

Education

- Ph.D. Cognitive Science, Department of Psychology, Yale University, 1983.
- M.A. Psychology, New York University, 1979.
- B.A. Psychology, University of Pennsylvania, 1977.

Professional Experience

- Professor of Learning Sciences, School of Education and Social Policy, Northwestern University. 2002-present
- Weston Visiting Professor, Weizmann Institute of Science, Israel 2011
- Chair, Learning Sciences Ph.D. program, Northwestern University 1993-2002
- Associate Professor of Learning Sciences, School of Education and Social Policy, Northwestern University 1992-2002
- Faculty, Institute for the Learning Sciences, Northwestern University 1992-2001
- Assistant Professor, Dept. of Psychology, Princeton University 1985-1992
- Research Associate, Dept. of Psychology, Carnegie-Mellon University 1983-1985

Leadership in Learning Sciences and Science Education

- Board on Science Education, National Research Council 2011-present
- Member, Board of Directors, International Society of the Learning Sciences 2010-present
- Panel Member, NRC report *Guide to Implementing the Next Generation Science Standards*. 2015
- Panel Member, NRC report *Developing Assessments for the Next Generation Science Standards*. 2012-2014
- Faculty Mentor, NARST Sandra K. Abell Institute for Doctoral Scholars 2013
- Panel Member, NRC report *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Participated in press conferences, webinars, and public briefings connected with the release of the report. 2010-2011
- Co-principal investigator of the NSF *Center for Curriculum Materials in Science*, coordinating a research program across four partners to improve science teaching through curriculum materials and software, and to develop a model for graduate training in this research area. 2003-2009

- Panel Member, NRC report *Taking Science to School: Learning and Teaching Science in Grades K-8*. Participated in briefings to NSF and state policy makers connected with the release of the report. 2004-2006
- Founding member of the first graduate program in Learning Sciences, created at Northwestern University, and Chair of the program for nine years beginning shortly after its inception. Led efforts to develop a graduate multidisciplinary program that integrates cognitive science, technology design, and study of social context to design more effective learning settings. 1993-2001

Selected Advisory Boards, Review Boards, and Offices

- Editorial Board, *Journal of Research in Science Teaching* 2014-present
- Board of Visitors, Learning Research and Development Center, University of Pittsburgh. 2006-present
- Review panels for National Science Foundation, including DRK-12, REESE, IMD, and CAREER programs. 2006-present
- Chair, NSF Committee of Visitors, Research and Evaluation in Science and Engineering (REESE). 2012
- NSF Committee of Visitors, Directorate for Education and Human Resources (EHR), and Division for Research on Learning in Formal and Informal Settings (DRL). 2009
- Faculty Mentor, Spencer Foundation Dissertation Fellows. 2009
- Editorial Board, *Science Education* 2007-2009
- Editorial Board, *Journal of the Learning Sciences*. 2000-2006
- External review board, Lawrence Hall of Science, Science Education for Public Understanding Program (SEPUP). 2002
- Faculty Mentor, Doctoral Consortium, International Conference on the Learning Sciences. 2000
- Program Advisory Committee, Spencer Foundation Major Grants Program. 1997-1998
- Advisory Board, Program in Cognitive Studies for Educational Practice, James S. McDonnell Foundation. 1990-1994
- Awarded the Princeton University Class of 1936 Bicentennial Preceptorship. 1988-1991

Research

- Reiser’s research program investigates how to make scientific practices such as argumentation, explanation, and modeling meaningful and effective for classroom teachers and students. This design research investigates the cognitive and social interaction elements of learning environments supporting scientific practices, and design principles for technology-infused curricula that embed science learning in investigations of contextualized data-rich problems.
- Principal investigator for the Scientific Practices and the MoDeLS (*Modeling Designs for Learning Science*) research projects, to develop an empirically-based learning progression for scientific practices including argumentation, explanation and modeling.
- Co-Principal Investigator and member of the Leadership Team for IQWST (*Investigating and Questioning our World through Science and Technology*), a collaboration with the University of Michigan developing a three-year middle school project-based science curriculum, in use in more than 20 schools around the country, now in commercial publication.
- Principal Investigator for BGulle (*Biology Guided Inquiry Learning Environments*), developing software tools for supporting students in analyzing biological data and constructing explanations.

