynamics
Olivia Levrini, Paola Fantini, Barbara Pecori, Marta Gagliardi, Mariateresa Scarongella, Giulia Tasquier

The Construction, Refinement, and Early Validation of the Equipartitioning Learning Trajectory
Alan Maloney, Jere Confrey

Magnetism as a Size Dependent Property: A Cognitive Sequence for Learning about Magnetism as an Introduction to Nanoscale Science for Middle and High School Students
David Sederberg, Lynn Bryan

Symposium 21: The Design Framework: An Organizing Artifact for Enhancing the Fidelity of Educational Research, Implementation, and Assessment — **Salon 6**

Discussant: Louis Gomez, University of Pittsburgh

The Design Framework: An Organizing Artifact for Enhancing the Fidelity of Educational Research, Implementation, and Assessment
Richard Halverson, Erica Rosenfeld Halverson, Dana Gnesdilow, Jen Scott Curwood, Michelle Bass, Anne Karch

A Modest Proposal: A Design Framework to Unify Educational Discourse
Richard Halverson, Erica Rosenfeld Halverson

Using the Design Framework as a Metarepresentation to Facilitate Teacher-Researcher Collaboration
Dana Gnesdilow, Jen Scott Curwood

Artifact Families: An Affordance of the Design Framework
Michelle Bass

Branching Up, Out or Off: How Features Become Affordances
Anne Karch

Symposium 22: Using Digital Video to Investigate Teachers' In-the-Moment Noticing — **Salon 7**

Discussant: Rogers Hall, Vanderbilt University

Using Digital Video to Investigate Teachers' In-the-Moment Noticing
Bruce Sherin, Miriam Sherin, Adam Colestock, Rosemary Russ, Melissa Luna, Martha Mulligan, Janet Walkoe, Rogers Hall

Freezing Time: What Mathematics and Science Teachers "See" While Teaching
Bruce Sherin, Miriam Sherin

Science and Mathematics Teachers' In-The-Moment Noticing: Attending to Student Thinking Within a Lesson and Beyond
Adam Colestock, Rosemary Russ

Supporting Video Club Conversations Using Teacher-Selected Video Clips
Melissa Luna, Martha Mulligan, Miriam Sherin, Janet Walkoe

Symposium 23: Learning about Complexity and Beyond - Theoretical and Methodological Implications for the Learning Sciences — **Salon 8**

Organizer: Michael Jacobson, University of Sydney Chair: Uri Wilensky, Northwestern University
Discussant: Peter Reimann, University of Sydney

Learning about Complexity and Beyond: Theoretical and Methodological Implications for the Learning Sciences
Michael Jacobson, Uri Wilensky, Peter Reimann, Pratim Sengupta, Michelle Wilkerson-Jerde, Manu Kapur

The Role of Perceptual Signatures and Agent-Level Mechanisms in Understanding Emergence: An Example in Learning Electricity
Pratim Sengupta, Uri Wilensky

Seeing Change in the World from Different Levels: Understanding the Mathematics of Complex Systems
Michelle Wilkerson-Jerde, Uri Wilensky

Learning as an Emergent Phenomenon: Methodological Implications
Manu Kapur, Michael Jacobson

Ontologies as Scale Free Networks: Implications for Theories of Conceptual Change
Michael Jacobson, Manu Kapur

Symposium 24: Understanding the Role of Place in Environmental Education across Settings — **Salon 9**

Understanding the Role of Place in Environmental Education across Settings
Giovanna Scalone, Philip Bell, Shari Rose, Angela Calabrese Barton, Carrie Tzou

Ideological dimensions of place: (re)creating an urban area
Giovanna Scalone, Philip Bell

"The Coal Plant Could Give People Jobs, But at the Same Time, It could Pollute the Air": Science learning as participation with and in a place
Shari Rose, Angela Calabrese Barton

Symposium 24 (continued) — **Salon 9**

"My Place in Puget Sound": Leveraging youths' sense of place in ocean sciences education
Carrie Tzou

Poster Symposium 5: Technologies and Tools to Support Informal Science Learning — **Salon 12**
Chair: Heather Toomey Zimmerman, Pennsylvania State University
Discussant:s: Sherry Hsi, Lawrence Hall of Science; Brian K. Smith, Rhode Island School of Design

