

ICLS 2006

Tuesday

June 27

Registration East Lounge/IMU

9:00 am – 5:00 pm

Workshop Sessions (Special Registration required)

9:00 – 12:30 am

Tuesday 9:00 Workshop Sassafras	Workshop A: Coordination and Control in Handheld Mobile Computers for Education: Identifying Cross-cutting Factor Deborah Tatar, Virginia Tech; Charles Patton, SRI International; Yvonne Rogers, Indiana University
Tuesday 9:00 Workshop Oak	Workshop B: Interaction & Learning in Chat Environments: A Workshop with Data Sessions Gerry Stahl & Alan Zemel, Virtual Math Teams Project, The Math Forum @ Drexel University
Tuesday 9:00 Workshop Persimmon	Workshop C: Authoring, Assessment & Open Source: Implications for Research and Classroom Application Janice D. Gobert, Robert Tinker, & Paul Horwitz, The Concord Consortium; Jim Slotta, The University of Toronto
Tuesday 9:00 Workshop Maple	Workshop D: Dynamic Support for CSCL: Conceptual Approaches and technologies for Flexible Support of Collaborative Knowledge Construction Carolyn Rosé & Gahgene Gweon, Carnegie Mellon University; Frank Fischer, University of Tuebingen; Nikol Rummel, Universitaet Freiburg; G. Molinari, Ecole Polytechnique Fédérale de Lausanne, Switzerland
Tuesday 9:00 Workshop Walnut	Workshop E: Games, Learning & Society: Researching Technologies “In the Wild” Constance Steinkuehler & Kurt Squire, University of Wisconsin-Madison
Tuesday 9:00 Workshop Dogwood	Doctoral Consortium Dr. Susan Goldman, University of Illinois, Chicago; Dr. Claire O'Malley, University of Nottingham; Philip Bell, University of Washington; Janet Kolodner, Georgia Institute of Technology; Nancy Songer, University of Michigan.
Tuesday 9:00 Redbud	Early Career Workshop Building Generalizable Theory from Local Data Wolff-Michael Roth and Ken Tobin Scaling Curriculum to have Broad Impact Janet Kolodner and Joseph Krajcik Scaling Assessment to Demonstrate Impact Finbarr Sloane and James Pellegrino

Workshop Lunch

12:30-1:00 pm

**Wed. 12:00
Frangipani**

Lunch (Special Registration required)

Workshop Sessions

2:00 – 5:30 pm

Tuesday 9:00 Sassafras	Workshop A: Handheld Mobile Computers for Education (continued)
Tuesday 9:00 Oak	Workshop B: Interaction & Learning in Chat Environments (continued)
Tuesday 9:00 Persimmon	Workshop C: Authoring, Assessment & Open Source (continued)
Tuesday 9:00 Maple	Workshop D: Dynamic Support for CSCL (continued)
Tuesday 9:00 Walnut	Workshop E: Games, Learning & Society (continued)
Tuesday 9:00 Dogwood	Doctoral Consortium (continued)
Tuesday 9:00 Redbud	Early Career Workshop (continued)

ICLS 2006

Wednesday

June 28

Registration East Lounge/IMU

9:00 am – 5:00 pm

Workshop Sessions (Special Registration required)

9:00 – 12:30 am

Tuesday 9:00 Workshop Maple	Workshop F: Problems in Planning: Attaching the issues of planning design-based research Chandra Orrill, Learning & Performance Support Lab, University of Georgia; Diana Joseph, University of Chicago
Tuesday 9:00 Workshop Oak	Workshop G: Studying Engaged Learning in Online Communities K. Ann Renninger, Swarthmore College; Sharon Derry, University of Wisconsin; Mary Marlino, DLESE; Wesley Shumar and Gerry Stahl, Drexel University; Dan Suthers, University of Hawaii; Stephen Weimar, Math Forum@Drexel
Tuesday 9:00 Workshop Persimmon	Workshop H: Designing, Assessing, and Evaluating Innovative STEM Instruction using the Virtual Design Center Beaumie Kim, Center for Educational Technologies, Wheeling Jesuit University
Tuesday 9:00 Workshop Dogwood	Doctoral Consortium (continued)
Tuesday 9:00 Workshop Redbud	Early Career Workshop (continued)

Workshop Lunch

12:00-1:00 pm

Wed. 12:00 Frangipani	Lunch (Special Registration required)
----------------------------------	--

Welcome and Opening Plenary

1:00-3:00 pm

Wed. 1:00 Alumni Hall	Getting to Organizations & Systems Without Losing Touch with Learners & Teachers James P. Spillane, Northwestern University
----------------------------------	---

Concurrent Sessions

3:30 - 5:00 pm

07. Animation, Narration, and Visualization

Proceedings
Page

Wed. 3:30 Paper Session Maple Room	Student-generated Animations: Supporting Middle School Students' Visualization, Interpretation and Reasoning of Chemical Phenomena Hsin-Yi Chang, Chris Quintana..... 71
	Collaborative Learning with Animated Pictures: The Role of Verbalizations Mirweis Sangin, Gaëlle Molinari, Pierre Dillenbourg, Cyril Rebete, Mireille Bétrancourt 667
	Direct-manipulation Animation: Incorporating the Haptic Channel in the Learning Process to Support Middle School Students in Science Learning and Mental Model Acquisition Margaret S. Chan, John B. Black 64
	True Stories, Storied Truth: Stitching Narrative and Logico-scientific Discourse Together in an Age of "Spin" Joseph L. Polman..... 557

