CURRICULUM VITAE

JANICE D. GOBERT, Ph.D.
June 2014

Associate Professor of Learning Sciences & Psychology
Social Sciences and Policy Studies Department

Co-Director, Learning Sciences & Technology Graduate Program
Social Sciences and Policy Studies, Computer Science, & Mathematical Sciences

BACKGROUND

Education

Doctor of Philosophy (May 1994)
    Dissertation: *Expertise in the comprehension of architectural plans: Contributions of representation and domain knowledge*
    Specialization: Cognitive Science   **Supervisor**: Dr. Carl Bereiter
    Department of Applied Psychology (OISE)
    University of Toronto, Toronto, Ontario

Master of Arts (November 1989)
    Thesis: *The Interpretation of Architectural Plans by Expert and Sub-expert Architects*
    Specialization: Cognitive Science   **Supervisor**: Dr. Carl Frederiksen
    Department of Educational Psychology and Counseling
    McGill University, Montreal, Quebec
    Clinical Internship: (September 1988 - May 1989) under supervision of Dr. Pascal Delli Colli,
    Senior Psychologist, Commission of Catholic Schools of Montreal, Montreal, Quebec

Bachelor of Arts (Honour's; June 1985)
    Thesis: A Multidimensional Approach to Human Laterality and Perceptual Style
    Psychology (major); English Literature (minor)
    Laurentian University, Sudbury, Ontario

SCHOLARSHIP

Publications

Journal Articles (Peer Reviewed)

Gobert, J. (in press). Microworlds. In Gunstone, R. (Ed.) *Encyclopedia of Science Education*. Springer.

Gobert, J., Sao Pedro, M., Raziuddin, J., and Baker, R. S., (2013). From log files to assessment metrics for science inquiry using educational data mining. *Journal of the Learning Sciences, 22(4),* 521-563.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Wixon, M., Sao Pedro, M. (2013). Discovery with models: A case study on carelessness in computer-based science inquiry. *American Behavioral Scientist, 57* (10), 1479-1498.

Gobert, J., Wild, S., & Rossi, L. (2012). Examining Geoscience Learning with Google Earth: Testing the Effects of Prior Coursework and Gender. Special issue on Google Earth and Virtual Visualizations in Geoscience Education and Research. *Geological Society of America, Special Paper 492,* 453-468.

Gobert, J., Sao Pedro, M., Baker, R.S., Toto, E., & Montalvo, O. (2012). Leveraging educational data mining for real time performance assessment of scientific inquiry skills within microworlds, *Journal of Educational Data Mining, Article 15, Volume 4,* 153-185.

Timms, Michael, Clements, Douglas H., Gobert, Janice, Ketelhut, Diane J., Lester, James, Reese, Debbie D., and Wiebe, Eric. (2012). *New measurement paradigms*. http://research.acer.edu.au/ar_misc/9. Report to the National Science Foundation.

Sao Pedro, M.A., Baker, R.S.J.d., Gobert, J., Montalvo, O. Nakama, A. (2011). Leveraging Machine-Learned Detectors of Systematic Inquiry Behavior to Estimate and Predict Transfer of Inquiry Skill. *User Modeling and User-Adapted Interaction.* DOI: 10.1007/s11257-011-9101-0

Gobert, J., O'Dwyer, L., Horwitz, P., Buckley, B., Levy, S.T. & Wilensky, U. (2011). Examining the relationship between students' epistemologies of models and conceptual learning in three science domains: Biology, Physics, & Chemistry. *International Journal of Science Education, 33(5),* 653-684.

Gobert, J.D, Pallant, A.R., & Daniels, J.T.M. (2010). Unpacking inquiry skills from content knowledge in Geoscience: A research perspective with implications for assessment design. *International Journal of Learning Technologies, 5(3),* 310-334.

Cobern, W., Schuster, D., Adams, B., Undreiu, A., Applegate, B., Skjold, B., Loving, C. & Gobert, J. (2010). Experimental Comparison of Inquiry and Direct Instruction in Science. *Research in Science and Technological Education, 28(1)*, 81-96.

Buckley, B.C., Gobert, J., Horwitz, P. & O'Dwyer, L. (2010). Looking inside the black box: Assessments and decision-making in BioLogica. *International Journal of Learning Technologies, 5(2)*, 166 - 190.

Gobert, J. (2005). The effects of different learning tasks on conceptual understanding in science: teasing out representational modality of diagramming versus explaining. *Journal of Geoscience Education, 53(4),* 444-455.

Buckley, B.C., Gobert, J.D., Kindfield, A., Horwitz, P., Tinker, R., Gerlits, B., Wilensky, U., Dede, C., & Willett, J. (2004). Model-based Teaching and Learning with BioLogica™: What do they learn? How do they learn? How do we know? *Journal of Science Education and Technology. Vol 13(1),* 23-41.

Gobert, J.D., & Pallant, A., (2004). Fostering students' epistemologies of models via authentic model-based tasks. *Journal of Science Education and Technology. Vol 13(1),* 7-22.

Gobert, J.D., & R. Tinker (2004). Introduction to the Issue. *Journal of Science Education and Technology, Vol 13(1),* 1-6.

Gilbert, J.K., Treagust, D., & Gobert, J. (2003). Science Education: from the past, through the present, to the future. *International Journal of Science Education, 25 (6),* 643-644.

Gobert, J. & Buckley, B. (2000). Special issue editorial: Introduction to model-based teaching and learning. *International Journal of Science Education, 22(9),* 891-894.

Gobert, J. (2000). A typology of models for plate tectonics: Inferential power and barriers to understanding. *International Journal of Science Education, 22(9),* 937-977.

Gobert, J. & Clement, J. (1999). Effects of student-generated diagrams versus student-generated summaries on conceptual understanding of causal and dynamic knowledge in plate tectonics. *Journal of Research in Science Teaching, 36(1),* 39-53.

Book Chapters (Peer Reviewed)

Horwitz, P., Gobert, J., & Buckley, B., & O'Dwyer, L. (2010). Learning Genetics With Dragons: From Computer-Based Manipulatives to Hypermodels. In Jacobson, M. J., & Reimann, P. (Eds.). *Designs for learning environments of the future: International perspectives from the learning sciences*. Springer Publishers, pp. 61-87.

Gobert, J. (2005). Leveraging technology and cognitive theory on visualization to promote students' science learning and literacy. In *Visualization in Science Education*, J. Gilbert (Ed.), pp. 73-90. Springer-Verlag Publishers, Dordrecht, The Netherlands. ISBN 10-1-4020-3612-4.

Gobert, J. (1999). Expertise in the comprehension of architectural plans: Contribution of representation and domain knowledge. In *Visual And Spatial Reasoning In Design '99*, John S. Gero and B. Tversky (Eds.), Key Centre of Design Computing and Cognition, University of Sydney, AU.

Conference Proceedings (Peer Reviewed)

Sao Pedro, M.A., Paquette, L., Jiang, Y., Baker, R.S., and Gobert, J.D. (in press). Identifying Transfer of Inquiry Skills across Physical Science Simulations using Educational Data Mining. To be published in the *Proceedings of the International Conference of the Learning Sciences*.

Sao Pedro, M.A., Gobert, J.D., Betts, C. (in press). Towards Scalable Assessment of Performance-Based Skills: Generalizing a Detector of Systematic Science Inquiry to a Simulation with a Complex Structure. To be published in the *Proceedings of the International Conference on Intelligent Tutoring Systems*.

Paquette, L., Baker, R.S., Sao Pedro, M., Gobert, J., Rossi, L., Nakama, A., Kauffman-Rogoff, Z. (in press). *Sensor-Free Affect Detection for a Simulation-Based Science Inquiry Learning Environment*. To be published in the *Proceedings of the International Conference on Intelligent Tutoring Systems*.

Sao Pedro, M., Baker, R., & Gobert, J. (2013). Incorporating Scaffolding and Tutor Context into Bayesian Knowledge Tracing to Predict Inquiry Skill Acquisition. In *Proceedings of the 6th International Conference on Educational Data Mining*. Memphis, TN.

Gobert, J., Raziuddin, J., & Koedinger, K. (2013). Auto-scoring discovery and confirmation bias during data interpretation in a science microworld. *Artificial Intelligence in Education Lecture Notes in Computer Science, Volume 7926,* pp 770-773.

Gobert, J.D., Toto, E., Brigham, M. & Sao Pedro, M. (2013). Searching For Predictors of Learning Outcomes in Non Abstract Eye Movement Logs. *Artificial Intelligence in Education Lecture Notes in Computer Science Volume 7926*, pp 799-802.

Sao Pedro, M., Baker, R., & Gobert, J. (2013). What Different Kinds of Stratification Can Reveal about the Generalizability of Data-Mined Skill Assessment Models. In Proceedings of the 3rd *Conference on Learning Analytics and Knowledge*. Leuven, Belgium.

Hershkovitz, A, Baker, R.S.J.d., Gobert, J., & Nakama, A. (2012). *A data-driven path model of student attributes, affect, and engagement in a computer-based science inquiry microworld*. Tenth International Conference of the Learning Sciences, 2-6 July, Sydney, Australia.

Sao Pedro, M., Baker, R., & Gobert, J. (2012). Improving Construct Validity Yields Better Models of Systematic Inquiry, Even with Less Information. In *Proceedings of the 20th Conference on User Modeling, Adaptation, and Personalization (UMAP 2012)*. Montreal, QC, Canada (pp. 249-260). **James Chen Best Student Paper Award**

Sao Pedro, M., Gobert, J., & Baker, R. (2012). Assessing the Learning and Transfer of Data Collection Inquiry Skills Using Educational Data Mining on Students' Log Files. Paper presented at *The Annual Meeting of the American Educational Research Association*. Vancouver, BC, CA: Retrieved April 15, 2012, from the AERA Online Paper Repository. **Best Student Paper Award - AERA SIG Advanced Technologies for Learning/Learning Sciences**

Hershkovitz, A., Wixon, M., Baker, R.S.J.d., Gobert, J., & Sao Pedro, M. (2011). Carelessness and Goal Orientation in a Science Microworld. In G. Biswas et al. (Eds.): *AIED 2011, LNAI 6738* (pp. 462-465). Heidelberg, Germany: Springer.

Hershkovitz, A., Baker R.S.J.d., Gobert, J., & Wixon, M. (2011). Goal Orientation and Changes of Carelessness over Consecutive Trials in Science Inquiry. In the *Proceedings of the 4th International Conference on Educational Data Mining* (EDM 2011), 315-316, Eindhoven, The Netherlands.

Gobert, J., Sao Pedro, M., Montalvo, O., Toto, E., Bachmann, M. & Baker, R. (2011). The Science Assistments Project: Intelligent tutoring for scientific inquiry skills. In L. Carlson, C. Hoelscher, & T. (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Gobert, J., Raziuddin, J., & Sao Pedro, M. (2011). The Influence of Learner Characteristics on Conducting Scientific Inquiry Within Microworlds. In L. Carlson, C. Hoelscher, & T. Shipley (Eds.), *Proceedings of the 33rd Annual Conference of the Cognitive Science Society*. Austin, TX: Cognitive Science Society.

Bachmann, M., Gobert, J.D., & Beck, J. (2010). Tracking Students' Inquiry Paths through Student Transition Analysis. *Proceedings of the 3rd International Conference on Educational Data Mining* (Pages 269-270).

Sao Pedro, M.A., Baker, R.S.J.d, Montalvo, O., Nakama, A. & Gobert, J.D. (2010). Using Text Replay Tagging to Produce Detectors of Systematic Experimentation Behavior Pattern. *Proceedings of the 3rd International Conference on Educational Data Mining* (Pages 181-190).

Sao Pedro, M., Gobert, J., & Raziuddin, J. (2010). Long-term Benefits of Direct Instruction with Reification for Learning the Control of Variables Strategy. In Aleven, V., Kay, J. & Mostow, J. (Eds.) *Intelligent Tutoring Systems Conference* (6095), pp. 257-259. Springer Berlin/ Heidelberg.