Selected Grants and Contracts

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| • <i>Curriculum Units that Exemplify Three Dimensional Learning and Assessment</i> . Gordon E. and Betty I. Moore Foundation (\$843,028) | 2015-2017 |
| • <i>Teachers Engaging in Science Leadership Activities (TESLA)</i> . Subcontract from Michigan Wayne Regional Educational Service Agency (\$173,983). | 2015-2016 |
| • <i>Supporting Scientific Practices in Elementary and Middle School Classrooms</i> . National Science Foundation, DRK-12 (\$3,499,563). | 2010-2016 |
| • <i>ISTEM Network: Next Generation Science Professional Development</i> . Subcontract from the Illinois Math and Science Partnership (\$166,916). | 2015 |
| • <i>NGSX Design to Support the Connecticut New Terrain Initiative</i> , Subcontract from Connecticut Science Center (\$67,438). | 2015 |
| • <i>New Terrain Next Generation Science Teaching Project</i> . Subcontract from Sacred Heart University, Connecticut Math and Science Partnership Program (\$65,103). | 2014-2015 |
| • <i>A Learning Progression for Scientific Modeling</i> . National Science Foundation, IMD (\$2,992,427). | 2006-2011 |
| • <i>Developing the Next Generation of Middle School Science Materials: Investigating and Questioning Our World through Science and Technology (IQWST)</i> . National Science Foundation, IMD | 2004-2010 |

(\$1,589,683).

- *Center for Curriculum Materials in Science*. National Science Foundation, Center for Learning and Teaching. Subcontract from AAAS (\$2,500,000). 2003-2009
- *PBI: Meeting Standards and Fostering Inquiry through Project-based Inquiry Science Units*. National Science Foundation, IMD. Subcontract from Georgia Institute of Technology (PI J. Kolodner, \$500,000). 2002-2005
- *IQWST: Middle School Science Curriculum Materials: Meeting Standards and Fostering Inquiry through Learning Technologies*. National Science Foundation, IMD. Subcontract Univ. of Michigan (PI J. Krajcik, \$649,019). 2001-2004
- *Urban Systemic Program in Science, Math and Technology Education*. National Science Foundation, USP (PI L. Gomez). Subcontract from Chicago Public Schools (\$1,119,938). 2000-2004
- *Supporting Student and Teacher Inquiry in Bioscience*. National Institute of Health. Subcontract from the Museum of Science and Industry, Chicago, IL (\$499,494). 2000-2003
- *ITR: Learning-Centered Design Methodology: Meeting the Nation's Need for Computational Tools for K-12 Science Education*. National Science Foundation (Co-PI D. Edelson). Subcontract from University of Michigan (PI E. Soloway, \$586,412). 2000-2003
- *KDI: Creating a Corpus of Learning-Situated Design Guidelines and Software Components: A Foundation for Educational Software Research and Development* (Co-PI D. Edelson). National Science Foundation. Subcontract from University of Michigan (PI E. Soloway, \$383,536). 1999-2002
- *Creating and Supporting an Inquiry Culture in High School Science Classrooms*, James S. McDonnell Foundation (Co-PI J. Spillane, \$683,108). 1997-2001
- *Promoting Reflective Inquiry in Knowledge-Rich Investigation Environments*, National Science Foundation (Co-PIs L. Gomez, D. Edelson, \$950,395). 1997-2000
- *Scaffolding Scientific Thinking And Construction Of Models Of Biological Mechanisms*. James S. McDonnell Foundation (\$425,796). 1995-1998
- *Graphical Representations and Causal Models in Intelligent Interactive Learning Environments*. Army Research Institute for the Behavioral and Social Sciences (\$470,810). 1990-1993
- *Memory and Use of Examples in Problem Solving*. Office of Naval 1990-1993

Research (\$341,986).

- *Causal Models in the Acquisition and Instruction of Programming Skills*. 1987-1990
Army Research Institute for the Behavioral and Social Sciences
(\$208,892).