Technologies and Tools to Support Informal Science Learning
Heather Toomey Zimmerman, David E. Kanter, Kirsten Ellenbogen, Leilah Lyons, Steven J. Zuiker, Tom Satwicz, Sandra Toro Martell, Sherry Hsi, Brian K. Smith, Matthew Brown

Using the demand for data in a project-based science curriculum to bridge high school biology classrooms and an informal science center
David E. Kanter

Rain Table: Visualization technology using complex datasets that allows learners to control and follow water flow across the Earth's surface
Kirsten Ellenbogen, Molly Phipps

Mobile devices transforming the museum experience: Opportunistic user interfaces to exhibits
Leilah Lyons

Cyber-stretching: The Taiga biome around kids' worlds
Steven J. Zuiker

Understanding the pieces of knowledge in informal learning environments
Tom Satwicz

Using digital photography on an Internet portal to extend and enrich outdoors learning experiences
Heather Toomey Zimmerman, Robert Jordan, Jennifer Weible, Chris Gamrat

Innovative Tools and Student Perceptions of Technology: Owl Tracking and GIS Mapping with Fifth and Sixth Graders
Sandra Toro Martell

Take a Stand: Creating an immersive social experience with people tracking, 3D game technology, and interactive storytelling
Matthew Brown, Ben Loh, Joyce Ma

4:45 PM - 6:00 PM Parallel Sessions

Paper Session 31: Representational practices of learners — **Salon 6**
Chair: R. Benjamin Shapiro, Morgridge Institute for Research

Representational practices in the activity of student-generated representations (SGR) for promoting conceptual understanding
Orit Parnafes

Learning physics as coherently packaging multiple sets of signs
Kristine Lund, Karine Becu-Robinault

Digital art-making as a representational process
Erica Rosenfeld Halverson

Paper Session 32: Multi-media resources for learning environments — **Salon 3**
Chair: Nichole Pinkard, University of Chicago

Pictorial illustrations in intelligent tutoring systems: Do they distract or elicit interest and engagement?
Ulrike Magner, Rolf Schwonke, Alexander Renkl, Vincent Aleven, Octav Popescu

Digital Video Tools in the Classroom: Empirical Studies on Constructivist Learning with Audio-visual Media in the Domain of History
Carmen Zahn, Karsten Krauskopf, Roy Pea, Friedrich W. Hesse

From Show, To Room, To World: A Cross-Context Investigation of How Children Learn from Media Programming
Therese E. Dugan, Reed Stevens, Siri Mehus

Paper Session 33: Mathematics instruction: Innovations and challenges — **Salon 4**
Chair: Phil Vahey, SRI International

Interactional Achievement of Shared Mathematical Understanding in a Virtual Math Team
Murat Cakir, Gerry Stahl, Alan Zemel

Free, open, online, mathematics help forums: The good, the bad, and the ugly
Carla van de Sande

Effects of Instructional Design Integrated With Ethnomathematics: Attitudes And Achievement
Melike Kara, Aysenur Yontar Togrol

Paper Session 34: Teachers' epistemologies and science — **Salon 7**
Chair: Joseph Polman, University of Missouri St. Louis

Investigating pre-service elementary teachers' epistemologies when talking about science, enacting science and reflecting on their enactment
Loucas T. Louca, Dora Tzialli, Zacharias C. Zacharia

Interpreting Elementary Science Teacher Responsiveness Through Epistemological Framing
April Cordero Maskiewicz, Victoria Winters

Personal beliefs about learning and teaching: Comparison of student teachers in the sciences and humanities at different stages of their studies
Natalia Schlichter, Rainer Watermann, Matthias Nückles

Paper Session 35: Learning sciences research at scale — **Salon 2**
Chair: Louis Gomez, University of Pittsburgh

Equity in Scaling Up SimCalc: Investigating Differences in Student Learning and Classroom Implementation
Jeremy Roschelle, Jessica Pierson, Susan Empson, Nicole Shechtman, Margie Dunn, Deborah Tatar

Large Scale Analysis of Student Workbooks: What Can We Learn About Learning?
Nicole Shechtman, Jeremy Roschelle

Complexity, Robustness, and Trade-Offs in Evaluating Large Scale STEM Education Programs
Susan A. Yoon, Lei Liu

6:00 PM - 7:30 PM Reception & Poster Session — Red Lacquer Ballroom

Poster Session 3

3.1 The identity formation of youth with disabilities across academic disciplines and social contexts
AnnMarie Baines, Philip Bell