Montalvo, O., Baker, R.S.J.d., Sao Pedro, M.A., Nakama, A., & Gobert, J.D. (2010). Identifying Students' Inquiry Planning Using Machine Learning. *Proceedings of the 3rd International Conference on Educational Data Mining*, pp. 141-150.

Gobert, J., Montalvo, O., Toto, E., Sao Pedro, M., & Baker, R. (2010). The Science Assistments Project: Scaffolding scientific inquiry skills. In Aleven, V., Kay, J. & Mostow, J. (Eds.) *Intelligent Tutoring Systems Conference* (6095), p. 445, Springer Berlin / Heidelberg.

Sao Pedro, M. A., Gobert, J. D., & Raziuddin, J. (2010). Comparing Pedagogical Approaches for the Acquisition and Long-Term Robustness of the Control of Variables Strategy. In K. Gomez, L. Lyons, & J. Radinsky (Ed.), *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 1, Full Papers* (pp. 1024-1031). Chicago, IL: International Society of the Learning Sciences.

Gobert, J., Pedro, M. Raziuddin, J., & the Science Assistments Team (2010). Studying the interaction between learner characteristics and inquiry skills in microworlds. In K. Gomez, L. Lyons, & J. Radinsky (Ed.), *Learning in the Disciplines: Proceedings of the 9th International Conference of the Learning Sciences (ICLS 2010) - Volume 2* (p. 46). Chicago, IL: International Society of the Learning Sciences.

Pence, N., Weisbrot, E., Whitmeyer, S., De Paor, D. & Gobert, J. (2010). Using Google Earth for Advanced Learning in the Geosciences. *Geological Society of America Abstracts with Programs, Vol. 42, No. 1*, p. 115.

De Paor, D.G., Whitmeyer, S., and Gobert, J. (2009). Development, Deployment, and Assessment of Dynamic Geological and Geophysical Models Using the Google Earth APP & API: Implications for Undergraduate Education in the Earth and Planetary Sciences. *Eos Trans. AGU, 90(52)*, Fall Meet. Suppl., Abstract ED53E-07.

Selkin, P.A., De Paor, D.G., Gobert, J., Kirk, K.B., Kluge, S., Richard, G.A., and Whitmeyer, S.J. (2009). Emerging Digital Technologies for Geoscience Education and Outreach. *GSA Abstracts with Programs, v. 41, no. 6*.

Sao Pedro, M., Gobert, J., Heffernan, N., & Beck, J. (2009). Comparing Pedagogical Approaches for Teaching the Control of Variables Strategy. In N.A. Taatgen & H. vanRijn (Eds.), *Proceedings of the 31st Annual Meeting of the Cognitive Science Society* (pp. 1294-1299). Austin, TX: Cognitive Science Society.

DePaor, D., Whitmeyer, S. & Gobert, J. (2008). Emergent Models for Teaching Geology and Geophysics Using Google Earth, *Eos Trans. AGU, 89*(53).

Quellmalz, E.S., DeBarger, A.H., Haertel, G., Schank, P., Buckley, B., Gobert, J., Horwitz, P., & Ayala, C. (2008). Exploring the Role of Technology-Based Simulations in Science Assessment: The Calipers Project. In *Science Assessment: Research And Practical Approaches*. Washington, DC: NSTA.

Zalles, D., Gobert, J., Pallant, A., Quellmalz, E. (2007). Building Data Literacy, Visualization, and Inquiry in Geoscience Education. In the *Proceedings of the Environmental Systems Research Institute (ESRI) Education User Conference*. Environmental Systems Research Institute, Inc.

Buckley, B., Gobert, J. & Horwitz, P. (2006). Using Log files to Track Students' Model-based Inquiry. In the *Proceedings of the Seventh International Conference of the Learning Sciences (ICLS),* Mawah: NJ: Erlbaum, pp.57-63.

Manduca, C.A., J. Gobert, P. Laws, D.W. Mogk, and S.J. Reynolds (2005). Observing and Assessing Student Learning: A Workshop Report. *Geological Society of America Abstracts with Programs, 37(7):* 283.

Gobert, J., Horwitz, P., Buckley, B., Mansfield, A., Burke, E., & Markman, D. (2005). Logging Students' Model-Based Learning and Inquiry Skills in Science. In the *Proceedings of the American Association of Artificial Intelligence Technical Report WS-05-02*, p. 67. AAAI Press, Menlo Park, CA.

Gobert, J., Horwitz, P., Tinker, B., Buckley, B., Wilensky, U., Levy, S., and Dede, C. (2003). Modeling Across the Curriculum: Scaling up Modeling Using Technology. In the *Proceedings of the Twenty-fifth Annual Meeting of the Cognitive Science Society*, July 31-August 2, Boston, MA.

Gobert, J. (2003). Collaborative Model-Building and Peer Critique Online. In the *Proceedings of the Twenty-fifth Annual Meeting of the Cognitive Science Society*, July 31-August 2, Boston, MA.

Gobert, J., Slotta, J., & Pallant, A. (2002). Collaborative Model-Building and Peer Critique via the Internet. In P. Bell, R. Stevens, & T. Satwicz (Eds.), *Keeping Learning Complex: The Proceedings of the Fifth International Conference of the Learning Sciences (ICLS)*, pp. 536-537. Mawah: NJ: Erlbaum.

Gobert, J. (1997). Summarizing, Explaining, and Diagramming: The Differential Effects on Text-Base Representations and Mental Models. *Proceedings of the Nineteenth Annual Meeting of the Cognitive Science Society.* Stanford University. August 7-10, Palo Alto, CA.

Gobert, J. (1994). Reasoning and inference-making with architectural plans. In N.H. Narayanan (Ed.), *Reasoning with Diagrammatic Representations*. American Association of Artificial Intelligence Technical Report SS-92-02, AAAI Press, Menlo Park, CA.

Gobert, J. (1993). The comprehension of complex graphics: facilitating effects of text on integration and inference-making. *Proceedings of the Fifteenth Annual Meeting of the Cognitive Science Society.* University of Colorado at Boulder, June 18-21, Boulder, CO.

Gobert, J. & Coleman, E.B. (1993). Using diagrammatic representations and causal explanations to investigate children's models of continental drift. *Proceedings of the Society of Research in Child Development.* March 25-28, New Orleans, LA.

Gobert, J. (1992). Reasoning and inference-making with architectural plans. *Working notes of the Spring Symposium on Reasoning with Diagrammatic Representations*. American Association for Artificial Intelligence. Stanford University, March 25-27, Stanford, CA.

Gobert, J. (1991). The use of textual organizers to enhance the comprehension of graphic information. *Canadian Psychology, 32(2a),* p. 381.

Gobert, J. & Frederiksen, C. (1988). The comprehension of architectural plans by expert and sub-expert architects. *Proceedings of the Tenth Annual Meeting of the Cognitive Science Society.* Montreal, Canada, August 17-19, Hillsdale, NJ.: Lawrence Erlbaum.

Edited Books/Special Journal Issues

Gilbert, J., Treagust, D., & Gobert, J. (Eds.) (2003). Special Issue: Science Education from the past, through the present, to the future. *International Journal of Science Education, 25(6),* 643-773.

Gobert, J. D., & Buckley, B.C. (Eds.) (2000). Special Issue: Introduction to model-based teaching and learning in Science Education. *International Journal of Science Education, 22(9),* 891-1053.

Articles - Other

Gobert, J. (in press). *Learning with microworlds*. To appear at www.learn.org.

Gobert, J. & Discenna, J. (1997). *The Relationship between Students' Epistemologies and Model-Based Reasoning*. Kalamazoo, MI: Western Michigan University, Department of Science Studies. (ERIC Document Reproduction Service No. ED409164).

Gobert, J. & Horwitz, P. (2002). Do modeling tools help students learn science? *In @ Concord*, *6(1)*, p.19.

Other Published Writings - Manuals

Gobert, J. & Pallant, A. (2006). *Implementation manual for "On Shaky Ground" curriculum unit.* Available at http://digs.sri.com/Plates/teacher.html.

Gobert, J. & Pallant, A. (2006). *Student guide for "On Shaky Ground" curriculum unit*. Available at http://digs.sri.com/Plates/student_unit.html

Horwitz, P., Gobert, J., Buckley, B. & The Modeling Across the Curriculum Team. (2002). *Implementation manual for BioLogica.* Available at http://mac.concord.org/portal/documents/

Horwitz, P., Gobert, J., Buckley, B. & The Modeling Across the Curriculum Team. (2002). *Implementation manual for Dynamica.* Available at http://mac.concord.org/portal/documents/

Horwitz, P., Gobert, J., Buckley, B. & The Modeling Across the Curriculum Team. (2002). *Implementation manual for Chemica.* Available at http://mac.concord.org/portal/documents/

Gobert, J. & Pallant, A. (2001). *Implementation Manual for "What's on Your Plate?" curriculum.*

Manuscripts Under Review & In Progress

Gobert, Janice, D., Sao Pedro, Michael, Baker, Ryan S., Toto, Ermal, & Betts, Cameron, G. (under revision). *Using educational data mining for real time, scalable science skills assessment.* Science.

Gobert, J., Wixon, M., & Baker, R. S. (under revisions). *Operationalizing and Detecting Disengagement During Science Inquiry.* Educational Psychologist.

Hershkovitz, A., Baker, R.J.S.d., Gobert, J., & Nakama, A. (in prep.). *Student attributes, affect, and engagement in science inquiry in computer-based learning: A data-driven path model.* Manuscript in preparation for Journal of Science Education and Technology.

Kim, B., Pathak, S., Jacobson, M., Zhang, B., & Gobert, J. (under revision). *Cycles of Exploration, Reflection, and Consolidation in Model-Based Learning of Genetics.* Journal of Science Education and Technology.

Gobert, J. (in prep.). *Summarizing, Explaining, and Diagramming: The Differential Effects on Reading Times, Text-Base Representations, and Mental Models of Science Text*. Manuscript in preparation for *Journal of Geoscience Education*.

Sao Pedro, M. & Gobert, J.D. (in prep.). *Teaching the Control of Variables Strategy Within a Virtual Learning Environment: Do Self-Explanations Help Acquisition and Long-Term Robustness?* Manuscript in preparation.

Gobert, J., Bachmann, M., Baker, K. (in prep). *SimCell: the design and testing of a microworld for assessing students' inquiry skills in Cell Biology*. Manuscript in preparation, to be submitted to *Journal of Science Education and Technology*.