25. Teacher Knowledge and Participation in Science and Mathematics

Wed. 3:30 Paper Session Walnut Room	Relationships of Preservice Early Childhood Teachers' Cultural Values, Ethical and Cognitive Developmental Levels, and Views of Nature of Science Valarie Akerson, Cary Buzzelli, n/a
	Comparing Instructional Methods for Teaching Technology in Education to Preservice Teachers Using Logistic Regression Dongping Zheng, Michael Young 873
	Congruence and Tension among Activity Systems in a Tripartite Partnership for Systemic Reform Daniel Suthers, Joyce Yukawa, Violet Harada..... 744
	Measuring Teachers' Algebraic Reasoning: Development and Preliminary Validation of a Video Assessment Task Alan J. Hackbarth, Sharon J. Derry, Margaret J. Wilsman..... 222

18. Analyzing, Understanding, and Assessing Scientific Inquiry

Wed. 3:30 Paper Session Dogwood Room	It's Okay to be Wrong: Recognizing Mechanistic Reasoning During Student Inquiry Rosemary Russ, Paul Hutchison..... 641
	Productive Failure Manu Kapur..... 307
	Changing Conceptual Ecologies with Task-structured Science Curricula David Kanter, Bruce Sherin, Victor Lee..... 293
	Measuring Students' Scientific Content and Inquiry Reasoning Amelia Gotwals, Nancy Songer 196

Symposium

Wed. 3:30 Oak Room	Learning at the Nanoscale: Research Questions that the Rapidly Evolving Interdisciplinarity of Science Poses for the Learning Sciences Sherry Hsi, Nora Sabelli, Joseph Krajcik, Robert Tinker, Kirsten Ellenbogen..... 1066
-------------------------------------	--

Symposium

Wed. 3:30 Frangipani Room	Moving Forward: The Learning Sciences and the Future of Education R. Keith Sawyer, Allan Collins, Jere Confrey, Janet L. Kolodner, Marlene Scardamalia 1084
--	---

Reception

6:00–7:30 pm

Wed. 6:00
IU Art
Museum

Hosted Opening Reception (Beer, wine, and appetizers)

Closed Breakfast/Meeting

7:00 – 8:30 am

Thurs, 7:00
DAR

JLS Board Meeting

Breakfast

7:30 – 8:30 am

Thurs, 7:30
Alumni Hall

Hosted Continental Breakfast

Concurrent Sessions

8:30 - 10:00 am

22. Motivation and Engagement in Science and Mathematics

Proceedings
Page

Thurs, 8:30
Paper Session
Maple Room

The Story of one Urban High School's Efforts to Improve Student Attitudes, Motivation, Self-efficacy and Perceptions of Self, School, and Science through Project-based Science Instruction	
Thomas Higginbotham, Janice Anderson, Camelia Rosca, Michael Barnett, Deborah Jencunas, Sandra Copman, John Zinkowski	257
The Role-Goal-Activity Framework Revisited: Examining Student Buy-in in a Project-based Learning Environment	
Virginia Pitts, Daniel Edelson	544
Motivation in Project-based Classrooms: New Measures Better Coupled to Students' Experiences	
Phillip Herman, Louis Gomez	250
Using Comparisons of Alternate Strategies to Promote Discourse	
Radha Kalathil	285

13. Implementing and Enacting Inquiry-Oriented Curricula

Thurs, 8:30
Paper Session
Walnut Room

Inquiry into Mediated Action: The Implementation of an Innovative Online Problem-based Unit	
Donna Russell.....	648
Fostering Innovation Implementation: Findings about Supporting Scale from GLOBE	
Barry Fishman, William Penuel, Ryoko Yamaguchi.....	168
When the Rubber Meets the Road -- Putting Research-based Methods to Test in Urban Classrooms	
Junlei Li, David Klahr, Amanda Jabbour	418
A Learning Journey in Problem-based Learning	
Jennifer Yeo, Seng-Chee Tan, Yew-Jin Lee.....	859

05. Computer-Supported Construction of Knowledge

Thurs, 8:30 Paper Session Dogwood Room	Shared Referencing of Mathematical Objects in Online Chat Gerry Stahl, Alan Zemel, Johann Sarmiento, Murat Cakir, Stephen Weimar, Martin Wessner, Martin Mühlpfordt.....	716
	Coercing Shared Knowledge in Collaborative Learning Environments Paul A. Kirschner, Pieter Jelle Beers, Henny P.A. Boshuizen, Wim Gijsselaers	342
	Effects on an Individual's Prior Knowledge on Collaborative Knowledge Construction and Individual Learning Outcomes in Videoconferencing Bernhard Ertl, Heinz Mandl	161
	Lurking as Participation: A Community Perspective on Lurkers' Identity and Negotiability Yu-Wei Lee, Fei-Ching Chen, Huo-Ming Jiang.....	404

09. Methodological and Theoretical Advances

Thurs, 8:30 Paper Session Oak Room	"How Do We See?": Information Architecture as Theory Philip Piety, Annemarie Palincsar	536
	Is Neuroscience a Learning Science? Sashank Varma, Daniel L. Schwartz, Bruce McCandliss.....	792
	Ways of Working: A Three-tiered Interpretive Model for Video Research Donald Wortham, Sharon Derry.....	845
	Using Log Files to Track Students' Model-based Inquiry in Science Barbara Buckley, Janice Gobert, Paul Horwitz, Amie Mansfield	57