3.2 Designing an online environment for all teachers: Supporting teachers in learning to learn online
Rebecca Schneider

3.3 SURGE: Integrating Vygotsky's Spontaneous and Instructed Concepts in a Digital Game?
Douglas Clark, Brian C. Nelson, Cynthia M. D'Angelo, Kent Slack, Mario Martinez-Garza

3.4 Multi-Touch Tabletop Computing for Early Childhood Mathematics: 3D Interaction with Tangible User Interfaces
Michael A. Evans, Elisabeth Drechsel, Eric Woods, Guoqiang Cui

3.5 Impact of the distribution of social skills within learning groups in a CSCL- setting: An empirical pilot study
Michele Notari, Adrian Baumgartner

3.6 Pre-Implementation Technology Acceptance Model in the Case of a University-Based Electronic Portfolio System
Jeng-Yi Tzeng

3.7 Investigating youth's identity trajectories through positioning within the dialectic interstices of online and offline worlds
Azilawati Jamaludin

3.8 Broadening Participation through Scaffolding
Shelley Stromholt, Andrew Shouse, Philip Bell

3.9 An Analysis of the Interactional Patterns in One-to-One and One -to- Many Collaborative Concept Mapping Activities
Chiu-Pin Lin, Lung-Hsiang Wong, Tzu-Chien Liu, Yin-Juan Shao

3.10 Finding Essential Complexity for Learning in Virtual Worlds
Benjamin Erlandson, Brian C. Nelson, Andre Denham

3.11 Overherd: Designing Information Visualizations to Make Sense of Student's Online Discussions
Libby Hemphill, Stephanie D. Teasley

3.12 Out-of-School Virtual Worlds Based Programs: A Cross-Case Analysis
Constance Steinkuehler, Esra Alagoz

3.13 Formative Feedback Handheld Tools for Teachers
Suzanne Rhodes

3.14 Moving Towards Learning with One-to-One Laptop: A Longitudinal Case Study on Tools, People, and Institutions
Arnan Sipitakiat

3.15 The Design and Evaluation of Educative Just-In-Time Teacher Supports in a Web-Based Environment
Hebbah El-Moslimany, Ravit Golan Duncan, Janice McDonnell, Sage Lichtenwalner

3.16 Reviving Dewey's Reflective Thinking Framework for the Design of Problems in Virtual Learning Environment based Assessments of Content and Inquiry
David Majerich, Diane J. Ketelhut, Brian Nelson, Catherine Schifter, Younsu Kim

3.17 Using a designed, online games based affinity space as a quasi-natural ethnographic context and experiment lab
Constance Steinkuehler, Elizabeth King, Esra Alagoz, Yoonsin Oh, Sarah Chu, Bei Zhang, Aysegul Bakar, Crystle Martin

3.18 A dual-level approach for investigating design in online affinity spaces
Sean Duncan

3.19 Identity in Informal Game-based Learning Environments
Benjamin DeVane

3.20 Exploring Intersections Between Online and Offline Affinity Space Participation
Elizabeth King

3.21 FormulaT Racing: Combining Gaming Culture and Intuitive Sense of Mechanism for Video Game Design
Nathan Holbert, Uri Wilensky

3.22 DevInfo GameWorks: Supporting inquiry-based game design
Jeff Kupperman, Beth Robertson, Shawn Baglin

3.23 Learning as mediated by a nodal ecology: Findings from studies of Gamestar Mechanic and Quest to Learn
Robert J Torres, Valerie Shute

3.24 The Impact of Video Games and Virtual Environments iin Pre-Service Elementary Teacher Science Education
Janice Anderson

3.25 Designing for an Informal Learning Environment: Towards a Participatory Simulation Design Process for Public Policy Planning
Chandan Dasgupta, Leilah Lyons, Moira Zellner, Andrew Greenlee

3.26 Social Network Environments as Third Spaces for Merging Everyday and Formalized Practices
Priya Sharma, Susan Land, Robert Jordan, Jeff Swain, Brian K. Smith

3.27 Using Social Network Analysis to Understand Homeschool Network Interactions
Christopher Steinmeier, Susan A. Yoon

3.28 The "Other" curriculum: Constructing success and failure in a game-based learning environment
Asmalina Saleh, Steven J. Zuiker

