Janet L. Kolodner
Fall, 2018
Curriculum Vitae

Regents' Professor Emerita
College of Computing
Georgia Institute of Technology
Atlanta, Georgia 30332-0280

Professor
The Lynch School of Education
140 Commonwealth Ave
Chestnut Hill, MA

EDUCATIONAL BACKGROUND

Degree	Year	University	Field
Ph.D.	1980	Yale University	Computer Science (AI, Cog Sci)
MS	1977	Yale University	Computer Science
BA	1976	Brandeis University	Mathematics, Computer Science

AREAS OF INTEREST AND EXPERTISE

Design of technology-rich learning environments; design-based, project-based and problem-based learning; implications and applications of cognition to design of learning environments, experiences, and learning technologies; case-based reasoning, novice-expert evolution, the role of experience in expert and common-sense reasoning, design cognition, processes involved in creativity, design of decision-aiding tools and interactive learning environments.

EMPLOYMENT HISTORY

Title	Organization	Years
Visiting Professor and Special Projects	Lynch School of Education, Boston University	2017 – present
Chief Learning Scientist	The Concord Consortium	2015 – 2017
Regents' Professor Emerita	Interactive Computing, College of Computing Georgia Institute of Technology	2014 – present
Program Officer	The National Science Foundation, CISE and EHR Directorates; Lead Program Officer, Cyberlearning and Future Learning Technologies	2010 – 2014
Visiting Professor	Tufts University, Center for Engineering Education and Outreach	2009 - 2010
Visiting Faculty	Museum of Science, Boston, MA	2009 - 2010

Regents' Professor	Interactive Computing, College of Computing, Georgia Institute of Technology	2004 - 2014
Professor	College of Computing, Georgia Institute of Technology	1990 - 2004
Editor-in-Chief	*Journal of the Learning Sciences*	1989 – 2008
Visiting Professor	Dept. of Computer Science & School of Education Hebrew University, Jerusalem, Israel	1996-1997
Interim Director and Director	EduTech Institute Georgia Institute of Technology	1993 - 1997
Coordinator, Cognitive Science Program	Georgia Institute of Technology	1988 -1993
Visiting Associate Professor	MIT, Cambridge, MA	1987 - 1988
Consultant	Thinking Machines, Inc. Cambridge, MA	1987 - 1988
Associate Professor	Information and Computer Science Georgia Institute of Technology	1985 - 1990
Assistant Professor	Information and Computer Science Georgia Institute of Technology	1980 - 1985
Summer Intern	IBM Research Center,Yorktown Heights	1979

RESEARCH AND CREATIVE SCHOLARSHIP

A. Published Journal Articles (refereed)

1. Clegg, T., & Kolodner, J. (2014). The role of life-relevant learning environments in helping middle-school learners develop scientific dispositions. *Science Education, Special Themed Collection on The Intersection of the Learning Sciences and Science Learning in Everyday Life*.

2. Vattam, S. & Kolodner, J. L. (2008) On foundations of technological support for addressing challenges facing design-based science learning, *Pragmatics & Cognition*, 16:2, pp. 406-437.

3. Clegg, T., & Kolodner, J. (2007). Bricoleurs and Planners Engaging in Scientific Reasoning: A Tale of Two Groups in One Learning Community. *Research and Practice in Technology Enhanced Learning, Special Issue on Learning Communities* 2(3), 239-265.

4. Puntambekar, S., Kolodner, J.L. (2004). Toward implementing distributed scaffolding: Helping students learn science from design. *Journal of Research on Science Teaching*, Vol. 42, Issue 2, pp. 185-217.

5. Kolodner, J.L., Camp, P.J., Crismond D., Fasse, B., Gray, J., Holbrook, J., Puntambekar, S., Ryan, M. (2003). Problem-Based Learning Meets Case-Based Reasoning in the Middle-School Science Classroom: Putting Learning by Design™ into Practice. *Journal of the Learning Sciences*, Vol.12, No 4, pp. 495 - 548.

6. Kolodner, J. L., Gray, J. & Fasse, B.B. (2003). Promoting Transfer through Case-Based Reasoning: Rituals and Practices in Learning by Design Classrooms. *Cognitive Science Quarterly*, Vol. 3, No. 2, pp. 183 – 232.

7. Kolodner, J.L. (2002). Facilitating the Learning of Design Practices: Lessons Learned from an Inquiry into Science Education. *Journal of Industrial Teacher Education*, Vol. 39, No. 3, pp. 9-40.

8. Hmelo, C.E., Holton, D.L., Kolodner, J.L. (2000). Designing to Learn about Complex Systems. *Journal of the Learning Sciences*, Vol. 9, No. 3, pp. 247 - 298.

9. Kolodner, J.L. (1997). Educational Implications of Analogy: A View from Case-Based Reasoning. *American Psychologist*, Vol. 52, No. 1, pp. 57-66.

10. Kolodner, J.L. & Wills, L.M. (1996). Powers of Observation in Creative Design. *Design Studies*, Special Issue on Design Cognition and Computation, Rivka Oxman (Ed.), No. 17, pp. 385-416.

11. Hmelo, C.E., Narayanan, N. H., Hubscher, R., Newstetter, W. C. & Kolodner, J.L. (1996). A multiple case-based approach to generative environments for learning. *VIVEK: A quarterly in artificial intelligence*, 9, pp. 2-18.

12. Guzdial, M., Kolodner, J.L., Hmelo, C., Narayanan, H., Carlson, D, Rappin, N., Hubscher, R., Turns, J., & Newstetter, W. (1996). Computer Support for Learning Through Complex Problem-Solving. *Communications of the ACM*, Vol. 40, pp. 39-42.

13. Domeshek, E.A. & Kolodner, J. L. (1993). Using the Points of Large Cases. *Artificial Intelligence for Engineering Design, Analysis and Manufacturing (AIEDAM)*, Vol. 7. No. 2, pp. 87-96.

14. Pearce, M., Goel, A.K., Kolodner, J.L., Zimring, C., Sentosa, L. & Billington, R. (1992). Case-Based Design Support: A Case Study in Architectural Design. *IEEE Expert*, Vol. 7, No. 5, October, 1992, pp 14-20.

15. Domeshek, E.A. & Kolodner, J.L. (1991). Towards a Case-Based Aid for Conceptual Design. *International Journal of Expert Systems.* Vol. 4, No. 2, pp. 201-220.

16. Kolodner, J. L. & Simpson, R. L. (1989). The MEDIATOR: Analysis of an Early Case-Based Reasoner, *Cognitive Science*, Vol. 13, No. 4, December, 1989, pp. 507 - 549.

17. Kolodner, J. L. & Kolodner, R. (1987). Using Experience in Clinical Problem Solving: Introduction and Framework, *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. 17, No. 3, May/June, 1987, pp. 420 - 431.

18. Kolodner, J. L. (1983). Indexing and Retrieval Strategies for Natural Language Fact Retrieval, *ACM Transactions on Database Systems*, Vol. 8, No. 3, Sept., 1983, pp. 434 - 464.

19. Kolodner, J. L. (1983). Reconstructive Memory: A Computer Model. *Cognitive Science*, Vol. 7, No. 4, Oct., 1983, pp. 281 - 328.

20. Kolodner, J. L. (1983). Maintaining Organization in a Long Term Dynamic Memory. *Cognitive Science*, Vol. 7, No. 4, Oct., 1983, pp. 243 - 280.

21. Kolodner, J. L. (1983). Towards an Understanding of the Role of Experience in the Evolution from Novice to Expert. *International Journal of Man-Machine Systems*, Vol. 19, Nov., 1983, pp. 497 - 518.

B. Published Conference Presentations (formally reviewed)

1. Kolodner, Janet, Tamer Said, Kenneth Wright, Amy Pallant (2017). Drawn into Science Through Authentic Virtual Practice. *Interaction Design and Children (IDC)* 2017.

2. Clegg, T., Gardner, C., & Kolodner, J. (2011). Technology for supporting learners in physically demanding out-of-school learning environments. *Proceedings of the Computer Supported Collaborative Learning*, Hong Kong, China.