Symposium

Thurs, 8:30 Frangipani Room	Complex Systems in Education: Conceptual Principles, Methodologies, and Implications for Research in the Learning Sciences Jacobson, Michael; Wilensky, Uri; Goldstone, Robert; Landy, David; Son, Ji; Lesh, Richard; Azevedo, Roger; Hmelo-Silver, Cindy E.; Collins, Allan ; Sabelli, Nora;.....	1073
--	--	------

Concurrent Sessions

10:30 am – 12:00 pm

15. Transforming Curricula and Sustaining Reforms

Proceedings
Page

Thurs, 10:30 Paper Session Maple Room	The Distribution of Resources and Expertise and the Implementation of Schoolwide Reform Initiatives William R. Penuel, Kenneth A. Frank, Ann Krause.....	522
	A Role for Professional Development in Sustainability: Linking the Written Curriculum to Enactment Beth Kubitskey, Barry Fishman	363
	Developing a Sustainable Instructional Leadership Model: A Six-year Investigation of Teachers in One Urban Middle School Hee-Sun Lee, Nancy Songer, Soo-Young Lee	376
	Using Transformative Research To Explore Congruencies Between Science Reform and Urban Schools Ann E. Rivet	578

01. Instructional Design Issues

Thurs, 10:30 Paper Session Walnut Room	Interface Agents to Alleviate Online Frustration Amy L. Baylor, Rinat B. Rosenberg-Kima 30
	Making a Difference - Exploiting the Full Potential of Instructionally Designed On-Screen Videos Anna Ertelt, Alexander Renkl, Hans Spada..... 154
	Effects of Part-task and Whole-task Instructional Approaches and Levels of Learner Expertise on Learner Acquisition and Transfer of a Complex Cognitive Skill Jung Lim, Robert Reiser 425
	Collaborative Learning in a 3D Virtual Environment: Design Factors and Evaluation Results Nicoletta Di Blas, Caterina Poggi, Thomas Reeves..... 127

20. Individual and Social Factors in Problem Solving

Thurs, 10:30 Paper Session Dogwood Room	Students' Perception of Knowledge Activation on a Guided Collaborative Problem Solving Organizer Wei-Chen Hung, James Lockard 270
	The Effect of Multiple-perspective Thinking on Problem Solving Yan Wang, Enis Dogan, Xiaodong Lin 812
	Insights into the Emergence of Convergence in Group Discussions Manu Kapur , John Voiklis, Charles Kinzer, John Black 300
	The Ideal Science Student and Problem Solving Florence Sullivan, Xiaodong Lin..... 737

12. Understanding and Assessing Scientific Argumentation

Thurs, 10:30 Paper Session Oak Room	A Case Study of Elementary Students' Argumentation in Science Seau Yoon Foo, Dr. Chee Kit Looi 175
	Assessment of Argument in Science Education: A Critical Review of the Literature Victor Sampson, Douglas Clark 655
	From Mechanical to Meaningful Classroom Questions Elizabeth S. Charles, Janet L. Kolodner, Sabina Karkin, Christopher W. Kramer 78
	From Evidence to Explanations: Engaging undergraduate Geology Students in Inquiry Xornam Apedoe..... 2

08. Technomethodology in the Learning Sciences

Thurs, 10:30 Paper Session Georgian Room	Using Cognitive Ethnography to Study Instruction Robert F. Williams 838
	Boolean Classes and Qualitative Research Mitchell Nathan, Kristi Jackson 502
	Revealing and Mediating Young Children's Memory and Social Cognition through Digital Photo Journals Cynthia Carter Ching, X. Christine Wang 85
	Computer-Supported Collaborative Video Analysis Roy Pea, Robb Lindgren, Joseph Rosen..... 516

Symposium

Thurs, 10:30 Frangipani Room	Analyzing Collaborative Learning: Multiple Approaches to Understanding Processes and Outcomes Cindy E. Hmelo-Silver, Ellina Chernobilsky, Olga Mastov, Clark Chinn, Angela O'Donnell, Gijsbert Erkens 1059
---	--

Lunch

12:00 - 1:30 pm

Thurs, 12:00
Alumni Hall

Hosted Lunch

Invited Symposium

1:30-3:30 pm

Thurs, 1:30
Alumni Hall

Projects that Made a Difference

The Adventures of Jasper Woodbury Mathematical Problem Solving Series

John D. Bransford, University of Washington

The American Psychological Association's Learner Centered Psychological Principles

Barbara McCombs, University of Denver Research Institute

Knowledge Building and Knowledge Building Environments (CSILE/Knowledge Forum)

Marlene Scardamalia, Ontario Institute for Studies in Education

LOGO/Mindstorms

Seymour Paper, MIT/University of Maine

Concurrent Sessions

4:00 - 5:30 pm

F03. Games and Technology for Learning

Proceedings
Page

Thurs, 4:00
Firehose
Session
Georgian
Room

Examining the Fluctuation of Strategy Use during Learning with Hypermedia	
Daniel Moos, Roger Azevedo.....	481
Learning with Laptops: The Impact of One-to-One Computing on Student Attitudes and Classroom Perceptions	
Chrystalla Mouza.....	488
"Ugly in a World Where You Can Choose to be Beautiful": Teaching and Learning Diversity via Virtual Worlds	
Joey Lee, Christopher Hoadley.....	383
WWW and Multicultural Democracy: Evaluating U.S. History Websites	
Cecil Robinson, Douglas McKnight.....	592
Classroom Goal Structures for Educational Math Game Application	
Fengfeng Ke	314
Collaborating to Learn, Learning to Collaborate: Finding the Balance in a Cross-disciplinary Design Course	
Emma Mercier, Shelley Goldman, Angela Booker	467
Fostering Scientific Habits of Mind in the Context of Online Play	
Constance Steinkuehler, Marjee Chmiel	723