Selected Refereed Articles and Chapters

- Berland, L. K., Schwarz, C. V., Krist, C., Kenyon, L., Lo, A. S., & Reiser, B. J. (2015). Epistemologies in practice: Making scientific practices meaningful for students. *Journal of Research in Science Teaching* (Early View). doi:10.1002/tea.21257
- Fortus, D., Sutherland Adams, L. M., Krajcik, J. S., & Reiser, B. J. (2015). Assessing the role of curriculum coherence in student learning about energy. *Journal of Research in Science Teaching*, 52(10), 1408–1425. doi:10.1002/tea.21261
- Reiser, B. J. & Tabak, I. (2014). Scaffolding. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (2nd edition). New York, NY: Cambridge University Press.
- Duncan, R. G., & Reiser, B. J. (2014). Variations of traits. In S. Koba & A. Tweed (Eds.), *Hard-to-teach biology concepts: Designing instruction aligned to the NGSS* (pp. 229-254). Arlington, VA: NSTA Press.
- Moon, J., Passmore, C., Reiser, B. J., & Michaels, S. (2014). Beyond comparisons of online versus face-to-face PD: Commentary in Response to Fishman et al., “Comparing the impact of online and face-to-face professional development in the context of curriculum implementation.” *Journal of Teacher Education*, 65(2) 172–176.
- Reiser, B. J., Berland, L. K., & Kenyon, L. O. (2012). Engaging students in the scientific practices of explanation and argumentation: Understanding a Framework for Science Education. *Science Scope* (April/May), 6-11. [Also appeared simultaneously in *Science Teacher* and *Science and Children*]
- Schwarz, C., Reiser, B. J., Acher, A., Kenyon, L., & Fortus, D. (2012). MoDeLS: Challenges in defining a learning progression for scientific modeling. In A. C. Alonzo & A. W. Gotwals (Eds.). *Learning progressions in science: Current challenges and future directions*. Rotterdam: Sense Publishers (pp. 101-137).
- Berland, L. K., & Reiser, B. J. (2011). Classroom communities’ adaptations of the practice of scientific argumentation. *Science Education*, 95(2), 191–216.
- Berland, L. K., & Reiser, B. J. (2009). Making sense of argumentation and explanation. *Science Education*, 93(1), 26-55.
- Schwarz, C.V., Reiser, B. J., Davis, E. A., Kenyon, L., Acher, A., Fortus, D., Shwartz, Y., Hug, B., & Krajcik, J. (2009). Developing a learning progression for scientific modeling: Making scientific modeling accessible and meaningful for learners. *Journal of Research in Science Teaching*, 46(6), 632-654.
- Krajcik, J., McNeill, K. L., & Reiser, B. J. (2008). Learning-goals-driven design model: Developing curriculum materials that align with national standards and incorporate project-based pedagogy.

Science Education, 92(1), 1-32.

- Krajcik, J., Slotta, J. D., McNeill, K. L., & Reiser, B. J. (2008). Designing learning environments to support students' integrated understanding. In Y. Kali, M. C. Linn & J. E. Roseman (Eds.), *Designing coherent science education: Implications for curriculum, instruction, and policy*. New York: Teachers College Press (pp. 39-64).
- Shwartz, Y., Weizman, A., Fortus, D., Krajcik, J., & Reiser, B. J. (2008). The IQWST experience: Using coherence as a design principle for a middle school science curriculum. *Elementary School Journal*, 109(2), 199-219.
- Tabak, I., & Reiser, B. J. (2008). Software-realized inquiry support for cultivating a disciplinary stance. *Pragmatics and Cognition*, 16(2), 307-355.
- Duncan, R. G., & Reiser, B. J. (2007). Reasoning across ontologically distinct levels: Students' understandings of molecular genetics. *Journal of Research in Science Teaching*, 44(7), 938-959.
- Edelson, D. C., & Reiser, B. J. (2006). Making authentic practices accessible to learners: Design challenges and strategies. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (pp. 335-354). New York, NY: Cambridge University Press.
- Spillane, J. P., Reiser, B. J., Gomez, L. M. (2006). Policy implementation and cognition: The role of human, social, and distributed cognition in framing policy implementation. In M. I. Honig (Ed.). *Confronting complexity: Defining the field of educational policy implementation*. The State University of New York Press: Albany, NY.
- Smith, B. K., & Reiser, B. J. (2005). Explaining behavior through observational investigation and theory articulation. *The Journal of the Learning Sciences*, 14(3), 315-360.
- Quintana, C., Reiser, B. J., Davis, E. A., Krajcik, J., Fretz, E., Duncan, R. G., Kyza, E., Edelson, D. C., & Soloway, E. (2004). A scaffolding design framework for software to support science inquiry. *The Journal of the Learning Sciences*, 13(3), 337-386.
- Reiser, B. J. (2004). Scaffolding complex learning: The mechanisms of structuring and problematizing student work. *The Journal of the Learning Sciences*, 13(3), 273-304.
- Sandoval, W. A., & Reiser, B. J. (2004). Explanation-driven inquiry: Integrating conceptual and epistemic scaffolds for scientific inquiry. *Science Education*, 88(3), 345-372.
- Sherin, B. L., Reiser, B. J., & Edelson, D. C. (2004). Scaffolding analysis: Extending the scaffolding metaphor to learning artifacts. *The Journal of the Learning Sciences*, 13(3), 387-421.
- Spillane, J. P., Reiser, B. J., & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of Educational Research*, 72(3), 387-431.
- Reiser, B. J., Tabak, I., Sandoval, W. A., Smith, B. K., Steinmuller, F., Leone, T. J. (2001). BGuILE: Strategic and conceptual scaffolds for scientific inquiry in biology classrooms. In S.M. Carver & D. Klahr (Eds.), *Cognition and Instruction: Twenty-five years of progress*. Mahwah, NJ: Erlbaum.
- Loh, B., Reiser, B. J., Radinsky, J., Edelson, D. C., Gomez, L. M., & Marshall, S. (2000). Developing reflective inquiry practices: A case study of software, the teacher, and students. In K. Crowley, C. Schunn, & T. Okada (Eds.). *Designing for science: Implications from everyday, classroom, and*