Fellowships & Grants Awarded

A Computer Assisted Learning Environment to Support Engineering Design, Innovation, and Entrepreneurship. Gaudette, G., PI, Gobert, J., Camesano, T., & Hoy, F., (Co-PIs). KEEN Topical Grant Proposal, $45,804.00

Testing the Effects of Real-time Scaffolding of Science Inquiry Driven by Automated Performance Assessment, (NSF-DRL-1252477), Gobert, J., Principal Investigator, Awarded September 2013 from the National Science Foundation, $1,499,346.00

The Development of an Intelligent Pedagogical Agent for Physical Science Inquiry Driven by Educational Data Mining. Gobert, J. & Baker, R. Proposal (R305A120778) Awarded May, 2012 by the U.S. Dept. of Education, $1,499,588.00

Empirical Research: Emerging Research: Using Automated Detectors to Examine the Relationships Between Learner Attributes and Behaviors During Inquiry in Science (NSF-DRL# 1008649). Janice Gobert, Principal Investigator, Ryan Baker, Co-Principal Investigator. Awarded July 1, 2010 from the National Science Foundation; $986,111.00

ASSISTments Meets Science Learning (AMSL; R305A090170). Janice Gobert, Principal Investigator, Neil Heffernan, Ken Koedinger, & Joe Beck (Co-Principal Investigators). Awarded February 1, 2009 from the U.S. Dept of Education; $1,187,432.00

PIMSE: A GK-12 Partnership Implementing Mathematics & Science Education: Assisting Middle School Use of Tutoring Technology in the Classroom (NSF-DGE# 0742503). Neil Heffernan Principal Investigator; Janice Gobert, George Heineman, & Elke Rundensteiner (Co-Principal Investigators). Awarded May 2008 from the National Science Foundation; $2,090,721.00

Evaluating Use of the Unidata Program's Integrated Data Viewer (IDV) Software in an Undergraduate Meteorology Classroom. Dave Dempsey, Geosciences, San Francisco State University (PI), Janice Gobert, WPI, & Allan Bol, The COMET Program, Boulder, CO (Co-PIS). Gordon Research Conference Visionary Grant; Awarded 2007, $6,000.00

AMI: ASSISTments Meets Inquiry (NSF-DRL# 0733286). Janice Gobert, Principal Investigator; Neil Heffernan, Carolina Ruiz, & Ryan Baker, Co-Principal Investigators; Awarded September 2007 from the National Science Foundation; $1,498,677.00

Inquiring with Geoscience Data Sets (DIGS) (NSF-GEO# 0507828). Edys Quellmalz, Principal Investigator, Dan Zalles, Janice Gobert, Co-Principal Investigators; Awarded August 2005 from the National Science Foundation; $299,579.00

Calipers: Multi-Level Assessments of Science with Technology (NSF-ESI# 0454772). Edys Quelmalz, Principal Investigator, Angela DeBarger, Patty Kreikemeier, Geneva Haertal, Co-Principal Investigators; Janice Gobert, Principal Investigator for sub-contract to Concord Consortium; Awarded February 2005 from the National Science Foundation; $496,025.00

Modeling Across the Curriculum (IERI# 0115699). Paul Horwitz, Principal Investigator; J. Gobert, Research Director & Co-Principal Investigator; C. Dede, R. Tinker, U. Wilensky, Co-Principal Investigators. Intra-Agency Education Research Initiative Grant funded by the National Science Foundation and U.S. Dept. of Education; Awarded September 2001; $7,422,986.00

The Role of Students' Epistemologies in Learning with Models. J. Gobert, Principal Investigator; C. Schwarz, Co-Principal Investigator. Center for Innovative Learning Technologies Seed Grant; Awarded December 2000; $15,000.00

Fostering Transfer from Open-Ended Exploration to Scientific Reasoning (NSF-REC# 0087579). Paul Horwitz, Principal Investigator; J. Gobert, Co-Principal Investigator. National Science Foundation; Awarded September 2000; $2,155,078.00

Modeling Across The Curriculum (Planning grant). P. Horwitz & R. Tinker. Intra-Agency Education Research Initiative Planning Grant; Awarded August 2000; $100,000.00

Making Thinking Visible: Promoting Students' Model-Building And Collaborative Discourse In WISE (NSF-REC# 9980600). J. Gobert, Principal Investigator. National Science Foundation; Awarded January 2000; $264,000.00

Making Thinking Visible- Supplement (NSF-DRL# 0206612). J. Gobert, Principal Investigator**,** National Science Foundation; Awarded January 2002; $49,993.00

Technical and Theoretical Foundations of Learning Activities with Modeling. Center for Innovative Learning Technologies Seed Grant. Clayton Lewis, Principal Investigator**;** Allen Cypher, Andrea diSessa, Vanessa Colella, William Conrad, Jennifer Discenna, Carlos Garcia, Janice Gobert, Ken Hay, Linda Hahner, Pamela Jennings, Raul Zaritsky; National Science Foundation, Awarded June 1999; $15,000.00

Investigating Students' Models and Model-Based Reasoning in Plate Tectonics (NSF-REC# 9806141). J. Gobert, Principal Investigator. National Science Foundation; Awarded June 1998; $150,000.00

Drawing to Learn. J. Gobert, Principal Investigator, Spencer Post-Doctoral Fellowship, National Academy of Education, Awarded Spring 1995; $40,000.00

Professional Presentations

Keynotes & Invited Colloquia

Gobert, J. D. (March, 2014). *From Log Files to Assessment Metrics: Towards the Design and Implementation of a Scalable Assessment System for Students' Science Inquiry Skills Using EDM.* Keynote presentation at the 4th Latin American School for Education, Cognitive and Neural Sciences, March 11-22, Punta del Este, Uruguay.

Gobert, J.D., (March, 2014). *From Log Files to Assessment Metrics: Towards the Design and Implementation of a Scalable Assessment System for Students' Science Inquiry Skills Using EDM.* Keynote presentation at the Science Learning and Assessment Workshop, Moore Foundation, March 27-29th, San Francisco, CA.

Gobert, J. & Sao Pedro, M. (May 2013). *Developing EDM-Based Assessments For Measuring Science Inquiry Skills And Testing For Transfer Across Science Topics.* Colloquium presented at Teachers' College, Columbia University, May 9, New York, NY.

Gobert, J. & Sao Pedro, M. (May, 2013). *Developing EDM-Based Assessments For Measuring Science Inquiry Skills And Testing For Transfer Across Science Topics.* Colloquium presented at ETS, May 10, Princeton, NJ.

Gobert, J. (October 2012). *Learning with scientific simulations: Affordances for performance assessment and adaptive intelligent tutoring of scientific inquiry skills.* Colloquium presented at the Museum of Science and Industry, October 18, Chicago, IL.

Gobert, J. (October 2012). *Learning with scientific simulations: The affordances of technology for studying and scaffolding students' learning processes and proposed directions for Learning Sciences research.* Colloquium

presented at the Learning Sciences Research Institute, October 19, University of Illinois-Chicago, Chicago, IL.

Gobert, J. (September 2012). *Assessing & Scaffolding Science Inquiry Skills.* Colloquium presented at the Massachusetts Institute of Technology, September 12, Cambridge, MA.

Gobert, J. (September 2012). *Leveraging technology to transform students' scientific literacy.* Keynote address presented at the Fall meeting of the Delta Kappa Gamma Society. September 15, Mansfield, MA.

Gobert, J. (August 2012). *Learning with scientific simulations: Affordances for performance assessment and adaptive intelligent tutoring of scientific inquiry skills.* Keynote address presented at the European Association for Research on Learning and Instruction, August 22-24, University of Bochum, Germany.

Gobert, J. (February 2012). *New Advances in Cognitive and Computational Science: Creating Custom Educational Opportunities Using Adaptive Micro-Worlds.* Presented at Microsoft Headquarters, February 21, Redmond, OR.

Gobert, J. (February 2012). *Using data mining and knowledge engineering for automatic assessment of students' inquiry skills.* Presented at University of British Columbia, February 20, Vancouver, Canada.

Gobert, J. (October 2011). *Learning with scientific simulations: Affordances for student learning & performance assessment for simulations.* Presented to the Human-computer Interaction Institute, Carnegie-Mellon, October 19, Pittsburgh, PA.

Gobert, J. (October 2011). *Motivation and Engagement: Ontology, Construct-Validity, and Measurement Considerations.* Invited talk at the National Science Foundation, REESE Principal Investigators' Meeting. October 20-21, Arlington, VA.

Gobert, J. (January 2011). *Developing assessments of geological thinking and reasoning and studying their affordances for studying spatial cognition.* Keynote address presented at the Google Earth Penrose Conference, January 4 - 8, Mountain View, CA.

Gobert, J. (July 2007). *Visualization and assessment in the Geosciences.* Keynote address, Gordon Research Conference, Bryant University, July 1-6, Smithfield, RI.

Gobert, J. (May 2006). *Leveraging technology to impact science learning and scientific literacy on a broad scale: A model for the 21st century.* Keynote address, Broadening Research at International Networks meeting. National Taiwan Normal University, Taipei, Taiwan.

Gobert, J. (May 2006). *Science learning and teaching for the 21st century: Impacting students' learning & teachers' assessment and pedagogical practices.* Keynote address for Technology-integrated Science and Engineering Education meeting. National Taiwan Normal University, Taipei, Taiwan.

Gobert, J. (May 2004). *Using technology to support students' collaborative on-line learning of Plate Tectonics: Content gains, epistemological gains, and implications for scientific literacy.* Keynote address for the Joint Geosciences Assembly, Taipei Taiwan.

Gobert, J. (February 2005). *Making Thinking Visible: The role of visualization in promoting scientific literacy.* Keynote address for Resurrecting Leonardo: Reconnecting Art and Science for Education. University of Massachusetts, Amherst, MA.

Gobert, J. (May 2004). *Harnessing Technology to Promote Science Learning and Scientific Literacy.* Presented to the CITE group (Centre for Information Technology in Education), University of Hong Kong.

Gobert, J. (October 2003). *Harnessing Technology to Promote Model-Based Learning and Scientific Literacy.* Presented at the IKIT Colloquium Series, University of Toronto, Toronto, CA.

Gobert, J. (April 2003). *Characterizing model-based learning and peer critique within an on-line inquiry-based unit for Plate Tectonics.* Presented to the Hampshire College Cognitive Science Lecture Series, Amherst, MA.

Gobert, J. (December 1999). *Diagramming for learning science: Implications for model-based reasoning.* Presented to the Department of Social Sciences and the Center for Educational Development, Worcester Polytechnic Institute, Worcester, MA.

Gobert, J. (September 1999). *Student learning in Plate Tectonics: The role of prior knowledge, instructional strategies, and epistemologies.* Presented to the Department of Education, Tufts University, Medford, MA.

Gobert, J. (October 1998). *Strategies to Diagnose and Remediate Students' Models in Plate Tectonics.* Presented to the Center for Astrophysics, Harvard University, Cambridge, MA.

Gobert, J. (October 1998). *Using Student-Generated Diagrams to Investigate Students' Models and Model-Based Reasoning in Plate Tectonics.* Presented to the Center for Earth and Space Science Education, TERC, Cambridge, MA.

Gobert, J. (September 1997). *Summarizing, Explaining, and Diagramming: The Differential Effects on Text-Base Representations and Mental Models.* Presented at the Science Studies Colloquium Series, Western Michigan University, Kalamazoo, MI.

Gobert, J. (March 1995). *Knowledge acquisition from complex graphics: Processes of search and integration.* Department of Psychology, Dartmouth College, Hanover, NH.

Gobert, J. (March 1995). *The use of think aloud protocols to trace knowledge acquisition and integration processes from complex graphics.* Department of Psychology, Cognitive Division, University of Massachusetts, Amherst, MA.

Gobert, J. (October 1994). *Children's understanding of causality: The effects of student-generated diagrams and visual analogies on conceptual knowledge.* Department of Psychology, Developmental Division, University of Massachusetts, Amherst, MA.

Gobert, J. (December 1993). *Facilitating fifth graders' causal model construction through student-generated diagrams and visual analogies.* Learning Research Development Center, University of Pittsburgh, Pittsburgh, PA.

Gobert, J. (November 1993). *Promoting causal model construction of continental drift with fifth graders.* Bolt, Beranek, and Newman, Cambridge, MA.

Gobert, J. (November 1993). *The benefit of student-generated diagrams on causal and dynamic model construction: A study of fifth graders' learning of continental drift.* Scientific Reasoning Research Institute Colloquia Series. University of Massachusetts, Amherst, MA.

Gobert, J. (September 1991). *Why a plan is worth at least 1,000 words: Determining novices' interpretations, representations, and mental models of architectural plans.* Invited Colloquium, Psychology Department, Carnegie-Mellon University, Pittsburgh, PA.

Gobert, J. (September 1991). *The use of cognitive methodologies to determine the types of knowledge represented in architectural plans and their potential usefulness in the development of CAD software.* Design Lecture Series, Engineering Design Research Center, Carnegie-Mellon University, Pittsburgh, PA.