2. Clegg, T., Gardner, C., & Kolodner, J. (2010). Playing with Food: Turning Play into Scientifically Meaningful Experiences. *Proceedings of The International Conference of the Learning Sciences*, Chicago IL.

3. Kolodner, Janet L, Mary L. Starr, and 12 additional authors (2008). Implementing what we know about learning in a middle-school science curriculum for widespread dissemination: The Project-Based Inquiry Science (PBIS) story. Panel summary in *Proceedings of the International Conference of the Learning Sciences,* Ultrecht, July.

4. Vattam, S., Warren, C. W., Kim, H. & Kolodner, J. L. (2007). Effects of Technology-based Support for Explanation Construction on Learners' Discourse during Design-based Learning in Science. *Proceedings of the International Conference on Computer Support for Collaborative Learning* (CSCL-2007), New Brunswick, NJ.

5. Gardner, C.M. & Kolodner, J. L. (2007). Turning on Minds with Computers in the Kitchen: Supporting Reflection in the Midst of Engaging Hands-On Activity. *Proceedings of the International Conference on Computer Support for Collaborative Learning* (CSCL-2007).

6. Vattam, S. & Kolodner, J.L. (2006). Design-based science learning: Important challenges and how technology can make a difference. In S. Barab, K. Hay, & D. Hickey (Eds.), *Proceedings of the Seventh International Conference of the Learning Sciences* (ICLS 2006). Bloomington, IN.

7. Clegg, T., Gardner, C., Williams, O., and Kolodner, J. 2006. Promoting deep learning in informal learning environments. In S. Barab, K. Hay, & D. Hickey (Eds.), *Proceedings of the 7th international Conference on Learning Sciences* (ICLS-2006). Pp. 92-98. Bloomington,IN.

8. Gardner, C.M., Clegg, T.L., Williams, O.L., & Kolodner, J.L. (2006). Messy Learning Environments: Busy Hands and Less Engaged Minds. In S. Barab, K. Hay, & D. Hickey (Eds.), *Proceedings of the Seventh International Conference of the Learning Sciences* (ICLS 2006) (pp. 926-927). Bloomington, IN.

9. Charles, E. S., Karkin, S., Kramer, C., & Kolodner, J. L. (2006). From mechanical to meaningful classroom questions. *Proceedings of the 7th International Conference of the Learning Sciences*: Bloomington, IN.

10. Karkin, S., Charles, E.S., & Kolodner. (2006). Visualizing Discussion by the Use of the Conversation Chain Model. Poster in *Proceedings of the 7th International Conference of the Learning Sciences*: Bloomington, IN.

11. Lamberty, K.K. & Kolodner, J.L. (2005). Camera Talk: Making the Camera a Partial Participant. *Proceedings of the SIGCHI conference on Human factors in computing systems* (CHI 2005) Portland, Oregon, April 2-7. (pp. 839-848). New York, NY: ACM Press.

12. Owensby, J. N. & Kolodner, J. L. (2004). Case Interpretation and Application in Support of Scientific Reasoning. *Proceedings of the 26th Conference of Cognitive Science Society*, pp. 1065-1070.

13. Owensby, J.N. & Kolodner, J.L. (2004). Case Application Suite: Scaffolding Use of Expert Cases in Middle-School Project-Based Inquiry Classrooms. In Y. Kafai, W. Sandoval, N. Enyedy, A.S. Nixon, & F. Herrera (Eds.). *Embracing Diversity in the Learning Sciences: International Conference of the Learning Sciences* (ICLS) (pp. 396-403). Mahwah, NJ: Erlbaum.

14. Ryan, M.T. & Kolodner, J.L. (2004). Using 'Rules of Thumb' Practices to Enhance Conceptual Understanding and Scientific Reasoning in Project-based Inquiry Classrooms. In Y. Kafai, W. Sandoval, N. Enyedy, A.S. Nixon, & F. Herrera (Eds.). *Embracing Diversity in the Learning Sciences: International Conference of the Learning Sciences* (ICLS) (pp. 449-456). Mahwah, NJ: Erlbaum.

15. Kolodner, J. L. (2002). Promoting Transfer through Case-Based Reasoning: Rituals and Practices in the Learning by Design Classroom and Evidence of Transfer. *Proceedings of the Cognitive Science Society*, (pp. 74). Mahwah, NJ: Erlbaum.

16. Fasse, B. B., Holbrook, J. & Kolodner, J. L. (October, 2002). Addressing teacher misconceptions in a learner-centered classroom. In P. Bell, R. Stevens & T. Satwicz (Eds.). *Keeping Learning Complex: International Conference of the Learning Sciences* (ICLS) (pp. 102 - 109). Mahwah, NJ: Erlbaum.

17. Kolodner, J. L. & Gray, J. (October, 2002). Understanding the affordances of ritualized activity structures for project-based classrooms. In P. Bell, R. Stevens & T. Satwicz (Eds.). *Keeping Learning Complex: International Conference of the Learning Sciences* (ICLS) (pp. 221 – 228). Mahwah, NJ: Erlbaum.

18. Camp, P. J. & Kolodner, J.L. (October, 2002). Scientific Methods: Epistemological Issues in Cross-Disciplinary Science Curricula. In P. Bell, R. Stevens & T. Satwicz (Eds.). *Keeping Learning Complex: International Conference of the Learning Sciences* (ICLS) (pp. 41 - 48). Mahwah, NJ: Erlbaum.

19. Lamberty, K. L. & Kolodner, J. L. (October, 2002). Exploring Digital Quilt Design Using Manipulatives as a Math Learning Tool. In P. Bell, R. Stevens & T. Satwicz (Eds.). *Keeping Learning Complex: International Conference of the Learning Sciences* (ICLS) (pp. 552 - 553). Mahwah, NJ: Erlbaum.

20. Owensby, J. & Kolodner, J.L. (January, 2002). Case Application Suite: Promoting Collaborative Case Application in Learning By Design Classroom. *Proceedings of the International Conference on Computer Support for Collaborative Learning*, CSCL-02, Jan, 2002, pp. 505-506.

21. Holbrook, J. & Kolodner, J.L.(June, 2000). Scaffolding the Development of an Inquiry-Based (Science) Classroom, *In Proceedings, International Conference of the Learning Sciences 2000 (ICLS*), pp.221-227.

22. Camp, P.J., Gray, J., Groves, H., Kolodner J.L. (June, 2000). Modeling and Case-Based Reasoning in Support of Reflective Inquiry in Earth Science, *In Proceedings International Conference of the Learning Sciences 2000 (ICLS),* pp. 164-165.

23. Fasse, B.B. & Kolodner , J.L. (June, 2000). Evaluating Classroom Practices Using Qualitative Research Methods: Defining and Refining the Process. *In Proceedings International Conference of the Learning Sciences 2000 (ICLS),* pp. 193-198.

24. Gray, J., Groves, H., and Kolodner, J.L. (June, 2000). A survival guide: The student success handbook for learners in project based science environments. *In Proceedings International Conference of the Learning Sciences 2000 (ICLS),* pp. 201-202.

25. Kolodner , J.L. and Nagel, K. (1999). The Design Discussion Area: A Collaborative Learning Tool in Support of Learning from Problem-Solving and Design Activities. *Proceedings of CSCL '99. Palo Alto, CA, 300-307.*

26. Kolodner, J.L., Crismond, D., Gray J., Holbrook, J., & Puntembakar, S.(1998). Learning by Design from Theory to Practice. *Proceedings International Conference of the Learning Sciences '98,* pp.16 - 22.

27. Puntambekar, S. & Kolodner, J.L. (1998). Distributed Scaffolding: Helping Students Learn in a Learning by Design Environment. *Proceedings International Conference of the Learning Sciences '98,* pp.35 – 41.

28. Puntambekar, S. & Kolodner, J.L. (1998). The Design Diary: Development of a Tool to Support Students Learning Science by Design. *Proceedings International Conference of the Learning Sciences '98,* pp. 230 - 236.