professional settings. Mahwah, NJ: Erlbaum.

- Merrill, D. C., Reiser, B. J., Merrill, S. K., & Landes, S. (1995). Tutoring: Guided learning by doing. *Cognition and Instruction*, 13(3), 315-372.
- Merrill, D. C., Reiser, B. J., Ranney, M., & Trafton, J. G. (1992). Effective tutoring techniques: A comparison of human tutors and intelligent tutoring systems. *The Journal of the Learning Sciences*, 2(3), 277-305.
- Reiser, B. J., Kimberg, D. Y., Lovett, M. C., & Ranney, M. (1992). Knowledge representation and explanation in GIL, an intelligent tutor for programming. In J. H. Larkin & R. W. Chabay (Eds.), *Computer-assisted instruction and intelligent tutoring systems: Shared goals and complementary approaches* (pp. 111-149). Hillsdale, NJ: Erlbaum.
- Anderson, J. R., Boyle, C. F., Farrell, R. G., & Reiser, B. J. (1987). Cognitive principles in the design of computer tutors. In P. Morris (Ed.), *Modelling cognition* (pp. 93-133). New York: Wiley and Sons.
- Reiser, B. J. (1986). The encoding and retrieval of memories of real-world experiences. In J. A. Galambos, R. P. Abelson, & J. B. Black (Eds.), *Knowledge structures*. Hillsdale, NJ: Erlbaum (pp. 71-99).
- Reiser, B. J. (1986). Knowledge-directed retrieval of autobiographical memories. In J. L. Kolodner & C. K. Riesbeck (Eds.), *Experience, memory, and reasoning* (pp. 75-93). Hillsdale, NJ: Erlbaum (pp. 75-93).
- Anderson, J. R., Boyle, C. F., & Reiser, B. J. (1985). Intelligent tutoring systems. *Science*, 228(4698), 456-462.
- Reiser, B. J., Black, J. B., & Abelson, R. P. (1985). Knowledge structures in the organization and retrieval of autobiographical memories. *Cognitive Psychology*, 17(1), 89-137.
- Reiser, B. J., Black, J. B., & Lehnert, W. G. (1985). Thematic knowledge structures in the understanding and generation of narratives. *Discourse Processes*, 8(3), 357-389.
- Kosslyn, S. M., Reiser, B. J., Farah, M. J., & Fliegel, S. L. (1983). Generating visual images: Units and relations. *Journal of Experimental Psychology: General*, 112, 278-303.
- Reiser, B. J., & Black, J. B. (1982). Processing and structural models of comprehension. *Text*, 2, 225-252.
- Kosslyn, S. M., Ball, T. M., & Reiser, B. J. (1978). Visual images preserve metric spatial information: Evidence from studies of image scanning. *Journal of Experimental Psychology: Human Perception and Performance*, 4, 47-60.