Gobert, J. (September 1991). *The contribution of spatial abilities to real time tasks in the domain of architecture.* Invited Colloquium, Educational Testing Service, Princeton University, NJ.

Conference Presentations

Yasar, O., Gobert, J., & Toto, E. (August, 2014). Using Eye Tracking to Measure Students' Knowledge Acquisition Processes from Text and Graphics. To be presented at *The European Association for Research on Learning and Instruction (EARLI) SIG 2 Conference*, 25-27 August 2014, Rotterdam, Netherlands.

Yasar, O., Gobert, J., & Toto, E. (June, 2014). Using Eye Tracking to Measure Students' Knowledge Acquisition Processes from Text and Graphics. In Scaffolding Computer-Supported Inquiry Learning, Raes, A. (Organizer). To be presented at the 18th meeting of the *Junior Researchers Conference of European*

Association for Research on Learning and Instruction, June 30-July 4, Nicosia, Cyprus.

Gobert, J.D., Sao Pedro, M., & Betts, C.G. (April, 2014). Using Educational Data Mining to Assess Students' Experimentation Skills During Inquiry Within Complex Systems. Presented at the annual meeting of the American Education Research Association 2014. Philadelphia, PA.

Sao Pedro, M.A., Gobert, J.D., and Baker, R.S. (2014). *The Impacts of Automatic Scaffolding on Students' Acquisition of Data Collection Inquiry Skills*. Paper presented at the annual meeting of the American Education Research Association 2014. Philadelphia, PA.

Raziuddin, J., Gobert, J., & Koedinger, K. (2013). *Auto-scoring Discovery and Confirmation Bias During Inquiry: Implications for Adaptive Scaffolding*. Presented at the Annual Meeting of the American Educational Research Association, April 27-May 1, San Francisco, CA.

Gobert, J., Sao Pedro, M., Raziuddin, J., & Baker, R.d. (2013). *Developing And Validating EDM-Based Assessment Measures For Measuring Science Inquiry Skill Acquisition And Transfer Across Science Topics*. Presented at the annual Meeting of the American Educational Research Association, April 27-May 1, San Francisco, CA.

Wixon, W., Gobert, J., & Baker, R.d. (2013). *Inquiry Without Thinking Fastidiously (WTF): What It Is And How To Detect It*. Presented at the annual Meeting of the American Educational Research Association, April 27-May 1, San Francisco, CA.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Kauffman-Rogoff, Z., & Wixon, M. (2012). *Student attributes, affective states, and engagement in science inquiry microworlds*. The European Association for Research on Learning and Instruction (EARLI) SIG 20 Conference, 22-24 August, Bochum, Germany.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Nakama, A. (2012). *A data-driven path model of approaches to learning, affect and engagement in computer-based science inquiry*. Presented at the 10th International Conference of the Learning Sciences, July 2-6, Sydney, Australia.

Gobert, J. (2012). *Science Assistments: Assessing and assisting students' inquiry skills in real time*. Presented at the 10th International Conference of the Learning Sciences, July 2-6, Sydney, Australia.

Hershkovitz, A., Baker, R.S.J.d., Gobert, J., Kauffman-Rogoff, Z., & Wixon, M. (2012). *Student attributes, affective states and engagement in science inquiry microworlds*. 11th International Conference on Intelligent Tutoring Systems, June 14-18, Chania, Greece.

Gobert, J. & Koedinger, K. (2012). *Using Model-Tracing to Conduct Performance Assessment of Students' Science Inquiry Skills Within a Microworld*. Presented (by Juelaila Raziuddin) at the Annual Meeting of the American Educational Research Association, April 13-17, Vancouver, Canada.

Sao Pedro, M., Gobert, J., & Baker, R. (2012). *On the Acquisition and Transfer of Data Collection Inquiry Skills Across Physical Science Microworlds*. Presented at the Annual Meeting of the American Educational Research Association, April 13-17, Vancouver, Canada.

Gobert, J. (2012). *Science ASSISTments: Assessing and Scaffolding Students' Inquiry Skills in Real Time*. Presented at the American Association for the Advancement of Science as part of a symposium, On-line 21st Century Science Assessments, February 16 – 20, Vancouver, Canada.

Sao Pedro, M., Baker, R.S.J.d., & Gobert, J. (2011 accepted as poster, withdrawn). *Improving Construct Validity Makes Better Models of Systematic Inquiry Even With Less Information*. Submitted to the 4th International Conference on Educational Data Mining.

Gobert, J., & Koedinger, K. (2011). *Using model-tracing to conduct performance assessment of students' inquiry skills within a Microworld*. Presented at the Society for Research on Educational Effectiveness as part of a symposium, Supporting elementary and middle-school students' development of science reasoning skills, September 8-10, Washington D.C.

Gobert, J., Baker, R.S.J.d., & Sao Pedro, M. (2011). *Using Machine-Learned Detectors to Assess and Predict Students' Inquiry Performance.* Presented at the Society for Research on Educational Effectiveness as part of a symposium, Principally Designed Simulation-Based Science Assessments, September 8-10, Washington, D.C.

Gobert, J. (2011). *Science Assistments: an adaptive learning environment for science inquiry.* Presented at to the Annual Meeting of the Cognitive Science Society, July 20-23, Boston, MA.

Gobert, J. Raziuddin, J., & Sao Pedro, M. (2011). *The Role of Learner Characteristics on Scientific Inquiry Skills: Hypothesizing, Controlling for Variables Strategy, Interpreting Data, and Communicating Findings within a Density Microworld.* To be presented at to the Annual Meeting of the Cognitive Science Society, July 20-23, Boston, MA.

Hershkovitz, M., Baker, A., Wixon, R.S.J.d., Gobert, J. (2011). *Goal Orientation and Changes of Carelessness over Consecutive Trials in Science Inquiry.* Presented at the 4th International Conference on Educational Data Mining (EDM 2011), July 6-8, 2011, Eindhoven, The Netherlands.

Hershkovitz, A., Wixon, M., Baker, R.S.J.d., Gobert, J., & Sao Pedro, M. (2011). *Carelessness and goal orientation in a science microworld.* Presented at the 15th International Conference on Artificial Intelligence in Education, June 27-July 1, Auckland, New Zealand.

Gobert, J., Sao Pedro, M., Toto, E., Montalvo, O., & Baker, R. (2011). *Science ASSISTments: Assessing and scaffolding students' inquiry skills in real time.* Presented at the Annual Meeting of the American Educational Research Association, April, New Orleans, LA.

Gobert, J., Baker, R., Sao Pedro, M., Toto, E., & Montalvo, O. (2011). *Science ASSISTments: Using student logs, machine learning, and data mining to determine when & how to scaffold students' science inquiry.* Presented at the Annual Meeting of the American Educational Research Association, April, New Orleans, LA.

Bachmann, M. Gobert, J., & Beck, J. (2011). *Do Differences in Student's Exploration Behavior lead to differences in Domain Learning or Inquiry Skills?* Presented at the Annual Meeting of the American Educational Research Association, April, New Orleans, LA.

Sao Pedro, M., Gobert, J.D., Sebuwufu, P., & Raziuddin, J. (2011). *The Effects of Self-Explanations on Robust Understanding of the Control of Variables Strategy.* Presented at the Annual Meeting of the American Educational Research Association, April, New Orleans, LA.

Whitmeyer, S., De Paor, D., Gobert, J., Pence, N., Weisbrot, E. (2011). *Enhancing the Geoscience Curriculum Using Geo-browser Based Learning Objects.* Presented at the CCLI / TUES Principal Investigators' Conference, Jan 26-28, Washington, D.C. (Invited).

De Paor, D., Whitmeyer, S., Gobert, J. (2010). *The Next Phase Of The Google Earth Science Revolution.* Presented at the Geological Society Association Annual Meeting, October 31- November 3, Denver, CO.

Montalvo, O., Baker, R., Sao Pedro, M., Nakama, A. & Gobert, J. (2010). *Identifying Students' Inquiry Planning Using Machine Learning.* Presented at the Educational Data Mining Conference, Carnegie-Mellon University, June 11-13, Pittsburgh, PA.

Sao Pedro, M., Baker, R., Montalvo, O., Nakama, A. & Gobert, J. (2010). *Using Text Replay Tagging to Produce Detectors of Systematic Experimentation Behavior Patterns.* Presented at the Educational Data Mining Conference, Carnegie-Mellon University, June 11-13, Pittsburgh, PA.

Bachmann, M. Gobert, J., & Beck, J. (2010). *Tracking Students' Inquiry Paths Through Student Transition Analysis.* Presented at the Educational Data Mining Conference, Carnegie-Mellon University, June 11-13, Pittsburgh, PA.

Sao Pedro, M., Gobert, J., & Raziuddin, J. (2010). *Long-term Benefits of Direct Instruction with Reification for Learning the Control of Variables Strategy.* Presented at the Intelligent Tutoring Conference, June 14-18, Pittsburgh, PA.

Gobert, J.D., Montalvo, O., Toto, E., Sao Pedro, M., Baker, R.S.J.d. (2010). *The Science Assistments Project: Scaffolding Scientific Inquiry Skills.* Presented at the Interactive Event at 10th International Conference on Intelligent Tutoring Systems. June 14-18, Pittsburgh, PA.

Gobert, J., Heffernan, N., Koedinger, K., & Beck, J. (2010). *ASSISTments Meets Science Learning: Developing and Testing a Learning Environment for Middle School Science Inquiry.* Presented at the Annual Institute for Education Sciences Principal Investigators' Meeting, June, Washington, D.C.

Baker, R. & Gobert, J. (Co-Chairs). *Qualitative, Quantitative, and Data Mining Methods for Analyzing Log Data to Characterize Students' Learning Strategies and Behaviors.* Presented at the International Conference of the Learning Sciences, June, Chicago, IL.

Gobert, J., Pedro, M. Raziuddin, J., & the Science Assistments Team. (2010). *Studying the interaction between learner characteristics and inquiry skills in microworlds.* Presented at the International Conference of the Learning Sciences, June, Chicago, IL.

Sao Pedro, M., Gobert, J., & Raziuddin, J. (2010). *Comparing Pedagogical Approaches for the Acquisition and Long-Term Robustness of the Control of Variables Strategy.* Presented at the International Conference of the Learning Sciences, June, Chicago, IL.

Gobert, J., Sao Pedro, M., Montalvo, O., & Toto, E. (2010). *A framework for adaptive scaffolding based on content knowledge, inquiry skills, and learner characteristics.* Presented at the Annual Meeting of the American Educational Research Association, April, Denver, CO.

Cobern, W., Schuster, D., Schwartz, R., Adams, B., Undreiu, A., Gobert, J. & Loving, C. (2009). *Inquiry Science Instruction or Direct? Experiment-based answers as to what practices best promote conceptual development of significant science content.* Presented at the Annual Meeting of the European Science Education Research Association, August 31- September 4, Istanbul, Turkey.

De Paor, D.G., Whitmeyer, S., and Gobert, J. (2009). *Development, Deployment, and Assessment of Dynamic Geological and Geophysical Models Using the Google Earth APP & API: Implications for Undergraduate Education in the Earth and Planetary Sciences.* Presented at the Fall Geological Society of America. October 18-21, Portland, OR.

Gobert, J. (2009). *Learning with scientific visualizations: Some implications for students' learning and some directions for Learning Sciences research.* Presented to the Spatial Cognition Science of Learning Center Group, Northwestern University, May 5, Evanston, IL.

Rai, D., Heffernan, N., Gobert, J., & Beck, J. (2009). *Mily's World: Math game involving authentic activities in visual cover story.* Presented at the Educational Games workshop at the 14th Annual Conference of Artificial Intelligence in Education, July 6-10, Brighton, UK.

Sao Pedro, M., Gobert, J., Beck, J., & Heffernan, N. (2009). *Comparing Pedagogical Approaches for Teaching the Control of Variables Strategy.* Presented at the Annual Meeting of the Cognitive Science Society, July 27- August 1, Amsterdam, The Netherlands.