Poster Session 3 (continued) **Red Lacquer Ballroom**

3.29 Teachers' concepts of spatial scale. An intercultural comparison between Austrian, Taiwanese, and US-American teachers.
M. Gail Jones, Manuela Paechter, Grant Gardner, Iris Yen, Amy Taylor, Thomas Tretter

3.30 Developing and validating a web-based learning environment for helping 6th grade students appreciate subjectivity and uncertainty in science
Georgia Michael, Nicos Papadouris, Eleni Kyza, Constantinos Constantinou

3.31 The Effect of Teachers' Beliefs and Curricular Enactments on Student Learning in High School Science
Katherine McNeill, Diane Pimentel, Eric Strauss

3.32 Leveraging Multiple Representations to Support Knowledge Integration in Plate Tectonics
Elissa Sato, Marcia Linn

3.33 Investigating the Nature of Evidence 6th Grade Students Use When Constructing Scientific Explanations in Biodiversity
Hayat Hokayem, Amelia Gotwals

3.34 An Investigation into Students' Interpretations of Submicroscopic Representations
Shawn Stevens, Namsoo Shin

3.35 Knowledge Building for Historical Reasoning in Grade Four
Monica Resendes, Maria Chuy

3.36 How does the use of analogical mapping as a scaffold for science learners' argumentation support their learning and talking about science?
Brandon Emig, Scott McDonald

3.37 Teachers' Understanding of Partitioning When Modeling Fraction Arithmetic
Chandra Orrill, Andrew Izsak, Erik Jacobson, Zandra de Araujo

3.38 Putting the pieces together: The challenge and value of synthesizing disparate graphs in inquiry-based science learning
Itay Asher, Samira Nasser, Lina Ganaim, Iris Tabak

3.39 Online Science Classroom Collaborations: A Comparison of Domestic and International Learning Communities
Steven Kerlin, Elizabeth Goehring, William Carlsen

3.40 The Role of Student Agency and Sustained Inquiry on Collaboration and Learning of Science Practices
Kari Shutt, Nancy Vye, John Bransford

3.41 Developing an iMVT Pedagogy for Science Learning
Baohui Zhang, Xiaoxuan Ye, Seekit Foong, Peichun Chia

3.42 I Don't Do Science: Urban Minority Girls' Science Identity Development in an Informal Authentic Science Context
April Lynn Luehmann, Rachel Chaffee, Liz Tinelli, Kimberly Fluet

3.43 The Function of Mathematical Terminology: The Case of 'Slope'
Darrell Earnest

8:00 PM - Midnight **Social Event at the Cultural Center**

Chicago Cultural Center
78 E. Washington Street

Sponsored by the UIC Learning Sciences Program and by

the Learning Sciences Program in the School of Education and Social Policy at Northwestern University.

Music by the "Replays"

with Tom Moher

Friday, July 2

8:00 AM - 10:00 AM Continental Breakfast — Red Lacquer Ballroom

8:30 AM - 10:00 AM Keynote 3 — Red Lacquer Ballroom

Chair: Susan Goldman, *University of Illinois at Chicago*

Learning to Ponder: The Puzzle and Pleasure of Literary Text

Pamela Grossman, *Stanford University*

Reactor: Carol D. Lee, *Northwestern University*

Sponsored by the Spencer Foundation

10:00 AM - 10:15 AM Morning Break — Red Lacquer Ballroom

10:15 AM - 11:45 AM Parallel Sessions

Invited 6: Disciplinary Foundations of the Computational Sciences — Crystal Ballroom

Chair: Tom Moher, University of Illinois Chicago
Presenters: Mark Guzdial, Georgia Insitute of Technology; Ulrich Hoppe, University of Duisburg-Essen; Yasmin Kafai, University of Pennsylvania
Discussant: Sally Fincher, University of Kent at Canterbury

Paper Session 36: Control of variables: Learning scientific inquiry skills — Salon 12

Chair: Philip Bell, University of Washington

Helping Students Make Controlled Experiments More Informative
Kevin McElhaney, Marcia Linn

Sequential Effects of High and Low Guidance on Children's Early Science Learning
Bryan Matlen, David Klahr

Comparing Pedagogical Approaches for the Acquisition and Long-Term Robustness of the Control of Variables Strategy
Michael Sao Pedro, Janice Gobert, Juelaila Raziuddin

Paper Session 37: Apprenticeship to professional practices as a model for learning environment design — Salon 2