29. Simina, M., Kolodner, J.L., Ram, A., and Gorman, M. (1998). Opportunistic Enterprises in Invention. In *Proceedings of the Twentieth Annual Conference of the Cognitive Science Society*, Madison, WI, August 1998, LEA, pp. 974-979.

30. Hmelo, C.E., Holton, D.L., Allen, J.K., & Kolodner, J.L. (1997). Designing for Understanding: Children's Models of Lungs. In M.G. Shafto & P. Langley (Eds.), *Proceedings of the Nineteenth Annual Meeting of the Cognitive Science Society* (pp. 313-318). Mahwah, NJ: Erlbaum.

31. Guzdial, M., Hmelo, C., Hubscher, R., Nagel K., Newstetter, W., Puntambekar, S., Shabo, A., Turns, J. & Kolodner, J.L. (1997). Integrating and Guiding Collaboration: Lessons Learned in Computer-Supported Collaborative Learning Research at Georgia Tech. *Proceedings Computer Support for Collaborative Learning '97,* pp. 91-99.

32. Kolodner, J.L., Schwarz, B., Barkai, R.D., Levy-Neumand, E., Tcherni, A. & Turbovsky, A., (1997). Roles of a Case Library as a Collaborative Tool for Fostering Argumentation. *Proceedings Computer Support for Collaborative Learning '97,* pp. 150-156.

33. Puntambekar, S., Nagel, K., Hubscher, R., Guzdial, M. & Kolodner, J.L. (1997). Intra-group and Intergroup: An Exploration of Learning with Complementary Collaboration Tools. *Proceedings Computer Support for Collaborative Learning '97,* pp. 207 - 214.

34. Shabo, A., Nagel, K., Guzdial, M. & Kolodner, J.L. (1997). JavaCAP: A Collaborative Case Authoring Prog on the WWW. *Proceedings Computer Support for Collaborative Learning '97,* pp. 241-249.

35. Simina, M. & Kolodner, J.L. (1996). Cases, Reasoning and Bell's Telephone. *Proceedings of the Eighteenth Annual Conference of Cognitive Science Society*, La Jolla, CA, July, 1996, pp. 347-353.

36. Kolodner, J.L., Hmelo, C.E., & Narayanan, N.H. (1996). Problem-based Learning Meets Case-based Reasoning. In D.C. Edelson & E.A. Domeshek (Eds.), *Proceedings of ICLS '96*, Charlottesville, VA: AACE, pp.188-195.

37. Hubscher, R., Hmelo, C.E., Narayanan, N.H., Guzdial, M. & Kolodner, J.L., (1996). McBAGEL: A Shared and Structured Electronic Workspace for Problem-Based Learning. *Proceedings of the Second International Conference on the Learning Sciences*, Evanston/Chicago, IL, July, 1996, p. 559.

38. Narayanan, N. H., Hmelo, C.E., Holton, D.L. & Kolodner, J.L. (1996). Case Libraries for Middle School Science Instruction. *Proceedings of the Second International Conference on the Learning Sciences*, Evanston/Chicago, IL, July, 1996, p. 566.

39. Gertzman, A. & Kolodner, J. L. (1996). A Case Study of Problem-Based Learning in a Middle-School Science Class: Lessons Learned. *Proceedings of the Second International Conference on the Learning Sciences*, Evanston/Chicago, IL, July, 1996, p. 91 - 98.

40. Petrushin, V. A., Kolodner, Janet L., (1996). Put Your Experience on The Web: A Tool for Creating and Browsing in Case Libraries. *Proceedings, WebNet96 World Conference of the Web Society Proceedings '96*, pp. 566-567.

41. Simina, M.D. & Kolodner, J.L. (1995). Opportunistic Reasoning: A Design Perspective. In *Proceedings of the Seventeenth Annual Conference of the Cognitive Science Society*. Lawrence Erlbaum Associates (pp. 78-83).

42. Narayanan, N. H., Hmelo, C.E., Petrushin, V., Newstetter, W. Guzdial, M., & Kolodner, J.L. (1995). Computer Support for Collaborative Learning through Generative Problems, *CSCL Proceedings, 95*, ACM Press, pp. 247-254.

43. Domeshek, E.A., Zimring, C. M. & Kolodner, J. L. (1994). Scaling up is Hard to Do: Experiences in Preparing a Case-Based Design Aid Prototype for Field Trial, *Proceedings of the American Association of Civil Engineers Computing Congress '94, Symposium on Artificial Intelligence.*

44. Wills, L. M., Kolodner, J. L. (1994). Explaining Serendipitous Recognition in Design. *Proceedings of the Sixteenth Annual Conference of the Cognitive Science Society* , Lawrence Erlbaum Associates, Hillsdale, NJ, pp. 940-945.

45. Wills, L.M. & Kolodner, J.L. (1994). Towards More Creative Case-Based Design Systems. *Proceedings of the Twelfth National Conference on Artificial Intelligence (AAAI-94)*, Seattle, Washington, pp. 50-55, August.

46. Domeshek, E., Herndon, M. Bennett, A. & Kolodner, J.L. (1994). A Case-Based Design Aid for Conceptual Design of Aircraft Subsystems. *Proceedings of the Tenth IEEE Conference on Artificial Intelligence for Applications.* Washington: IEEE Computer Society Press, pp. 63-69.

47. Domeshek, E., Kolodner, J. L. & Zimring, C. M. (1994). The design of a tool kit for case-based design aids. *Artificial Intelligence in Design '94*, (J.S. Gero and F. Sudweeks (eds.)), Kluwer Academic Publishers, Netherlands, pp. 109-126.

48. Domeshek, E. & Kolodner, J.L. (1992). A Case-Based Design Aid for Architecture. *Artificial Intelligence and Design '92.* (J.S. Gero, editor). The Netherlands: Kluwer Academic Press, pp. 497-516.

49. Hinrichs, T. & Kolodner, J. L. (1991). The Roles of Adaptation in Case-Based Design. *Proceedings of AAAI-91*. Anaheim, July, 1991, pp. 28-33.

50. Hinrichs, T. & Kolodner, J. L. (1991). The Roles of Adaptation in Case-Based Design (extended version). *Proceedings of the 3rd DARPA Workshop on Case-Based Reasoning*. Washington, DC, May, 1991, pp.121-132.

51. Kolodner, J.L. (1991). Helping Teachers Teach Science Better: Case-Based Decision Aiding for Science Education. *Proceedings of the International Conference of the Learning Sciences 1991*. Chicago, August, 1991.

52. Goel, A., Kolodner, J.L., Pearce, M. & Billington, R. (1991). Towards a Case-Based Tool for Conceptual Design Problem Solving, *Proceedings of the Third DARPA Workshop on Case-Based Reasoning*, Washington, DC, May, 1991, pp. 109-120.

53. Robinson, S. & Kolodner, J.L. (1991). Indexing Cases for Planning and Acting in Dynamic Environments: Exploiting Hierarchical Goal Structures. *Proceedings of the Thirteenth Annual Conference of the Cognitive Science Society*, Chicago, Ill., August, 1991, pp. 882-886.

54. Kolodner, J.L. & Penberthy, L. (1990). A Case-Based Approach to Creativity in Problem Solving. *Proceedings of the Twelfth Annual Conference of the Cognitive Science Society*, Cambridge, MA, July, 1990, pp. 978 - 985.

55. Kolodner, J.L. (1989). Selecting the Best Case for a Case-Based Reasoner. *Proceedings of the Eleventh Annual Conference of the Cognitive Science Society*, Ann Arbor, MI, Lawrence Erlbaum Assoc., Inc., Publishers, August, 1989, pp. 155 - 162.

56. Lancaster, J. & Kolodner, J.L. (1988). Varieties of Learning from Problem Solving Experience. *Proceedings of the Tenth Annual Conference of the Cognitive Science Society*, July, 1988.

57. Kolodner, J.L. (1987). Capitalizing on Failure Through Case-Based Inference. *Proceedings of the Ninth Annual Conference of the Cognitive Science Society*, July, 1987, pp. 715 - 726.