Gobert, J., Beck, J., Sao Pedro, M., & Heffernan, N. (2009). *ASSISTments Meets Inquiry for Science Learning.* Presented at the Annual Meeting of the American Educational Research Association, April 13-17, San Diego, CA.

Gobert, J., Heffernan, N., Feng, Mingyu, Sao Pedro, M., & Beck, J. (2009). *ASSISTments for Science and Math: Assessing and Assisting.* Presented at the Annual Meeting of the American Educational Research Association, April 13-17, San Diego, CA.

Gobert, J. (2009). *Discovery vs. Direct Instruction: A Cognitive Perspective on the Theory and Data.* Presented at the National Association for Research on Science Teaching, April 18-23, Irvine, CA.

Gobert, J. (2009). *Discovery vs. Direct Instruction: A Cognitive Perspective on the Theory and Data.* Presented at the Annual Meeting of the American Association for the Advancement of Science, February 12-16, Chicago, IL.

Gobert, J. (2008). *The Affordances of Model-based learning: Conceptual, Phenomenological, Ontological, and Epistemological Considerations.* Discussant on Designing and Assessing Modeling and Visualization Technology-Enhanced Learning, B. Zhang, (Organizer). International Conference of the Learning Sciences, June 24-28, Utrecht, The Netherlands.

Gobert, J., Beck, J., Sao Pedro, M., Heffernan, N., & Richardson, J. (2008). *Logging as a means to track students' inquiry-based learning.* Presented as part of a symposium, Real-time methods for monitoring, evaluating, and scaffolding students' reflective inquiry in computer-supported collaborative learning environments, Giljers, H. & Kyza, E. (Organizers). International Conference of the Learning Sciences, June 24-28, Utrecht, The Netherlands.

Gobert, J., Horwitz, P., Buckley, B., & O'Dwyer, L. (2008). *Mapping a model-based learning progression from Genetics to Evolution: Representational Affordances and Epistemological Underpinnings.* Presented at the Annual Meeting of the American Educational Research Association, March 24-28, New York, NY.

Gobert, J. & Slotta, J. (Co-chairs). (2007). *Fostering Peer Collaboration with Technology.* A symposium presented at the Computer-Supported Collaborative Learning Conference, July 16-21, New Brunswick, NJ.

Gobert, J. (2007). *Fostering Collaborative model-building and peer critique on-line.* Presented at the Computer-Supported Collaborative Learning Conference, July 16-21, New Brunswick, NJ.

Gobert, J. & Slotta, J. (Co-chairs). (2007). *New learning technologies: Affordances for authoring, assessment, and research.* Presented at the Annual Meeting of the American Educational Research Association, April 9-13, Chicago, IL.

Gobert, J., Buckley, B. & Horwitz, P. (2007). *Through the looking glass and what we found there: A Logging infrastructure for investigating students' inquiry processes.* Presented at the Annual Meeting of the American Educational Research Association, April 9-13, Chicago, IL.

Gobert, J., & Schunn, C. (Co-chairs). (2007). *Supporting Inquiry Learning: A Comparative Look at What Matters.* Presented at the Annual Meeting of the American Educational Research Association, April 9-13, Chicago, IL.

Gobert, J., Buckley, B., Levy, S., & Wilensky, U. (2007). *Teasing apart domain-specific and domain-general inquiry skills: Co-evolution, bootstrapping, or separate paths?* Presented at the Annual Meeting of the American Educational Research Association, April 9-13, Chicago, IL.

Zalles, D., Quellmalz, E., Gobert, J. & Pallant, A. (2007). *Data sets and inquiry in Geoscience Education.* Presented at the Annual Meeting of the American Educational Research Association, April 9-13, Chicago, IL.

Quellmalz, E.S., DeBarger, A.H., Haertel, G., Schank, P., Buckley, B., Gobert, J., Horwitz, P., & Ayala, C. (2007). *Exploring the Role of Technology-Based Simulations in Science Assessment: The Calipers Project.* Presented at the Annual Meeting of the American Educational Research Association, April 9-13, Chicago, IL.

Gobert, J. (2007). *Using Collaborative Model-building and Peer Critique to Bootstrap Conceptual Learning and Epistemological Understanding.* Presented at the Biennial Meeting of the Society for Research in Child Development. March 29-April 1, Boston, MA.

Zalles, D., Quellmalz, E., Gobert, J., Pallant, A. (2006). *Assessing the Impact of Data-Immersive Technology-Enabled Inquiry Projects On High School Students' Understanding Of Geoscience.* Paper presented at the Annual Meeting of the American Geophysical Union, December 11-15, San Francisco, CA.

Gobert, J. & Slotta, J. (2006). (Organizers). Realizing the Potential of Educational Technology: Authoring & Assessment, and their Implications for Research and Classroom Application. Presented at the *Seventh International Conference of the Learning Sciences (ICLS),* June 27-July 1, Bloomington, IN.

Buckley, B., Gobert, J. & Horwitz, P. (2006). Using Log files to Track Students' Model-based Inquiry. Presented at the *Seventh International Conference of the Learning Sciences (ICLS),* June 27-July 1, Bloomington, IN.

Gobert, J., Buckley, B., & Horwitz, P. (2006). *Logging model-based inquiry in high school physics students*. Presented at the Annual Meeting of the National Association of Research in Science Teaching, April 3-7, San Francisco, CA.

Gobert, J., Buckley, B., & Horwitz, P. (2006). *Technology-enabled assessment of model-based learning and inquiry skills among high school physics students*. Presented at the Annual Meeting of the American Educational Research Association, April 8-12, San Francisco, CA.

Buckley, B., Gobert, J., & Horwitz, P. (2006). *Facilitating and assessing genetics learning with BioLogica*. Presented at the Annual Meeting of the American Educational Research Association, April 8-12, San Francisco, CA.

Gobert, J., Horwitz, P., Buckley, B., Mansfield, A., Burke, E., & Markman, D. (2005). *Logging Students' Model-Based Learning and Inquiry Skills in Science*. Presented at the American Association of Artificial Intelligence, July 9-13, Pittsburgh, PA.

Gobert, J., Buckley, B.C., (2005). *Logging Students' Learning with Hypermodels in BioLogica and Dynamica*. Presented at the Annual Meeting of the American Educational Research Association as part of a symposium, Leveraging on Affordances of Technology-Enhanced Models in Science (J. Gobert, Chair), April 11-15, Montreal, Canada.

Gobert, J. & Horwitz, P. (2005). *Leveraging on Affordances of Technology-Enhanced Models in Science*, Presented at the Annual Meeting of the American Educational Research Association, April 11-15, Montreal, Canada.

Gobert, J. (2005). Discussant on *International Views of Research on Learning about Models and Modeling in Science*. Presented at the National Association for Science Teaching, April 4-7, Dallas, TX.

Gobert, J. (2005). Discussant on *Learning about Models and Modeling in Science: International Views of Research Issues*. Presented at the Annual Meeting of the American Educational Research Association, April 11-15, Montreal, Canada.

Gobert, J., Buckley, B., Dede, C., Levy, S., & Slotta, J. (2005). *Technology features that support research through logging of student interactions with models*. Presented at the Winter Text Conference, January 20-23, Jackson Hole, WY.

Gobert, J., Buckley, B.C., (2004). *Learning with hypermodels: The role of scaffolding and embedded assessment*. Presented as part of an American Educational Research Association pre-conference workshop, Assessing Student Learning in Technology-Rich Environments organized by Edys Quellmalz, April 11, San Diego, CA.

Gobert, J., Buckley, B., & Clarke, J. (2004). *Scaffolding model-based reasoning: Representations, information-processing, and cognitive affordances*. Presented at the Annual Meeting of the American Educational Research Association, April 11-15, San Diego, CA.

Gobert, J. (2004). *Teaching model-based reasoning with scaffolded interactive representations: cognitive affordances and learning outcomes*. Presented at the National Association for Science Teaching, April 1-4, Vancouver, B.C.

Gobert, J. (2004). *Harnessing technology to support on-line model building and peer collaboration*. Presented at Teaching Geoscience with Visualization Workshop, February, Northfield, MN.

Gobert, J. (2002). *Summarizing, Explaining, and Diagramming: The Differential Effects on Reading Times, Text-Base Representations, and Mental Models of Science Text*. Presented at the Winter Text Conference, January 25-28, Jackson Hole, WY.

Gobert, J., Horwitz, P., Tinker, B., Buckley, B., Wilensky, U., Levy, S., and Dede, C. (2003). *Modeling Across the Curriculum: Scaling up Modeling Using Technology*. Presented at the Annual Meeting of the Cognitive Science Society, July 31-August 2, Boston, MA.

Gobert, J. (2003). *Collaborative Model-Building and Peer Critique On-line*. Presented at the Annual Meeting of the Cognitive Science Society, July 31-August 2, Boston, MA.

Gobert, J. (2003). *Students' Collaborative Model-Building and Peer Critique On-line*. Presented at the National Association for Research in Science Teaching, March 23-26, Philadelphia, PA.

Gobert, J., Slotta, J., & Pallant, A. (2002). *Collaborative Model-Building and Peer Critique via the Internet*. Presented at the International Conference of the Learning Sciences, October 23-26, Seattle, WA.

Gobert, J. Slotta, J. & Pallant, A. (2002). *Inquiry Learning Through Students' East-West Coast Collaboration*. Presented at the National Association for Research in Science Teaching, April 7-11, New Orleans, LA.

Gobert, J., Snyder, J., & Houghton, C. (2002). *The influence of students' understanding of models on model-based reasoning*. Presented at the Annual Meeting of the American Educational Research Association, April 1-5, New Orleans, LA.

Gobert, J. Slotta, J. & Pallant, A., Nagy, S. & Targum, E. (2002). *A WISE Inquiry Project for Students' East-West Coast Collaboration*, Presented at the Annual Meeting of the American Educational Research Association, April 1-5, New Orleans, LA.

Gobert, J. & Slotta, J. (2002). *Collaborative Learning Technologies: Representations, Content Learning, & Cultural Context*. Symposium presented at the Annual Meeting of the American Educational Research Association, April 1-5, New Orleans, LA.

Gobert, J. (2002). *Summarizing, Explaining, and Diagramming: The Differential Effects on Reading Times, Text-Base Representations, and Mental Models of Science Text*. Presented at the Winter Text Conference, January 25-28, Jackson Hole, WY.

Slotta, J., Linn, M.C., Gobert, J. & Pallant, A. (2002). *Collaborative Design of WISE Collaborative Inquiry Curriculum: A Case Study*. Presented at Computer Supported Collaborative Learning Conference, January 7-11, Boulder, CO.

Gobert, J. and Pallant, A. (2001). *Making Thinking Visible: Promoting Science Learning through Modeling and Visualizations*. Presented at the Gordon Research Conference, Mt. Holyoke College August 5-10, S. Hadley, MA.

Gobert, J. (2001). *The Use of a Web-based Science Inquiry Environment (WISE) for Modeling, Visualization, and On-line Collaboration*. Presented at Image & Meaning, Massachusetts Institute of Technology, June 10-13, Cambridge, MA.

Gobert, J. (2001). *Summarizing, Explaining, and Diagramming: The Differential Effects on Reading Times, Text-Base Representations, and Mental Models*. Accepted for presentation at the Annual Meeting of the American Educational Research Association, April 10-14, Seattle, WA. * not presented due to family emergency.

Gobert, J. (2000). *Making Thinking Visible: Promoting Students' Model-Building And Collaborative Discourse In WISE*. Presented at the Center for Innovative Learning Technologies, October 26-19, Tysons Corner, VA.

Staudt, C. & Gobert, J. (2000). *Kids and Palms*. Presented at the Water Quality Summit Meeting. University of Michigan, January 13-16, Ann Arbor, MI.