Chair: Beth van Es, University of California Irvine

The Epistemography of Urban and Regional Planning 912: Appropriation in the face of resistance
Elizabeth Bagley, David Williamson Shaffer

Motivation To Transfer Revisited
Andreas Gegenfurtner, Marja Vauras, Hans Gruber, Dagmar Festner

Writing and commenting on professional procedures: In search of learning designs promoting articulation between school and workplace learning.
Monica Gavota, Mireille Betrancourt, Daniel Schneider

Mentor Modeling: The internalization of modeled professional thinking in an epistemic game
Padraig Nash, David Williamson Shaffer

Paper Session 38: Problem representations and strategies in computer-based instruction — Salon 6

Extending the Self-Explanation Effect to Second Language Grammar Learning
Ruth Wylie, Kenneth Koedinger, Teruko Mitamura

A Closer Look at the Split Attention Effect: Integrated Presentation Formats for Troubleshooting Tasks
Markus Huff, Vera Bauhoff, Stephan Schwan

Concrete vs. Abstract Problem Formats: A Disadvantage of Prior Knowledge
Andrew Heckler

Paper Session 39: What does it mean to think mathematically? — Salon 7

Chair: Dor Abrahamson, University of California Berkeley

Design-based knowledge building practices in mathematics teaching
Huang-Yao Hong, Yu-Han Chang

Paper Session 39 (continued) — **Salon 7**

Reconceptualizing Mathematical Learning Disabilities: A Diagnostic Case Study
Katherine Lewis

"I don't knowól'm just genius!": Distinguishing Between the Process and the Product of Student Algebraic Reasoning
Jose Gutierrez

Seeing Algebraic Thinking in the Classroom: A Study of Teachers' Conceptualizations of Algebra
Janet Walkoe

Symposium 25: Supporting Young New Media Producers Across Learning Spaces: A Longitudinal Study of the Digital Youth Network — **Salon 4**

Supporting Young New Media Producers Across Learning Spaces: A Longitudinal Study of the Digital Youth Network
Brigid Barron, Amber Levinson, Caitlin Martin, Veronique Mertl, Daniel Stringer, Maryanna Rogers, Kimberly Austin, Nichole Pinkard, Kimberly Richards, Kimberley Gomez

The Digital Youth Network Model
Nichole Pinkard, Kimberley Gomez

Theoretical Framework and Research Methods
Brigid Barron, Caitlin Martin

Positioning learners as creative and critical producers
Amber Levinson, Veronique Mertl, Daniel Stringer, Maryanna Rogers

Artists as Mentors and Teachers
Kimberly Richards, Kimberly Austin

Symposium 26: Motivation and affect in peer argumentation and socio-cognitive conflict — **Salon 8**

Discussant: Gale M. Sinatra, University of Nevada Las Vegas

Motivation and affect in peer argumentation and socio-cognitive conflict
Christa Asterhan, Baruch Schwarz, Ruth Butler, Fabrizio Butera, Celine Darnon, Timothy Nokes, John Levine, Dan Belenky, Soniya Gadgil, Gale M. Sinatra

Socio-cognitive conflict and learning: past and present
Fabrizio Butera, Celine Darnon

On competitive and co-constructive dialectical argumentation
Christa Asterhan, Baruch Schwarz, Ruth Butler

Investigating the Impact of Dialectical Interaction on Engagement, Affect, and Robust Learning
Timothy Nokes, John Levine, Dan Belenky, Soniya Gadgil

Symposium 27: Learning to Understand the Tree of Life — **Salon 3**

Learning to Understand the Tree of Life
Shaaron Ainsworth, Camillia Matuk, David Uttal, Karl Rosengren, Brenda Phillips, Laura Novick, Kefyn Catley, Jessica Saffer, Kristy Halverson

How high school students reason about the tree of life: A developmental perspective
Brenda Phillips, Laura Novick

Inventing a representation of relatedness
Camillia Matuk, David Uttal

Can children read trees?
Shaaron Ainsworth, Jessica Saffer

Improving undergraduates' approaches to understanding tree thinking
Kristy Halverson

11:45 AM - 1:00 PM **Closing Ceremony and Open Business Meeting (light lunch provided)** **Red Lacquer Ballroom**