58. Lancaster, J. & Kolodner, J.L. (1987). Problem Solving in a Natural Task as a Function of Experience. *Proceedings of the Ninth Annual Conference of the Cognitive Science Society*, July, 1987, pp. 727 - 736.

59. Kolodner, J.L. & Cullingford, R.E. (1986). Towards a Cognitive Architecture in Support of Reminding. *Proceedings of the Eighth Annual Conference of the Cognitive Science Society*, August, 1986, pp. 467 - 477.

60. Kolodner, J.L., Simpson, R.L. & Sycara, K. (1985). A Process Model of Case-Based Reasoning in Problem Solving. *Proceedings of the Seventh International Joint Conference on Artificial Intelligence*, Los Angeles, CA, August, 1985, pp. 284-290.

61. Kolodner, J.L. & Simpson, R.L. (1984). Experience and Problem Solving: A Framework. *Proceedings of the Sixth Annual Conference of the Cognitive Science Society*, Boulder, CO, June, 1984, pp. 239-243.

62. Kolodner, J.L. (1982). The Role of Experience in Development of Expertise. *Proceedings of the Second National Conference on Artificial Intelligence*, Pittsburg, PA, August, 1982, pp. 273-277.

63. Kolodner, J.L. & Kolodner, R. (1982). Problem Solving and Dynamic Memory (short version). *Proceedings of the First Annual Workshop on Theoretical Issues in Conceptual Information Processing*, Atlanta, GA, March, 1984, pp. 1 - 9.

64. Kolodner, J.L. & Kolodner, R. (1982). Towards A Computer Model of Psychiatric Reasoning. *Proceedings of the Sixth Annual Conference on Computer Applications in Medical Care*, Washington, DC, Nov., 1982, pp. 99 - 103.

65. Kolodner, J.L. (1981). Knowledge-Based Self-Organizing Memory. *Proceedings of the 1981 International Conference on Cybernetics and Society*, Atlanta, Georgia, October, 1981, pp. 289-295.

66. Kolodner, J.L. (1981). Retrieval and Organization in a Conceptual Memory for Events, or CON54, Where are You? *Proceedings of the Seventh International Joint Conference on Artificial Intelligence*, Vancouver, Canada, August, 1981, pp. 227-233.

67. Kolodner, J.L. (1980). Organizing Memory and Keeping it Organized. *Proceedings of the First Annual National Conference on Artificial Intelligence*, Palo Alto, CA. August, 1980, pp. 331-333.

68. Kolodner, J.L. & Schank, R. (1979). Retrieving Information from an Episodic Memory. *Proceedings of the Sixth International Joint Conference on Artificial Intelligence*, Tokyo. August, 1979, pp. 766-768.

C. Magazine Articles (not refereed)

1. Kolodner, J., Pallant, A., & Wright, K. (2017). Integrating knowledge across virtual worlds. @Concord, 20(2). 12 – 13.

2. Kolodner, J. L. (2015). Cognitive prosthetics for fostering learning: A view from the learning sciences. *AI Magazine.*

3. Woolf, Beverly Park, Chad H. Lane, Vinay Chaudri, and Janet L. Kolodner (2013). AI Grand Challenges for Education. *AI Magazine*, Fall.

2. Kolodner, J.L. (2004). The Learning Sciences: Past, Present, and Future. *Educational Technology* May-June, 2004, Vol. 44, No. 3, pp. 34-39.

3. Kolodner, J.L. (2002). Learning by Design™: Iterations of Design Challenges for Better Learning of Science Skills. *Japanese Bulletin of Cognitive Science.* September, 2002, Vol. 9, No. 3, pp. 339-350.

4. Kolodner, J.L. (2001). Analogical and Case Based Reasoning: Implications for Education. *Journal of the Learning Sciences*. January , 2002, Vol. 11, No. 1, pp. 123-126.

5. Kolodner, J.L. (2001) . The "Neat and the "Scruffy " in Promoting Learning from Analogy: We Need to Pay Attention to Both. *Journal of the Learning Sciences*. January, 2002, Vol. 11, No. 1, pp. 139-152.

6. Ram, A., Domeshek, E., Wills, L. M., Nersessian, N. & Kolodner, J. L. (1995). Creativity is in the Mind of the Creator, *Artificial Intelligence*, November, 1995, Vol. 79, No. 1, pp. 111-128.

7. Ram, A., Domeshek, E., Wills, L. M., Nersessian, N., Kolodner, J. L. (1994). Creativity is in the Mind of the Creator: Review of Boden's *The Creative Mind*. *Behavioral and Brain Sciences*, Princeton, NJ, Vol. 17, No. 3, p. 549.

8. Kolodner, J.L. (1994). Workshop on Cognitive Science Education: An Idiosyncratic View, *CogSci News,* G. Blank (Ed.), Lehigh University, Bethlehem, PA. Fall, 1994, pp.1-8.

9. Kolodner, J.L. & Mark, W. (1992). Guest Editors' Introduction, Case-Based Reasoning, *IEEE Expert*, October, 1992, Vol. 7, No. 5, pp. 5-6.

10. Kolodner, J. L. (1992). An Introduction to Case-Based Reasoning. *Artificial Intelligence Review*, pp. 3-34.

11. Kolodner, J. L. (1991). Improving Human Decision-Making Through Case-Based Decision Aiding. *AI Magazine*, Summer, pp. 52-68.

D. Published Books and Parts of Books

Books:

1. Kolodner, Janet L. (Lead Author). (2009 - 2017). *Project-Based Inquiry Science (PBIS).* A 13-volume comprehensive middle-school science curriculum. It's About Time, Mt. Kisco, NY.

2. Crismond, D., Ryan, M., Camp, P.J., Kolodner, J.L. (major writers) and members of the LBD team (2001, 2002) *Vehicles in Motion* (Student Text). Georgia Institute of Technology, Atlanta, GA.

3. Prince, L., Ryan, M. & Kolodner, J.L. (major writers) and members of the LBD team. (2002). *Vehicles in Motion* (Teacher Handbook). Georgia Institute of Technology, Atlanta, GA.

4. Holbrook, J., Prince, L. (major writers), and members of the LBD team (2001). *Apollo 13* (Teacher Handbook). Georgia Institute of Technology, Atlanta, GA.

5. Camp, P.J., Prince, L., Gray, J. (major writers) and members of the LBD team (2001). *Digging in* (Teacher Handbook). Georgia Institute of Technology, Atlanta, GA.

6. Camp, P.J., Prince, L., Gray, J. (major writers) and members of the LBD team (2001). *Tunneling Across Georgia* (Teacher Handbook). Georgia Institute of Technology, Atlanta, GA.

7. Paul J. Camp, Jackie Gray, and Harriet Groves (major writers) and members of the LBD team (2000, 2001, 2002). *Tunneling through Georgia* (Student and Teacher Textbooks). Georgia Institute of Technology, Atlanta, GA.

8. Jennifer Holbrook (major writer) and members of the LBD tea m (1998, 1999, 2000). *Apollo13: The Launcher Unit* (Student and Teacher Textbooks). Georgia Institute of Technology, Atlanta, GA.

9. Jennifer Holbrook and Paul J. Camp (major writers) and members of the LBD team (2000, 2001). *Digging In: An Introduction to Earth Science* (Student and Teacher Textbooks). Georgia Institute of Technology, Atlanta, GA.

10. Crismond, D. (major writer) and members of the LBD team (2000, 2001). *Machines that Help* (Student and Teacher Textbooks). Georgia Institute of Technology, Atlanta, GA.

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1. Janet L. Kolodner (2018). Forward. In Fischer, Frank, Cindy E. Hmelo-Silver, Susan R. Goldman & Peter Reimann (Eds.), *International Handbook of the Learning Sciences*. Routledge/Taylor & Francis: New York.

2. Janet L. Kolodner (forthcoming). Fostering identity and disposition development in Jewish education: A view from the learning sciences. In Levisohn, Jon A. & Kress, Jeffrey S. (Eds.), *Advancing the Learning Agenda in Jewish Education.* New York: Academic Studies Press.