Gobert, J. (1999). *Expertise in the comprehension of architectural plans: Contribution of representation and domain knowledge*. Presented at the Visual Spatial Reasoning and Design Conference, Massachusetts Institute of Technology, June 15-17, Cambridge, MA.

Gobert, J. (1999). *Investigating students' models and model-based reasoning in plate tectonics*. Presented at the National Science Foundation, REPP Principal Investigators' Meeting, June 3-4, Arlington, VA.

Gobert, J. (1998). *A typology of models for plate tectonics: Inferential power and barriers to understanding*. Presented at the Annual Meeting of the American Educational Research Association, April 13-18, San Diego, CA.

Gobert, J. (1997). *Summarizing, Explaining, and Diagramming: The Differential Effects on Text-Base Representations and Mental Models*. Presented at the Nineteenth Annual Meeting of the Cognitive Science Society, Stanford University, August 7-10, Palo Alto, CA.

Gobert, J. & Discenna, J. (1997). *The relationship between students' epistemologies and model-based reasoning*. Presented at the Annual Meeting of the American Educational Research Association, March 24-28, Chicago, IL.

Gobert, J. (1997). *The effects of summarizing, explaining, and diagramming on text-base representations and mental models*. Presented at the Eighth Annual Winter Text Conference, January 18-24, Jackson Hole, WY.

Gobert, J. (1996). *Drawing to Learn: Fostering children's model-based reasoning through student-generated diagrams*. Presented at the Fall Meeting of the National Academy of Education, October 24-25, Chicago, IL.

Gobert, J. (1995). *Model-based reasoning by fifth graders about plate tectonics*. Presented at the Annual Meeting of the American Educational Research Association, April 18-22, San Francisco, CA.

Gobert, J. (1995). *The use of text to facilitate search and integration processes from complex graphics*. Presented at the Annual Meeting of the American Educational Research Association, April 18-22, San Francisco, CA.

Gobert, J. (1995). *Diagramming versus summarizing during reading: The effects on the propositional and mental model representations*. Presented at the Sixth Annual Winter Text Conference, January 28-February 4, Jackson Hole, WY.

Gobert, J. (1995). *Text as a processing aid to complex graphics: The effects on mental model representations*. Presented at the Sixth Annual Winter Text Conference, January 28-February 4, Jackson Hole, WY.

Gobert, J. & Clement, J. (1994). *Promoting causal model construction in science through student-generated diagrams*. Presented at the Annual Meeting of the American Educational Research Association, April 4-8, New Orleans, LA.

Gobert, J. (1993). *The comprehension of complex graphics: Facilitating effects of text on integration and inference-making*. Presented at The Fifteenth Annual Meeting of the Cognitive Science Society. University of Colorado at Boulder, June 18-21, Boulder, CO.

Gobert, J. & Coleman, E.B., Scardamalia, M. & Bereiter, C. (1993). *Fostering the development of children's graphical representation and causal/dynamic models through CSILE*. Presented at the Annual Meeting of the American Educational Research Association, April 12-16, Atlanta, GA.

Gobert, J. & Coleman, E.B. (1993). *Using diagrammatic representations and causal explanations to investigate children's models of continental drift*. Presented at the Biannual Meeting of the Society of Research in Child Development, March 25-28, New Orleans, LA.

Gobert, J. (1992). *Reasoning and inference-making with architectural plans*. Spring Symposium on Reasoning with Diagrammatic Representations. Presented at the American Association for Artificial Intelligence, Stanford University, March 25-27, Stanford, CA.

Gobert, J. (1991). *The use of text to enhance the understanding of graphic information sources*. Presented at the Canadian Psychological Association, June, Calgary, Alberta.

Gobert, J. (1991). *Architecture in the year 2000: The challenge of change*. Invited speaker for the annual meeting of the Royal Architectural Institute of Canada, Toronto, Canada.

Gobert, J. & Frederiksen, C. (1989). *Expert and novice semantic interpretation of architectural drawings*. Presented at the Annual Meeting of the American Educational Research Association, March, San Francisco, CA.

Gobert, J. & Frederiksen, C. (1988). *The comprehension of architectural plans by expert and sub-expert architects*. Presented at the Tenth Annual Meeting of the Cognitive Science Society, August 17-19, Montreal, Canada.

Patent Applications

Gobert, J. & Toto, E. (February 22, 2013). *An Instruction System with Eyetracking-based Adaptive Scaffolding.* US Patent Application no. 13/774,981.

Gobert, J., Baker, R.S., & Sao Pedro, M. (January 29, 2014). *Inquiry Skills Tutoring System.* US Patent Application no. 14/167,215.

Software, Curriculum, and Assessment Development Products

The Science Assistments project (NSF-DRL# 0733286; NSF-DGE# 0742503; US Dept. of Ed. #R305A090170) has developed the following microworlds:
- **Microworlds for Physical Science:** State Change, Density, Density (Displacement), Mass & Weight, Conservation of Energy (1 ball); Conservation of Energy (2 balls), Parabolic Motion, Simple Machines, Elastic Collisions, Pendulum Properties, & Ramps
- **Microworlds for Life Science:** SimCell, Bug's Life, Ecosystems, Evolife (under development)
- **Microworlds for Earth Science:** Earth's Tilt, Seasons, Structure of Earth & Convection, Mountain Formation, & Volcanic Eruption

The Modeling Across the Curriculum (mac.concord.org; NSF-REC# 0115699) developed three *technology-based software tools* and accompanying formative assessments and performance assessments for:
- BioLogica (Genetics)
- Dynamica (Newtonian Mechanics)
- Chemica (Gas Laws)
- Pedaogica, a technology infrastructure for logging all students' interactions with models.

    Links to downloads for each of the software tools can be found at http://mac.concord.org.

The Inquiry with Geoscience Datasets Project (DIGS; http://digs.sri.com/; NSF-GEO# 0507828) developed:
- *technology-based curricular units* on Plate Boundaries and Climate Change for middle and high school students.
- *assessment modules* for evaluating both students' content knowledge and inquiry skills as outlined by the National Science Education Standards (NSES), the American Association for the Advancement of Science (AAAS), and the Massachusetts Curricular Frameworks in each of the content areas.
Links to curricular and assessment modules can be found at http://digs.sri.com.

The Calipers: Multi-Level Assessments of Science with Technology (http://wested.org/calipers; NSF-ESI# 0454772) developed a series of stand alone*, technology-based formative assessments* for teachers to assess students' content knowledge and inquiry skills in the domains of Physical Science and Life Science. The modules for Physical Science (Forces and Motion) are:

- Estimating Time Challenge
- Frozen Lake Challenge
- Prairie Dog Pasture Challenge
- Sloping Hill Challenge
- Cliff Rescue Challenge
- Beaver Creek Challenge
- Pole Maneuver Challenge

    The modules for Life Science (Populations and Ecosystems) are:
- Classification and Food Webs
- Ecosystem Simulation

Links to these assessment modules can be found at http://www.wested.org/calipers.

The Making Thinking Visible: Promoting Students' Model-Building And Collaborative Discourse In WISE (NSF-REC# 9980600) developed a curricular unit for Plate Tectonics for middle and high school students called "What's on your plate?" which was implemented in an existing technology portal developed at UC-Berkeley, called WISE (Web-based Inquiry Science Environment).

Professional Society Memberships and Offices

Member, European Association for Research in Education

Member, American Educational Research Association

Member, Cognitive Science Society

Member, International Society for the Learning Sciences

Member, Computer-Supported Collaborative Learning

Member, National Association for Research in Science Teaching

Member, Educational Data Mining Society

Member, AI in Education Society

Editorial Boards & Referee Activities

North American Editor, *International Journal of Science Education*, 2001-2006

Reviewer, *Journal of Science Education and Technology*

Reviewer, *International Journal of Science Education*

Reviewer, *Journal of the Learning Sciences*

Reviewer, *Cognition & Instruction*

Reviewer, *Cognitive Science*

Reviewer, *American Education Research Journal*

Reviewer, *Review of Educational Research*

Reviewer, *Journal of Research in Science Teaching*

Reviewer, *National Science Foundation*

Reviewer, *US Dept. of Education*

Reviewer, *Israel Science Foundation*

Reviewer, *Ministry of Education, Singapore*

Reviewer, *Netherlands Organisation for Scientific Research*

Honors, Awards, and Other Recognition Related to Scholarship

Sao Pedro, M., Baker, R., & Gobert, J. (2012). Improving Construct Validity Yields Better Models of Systematic Inquiry, Even with Less Information. In Proceedings of the 20th Conference on User Modeling, Adaptation, and Personalization (UMAP 2012). Montreal, QC, Canada. **James Chen Best Student Paper Award**

Sao Pedro, M.A., Gobert, J., Baker, R.S.J.d. (2012). *The Development and Transfer of Data Collection Inquiry Skills across Physical Science Microworlds*. Paper presented at the American Educational Research Association Conference. **Best Student Paper Award, American Educational Research Association Conference, SIG on Advanced Learning Technologies.**

Raziuddin, J.R., Gobert, J., Sao Pedro, M. A., Baker, R.S.J.d. (2012). *Validating an EDM Detector for*

Autoscoring Designing and Conducting Experiments Inquiry Behaviors. Presented at WPI Graduate Research Achievement Day. **1st Place Social Sciences & Business Category.**

Tied for 1st place for Best Interactive Event at the 10th International Conference on Intelligent Tutoring Systems. Carnegie-Mellon University, June 14-18, 2010, Pittsburgh, PA. Gobert, J.D., Montalvo, O., Toto, E., Sao Pedro, M., & Baker, R.S.J.d. (2010). *The Science Assistments Project: Scaffolding Scientific Inquiry Skills*.

Featured on the Digital Library for Earth System Education website (www.dlese.org), January 2008. The DIGS Project (NSF-GEO# 0507828; J. Gobert, Co-PI).

What's on your plate curriculum highlighted in video series *Essential Science for Teachers: Earth and Space Science*, by Harvard-Smithsonian Center for Astrophysics, Science Media Group, Annenberg/CPB Project (2004).

Research Development Award, Western Michigan University. Awarded August 1997.

Dean's Appreciation Award, Western Michigan University. Awarded December 1996.

Ontario Graduate Scholarship for Doctoral Studies. May 1991 - May 1992; total award- $11,300.00

University of Toronto Entrance Scholarship. September 1989 - May 1991; total award- $17,500.00

Awards & Press Releases

Cited in Education Week, October 9, 2013 http://www.edweek.org/ew/articles/2013/10/09/07sree.h33.html

Coleman Fellow, Coleman foundation faculty entrepreneurship fellows program, 2013-2014

Sigma Xi Senior Researcher Award, April 2, 2012

Cited in Science Magazine, August 2011: 1167
   podcast can be found at: http://podcasts.aaas.org/science_podcast/SciencePodcast_110826.mp3

WPI press release, September 7, 2011, Janice Gobert cited in Science Magazine and its weekly podcast- **http://www.wpi.edu/news/perspectives/139499.htm**

Innovation is key in WPI competition. The Worcester Telegram, April 1, 2011. –announcement that my doctoral student, Michael Sao Pedro, won 2nd place at the annual innovation competition.

Kerry Announces Massachusetts To Receive Additional $38 Million In Science Investments. http://kerry.senate.gov/press/release/?id=ebd5aacc-bd95-42b3-8a0b-fe6b76ac2a04, August 2, 2010.

WPI gets $1.5 million for science tutoring. The Boston Globe, January 10, 2008.

WPI Team gets $1.5 M for Computer Tutor. Worcester Business Journal, January 9, 2008.

WPI wins $1.5 M in fed funding for tutoring tech. Mass High Tech: the Journal of New England Technology, January 9, 2008.

$7 Million Research Study Will Assess the Impact of Technology on Student Learning. The Boston Globe, November 6, 2001.