16. Advances in Understanding Representation and Learning

Thurs, 4:00 Paper Session Maple Room	Unpacking the Mediation of Invented Representations Joshua Danish, Noel Enyedy113
	Beyond transparency: How students make representations meaningful Victor Lee, Bruce Sherin 397
	Effects of Conceptual Representation on Learning from Hypermedia Lei Liu, Surabhi Marathe, Cindy Hmelo-Silver 439
	Learning to Collaborate in a Computer-mediated Setting: Observing a Model Beats Learning from Being Scripted Nikol Rummel, Hans Spada, Sabine Hauser 634

17. Designing, Learning, and Self-Regulation

Thurs, 4:00 Paper Session Walnut Room	Exploring Differences Between Gifted and Grade-level Students' Use of Self-regulatory Learning Processes with Hypermedia Jeffrey Greene, Daniel Moos, Roger Azevedo, Fielding Winters 210
	Optical Pulsars and Black Arrows: Discovery's Work in 'Hot' and 'Cold' Science Timothy Koschmann, Alan Zemel..... 356
	Design-based Science Learning: Important Challenges and How Technology Can Make a Difference Swaroop Vattam, Janet Kolodner 799

03. Innovation and Handheld Learning Technology

Thurs, 4:00 Paper Session Dogwood Room	Co-design of Innovations with Teachers: Definition and Dynamics Jeremy Roschelle, William Penuel, Nicole Shechtman 606
	TEEMSS2: Technology Enhanced Elementary Math and Science - Year 1 Report Shari Metcalf 474
	MUSHI: A Multi-Device Framework for Collaborative Inquiry Learning Leilah Lyons, Joseph Lee, Christopher Quintana, Elliot Soloway 453
	Effects of Handheld Games on Students Learning in Mathematics Namsoo Shin, Cathleen Norris, Elliot Soloway..... 702

Symposium

Thurs, 4:00 Frangipani Room	What's a Situation in Situated Cognition? – A Constructionist Critique of Authentic Inquiry Dor Abrahamson, Andrea A. diSessa, Paulo Blikstein, Uri Wilensky, David H. Uttal, Meredith M. Amaya, Loren M. Marulis, Allan M. Collins 1015
--	--

PA1. Online-Supported Learning

Proceedings
Page

**Thurs, 5:30
Poster Cluster
Solarium**

Help-seeking Behavior and Learning with Hypermedia	
Pragati Godbole-Chaudhuri, Fielding I. Winters, Roger Azevedo, Neil Hofman	928
Lessons Learned From Using an Asynchronous Online Discussion Board to Facilitate Scientific Thinking in a Large Cognitive Psychology Lecture Class	
Jordan Lippman, James Pellegrino, Renee Koziol, Emily Whitehair	956
East Austin Stories Exchange: Facilitating 'Empathy' for Differing Perspectives	
Damien Brockmann, Todd C. Reimer	896
Socio-technical Factors of Practice Transmission in an Online Creative Tool Community	
Eric Cook, Stephanie D. Teasley, Mark Ackerman	908
Learning by Tagging: Group Knowledge Formation in a Self-organizing Learning Community	
Jude Yew, Faison Gibson, Stephanie Teasley	1010
A Model for Video-based Virtual Field Experience	
Ugur Kale, Jung Won Hur, Theano Yerasimou, Thomas Brush	944
Facilitating Social Creativity through Collaborative Designing	
Pirita Seitamaa-Hakkarainen, Minna Uotila	984
Design Principles for the Knowledge-Practices Laboratory (KP-Lab) Project	
Kai Hakkarainen, Hanni Muukkonen, Hannu Markkanen	934
A Comprehension Tool for Mathematics?: The Math Forum@Drexel's Online Mentoring Guide	
K. Ann Renninger, Lillian S. Ray, Ilana Luft, Erica L. Newton	976
Personalized Identity, Mentoring and Mathematical Conversation: The Math Forum's Online Mentoring Project	
Wesley Shumar	986
Semiotics: Mediation Tools That Can Fill ELearning Gaps	
Ruth Gannon Cook	924

PA2. Technology-Supported Educational Research

**Thurs, 5:30
Poster Cluster
Solarium**

PD3: A Handheld Observation Tool to Support Instructional Leadership	
Mark Chung, William R. Penuel	906
Mobile Devices to be applied as Supporting tools in Research Methods Class for Undergraduate Students	
Eteokleous Nikleia	918
Automated Social Network Analysis as a Tool for Evaluating Sociability	
Kirk Job-Sluder	940
Messy Learning Environments: Busy Hands and Less Engaged Minds	
Christina M. Gardner, Tamara L. Clegg, Oriana J. Williams, Janet L. Kolodner	926