3. Janet L. Kolodner (2016). Cyberlearning. In Bainbridge, William Sims, Roco, Mihail C. (Eds.) *Handbook of Science and Technology Convergence*. Springer.

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E. Edited Proceedings

1. Bruckman, A.S., Guzdial, M., Kolodner, J.L., Ram, A., (Eds.) (1998). *Proceedings of the International Conference of the Learning Sciences 1998.* AACE, Charlottesville, VA, 1998.

2. Kolodner, J.L. (Ed.) (1988). *Proceedings: Case-Based Reasoning Workshop*. Morgan Kaufmann Publishers, Inc., San Mateo, CA.

F. Published Conference Presentations (not formally refereed)

1. Simina, M., Kolodner, J.L., Ram, A. & Gorman, M. (1997). Invention as an Opportunistic Enterprise. Abstract in *Proceedings of the Nineteenth Conference of Cognitive Science Society*, p. 1051.

2. Simina, M. & Kolodner, J.L. (1997) Creative Design: Reasoning and Understanding. *ICCBR-97 Proceedings*, Providence, RI.

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4. Kolodner, J.L. & the EduTech Design Education Group (1995). Toward a Pre-Disciplinary Introductory Design Sequence. In *Proceedings FIE'95 (Frontiers in Education)*, Atlanta, IEEE Press, Pp. 4a3.16.

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6. Newstetter, W. & Kolodner, J.L. (1995). Learning to Change the World: A Case Study of a Mechanical Engineering Design Course. In *Proceedings FIE'95 (Frontiers in Education)*, American Society for Engineering Education (ASEE), Atlanta, GA, November 1995, pp. 4a3.10, IEEE Press

7. Kolodner, J.L. & the EduTech Design Education Team (1995). Design Education Across the Disciplines. In *Proceedings ASCE Specialty Conference, 2nd Congress on Computing in Civil Engineering*, Atlanta, GA, June, 1995, pp. 318-333.

8. Zimring, C., Do, E., Domeshek, E. & Kolodner, J.L. (1995). Supporting Case-Study Use in Design Education: A Computational Case-Based Design Aid for Architecture. In *Proceedings of the 2nd Congress on Computing in Civil Engineering*, ASCE, Atlanta, June, 1995.

9. Domeshek, E.A. & Kolodner, J.L. (1994). End-User Indexing of Design Lessons. In W*orking Notes of the AAAI-94 Workshop on Indexing and Reuse in Multimedia Systems*, pp 119-125.

10. Domeshek, E.A., Kolodner, J.L. & Billington, R. (1993) Using Stories to Overcome Social Obstacles in Design Collaborations, *Working Notes of the AAAI-93 Workshop in AI in Collaborative Design.* pp. 143-148.

11. Kolodner, J. L. & Domeshek, E.A. (1993) Case-Based Design Critiquing. *Working Notes of the AAAI-93 Workshop on Expert Critiquing.* pp. 287 - 294.

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13. Kolodner, J. L. & Wills, L. M. (1993). Case-Based Creative Design*. AAAI Spring Symposium on AI and Creativity*, pp. 95-102, Stanford, CA. March 23-25, 1993.

14. Kolodner, J.L., Goel, A., Pearce, M. & Zimring, C. (1991). An Experience-Based Approach to Cooperative Design. *AAAI Symposium on Design of Composite Systems*, Palo Alto, CA, March, 1991.

15. Kolodner, J.L. (1989). Judging Which is the "Best" Case for a Case-Based Reasoner. In Hammond, K. (Ed.), *Proceedings: Case-Based Reasoning Workshop*. Morgan Kaufmann Publishers, San Mateo, CA, 1989, pp. 77 - 81.

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20. Kolodner, J.L. (1985). Machine Learning Research at Georgia Tech: Using Experience as a Guide for Problem Solving. *Proceedings of Machine Learning Workshop*, Skytop, PA, June 24-26, 1985, pp. 96-99.

G. Conference Presentations without proceedings

1. Kolodner, Janet L., Kenneth Wright, Tamer Said (2017). Virtual Worlds Fostering Curiosity about the Real World. Annual Meeting of the Jean Piaget Society, San Francisco. June.

2. Kolodner, Janet L. (2012) Keynote address, International Conference of the Learning Sciences. *Learning Scientists Changing the World: Challenges and Opportunities.*

3. Clegg, T., & Kolodner, J. (2010). *Making Science Social: A Closer Look at How Social Interactions Impact Scientific Participation.* Paper presentation at the American Educational Research Association, Denver, CO.

2. Charles, E. S., & Kolodner, J.L. (2007, April). *"The medium is the message: A case study of cultural repertoires supporting design-based science.* Symposium entitled: Balancing the tensions between science and design in design-based science curricula. American Educational Research Association (AERA): Chicago, IL.

3. Charles, E. S., & Kolodner, J.L. (2005, April). *"In this classroom we are scientists": A case study of developing identities as student scientists.* In Symposium entitled: What do we know about designing learning environments aimed toward promoting a sense of agency? Co-organizers E.S. Charles & J.L. Kolodner. American Educational Research Association (AERA): Montreal, QC.

4. Kolodner, J.L. (2005). What Journal Reviewers Should Know to Do but Don't. Panel member, AERA, Montreal, Canada, April, 2005.

5. Charles, L.S. & Kolodner, J.L. (2005). What Do We Know About Designing Learning Environments Aimed Toward Promoting a Sense of Agency? Paper presentation "In This Classroom We Are Scientists": A Case Study of Developing Identities As Student Scientists. AERA, Montreal, Canada, April, 2005.

6. Charles, E.S., & Kolodner, J.L. (2005, January). *Reasoning About Science During a Poster Presentation Activity: How classroom practices and culture afford learning of science*. 16th WinterText Conference on Discourse, Text & Cognition, Jackson Hole, WY.

7. Kolodner, J. L & Owensby, J. N. (2004). SMILE: Supporting Teachers' Facilitation of Project-Based Inquiry Using a System of Software-Realized Scaffolds. Poster presented in Science

Teachers Becoming Adept with Promoting Inquiry Using Technology, AERA, San Diego, CA, April 2004.

8. Owensby, J. N. & Kolodner, J. L. (2003). Case Application Suite: A Study of Teacher Use in Learning By Design Classrooms. Paper presentation in Teaching Complex Scientific Ideas: Teachers Using Technology to Support Student Understanding, AERA, Chicago, IL, April 2003.

9. Kolodner, J. L., Reiser, B., Edelson, D., Krajcik, J., & Marx, R. (2003). Design Principles for Project-Based Inquiry. Paper presentation in The CILT Design Principles Database: A New Form of Synthesis for Technology-based Curriculum Design, AERA, Chicago, IL, April 2003.

10. Kolodner, J. L. (2003) Collaborative Learning as a Culture: What is collaborative culture, and how can one be put into place in a middle-school classroom. Panel on collaborative learning, Cognitive Science 2003 Conference.

11. Kolodner, J. L. Integrating project-based initiatives into a middle-grades science curriculum: Essentials and Challenges. Panel organizer, AERA, New Orleans, LA, April 2002.

12. Kolodner, J.L. discussant for Teaching and Learning for Conceptual Change. AERA, New Orleans, LA, April 2002.

13. Camp, P. and Kolodner, J.L. Cross-Disciplinary Skill Development: Challenges and Opportunities, presented at AERA, New Orleans, LA, April, 2002.

14. Kolodner, J. L. discussant for Thinking, problem solving, and argumentation with technology. AERA, New Orleans, LA, April 2002.

15. Kolodner, J.L., Gray, J. & Holbrook, J.K. Scaffolding for a Community of Learners, paper presentation in Finding Common Ground for Scaffolding in Science: Informing Theory and Design. AERA, Seattle, WA, April, 2001.