Teaching Experience

Associate Professor February 2012- present	Social Sciences and Policy Studies Worcester Polytechnic Institute Chair: Dr. James Doyle
Associate Professor, Tenure Track Fall 2007- 2012	Social Sciences and Policy Studies Worcester Polytechnic Institute Chair: Dr. James Doyle
Visiting Associate Professor August 2006- June 2007	Social Sciences and Policy Studies Worcester Polytechnic Institute Chair: Dr. Khalid Saeed
Adjunct Associate Professor August 2005- October 2005	Social Sciences and Policy Studies Worcester Polytechnic Institute Chair: Dr. Khalid Saeed
Part-time Faculty January 2000- December 2000	Education Department Tufts University Chair: Dr. Analucia Schliemann
Assistant Professor January 1996- April 2000	Department of Science Studies Western Michigan University Chair: Dr. Larry Oppliger *on leave at Harvard from 1998-2000

Teaching Innovations at WPI

July 2010- Present	Co-Director, *Learning Sciences & Technology Graduate Program* with Neil Heffernan
Fall 2013	Developed SS590 *Educational Innovations: challenges and opportunities* as Coleman Professor of Innovation
August 2010	Developed PSY 502 *Learning Environments in Education* for LS&T Graduate program
August 2009	Developed PSY 501 *Foundations of Learning Sciences* for LS&T Graduate program
August 2009	Redesigned PSY 2401 *Educational Psychology* for SSPS Undergraduate Psychology program
July 2007- May 2010	Co-Creator, *Learning Sciences & Technology Graduate Program* with Neil Heffernan

Courses Taught

Courses Taught at WPI (Undergraduate & Graduate)

2013-2014	PSY 501 *Foundations of Learning Sciences* for LS&T Graduate program SS590 *Educational Innovations: challenges and opportunities* (Coleman course) ISG *Big Data in Education*

2012-2013	PSY 1401 *Cognitive Psychology* for SSPS U/G Psychology program
2011-2012	PSY 2401 *Educational Psychology* for SSPS U/G Psychology program
	PSY 501 *Foundations of Learning Sciences* for LS&T Graduate program
2010-2011	PSY 1401 *Cognitive Psychology* for SSPS U/G Psychology program
	PSY 502 *Learning Environments in Education* for LS&T Graduate program
2009-2010	PSY 2401 *Educational Psychology* for SSPS U/G Psychology program
	PSY 501 *Foundations of Learning Sciences* for LS&T Graduate program
	PSY 1401 *Cognitive Psychology* for SSPS U/G Psychology program
2008-2009	PSY 1401 *Cognitive Psychology* for SSPS U/G Psychology program
	PSY 1400 *Introductory Psychology* for SSPS U/G Psychology program
2006-2007	PSY 1401 *Cognitive Psychology* for SSPS U/G Psychology program (B & C)
	PSY 1400 *Introductory Psychology* for SSPS U/G Psychology program
2005-2006	PSY 2401 *Educational Psychology* for SSPS U/G Psychology program

Courses Developed and Taught at Other Universities

Research Methods in Science Education: This seminar course is designed to provide Masters and Doctoral students with essential research design knowledge and methodological skills necessary to carry out research on learning in complex domains such as science. Taught at Tufts University in 2000.

Development of Knowledge and Reasoning in the Science Curriculum: This graduate seminar course covers multiple perspectives on the development of scientific knowledge and reasoning. Students enrolled in the course are required to conduct a review of the literature in their respective content areas and to develop either a curriculum plan for a unit or to conduct and analyze a series of interviews with middle or high school students. Taught at Tufts University in 2000.

Science Education Research in the Mental Models Tradition: The first half of this graduate course focuses on theoretical issues of mental models. The second part of the course focuses on the review and critique of current journal papers in Science Education that utilize the mental models framework. Taught at Western Michigan University.

Models of Learning and Teaching: These courses cover theoretical models of learning, starting with the philosophical influences of Plato and Aristotle, and progressing through Behavioristic models (and their downfall), Constructivist views, including Piaget and Vygotsky, and contemporary approaches, including Situated Cognition and Information-Processing models of learning. Taught at Western Michigan University.

Cognitive Science - Foundations and Theoretical Issues: The course covers a broad range of cognitive science issues: philosophical and psychological foundations, experimental methods employed, including computational approaches. The second part of the course includes specialty topics, such as knowledge representation, memory, problem-solving, expertise, language processing, and vision. Taught at Western Michigan University.

Undergraduate Projects Advised and Co-Advised at WPI

2013   Interactive Qualifying Projects

Studying Knowledge Acquisition with Text and Graphics in Economics Using Eye-Tracking. Adrian Oyola, Cem Usal, & Tam Vin, A term '13-D term '14; Co-supervised with Alexander Smith

2011   Major Qualifying Projects

An Intelligent Tutoring System With Eye-Tracking-Based Scaffolding. Zakkai Rogoff; Co-supervised with Professor David Brown

The Effects Of Music With And Without Words On Knowledge Acquisition From Text And Simulations: An Eye-Tracking Study. Lisa Rossi; Co-supervised with Professor Frederick Bianchi

2011   Interactive Qualifying Projects

Developing a Chemistry Microworld. Somi Hur, Janelle McLaughlin, & Catherine Waple, B term '11- D term '12

Eye-tracking for Science Learning. Eric Levin, Nicholas Mole, Michael Brigham, A term '11-A- term '12

Scaffolding For An Ecosystem Microworld. Concetta Boschetto, Alec Mitnik; Co-supervised with Professor Joe Beck, completed

Science Assistments: The Development And Testing Of An Interactive Microworld For Seasons Within A Middle School Environment. James Salvati, Ethan Wolfe; Co-supervised with Professor Ryan Baker, completed

2010   Interactive Qualifying Projects

Science Assistments: Tutoring Middle School Students' Inquiry Skills In The Domain Of State Change. Steven Michael DiTullio

Developing And Testing Microworld-Based Assessments For Physical Science. Migdoel Alvarado, Lucas A Lorditch, Sean McCauley, Jared Parks Drake, Meng Sun, Jacob Tanenbaum

Developing And Testing A Density Microworld. Catherine Elizabeth Danko, James A Lawrence, Raha Moussavi-Aghdam, Samantha Lillian Wentzell

Developing Technology-Based Biology Assessments For Cell Structures And Functions. Krista Marie Baker, Sana Hashmi, Fioleda Prifti

2009   Interactive Qualifying Projects

Science Assistments Coding Scheme For Open Response Items. Patrick S. Sebuwufu

Science Assistments: Creation Of Engaging Visual Objects For Microworlds. David Craig Embree

Assessment Of The Impacts Of Bioplastics: Energy Usage, Fossil Fuel Usage, Pollution, Health Effects, Effects On The Food Supply, And Economic Effects Compared To Petroleum Based Plastics. Brian Momani; Co-Supervised with Professor Robert Thompson

2008   Interactive Qualifying Projects

Science Assistments: Tutoring Inquiry Skills In Middle School Students. Jacqui Ohara Richardson

2007   Interactive Qualifying Projects

Technology In Geoscience Education. Jillian Daniels

2006   Major Qualifying Project

A Pilot Study Of Methods In The Online Socratic Tutoring Of Calculus. Nathan Krach; Co-supervised with Professor Neil Heffernan

Current & Past Graduate Theses and Dissertations Advised at WPI

Current Graduate Students

Kyle Cheney	Learning Sciences, Ph.D. student, 2013-present
Ozge Yasar	Learning Sciences, Ph.D. student, 2013-present
Raha Moussavi	Learning Sciences, Ph.D. student, 2013-present
Maura Ferrarini	Learning Sciences, M.S. student, 2013-present
Mike Kennedy	Science Education, M.S. student, 2013-present
Ermal Toto	Learning Sciences, Ph.D. student, part-time, 2009-present

Former Graduate Students Advised at WPI

Michael Sao Pedro	Learning Sciences, Ph.D., 2007-2013
Juelaila Raziuddin	Learning Sciences, M.S., 2009-2013
Michael Wixon	Learning Sciences, M.S., co-supervised by R. Baker, 2010-2013
Jonathan Legare	Mathematical Sciences, M.S. student, co-supervised by R. Kim, 2008-2010
Nathan Krach	left program before completing M.S. degree, 2008-2010
Matthew Bachmann	Computer Science, M.S. student, co-supervised by J. Beck, 2009-2012
Adam Nakama	Learning Sciences, M.S. student, co-supervised by R. Baker, 2009-2011 (withdrew)
Orlando Montalvo	Learning Sciences, Ph.D. student, part-time, 2010-2012 (withdrew)
Cameron Betts	Learning Sciences, M.S. student, 2010-2012
Zakkai Rogoff	Learning Sciences, M.S. student, 2011-2012 (withdrew)

Staff Supervised at WPI

December 2013-Present	Mike Sao Pedro, Ph.D., Research Scientist
July 2013-present	Mike Brigham, B.Sc., Software Engineer
July 2011-August 2012	Lisa Rossi, B.Sc., Research Analyst
September 2010-2012	Arnon Hershkovitz, Ed.D. Post Doctoral Associate
July 2009-present	Ermal Toto, M.Sc., Software Engineer
April 2009-Feb 2012	Orlando Montalvo, M.Sc., Software Engineer
April 2010-May 2011	Krista Baker, B.Sc., Research Assistant
February 2011-June 2011	Samantha Allen, B.A., Administrative Assistant

Former Doctoral Students at Western Michigan University

Jennifer Discenna Snyder, Ph.D.
    Associate Professor, Physical Science
    Delaware County Community College, Pennsylvania (Role: Advisor)

Linda Goossen, Ph.D.
    MT (ASCP), Associate Professor & Director, Clinical Laboratory Science
    Grand Valley State University, Michigan (Role: Committee Member)

Keith Schramm, Ph.D.
    Associate Professor of Chemistry Education,
    Harding University, Arkansas (Role: Committee Member)

Drew Isola, Ph.D.
    Teacher in Residence
    Western Michigan University, Michigan (Role: Committee Member)

Chokchai Usawinchai, Ph.D.
    Currently employed in the area of assessment in Thailand
    http://www.ipst.ac.th/eval_standard/staff.asp (Role: Committee Member)

Former Graduate Interns/ Graduate Research Assistants at Concord Consortium

Name	Current place of employment
Brian Nelson, D.Ed.	Associate Professor at Arizona State University
Jody Clarke, D.Ed.	Research Associate, MIT
Alfonso Lam, Ph.D.	Post-Doc, Boston University
Sandra Nagy, M.A.	Pearson Education, Inc., Toronto, Canada
Elliot Targum, M.A.	Head of middle school programs, Exploration Summer Programs
Harold Kingsbury, M.Ed.	High school teacher, Maine
Brandy Schmirer, MAT	Middle school teacher, Acton, MA
Tracy Gilroy, MAT	High school teacher, North Andover, MA
Jessica Epstein Baron, MAT	Educational Consultant
Fernando Diaz del Castillo, M.Ed.	Director of Technology in Education, Gimnasio La Montana, Colombia

Former Undergraduate Interns/ Research Assistants at The Concord Consortium

Name	Home University
Nathaniel Putnam, B.A.	Hampshire College, Amherst, MA
Ayisha Fullerton, B.Sc.	Norfolk State University, Norfolk, VA
Jackie Scobo, B.A.	Northeastern University, Boston, MA

Honors, Awards, & Other Recognition Related to Teaching

2014   **3rd Place, Social Sciences & Business Category, PhD Level, WPI Graduate Achievement day**. Ozge Yasar, Using eye-tracking to measure students' knowledge acquisition processes from text and graphics.