PA3. Learning in Informal Settings

Thurs, 5:30 Poster Cluster Solarium	Playshop as Space for Emergent Learning Yoshiro Miyata, Nobuyuki Ueda.....	964
	Music By Ear: An Interactive System to Teach Old-time Fiddle Matthew Osment, Todd Reimer	970
	Enhancing Children's Learning in Museums: A Design-based Research Approach Tony Hall, Liam Bannon, Luigina Ciolfi, Paul Gallagher, Kieran Ferris, Ruth Mulhern, Nora Hickey	936
	Active Citizenship through Technology: Collaboration, Connection, and Civic Participation Clement Chau, Ashima Mathur, Marina Bers	902
	Metalanguage among Families in a Marine Science Museum Carol B. Brandt, Doris Ash.....	894
	Cognitive Effects of Chess Instruction on Students At Risk for Academic Failure Saahoon Hong, William M. Bart	938
	Engineering Girls Gone Wild: Developing an Engineering Identity in Digital Zoo Gina Navoa Svarovsky, David Williamson Shaffer	996
	Seeds of a Computer Culture: An Archival Analysis of Programming Artifacts from a Community Technology Center Yasmin Kafai, Kylie A. Peppler, Mabel Alavez, Omar Ruvalcaba.....	942
	Identities and Astronomy Camp: How Individual Campers Make Meaning of Science Experiences Deborah Fields.....	920
	Slides, Sushi, and Sixth-Graders: A Case Study of Elementary Student Art-based Learning in a Museum Setting Sandra Toro Martell.....	960

PA4. Modeling and Simulations

Thurs, 5:30 Poster Cluster Solarium	Learning Science by Participating in Design: A Case Where Multiple Design Subgoals Interfere with Systematic Progress Eli M. Silk, Christian D. Schunn	988
	Fostering Generative Reasoning about Complex Phenomena in Genetics Ravit Golan Duncan	916
	Give Learners Questions to Answer While Watching Animated Examples Brian D. Gane, Richard Catrambone	922
	Adaptive Simulations Mark K. Singley, Tracee Vetting Wolf, Peter Fairweather, Richard B. Lam	990
	3D Game Design with Programming Blocks in StarLogo TNG Kevin Wang, Corey McCaffrey, Daniel Wendel, Eric Klopfer	1008
	Modeling Modern Methods in High School Physics Classes Hal Scheintaub.....	982
	College Students' Understandings of Pressurized Air Movement: Do Isomorphic Questions Elicit Isomorphic Answers? Jason Braasch, Susan R. Goldman.....	892
	'Hybrid Modeling': Advanced Scientific Investigations Linking Computer Models and Real-World Sensing (an interactive poster) Paulo Blikstein, Uri Wilensky	890
	Helio-Room: Problem Solving in a Whole Class Visual Simulation Mark Thompson, Tom Moher	1000

Closed Breakfast/Meeting

7:00 - 8:30 am

Friday, 7:00
DAR

CSCL Board Meeting

Breakfast

7:30 – 8:30 am

Friday, 7:30
Alumni Hall

Hosted Continental Breakfast

Concurrent Sessions

8:30 - 10:00 am

F01. Supporting and Understanding Student Argumentation

Proceedings
Page

Friday, 8:30
Firehose
Session
Georgian
Room

Who Knows Whom in a Virtual Learning Network? Applying Social Network Analysis to Communities of Learners at the Computer Clubhouse	
Elisabeth Sylvan	758
Estimation as a Catalyst for Numeracy: Micro-interventions that Increase the Use of Numerical Information in Decision-making	
Luke Rinne, Michael Ranney, Nicholas Lurie.....	571
Shifting Epistemologies: Examining Student Understanding of New Models of Knowledge and Learning	
Katerine Bielaczyc, Peter Blake	50
Contrasting Cases: What We Can Learn from Students' Perceptions of "Good" Design	
Joan Walker, Paul King	806
Promoting Learning in Informal Learning Environments	
Tamara Clegg, Christina Gardner, Oriana Williams, Janet Kolodner	92
Using Students' Epistemologies of Science to Guide the Practice of Argumentation	
Lisa Kenyon, Leema Kuhn, Brian Reiser	321
Fostering Scientific Argumentation by Creating a Need for Students to Attend to Each Other's Claims and Evidence	
Leema Kuhn, Lisa Kenyon, Brian Reiser	370

21. Observation, Generation, and Collaboration in Learning

Friday, 8:30
Paper Session
Maple Room

When Observation Beats Doing: Learning by Teaching	
Sandra Okita, Daniel Schwartz.....	509
The Role of Domain-specific Knowledge in Promoting Generative Reasoning in Genetics	
Ravit Golan Duncan	147
The Impact on Learning of Generating vs. Selecting Descriptions in Analyzing Algebra Example Solutions	
Albert Corbett, Angela Wagner, Sharon Lesgold, Harry Ulrich, Scott Stevens.....	99
Effects of Innovation versus Efficiency Tasks on Recall and Transfer in Individual and Collaborative Learning Contexts	
David Sears.....	681

19. Learning Communities

Friday, 8:30 Paper Session Walnut Room	Effects of Document Generation and Source Presentation on Historical Understanding and Thinking	
	Cecil Robinson, Gina Raineri	585
	The Social Formation of Leadership in a Youth Activism Group	
	Ben Kirshner	349
	Beyond Essentialist Critiques: The Co-development of Individual and Society within Erik Erikson's Psychosocial Theory of Identity Development	
Sage Rose, Cecil Robinson	620	
Characterizing the Nature of Discourse in Mathematics Classrooms		
Radha Kalathil	277	