16. Hickey, D., Kolodner, J.L., Holbrook, J.K. A Pragmatic Framework for Evaluating Innovative Science Learning Environments: Assessment of the Learning by Design Curriculum, paper presentation in Building Sustainable Science Curriculum: Acknowledging and Accommodating Local Adaptation. AERA, Seattle, WA, April, 2001.

17. Kolodner, J.L., discussant for Students' Scientific Reasoning in Learning Science. AERA, Seattle, WA, April, 2001.

18. Kolodner, J.L., discussant for Scaffolds in Design and Problem-based Learning. AERA, Seattle, WA, April, 2001.

19. Kolodner, J.L., Chair for From Cognitive Theory to Science Classroom: The Learning by Design™ Case Study. AERA, Seattle, WA, April, 2001.

    a) Holbrook, J.K., Gray, J., Ryan, M. & Kolodner, J.L. (2001). Scaffolding teachers' development through curriculum materials.
    b) Holbrook, J.K., Fasse, B.B., Gray, J. & Kolodner, J.L. (2001). Creating a Classroom Culture and Promoting Transfer with "launcher" Units
    c) Crismond, D, Camp, P.J., Ryan, M. & Kolodner, J.L. (2001). Design Rules of Thumb - Connecting Science and Design.

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20. Kolodner, J. L., organizer, chair, and discussant for Structured Poster Session on Learning from Design Activities: Two Years Later. AERA, New Orleans, April, 2000.

22. Kolodner, J.L., Crismond, D.C., Fasse, B., Gray, J. Holbrook, J., Ryan, M. Orchestrating Individual, Small-Group, and Whole-Class Activities in a Learning by Design Classroom. Poster presentation during session listed above. AERA, New Orleans, April, 2000.

23. Nagel, K. & Kolodner, J. Scaffolding in Support of Learning From Design and Project Activities. Poster presentation during session listed above. AERA, New Orleans, April, 2000.

24. Design and Use of Effective Web-Based and Visualization Learning Tools. Discussant at Interactive Symposium, AERA, New Orleans, April, 2000.

25. Other AERA paper, poster, and discussant presentations in 1997, 1998.

26. Kolodner, J.L. Helping Engineers Learn to Design: It's Not Just Science Education. An Interactive Symposium in the Spirit of Problem-Based Learning, organizer and discussant. Interactive Symposium, AERA, New York, NY, April, 1996.

27. Hmelo, C.E., Narayanan, N.H., Newstetter, W. & Kolodner, J.L. (1995). A Multiple-Case-Based Approach To Generative Environments For Learning. Presented at the 2nd Annual Symposium on Cognition and Education, Varanasi, India, December, 1995.

28. Anchors, Cases, Problems, and Scenarios as Contexts for Learning, panel member. The Seventeenth Annual Cognitive Science Conference, University of Pittsburgh, Pittsburgh, PA, July, 1995.

29. Applications in Networked Multimedia for Knowledge Construction, Collaboration, and Curricular Reform, discussant. Interactive Symposium, AERA, San Francisco, CA, 1995.

30. Cultural Issues in Cognitive Science, panel member. Workshop on Education in Cognitive Science: Planning for the 21st Century, Georgia Institute of Technology, Atlanta, GA, August, 1994.

31. The Role of Cases in Learning, panel member. The Sixteenth Annual Cognitive Science Conference, Georgia Institute of Technology, Atlanta, GA, August, 1994.

32. Case-Based Reasoning and Problem-Based Learning: A Marriage Proposal. Fourth International Workshop on Human and Machine Cognition, Seaside, FL, May, 1994.

33. Designing Contexts for Learning: New Approaches to the Continuing Challenge, panel member. Annual Meeting AERA, New Orleans, April, 1994.

34. A Case-Based Approach to CBR: What have we wrought? Keynote address, AAAI Case-Based Reasoning Workshop, Washington, D.C., 1993.

35. Making Computers Creative: A Case-Based Approach. Keynote address, First European Workshop on Case-Based Reasoning, Otzenhausen, Germany, November, 1993.

36. Case-Based Reasoning - A New Research Paradigm? panel member. First European Workshop on Case-Based Reasoning, Otzenhausen, Germany, November, 1993.

37. Chandler, T. N. & Kolodner, J. (1993) The Science Education Advisor: A Case-Based Advising System for Lesson Planning. *International Conference on AI and Education*, Scotland, August.

38. Hybrid Case-Based Systems, Panel Member, 3rd DARPA Workshop on Case-Based Reasoning, May, 1991, Washington, DC.

39. Panel Member, Creativity and Analogy, Career Opportunities for Women in Cognitive Science, Cognitive Science Conference, Ohio State University, April, 1991.

40. Domeshek, E., Chandler, T., Kolodner, J. (1991). Case-Based Aid. *Presentation at the First South-Eastern Cognitive Science Conference. January 16-17, Georgia Institute of Technology, Atlanta, GA.*

41. Tutorial on Case-Based Reasoning (some with C. Riesbeck), IJCAI-89, August, 1989, Detroit, MI; AAAI-90, August, 1990, Boston, MA; Atlanta, GA (Continuing Education), March, 1990; Boeing, Seattle, WA., July, 1990.

42. Case-Based Reasoning and Education, Panel Member, AAAI Spring Symposium on Case-Based Reasoning, March, 1990.

43. Case-Based Planning, Panel Member, AAAI Spring Symposium on Case-Based Reasoning, March, 1990.

44. Contributions of Case-Based Reasoning to Understanding and Improving Human Judgment, Keynote Address, The Judgment and Decision Making Society, Atlanta, GA, Nov. 19, 1989.

45. Case-Based Reasoning for Real-World Complex Problem Solving Tasks, Keynote Address, Second Annual DARPA Case-Based Reasoning Workshop, Pensacola Beach, FL, May, 1989.

46. Case Representation, Panel Member, Second Annual DARPA Case-Based Reasoning Workshop, Pensacola Beach, FL, May, 1989.

47. Judging Similarity, Panel Member, Second Annual DARPA Case-Based Reasoning Workshop, Pensacola Beach, FL, May, 1989.

48. Intelligent Tutoring Systems, Panel Member, Air Force Conference on Instructional Technology, Atlanta, GA, March, 1989.

49. Integrating the Representation of Several Kinds of Knowledge Needed for Problem Solving, at AAAI Workshop on Knowledge Bases: Scaling Up. St. Paul, Minn., Aug. 1988.

50. Participant, AAAI Workshop on Case-Based Reasoning. St. Paul, Minn., Aug., 1988.

51. Extending Problem Solver Performance Through Case-Based Inference, Fourth International Machine Learning Workshop, Irvine, CA, June, 1987.

52. What's Wrong with Traditional Planning Paradigms, Panel Member, Fourth Annual Workshop on Theoretical Issues in Conceptual Information Processing, Washington, D.C., June, 1987.

53. Problem Solving in a Natural Task, ARI contractor's meeting, Boston, MA, Oct., 1986.

54. Summary and Critique, Panel Member, Similarity and Analogy Workshop, Champaign, IL, July, 1986.

55. Memory and Problem Solver Interactions in Natural Problem Solving, ARI contractor's meeting, Atlanta, GA, November, 1985.

56. Representation of Experience in Long Term Memory, invited conference on Text Comprehension & Composition: The Role of Mental Representation of Meaning, Center for Research in Human Learning, U. of Minnesota, October, 1985.

57. Natural Problem Solving, ONR contractor's meeting, Atlanta, Georgia, January, 1985.

58. `If you want my advice...': Some protocols of a memory-intensive task, Second Annual Workshop on Theoretical Issues in Conceptual Information Processing, New Haven, CT, May, 1985.

59. Conference participant, Third International Machine Learning Workshop, Skytop, PA, June 24-26, 1985.

60. How to Choose Good Representations, Panel Member, First Annual Workshop on Theoretical Issues in Conceptual Information Processing, Atlanta, Georgia, March, 1984.

61. An Algorithm for Diagnosis Based on Analysis of Previous Cases, MEDCOMP 83, Burr Oak Lodge, OH, Sept., 1983.

62. Cognitive Simulation of Learning Processes, Panel Member, Second Machine Learning Workshop, Champaign, Ill., June, 1983.