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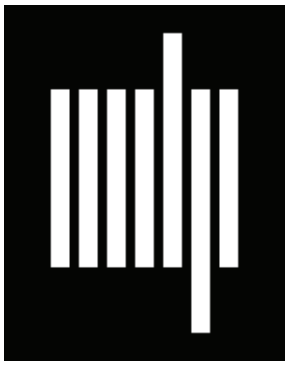

Notes

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Transportation

Airports

Chicago is home to two international airports. Either would be suitable for travel to the conference:

O'Hare International Airport (ORD)

Midway International Airport (MDW)

Public Transit

The Chicago Transit Authority manages a large network of rail and bus routes. Expect to pay 2.25 USD to use the system. The rail lines are color-coded. Travelers pay fare using a fare card, which can be purchased at vending machines located at most entrances to the rail system. Multi-day passes, which can be economical if planning on doing a lot of sightseeing, can be purchased at some (but not all) vending machines.

From O'Hare Airport

When taking public transportation from O'Hare International Airport, take the Blue Line train to Monroe/Dearborn stop. Exit the station, and walk along Monroe east to the hotel. The Palmer House is on the south side of the street.

From Midway Airport

From Midway Airport, take the Orange Line from Midway to downtown. Get off at the Adams/Wabash stop. The Palmer House is located on the west side of v Avenue.

Driving

Parking at the Palmer House will incur an additional charge (51 USD/day as of this posting, see Palmer House website for current rates), and the Palmer House is located very close to public transit, so driving is not recommended. Driving directions can easily be obtained from your favorite online route-finding website. If taking a taxi, expect to pay around 35 USD from O'Hare Airport, and 25 USD from Midway Airport. Other door-to-door options (e.g., shuttle or limousine service) are available, and a list of options can be found at the websites for O'Hare and Midway airports.

Train

If taking an Amtrak train to Chicago, the disembarkation point is Union Station, located at 225 South Canal Street, Chicago, IL 60606. One can walk to the Palmer House (about a mile away, 15 minutes) by heading north on Canal Street and East on Monroe, or a taxi can easily be flagged down outside of the station (expect fare to be around 5 USD). Alternatively, one could walk to the Blue Line Clinton stop and board an eastbound train to the Monroe/Dearborn stop. After exiting the station, walk east along Monroe to the hotel.