Author Committees for National Research Council Reports

- National Research Council (2015). *Guide to Implementing the Next Generation Science Standards*. Committee on Guidance on Implementing the Next Generation Science Standards. Board on Science Education, Division of Behavioral and Social Sciences and Education, Washington, DC: The National Academies Press.

- National Research Council (2014). *Developing Assessments for Next Generation Science Standards*. Committee on Developing Assessment of Science Proficiency in K-12, Board on Testing and Assessment, Board on Science Education; Division on Behavioral and Social Sciences and Education. Washington, DC: National Academies Press.
- National Research Council (2012). *A Framework for K-12 Science Education: Practices, crosscutting concepts, and core ideas*. Committee on a Conceptual Framework for New K-12 Science Education Standards. Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academies Press.
- National Research Council (2007). *Taking science to school: Learning and teaching science in grades K-8*. Committee on Science Learning, Kindergarten through 8th grade. Richard A Duschl, Heidi A. Schweingruber & Andrew W. Shouse (Eds.). Board on Science Education, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press

Published Curriculum Materials and Software

- *IQWST (Investigating and questioning our world through science and technology), 2nd edition*. A three-year set of coordinated middle school curriculum materials. Sangari Active Science. 2013
- *The Galapagos Finches*. Interactive data analysis web site. 2010
<http://bguile.northwestern.edu/>
- Sandoval, W. A., Reiser, B. J., Leider, R., & Judd, S. J. (2000) *TB Lab*. In the Bioquest Library, Volume VI. Jungck, J. and Vaughan, V. (Eds.), San Diego: Academic Press. 2000
- Tabak I., Sandoval, W. A., Reiser, B. J., & Steinmuller, F. *The Galapagos Finches*. In the Bioquest Library, Volume VI. Jungck, J. and Vaughan, V. (Eds.), San Diego: Academic Press. 2000
- Anderson, J. R., Corbett, A. T., & Reiser, B. J. *Essential LISP*. 1987
Reading, MA: Addison-Wesley

Selected Keynotes, Colloquia, invited Symposia, and Workshops

- Reiser, B. J., Krajcik, J., & Brody, L. The vision for science in NGSS. 2013
Invitational Research Symposium on Science Assessment, ETS K-12 Center, Washington DC.
- What do the NRC Framework and NGSS Mean for K-12 Science? 2013
Keynote, Illinois Science Teachers Association Meeting
- What Do The NRC Framework and NGSS Mean for Elementary and Secondary Science Classrooms? Keynotes, Michigan Fall Science Update 2013

- Invited presenter, Workshop for *The Road Map for Education in the Geographical Sciences Project*, National Geographic Society 2011
- Invited symposium on scientific modeling in K-12 classrooms, 42nd Annual Meeting of the Jean Piaget Society. 2011
- *Supporting students and teachers in scientific practices*. Invited colloquia presented at the Weizmann Institute for Science; Hebrew University; and Ben Gurion University of the Negev, Israel. 2011
- *Rethinking Science Classrooms: Engaging Students and Teachers in Scientific Practices*. Keynote talk, 6th International Conference on Science, Mathematics, and Technology, Haulien, Taiwan. 2010
- *Rethinking Science Classrooms: Engaging Students and Teachers in Scientific Practices*. Colloquium, TERC, Cambridge, MA. 2009
- *Engaging Students and Teachers in Scientific Practices*. Keynote talk, VII Congreso Internacional sobre Investigación en Didáctica de las Ciencias, Barcelona, Spain. 2009

Selected Teaching

- Teaching K-12 Science with NGSS (Summer course for practicing teachers, Northwestern University)
- Design of learning environments (Learning sciences graduate program, Northwestern University).
- Introduction to design for the learning sciences (Learning sciences graduate program, Northwestern University).
- Supporting scientific practices in K-12 classrooms (Graduate seminar, Northwestern University, Weizmann Institute of Science).
- Theory, research, and use of learning technologies in science education (Joint seminar, Northwestern University and University of Michigan).
- Science education: Theory and practice (Teacher preparation program, Northwestern University).

Affiliations/Memberships

- International Society for the Learning Sciences
- National Association for Research in Science Teaching
- American Educational Research Association, Division C, Special Interest Groups: Advanced Technologies for Learning, Learning Sciences.