63. Information, the Challenge of the 80's: Immediate Access and Availability, Panel Member, ACM National Conference, Dallas, Texas, October, 1982.

64. Panel member for Women in Science Careers Workshop, Atlanta, Georgia, September, 1981.

65. Organizing Memory for Natural Language Fact Retrieval, invited conference on "Language Representation and the Human Computer Interface", Atlanta, Georgia, March, 1981.

66. Retrieving Episodes from Very Long Term Episodic Memory, presented at the Second Annual Meeting of the Cognitive Science Society, Yale University, New Haven, CT, June, 1980.

67. Conference participant, invited conference on human memory organization, Mt. Kisco, New York, July, 1979.

68. Memory Organization for Natural Language Data-Base Inquiry, presented at International Conference on Data-Bases: Improving Usability and Response, Technion, Israel, August, 1978.

H. Software (incomplete list)

1. MEDIATOR, created by Robert L. Simpson, complete in 1985. The first working case-based problem solver, its domain is common-sense resolution of resource disputes. MEDIATOR uses case-based reasoning for problem understanding, solution generation, and failure recovery, and shows the range of tasks case-based reasoning is appropriate for.

2. PERSUADER, created by Katia Sycara, completed in 1987. Another early case-based reasoner, it used case-based reasoning to resolve labor-management disputes and showed how case-based reasoning can be integrated with analytic methods. PERSUADER uses case-based reasoning to suggest solutions, to debug proposed solutions, and to persuade a disputant of the utility of a solution. Analytic methods provide guidelines for determining that a solution is satisfactory.

PERSUADER's use of cross-contextual cases was the first implementation of the creative use of case-based reasoning.

3. FRAMEWORK, created by Roy Turner, adapted by Tom Hinrichs, completed in 1987, though adaptations continue to be made. FRAMEWORK is a frame system that implements a frame methodology that we have found useful in our projects. All programs built in our lab after FRAMEWORK was completed use it as their knowledge representation system.

4. CAS (Consumer Advisory System), begun as a group project and finished by Roy Turner, completed in 1987. CAS uses case-based reasoning to give advice about the acquisition of household products. Its emphasis is on the knowledge and methods needed to adapt old plans to new situations. MECH/LBUE, created by Mike Redmond and Joel Martin, completed in 1988. LBUE is a learning program that integrates explanations from a teacher into what it already knows. It makes inductive inferences to fill in gaps left by the teacher, and uses case-based reasoning to predict the teacher's actions.

5. MEDIC, created by Roy Turner, completed in 1989. MEDIC diagnoses pulmonary problems. Its emphasis is on the organization, access, and control of specialized procedures to do complex problem solving in situations where planning and execution are mixed. MEDIC shows how a case-based reasoner can be extended to work in such an environment.

6. JULIANA, created by Hong Shinn, completed in 1989. JULIANA is a case-based reasoner whose domain is meal planning. Its emphasis is on a method of case-based reasoning called *abstractional analogy*.

7. CORA, created by Joel Martin, completed in 1989. An experimental memory program and descendent of CYRUS, CORA aims to model human reconstructive memory and to be useful as a case memory for our case-based reasoners. CORA is novel in its use of conditional probabilities to make the memory behave in a reconstructive way.

8. JULIA, a case-based reasoner that plans meals, JULIA, combines reason maintenance, constraint propagation, problem reduction, and case-based processes to allow a problem solver to work on open-world problems that are underconstrained and/or underspecified. JULIA, is based on the requirements of design problem solving. As a case-based reasoner, emphasis is on general-purpose adaptation strategies and on the integration of case-based reasoning with other necessary reasoning methods. Programmed by Tom Hinrichs. Completed in 1991.

9. CELIA learns car mechanics by apprenticeship to a teacher, a descendent of LBUE. Programmed by Mike Redmond. Completed in 1990.

10. EXPEDITOR, A case-based scheduler, EXPEDITOR schedules household tasks. Emphasis is on learning.

11. CREATIVE JULIA addresses the use of case-based reasoning for creative problem solving. This prototype program knows how to search a case library, elaborate a problem specification, and adapt solutions in novel ways to produce creative solutions to design problems. Completed in 1991.

12. ARCHIE, investigated the use of case-based techniques in the design of an interactive advisory system to help facilities planners. Completed in 1991.

13. MIDAS, a case-based design aid (CBDA) for aircraft subsystem design, a collaboration between Georgia Tech and Lockheed; design information entered by Lockheed aerospace engineer, Marcia Herndon, programming and design done by Eric Domeshek, 1993.

14. ARCHIE-2, a large scale case-based design aid for architectural design, holds libraries, courthouses, and skyscrapers, cases collected by architecture graduate students, software designed by Eric Domeshek, 1993.

15. DESIGNMUSE, authoring system for case-based design aids, based on first attempts at MIDAS and ARCHIE-2, used for later better implementations of both programs and a variety of other case libraries. Designed and programmed by Eric Domeshek, completed in 1994; it has gotten attention in industry worldwide.

16. SCIED, an investigation of flexible design, planning for execution, and indexing as applied to an education problem: the design of lesson plans for elementary school science teaching, completed in 1994, it will be used in upcoming years as a teacher-training add-on to several novel educational programs. Designed with Terry Chandler, implemented by Richard Billington.

17. IMPROVISOR, exploring the cognition behind creativity, especially in design. Emphasis is on opportunistic recognition and use of information in the environment, opportunistic memory recall, and control of processing. Developed in collaboration with Linda Wills and Marin Simina, completed in 1995.

18. MCBAGEL, addresses the need for computational support and scaffolding collaboration and problem solving by students in a problem based learning approach to instruction. In collaboration with EduTech postdocs, 1996.

19. CASE LIBRARIES FOR LEARNERS, redesign of case-based design aids to address special needs of novice designers. In collaboration with EduTech postdocs, 1996.

20. CAT, case authoring tool, for students to use to organize their thoughts and present their findings as they read and analyze engineering case studies, developed by Kris Nagel, piloted in classrooms during the 1998-1999 school year.

21. JAVACAP, a software tool for student authoring and searching of case libraries, has been implemented in support of the Learning-by-Design curriculum development project at Georgia Tech's EduTech Institute. Its case-authoring component asks students to reflect on a recent problem solving and design experience, summarize it, and present important aspects of what they've learned from it. JavaCap's case-browsing component collects a library of student-authored cases to be edited and published as exemplary cases for use as models and for learning. JavaCap has been used to engage middle school students in effective reflection and to support collaboration, both synchronous and asynchronous. Designed by Amnon Shabo, EduTech Postdoc, 1997.

22. DDA (Design Discussion Area), for students to use to share their findings, ideas, and experiences with peers in other classrooms as they are engaging in Learning-by-Design design projects. Developed by Kris Nagel. Field tested in classrooms during 1998-1999 school year.

23. STORYBOARD AUTHOR, for students to use to reflect back on, summarize, and articulate what they've learned during a project and report what they've learned in stories that their peers can learn from. Developed by Kris Nagel. Piloted in classrooms during the 1998-1999 school year.

24. ALEC, descendent of IMPROVISOR, models the processes involved in creative design, specifically carrying out the reasoning of Alexander Graham Bell as he invented the multiple telegraph and telephone. Developed by Marin Simina, Ph.D. student, completed fall, 1999.

25. SMILE, Supportive Multi-User Interactive Learning Environment, developed to support collaboration and reflection during problem-based learning, project-based learning, and learning from design. The suite of tools provides support for small groups to keep records of their ideas,

their experimental trials, and their criteria for success; scaffolds them through iterative cycles of understanding their challenge, proposing solutions, constructing and testing solutions, and recording and explaining results; prompts them to make coherent reports about what they've tried and the results they've gotten and to tell stories about what they've learned; supports conversations anchored to those reports across student groups, classes, or schools; and helps groups of students publish interesting reports or stories in a case library that other students can use as a design or problem-solving resource. This software combines DDA, STORYBOARD AUTHOR, McBAGEL, and CAT such that they are compatible with each other. In 1999 - 2000, it was field tested in several schools. A refined version that allows for easier navigation and with a more consistent interface was designed ; was made available in September, 2002, with teachers trained during summer, 2002; schools were not ready for a piece of software to be used every day (and may or may not be in 2017).