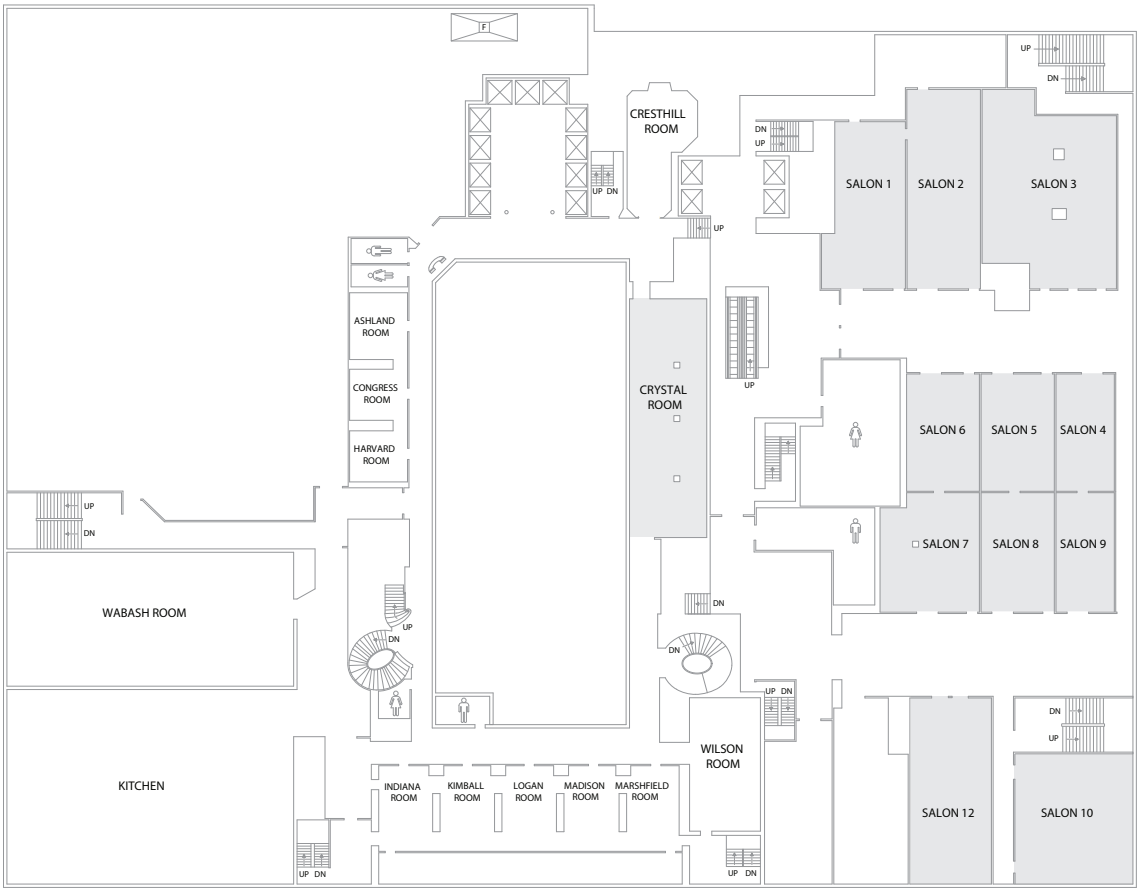
Conference Location

The Palmer House Hilton Hotel
17 E. Monroe Street

Floor Plans

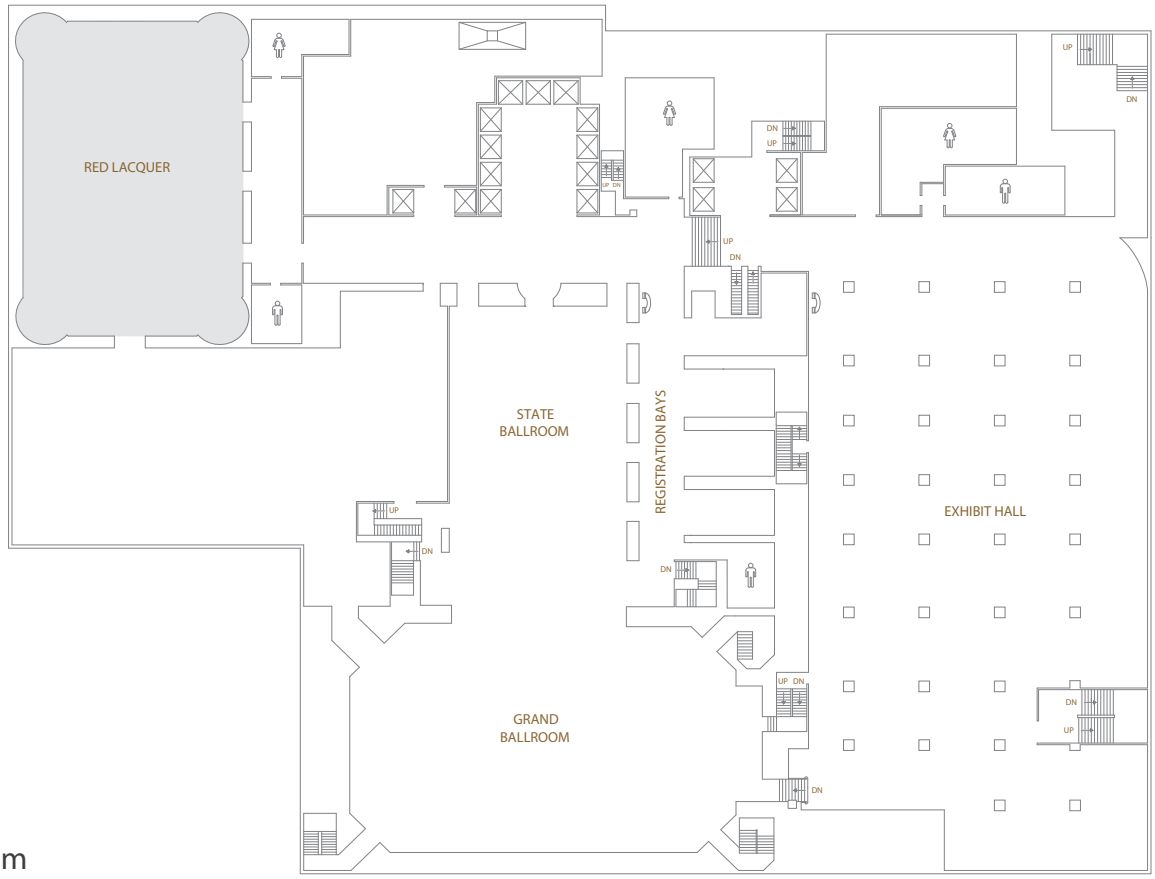
3rd Floor

Crystal Ballroom