11. Text, Digital Texts, and Learning

Friday, 8:30 Paper Session Dogwood Room	Children's Text Comprehension: Effects of Genre, Knowledge and Text Cohesion	
	Rachel Best, Yasuhiro Ozuru, Randy Floyd, Danielle McNamara	37
	An Analysis of Standardized Reading Ability Tests: What Do Questions Actually Measure?	
	Michael Rowe, Yasuhiro Ozuru, Danielle McNamara	627
	Enhancing Learning of Expository Science Texts in a Remedial Reading Classroom via iSTART	
Roger Taylor, Tenaha O'Reilly, Grant Sinclair, Danielle McNamara	765	
Supporting Concept Mapping for Learning from Text		
Sabine Hauser, Matthias Nueckles, Alexander Renkl	243	

Symposium

Friday, 8:30 Oak Room	At home with Mathematics: Meanings and Uses among Families	
	Reed Stevens, Veronique Mertl, Sheldon Levias, Laurie McCarthy, Shelley Goldman, Lee Martin, Roy Pea, Angela Booker, Kristen Pilner Blair, Na'ilah Suad Nasir, Michael Heimlich, Grace Atukpawu, Kathleen O'Connor	1088

Symposium

Friday, 8:30 Frangipani Room	Theorizing Games in/and Education	
	Richard Halverson, David Williamson Shaffer, Kurt Squire, Constance Steinkuehler	1048

F04. Programming, Modeling, and Visualizing

Proceedings
Page

**Friday, 10:30
Firehose
Session
Georgian
Room**

Tools and Task Structures in Modeling Balance Beam Ji Shen	695
Students' Difficulties in Learning Physics from Dynamic and Interactive Visualizations Rolf Ploetzner, Stefan Lippitsch, Matthias Galmbacher, Dieter Heuer	550
Using Interviews to Investigate Implicit Knowledge in Computer Programming Rebecca Mancy, Norman Reid	460
Increasing Representational Fluency with Visualization Tools Mike Stieff, Michelle McCombs	730
Technology Fluency as Cultural Practice: Bridging Local Understandings in a Diverse Learning Environments Donna DeGennaro	120
Multimodal Interaction in Children's Programming with Tangible Artifacts Jakob Tholander, Ylva Fernaus	771
Communication through the Artifact by Means of Synchronous Co-construction Astrid Wichmann, Markus Kuhn, Ulrich Hoppe	825

02. Online Collaborative Learning

**Friday, 10:30
Paper Session
Maple Room**

What Makes Groups Learning Effectively in a Videoconference Setting? Ulrike Cress, Hron Aemilian, Friedrich Felix, H. Hammer Karsten	106
The Interplay between Self-directed Learning and Social Interactions: Collaborative Knowledge Building in Online Problem-based Discussions Silvia Wen-Yu Lee	390
The Role of the Backchannel in Collaborative Learning Environments Sarita Yardi.....	852
Designing Instructional Support for Individual and Collaborative Demands on Net-based Problem-solving in Dyads Miriam Hansen, Hans Spada	229

14. Research on Meta-Cognition and Self-Regulation

**Friday, 10:30
Paper Session
Walnut Room**

Adolescents' Use of Self-regulatory Processes and Their Relation to Qualitative Mental Model Shifts While Using Hypermedia Jeffrey Greene, Roger Azevedo.....	203
How Can We Use Concept Maps for Prior Knowledge Activation - Different Mapping-tasks Lead to Different Cognitive Processes Johannes Gurlitt, Alexander Renkl, Michael A. Motes, Sabine Hauser	217
Effects of Task Difficulty and Epistemological Beliefs on Metacognitive Calibration: A Pilot-Study Stephanie Pieschl, Elmar Stahl, Rainer Bromme.....	529
Is Externally-regulated Learning by a Human Tutor Effective in Facilitating Learning with Hypermedia? Roger Azevedo, Jeffrey Greene, Daniel Moos, Fielding Winters, Jennifer Cromley, Pragati Godbole-Chaudhuri	16

06. Designing and Enacting Curricula with Teachers and Students

Friday, 10:30 Paper Session Dogwood Room	Exploring the Relationship between Teachers' Curriculum Enactment Experience and Their Understanding of Underlying Curriculum Design Rationales Hsien-Ta Lin, Barry Fishman 432
	Characterizing the Quality of Second-Graders' Observations and Explanations to Inform the Design of Educative Curriculum Materials Carrie Beyer, Elizabeth Davis 43
	Using Teacher Narrative to Understand Teachers' Uses of Curriculum Materials Corey Drake..... 134
	Tensions and Tradeoffs in a "Design for Science" Classroom: The "Forces in Balloon" Lecture Mary Leonard, Sharon Derry..... 411

Symposium

Friday, 10:30 Oak Room	Early Childhood Robotics for Learning Marina Bers, Chris Rogers, Laura Beals, Merredith Portsmouth, Kevin Staszowski, Erin Cejka, Adam Carberry, Brian Gravel, Janice Anderson, Michael Barnett..... 1036
---	---

Symposium

Friday, 10:30 Frangipani Room	Making a Difference with Attention to Content, Technology, and Scale: A Session Honoring the Memory of Jim Kaput Stephen Hegedus, Richard Lesh, Jeremy Roschelle..... 1053
--	--

Closed Lunch/Meeting

12:00-1:30 pm

Friday, 12:00 State Room East	ISLS Closed Board Meeting
--	----------------------------------

Lunch

12:00 - 1:30 pm

Friday, 12:00	Open Lunch (on your own)
----------------------	---------------------------------

Plenary Sessions

1:30-3:30 pm

Friday, 1:30 Alumni Hall	The learning sciences and place: Transforming how we think about urban science education Angela C. Barton, Columbia University Using technologies to create disruptive pedagogies: Reflections on some experiments to change the course of student learning John G. Hedberg, Macquarie University
---	--