I. Research Honors and Awards

- Inaugural Fellow, International Society of the Learning Sciences, 2017
- International Society of the Learning Sciences Career Award, 2011
- Fellow of the American Association for Artificial Intelligence, selected in 1992
- Governor of the Cognitive Science Society, (elected post), 1991-1997
- Elected to Sigma XI, Spring, 1989.
- Nominated as Presidential Young Investigator, 1983, 1984
- Invited paper, *Psychology of Learning and Motivation, Advances in Research and Theory*, 1985.
- Outstanding Young Women of America, 1982.
- American Society of Information Science Doctoral Forum Award Recipient, 1981.

J. Postdoctoral Fellows supervised.

1. Juliana Lancaster, 1983-85, Executive Director for the Office of Plans, Policies and Analysis, Georgia Gwinnett College
2. Terry Chandler, 1990 – 1992, Research Scientist, Galaxy Scientific
3. Eric Domeshek, 1990 – 1992, Research Scientist, Stottler Henke Associates, Inc.
4. Linda Wills, 1992 – 1994, Professor, Electrical Engineering, Ga. Inst. of Tech.
5. Mimi Recker, 1992 – 1994, Professor, Utah State University
6. Wendy Newstetter, 1994 – 1997, Principal Research Scientist, School of BioEngineering and Office of the Dean of Engineering, Ga. Inst. of Tech.)
7. Cindy Hmelo-Silver, 1994 - 1996, Professor and Center Head, Educational Psychology, Indiana University (received NSF Career Award)
8. Hari Narayanan, 1994 – 1996, Professor and Chair, Computer Sci. & Eng., Auburn University
9. Roland Hubscher, 1995 – 1997, Assoc. Professor, Computer Sci. & Eng., Bentley College
10. Amnon Shabo, 1995 – 1997 (joint w/Mark Guzdial), IBM Research, Haifa, Israel
11. Sadhana Puntambekar, 1996 – 1998, Professor, Educational Psychology, University of Wisconsin (received NSF Career Award, March, 1999)
12. David Kanter, 1999, Consultant, learning sciences
13. Paul J. Camp, 1999 – 2001, Assoc. Professor, Physics, Spelman College
14. Elizabeth Charles, 2003 – 2006, Faculty, Dawson College, Montreal

K. Ph. D. Students Supervised (and completed).

1. Christina Gardner (now McCune), December, 2012, *Supporting Cognitive Engagement in a Learning-By-Doing Learning Environment: Case Studies of Participant Engagement and Social Configurations in Kitchen Science Investigators.* Assistant Professor, University of Florida.
2. Tamara Clegg, August, 2010, *Kitchen Science Investigators: Building Identity as Scientific Reasoners and Thinkers*. Assistant Professor, University of Maryland.
3. Kristin Lamberty, May, 2007, *Getting and keeping children engaged with a constructionist design tool for craft and math.* Associate Professor, University of Minnesota, Morris.
4. Jakita Owensby, May, 2006. *Sharing the Scaffolding in a Cognitive Apprenticeship: A Case Study of the Case Application Suite.* Associate Professor, Spelman College. (soon to join Auburn U)
5. December, 1999, Marin Simina, *Enterprise-Directed Reasoning: Opportunism and Deliberation in Creative Reasoning*. Software designer.
6. December, 1992, Joel Martin. *Transfer of Predicted Structures: Improving Concept Formation*. National Research Council, Canada.
7. August, 1992, Michael A. Redmond. *Learning by Observing and Understanding Expert Problem Solving*. Assoc. Professor, LaSalle University, Philadelphia, PA.
8. September, 1991, Thomas R. Hinrichs. *Problem Solving in Open Worlds: A Case Study in Design*. Research Associate Professor, Northwestern University, Evanston, IL.
9. Oct., 1989, Roy Turner. *A Schema-Based Approach to Adaptive Problem Solving.* Professor, University of Maine.
10. Nov., 1989, Hong Shinn. *A Computational Model of Analogical Reasoning*. President, Dongbu Information Systems, Korea
11. June, 1987, Katia Sycara. *Resolving Adversarial Conflicts: Integrating Case-Based and Analytic Methods.* Principal Research Scientist, CMU Robotics Institute, became AAAI Fellow, 2002.
12. June, 1985, Robert Simpson. *A Computer Model of Case-Based Reasoning in Problem Solving: An Investigation in the Domain of Dispute Mediation.* Retired.

SERVICE

A. Memberships and Activities in professional Societies

- International Society of the Learning Sciences (Founding member and organizer (2001-2002), interim board member (2002), Executive Officer (2002-Dec., 2005)), Ex-officio board member (2006-2009)
- American Educational Researcher Association (member, reviewer, discussant, 1995 – present)
- American Association for Artificial Intelligence (member since 1979, fellow since 1992, on AI Magazine advisory board (2000 – 2002), on AAAI Press advisory board (1998 – 2000), reviewer, review board (1980's and 1990's), organizer of several spring symposia, 1990's)
- Cognitive Science Society (member 1979 - 2000, governor, 1991 – 1997, reviewer)
- Association for Computing Machinery (member since 1975, senior member since 2005)
- IEEE Computer Society (member since 1980's, senior member since 2005)
- European Society for Artificial Intelligence and Brain Science (AISB, member 1970's and 1980's)

B. Conference Committee Activities (incomplete)

- Mentor, Early Career Workshops and/or Doctoral Consortia, ISLS conferences (ICLS and CSCL), nearly every year 1996 - present
- International Conference on Computer Support for Collaborative Learning, Organizing Board, 2007 conference

- International Conference on the Learning Sciences (Organizing Board, 1991, 1996, 2000, 2002, 2004; Conference co-chair, 1998)
- AERA, reviewer, since 1996
- Cognitive Science Conference (reviewer most years 1980 - 2000, Conference General Chair, 1994, Coordinator, Workshop on Education in Cognitive Science: Planning for the 21st Century, 1994.)
- AAAI, member of the program committee, many years, program committee for symposia on CBR, 1988, 1990
- IJCAI, reviewer, many years
- DARPA Case-Based Reasoning Workshops, pre-planning, 1986; organizer, 1988; board and review committee, 1989, 1990
- AI and Design, organizing and review board several years
- ACM SIGIR, program committee, 1989
- IEEE Conference on Applications of AI, program committee, 1988
- Conference of the Computational Linguistics Society, Program committee, 1987.
- TICIP (Theoretical Issues in Conceptual Information Processing), founder, 1984, organizing board 1985

C. Consulting and Advisory Appointments

- 2004 – 2006 – Advisory Board for *The Cambridge Handbook of the Learning Sciences*.
- 2002 – 2005 – GE Power Systems, case-based reasoning applications
- 2000 – 2008: Editorial Board *AI Magazine*
- 2000 – Avi Chai Foundation – advisor -- designing a distance MS degree program in Jewish education
- 1994 – 2000: Editorial Board, AAAI Press
- 1994 – 1996: Consulting Editor, Blackwell's *Companion to Cognitive Science*.
- Fall, 1989 – 1991: guest editor for special issue of *Machine Learning* devoted to case-based reasoning.
- 1987 – 1995: variety of consulting associated with case-based reasoning applications, including GTE, Boeing, IBM, Bellcore.

D. Civic Activities

- 2000 – Committee Member, Integrating Technology into Jewish Day Schools, Avi Chai Foundation
- 1998 – 1999 -- Chair, subcommittee on integrating computers into the curriculum, New Atlanta Jewish Community High School
- 1998 - 1999 Subcommittee, Year-Round Education Center, Camp Ramah Darom
- 1995 - 1996 Instituted and taught The Epstein School Science Club

PERSONAL DATA

Citizenship: U.S.