Salons 1 - 12
Salon Foyer

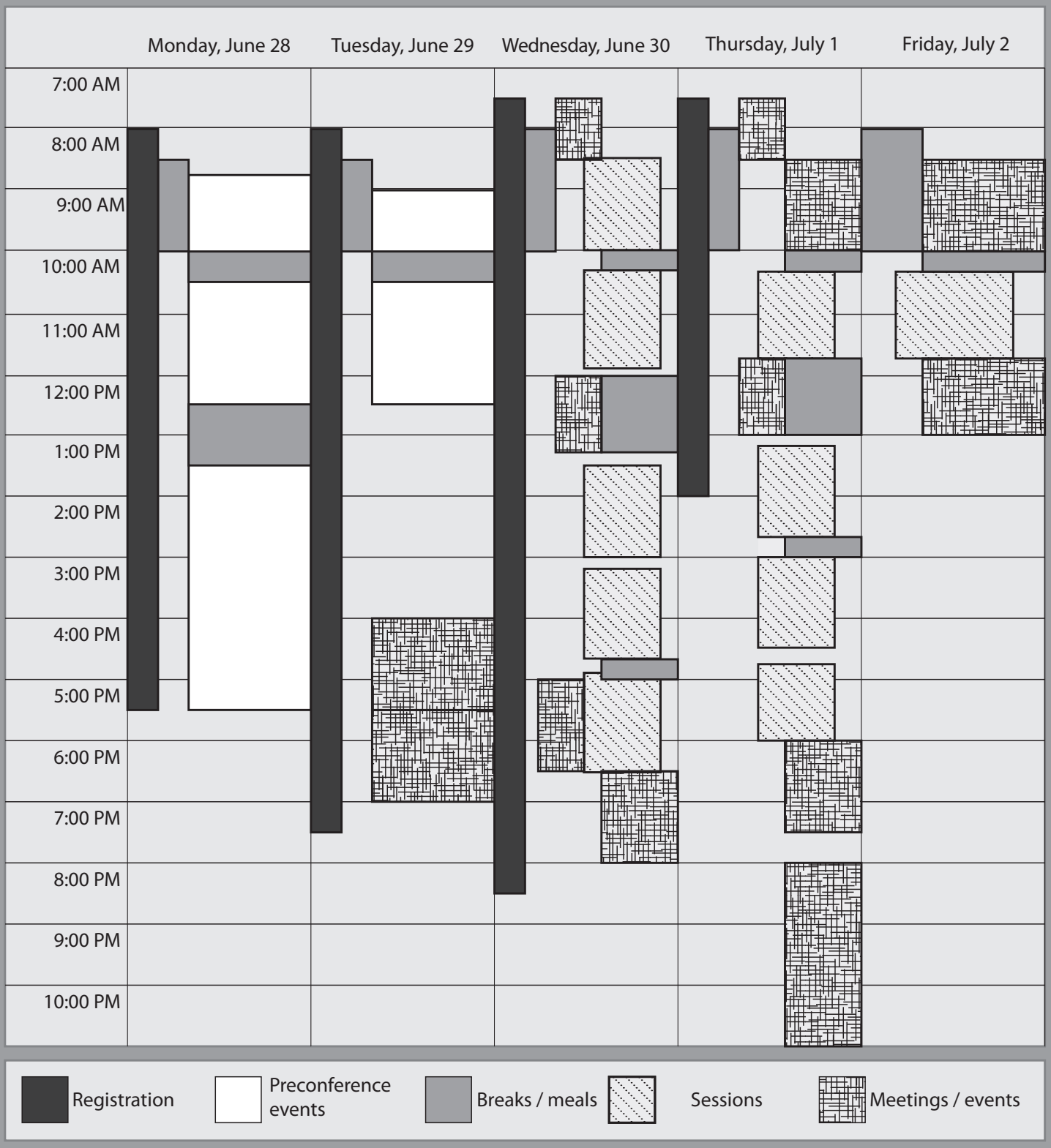


4th Floor

Red Lacquer Ballroom



Conference at a glance



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