F02. Professional Development and Educational Research

Proceedings
Page

Friday, 4:00 Firehose Session Georgian Room	The Pasteurization of Education David Williamson Shaffer, Kurt D. Squire.....	688
	Feedback and Adaptation Within a Complex Systems Approach to Designing for Scalable and Sustainable Professional Development Susan Yoon, Eric Klopfer.....	866
	Blurring the Lines: Learning and Assessing in Quadrant D Ken Rose, Martin Block.....	613
	Using Drawings and Interviews to Diagram Entering Preservice Teachers’ Preconceived Beliefs about Technology Integration. Elizabeth Keren-Kolb, Barry Fishman.....	328
	Sustaining and Scaling Innovations in Singapore Schools: Issues for School-based Learning Sciences Research Chee-Kit Looi, Wei Ying Lim.....	446
	Scaffolding Learning from Contrasting Video Cases Anandi Nagarajan, Cindy Hmelo-Silver.....	495
	Didn't I Tell You That? Challenges and Tensions in Developing and Sustaining School - University Partnerships Michael Barnett, Thomas Higgenbotham, Janice Anderson.....	23

Symposium

Friday, 4:00 Walnut Room	Argumentative Knowledge Construction in CSCL Armin Weinberger, Douglas Clark, Gijsbert Erkens, Victor Sampson, Karsten Stegmann, Jeroen Janssen, Jos Jaspers, Gellof Kanselaar, Frank Fischer.....	1094
-------------------------------------	--	------

Symposium

Friday, 4:00 Dogwood Room	Understanding the Cultural Foundations of Children's Biological Knowledge: Insights from Everyday Cognition Research Philip Bell, Leah A. Bricker, Tiffany R. Lee, Suzanne Reeve, Heather Toomey-Zimmerman.....	1029
--	--	------

Symposium

Friday, 4:00 Oak Room	Clubs, Homes, and Online Communities as Contexts for Engaging Youth in Technological Fluency Building Activities Brigid Barron, Yasmin B. Kafai, Diana Joseph, Nicole Pinkard, Mitchell Resnick, Caitlin Martin, Colin Schatz, Benjamin Shapiro, Amon Millner, Kylie Peppler, Grace Chiu, Shiu Desai.....	1022
----------------------------------	---	------

Symposium

Friday, 4:00 Frangipani Room	“Theory in Pieces” – the Communal Development of a Theory Orit Parnafes, Andrea diSessa, Joseph Wagner, Jose Mestre, Tom Thaden-Koch, Bruce Sherin.....	1078
---	--	------

PB1. Mathematics Teaching and Learning

Proceedings
Page

Friday, 6:00 Poster Cluster Solarium	Perspectives and Problem Solving in an Algebra Classroom Carla van de Sande	1006
	The Effects of Base Ratio and Conceptual Structure on Accuracy in Multiplicative Situations Reality S. Cauty, Susan R. Goldman	898
	Tupelo Enacted: How Teachers Shape Learning Opportunities in Middle Grades Mathematics Chandra Hawley Orrill, Holly Garrett Anthony, Andrew Izsák, Ernise Singleton	968
	Enhancing Mathematical Discourse in Elementary Classrooms Mitzi Lewison, Ingrid Graves, Lenny Sanchez	954

PB2. Innovations in Assessment

Friday, 6:00 Poster Cluster Solarium	A Multi-level Assessment Strategy: (Dis)Continuity in Making Learning Visible Differently Steven J. Zuiker, Daniel T. Hickey	1012
	A Teacher-friendly Interface To Assessment Data Jody S. Underwood, Diego Zapata, Waverly Hester	1004
	Formative Assessment: Reducing Math Phobia and Related Test Anxiety in a Geology Class for Non-Science Majors Vanessa Svihla	998

PB3. Individual Differences

Friday, 6:00 Poster Cluster Solarium	Toward a General Student Model: Accounting for Individual Learner Differences across Multiple Learning Environments Garrett W. Smith	992
	Individual Differences in Sense of Classroom Community Fengfeng Ke	948
	Professional Development, Cognitive Tools, and Thinking Skills Katherine McMillan Culp, Lauren B. Goldenberg, Dara Wexler	912
	Learning Communities and Laptops: A Design Experiment Todd Reimer, Felicia Rader	974
	Professional Development that Considers Teachers' Attitudes toward an Innovation Jeannine E. Turner, ChanMin Kim	1002
	Using Handheld PCs and Peer Instruction to Improve Science Teaching and Learning in Higher Education Perry Samson, Stephanie D. Teasley, Ben van der Pluijm, Peter Knoop	980
	The Role of Technology in Preservice Teachers' Images of Their Future Classroom Theresa A. Cullen	910
	Conflicts in Pedagogical and Technical Knowledge: Pre-service Teachers' Understanding and Misconception of Integrating Technology into PBL Lessons Hyo-Jeong So, Bosung Kim	994
	Assessing Conceptual Change in an Anchored, Case-based Environment Charles K. Kinzer, Manu Kapur, Dana W. Cammack, Sarah Lohnes	950