2nd Place, Social Sciences & Business Category, PhD Level, WPI Graduate Achievement day. Raha Moussavi-Aghdam, Developing and Testing the Effects of Real-Time Scaffolding of Science Inquiry Skills Used During Data Interpretation

3rd Place, Social Sciences & Business Category, Master's Level, WPI Graduate Achievement day. Maura A. Ferrarini, Simcell: Assessing and Honing Students' Inquiry with a Plant Cell Simulation

2012   **James Chen Best Student Paper Award. Sao Pedro, M.**, Baker, R., & Gobert, J. (2012). Improving Construct Validity Yields Better Models of Systematic Inquiry, Even with Less Information. To appear in Proceedings of the 20th Conference on User Modeling, Adaptation, and Personalization (UMAP 2012). Montreal, QC, Canada.

Best Student Paper Award, American Educational Research Association Conference, SIG on Advanced Learning Technologies. Sao Pedro, M.A., Gobert, J., Baker, R.S.J.d. (2012). *The Development and Transfer of Data Collection Inquiry Skills across Physical Science Microworlds*. Paper presented at the American Educational Research Association Conference.

1st Place Social Sciences & Business Category. Raziuddin, J.R., Gobert, J., Sao Pedro, M. A., Baker, R.S.J.d. (2012). *Validating an EDM Detector for Autoscoring Designing and Conducting Experiments Inquiry Behaviors*. Presented at WPI Graduate Research Achievement Day.

2011 **1st Place, Social Sciences & Business Category, WPI Graduate Achievement day**. Michael Sao Pedro, *Assessing And Predicting Systematic Inquiry Skills Within An Intelligent Tutoring System For Middle School Science*.

3rd Place, Social Sciences & Business Category, WPI Graduate Achievement day. Juelaila Raziuddin, *The Influence Of Learner Characteristics On Conducting Scientific Inquiry Within Microworlds*.

2nd Place, WPI Innovation Competition, 2011. Michael Sao Pedro, *Assessing And Predicting Systematic Inquiry Skills Within An Intelligent Tutoring System For Middle School Science*.

2010 **Tied for 1st Place Young Researcher's Track at 10th International Conference on Intelligent Tutoring Systems. June 14-18, 2010, Pittsburgh, PA**. Michael Sao Pedro, *Long-Term Benefits Of Direct Instruction With Reification For Learning The Control Of Variables Strategy*.

1st Place, Social Sciences & Business Category, WPI Graduate Achievement day. Ermal Toto, *Development Of Tools To Support Students' Inquiry*.

2nd place, Social Sciences & Business Category, WPI Graduate Achievement day. Adam Nakama, *Visualizing And Coding Student Inquiry Behaviors In Science Assistments*.

3rd place, Social Sciences & Business Category, WPI Graduate Achievement day. Juelaila Raziuddin, *Characterizing Students' Inquiry Skills In The Context Of A Microworld: Triangulating Evidence From Log Files, Inquiry Skills Surveys, And Open Response Questions*.

2010 **Best SSPS Interactive Qualifying Project**. Catherine Danko, Samantah Wentzell, Raha Moussavi-Aghdam, & James Lawrence, *Developing And Testing A Density Microworld*.

2006 **Provost's award for exemplary supervision of a Major Qualifying Project**. Nathan Krach, *A Pilot Study Of Methods In The Online Socratic Tutoring Of Calculus*.

Work Experience other than Teaching

Co-Director LS&T	SSPS, CS, & Mathematical Sciences
July 2010-	Worcester Polytechnic Institute
present	Co-Director: Dr. Neil Heffernan
Senior Research Scientist	The Concord Consortium
January 2000-	President: Dr. Robert Tinker
June 2007	
Research Associate	Department of Learning and Teaching
May 1999-	Harvard University
December 2002	Sponsor: Dr. Robert Kegan
Visiting Scholar	Department of Learning and Teaching
July 1998-	Harvard University
May 1999	Sponsor: Dr. Judah Schwartz

Post-Doctoral Research Associate
Scientific Research Reasoning Institute
May 1994-
University of Massachusetts, Amherst
December 1995
Project Director: Dr. John Clement

Research Associate
Scientific Research Reasoning Institute
September 1992-
University of Massachusetts, Amherst
May 1994
Project Director: Dr. John Clement

Research Assistant
Centre for Applied Cognitive Science
September 1989-
University of Toronto
April 1992
Heads: Dr. C. Bereiter & M. Scardamalia

Research Assistant
Lab. of Applied Cognitive Science
January 1986-
McGill University
May 1989
Project Head: Dr. C. Frederiksen

Research Assistant
McGill Giftedness Centre
September 1985-
McGill University
December 1985
Project Head: Dr. B. Shore

Statistics Consultant
Reading Centre
October 1988-
McGill University
March 1989
Director: Dr. M. Maguire

Statistics Consultant
Centre for Ethnographic Studies
Sept. 1987-December 1987
McGill University
Feb. 1987-April 1987
Project Head: Dr. T. Eisemon

Teaching Assistant
Course: Educational Media
January 1988-April 1988
McGill University
September 1987-December 1987
Professors: Dr. R. Boulianne/ B. Wilson

Teaching Assistant
Course: Introductory Psychology
September 1984-
Laurentian University
April 1985
Professor: Dr. E. Levin

Consultancies

DePaor, D., Whitemeyer, S., & Watson-Papelis, G. *Collaborative research: Virtual 4-D Field Education in Google Earth.* Proposal funded September from the National Science Foundation (NSF-GEO # 1034643).

DePaor, D., Whitemeyer, S., & Bailey, J. *Collaborative research: Scaffolding undergraduate geoscience inquiry using new loggable Google Earth explorations.* Proposal funded September from the National Science Foundation (NSF-DUE#1022755).

<div align="center">SERVICE</div>

Service to Profession (organizations)

Journal Reviewing/Editorships

- Guest Reviewer, *Journal of the Learning Sciences*
- Guest Reviewer, *Journal of Educational Data Mining*
- Reviewer, *Journal of Science Education and Technology*
- Reviewer, *International Journal of Science Education*
- Reviewer, *Journal of the Learning Sciences*
- Reviewer, *Cognition & Instruction*
- Reviewer, *Cognitive Science*
- Reviewer, *American Education Research Journal*
- Reviewer, *Review of Educational Research*
- Reviewer, *Journal of Research in Science Teaching*
- Reviewer, *Educational Researcher*
- Reviewer, *Science Education*
- Reviewer, *Instructional Science*
- North American Editor, *International Journal of Science Education*, 2001-2006

Proposal Reviewing

- Reviewer, *US Department of Education*
- Reviewer, *National Science Foundation*
- Reviewer, *Israel Science Foundation*
- Reviewer, *Ministry of Education, Singapore*
- Reviewer, *Ministry of Education, The Netherlands*

Conference Reviewing/Steering Committees

- Senior Review Committee, *Int. Conference of the Learning Sciences,* 2014
- Program committee, *Learning Analytics and Knowledge*, 2014
- Program committee, *Educational Data Mining,* 2013
- Program Co-Chair for *American Educational Research Association,* Division C, Section 5- Learning Environments, 2012
- Moderator, *Cognitive Science*, 2011
- Intelligent Tutoring Systems, Program committee, 2011
- Program Chair for *Int. Conference of the Learning Sciences,* 2010
- Reviewer, Doctoral Consortium, *Int. Conference of the Learning Sciences*, 2010
- Convener, *Understanding What Our Geoscience Students Are Learning: Observing and Assessing.* Science Education Resource Center, Carleton College, Northfield, MN, May 12-14, 2005
- Steering Committee, *Int. Conference of the Learning Sciences,* 2002

Advisory Boards

- NAEP Science Interactive Computer Task (ICT) Standing Committee Meeting, 2012 - present
- Dr. Brian Dorn (PI), Kevin Ball (Co-PI), and Larissa Schroeder (Co-PI), NSF-EXP: Exploring Spatial-Temporal Anchored Collaboration in Asynchronous Learning Experiences, 2013-present
- Dr. Lei Liu, Educational Testing Service, Cognitively-based Assessment of, for, and as Learning (CBAL) Science, 2012
- Dr. Charles (Aaron) Price, American Association of Variable Star Observers, NSF-ISE, 2011-present
- Dr. Albert Corbett, Carnegie Mellon University. NSF- REESE project, 2010 – present
- Dr. Kim Kastens, Lamont Observatory, Columbia University, Professional Development to Improve the Spatial Thinking of Earth Science Teachers and Students, NSF GeoScience education grant. 2011-present
- Dr. Gayle Dana, Desert Research Institute, Reno, NV, NSF-EPSCOR consortium project, September 2009 – 2012
- Dr. Susan Yoon, University of Pennsylvania, NSF-ITEST project, June 2008 – 2012
- Dr. G. Michael Barnett, Boston College, NSF-ITEST project, June 2008 – 2012

Other

- External Examiner, McGill University Ph.D. Candidate, Sandrine Turcotte, *Computer-supported collaborative inquiry in remote networked schools*. January 2009

Service to Department and University

Service to WPI

- Faculty Advisory Council, WPI's innovation and entrepreneurship strategic initiatives
- President-appointed member, Search Committee Vice Provost for Research, 2013
- Faculty Review Committee, 2013-present
- Presenter, Dr. Jerome Schaufeld's Innovation series, November 2011
- Presenter, Dr. Jerome Schaufeld's Innovation series, January 2011
- Presenter, New Faculty Orientation, August 2009 – August 2010
- Member, Campus Judicial Board, August 2008 – May 2010; August 2010 – present
- Presenter, WPI Board of Trustees meeting, February 2010
- Member, Committee for Outstanding Women's Achievement Awards, 2010
- Presenter, IGSD Brown Bag Lunch Seminar, February 2009

Service to SSPS Department

- SSPS Research Coordinator –finding and sending RFPs compatible with the mission of the department and respective faculty members. January 2009-present
- Organizer, Colloquia SSPS Dept,
    Davide Fossatti, Ph.D. Candidate, Universtiy of Illinois-Chicago, March 2009
    Dr. Brian White, University of Massachusetts-Boston, February 2009
    Dr. Michael Jacobson, Nanyang Technological Institute, Singapore
- Member, Oral Exam Committee for System Dynamics graduate student Ken Parsons, Spring 2007

Service to Learning Sciences & Technologies Program

- Co-Director of LS&T, June 2010 – present
- Organizer, Learning Sciences Seminar & Speaker Series, 2010 – 2011. Speakers include:

  Dr. David Hammer, Tufts University, February 2011
  Dr. Florencia Anggorro, Holy Cross, January 2011
  Dr. Benjamin Jee, Holy Cross, December 2010
  Dr. Arnon Hershkovitz, LS&T Program, WPI, November 2010

- Organizer, Learning Sciences Seminar & Speaker Series, 2009–2010. Speakers included:

  Dr. Eric Klopfer, Massachusetts Institute of Technology, March 2010
  Dr. Bev Woolf & Dr. Ivon Arroyo, UMass Amherst, February 2010
  Dr. Kate McNeill, Boston College, February 2010
  Dr. Jody Clarke-Midura, Harvard University, January 2010
  Dr. Neil Heffernan, WPI, November 2009
  Dr. Allan Collins, Professor Emeritus, Northwestern University, October 2009
  Dr. Janice Gobert, WPI, September 2009
  Dr. Brian White, UMass Boston, September 2009

- Organizer, colloquium series on the Learning Sciences, 2008 – 2009. Speakers included:
  Dr. Chris Dede, Harvard University
  Dr. David Pritchard, Massachusetts Institute of Technology
  Dr. Janice Gobert, WPI

- Co-Chair, Search Committee for the LS&T faculty search, 2008

- Co-author with N. Heffernan, J. Beck, M. Gennert, J. Doyle, Proposal to Dr. Berkey for an Interdisciplinary Learning Sciences graduate program, June 2008

Service to Students at WPI

- Presenter, IQP Fair, 2009 – 2011
- Judge, Graduate Achievement Day, 2009 – 2010
- 1996-1998   Developed and directed an inter-departmental faculty seminar on Cognitive Science