PB4. Preparing Teachers for Innovative Instruction

Friday, 6:00
Poster Cluster
Solarium

Misconceptions in Natural Selection: Conceptual Change Through Time in Biology Classrooms	
Christine Manzey, Kevin Pugh, Kristin Kelly, Victoria Stewart.....	958
Systematic Formation of Reading Comprehension in Visually Impaired Children	
Kari Kosonen, Kai Hakkarainen.....	952
A Comparison of Students' Conceptions about the Nature of Argumentation in School and Professional Science	
Kelli Millwood	962
Learning as Perspective Taking: Conceptual Alignment in the Classroom	
James G. Greeno, Brian MacWhinney	930
The Role of People Knowledge in Learning Narrative and Domain Content	
Joan Davis, Tiffany Lee, Nancy Vye, John Bransford, Daniel L. Schwartz	914
Nurses' Informal Argument: Learning to Justify the Claim and Reach Agreement	
Debra Hagler, Sarah Brem.....	932
Facilitating Inquiry using Technology and Teams in Exercise Physiology: The FITT Project	
Darla M. Castelli, Ellen M. Evans, Mark M. Mistic.....	900
Positive Technological Development: A Systems Approach to Understanding Youth Development and Educational Technology	
Clement Chau, Marina Bers	904
Using case comparison to support the development of instructional design problem-solving strategies	
Horvitz, Brian.....	n/a
Showing Evidence: Analysis of Students' Arguments in a Range of Settings	
Issam Abi-El-Mona, Barbara Hug.....	888
Creative Codings: Investigating Cultural, Personal, and Epistemological Connections in Media Arts Programming	
Kylie A. Pepler, Yasmin B. Kafai	972
Visualizing Discussion by the Use of the Conversation Chain Model	
Sabina Karkin, Elizabeth S. Charles, Janet L. Kolodner	946
Metaskills of Collaborative Inquiry in Higher Education	
Hanni Muukkonen, Minna Lakkala.....	966

Dinner

7:30 - 9:30 pm

Friday, 7:00
Alumni Hall

Hosted Banquet

Breakfast

7:30 – 8:30 am

Sat, 7:30
Alumni Hall

Hosted Continental Breakfast

Concurrent Sessions

8:30 - 10:00 am

24. Epistemic Games and Scaffolding

Proceedings
Page

<p>Sat, 8:30 Paper Session Maple Room</p>	<p>Does an Interface with Less Assistance Provoke More Thoughtful Behavior? Christof van Nimwegen, Herre van Oostendorp, Daniel Burgos, Rob Koper</p>	785
	<p>Frames and Games in the Science Museum: A Lens for Understanding Visitor Behavior Leslie Atkins.....</p>	9
	<p>Scaffolding Learner Motivation through a Virtual Peer Yanghee Kim, Eric Hamilton, Jinjie Zheng, Amy Baylor.....</p>	335
	<p>Press Play: Designing an Epistemic Game Engine for Journalism David Hatfield, David Williamson Shaffer</p>	236

10. Online Collaborative Problem Solving

<p>Sat, 8:30 Paper Session Walnut Room</p>	<p>Adopt & Adapt: Structuring, Sharing and Reusing Asynchronous Collaborative Pedagogy Miky Ronen, Dan Kohen-Vacs, Nohar Raz-Fogel</p>	599
	<p>An Initial Characterization of Engagement in Informal Social Learning Around MIT OCW David Wiley, Shelley Henson.....</p>	832
	<p>Shared Knowledge Construction Process in an Open-source Software Development Community: An Investigation of the Gallery Community Xun Ge, Yifei Dong, Kun Huang</p>	189
	<p>Designing an Online Service for a Math Community Martin Wessner, Wesley Shumar, Gerry Stahl, Johann Sarmiento, Martin Mühlpfordt, Stephen Weimar</p>	818

04. Professional Development Issues for Science Educators

<p>Sat, 8:30 Paper Session Dogwood Room</p>	<p>The Expert Novice Bobbie Turniansky, Dina Friling</p>	778
	<p>Using an Online Community of Practice to Foster Inquiry as Pedagogy amongst Student Teachers Oliver Dreon Jr., Scott McDonald.....</p>	140
	<p>Supporting Science Teacher Thinking Through Curriculum Materials Rebecca Schneider.....</p>	674
	<p>A Resources Interpretation of Teachers' Epistemologies of Science Sandra Honda, David May</p>	264

23. Theoretical and Technological Advances in Knowledge Building

Sat, 8:30 Paper Session Oak Room	Teaching Students to Evaluate Source Reliability during Internet Research Tasks. Christopher A. Sanchez, Jennifer Wiley, Susan R. Goldman 662
	From Wikipedia to the Classroom: Exploring Online Publication and Learning Andrea Forte, Amy Bruckman 182
	Berta's Tower: Developing Conceptual Physics Understanding One Exploratooid at a Time Gina Navoa Svarovsky, David Williamson Shaffer 751
	Flow Blocks as a Conceptual Bridge Between Understanding the Structure and Behavior of a Complex Causal System Oren Zuckerman, Tina Grotzer, Kelly Leahy 880

Symposium

Sat, 8:30 Paper Session Frangipani Room	Whither Education Research? Science Policy Implications of NSF Research Support John C. Cherniavsky, Janice Earle, Hari Narayanan, Roy Pea, John Bransford, Marcia Linn 1043
--	--

Closing Invited Symposium

10:30 am - 12:30 pm

Sat, 10:30 *The NSF Science of Learning Centers*
Alumni Hall

- Center for Learning in Informal and Formal Environments (LIFE)**
 Roy Pea, Stanford University
 Nora Sabelli, SRI International
- Pittsburgh Science of Learning Center (PSLC)**
 Kurt Van Lehn, University of Pittsburgh
- Center for Excellence for Learning in Education, Science & Technology**
 Daniel Franklin, Boston University