About the Contributors

Robert Z. Zheng is a faculty member in the Department of Educational Psychology, University of Utah, USA. His publications include edited books, book chapters and journal papers covering the topics of online learning, multimedia, cognition, and application of educational technology in K-12 schools. His research agenda includes online learning and pedagogy, multimedia and cognition, and educational technology and assessment. He edited and co-edited several books including Understanding Online Instructional Modeling: Theories and Practices, Cognitive Effects of Multimedia Learning, and Adolescent Online Social Communication and Behavior: Relationship Formation on the Internet. He is the author of numerous book chapters and peer-reviewed journal papers on the topics of cognitive load, multimedia, Web-based instruction, and problem solving in multimedia learning.

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Faisal Ahmad is a PhD candidate in computer science at University of Colorado at Boulder. He is a member of the Boulder Learning Technologies Groups, working under the leadership of Dr. Tamara Sumner. Mr. Ahmad has served as student chair on the Joint Conference on Digital Libraries 2005. His current work focuses on enhancing digital libraries usage by linking resource discovery and educational standards and modeling and developing knowledge organization services. His other interests include knowledge organization systems, ubiquitous computing and educational technologies.

Robert K. Atkinson is an associate professor of educational technology at Arizona State University. His research explores the intersection of cognitive science, instructional design, and educational technology. He currently has several research foci, including: (a) designing computer-based learning environments that are consistent with human cognitive processes, particularly environments that aid human cognition during problem solving in science and mathematics; (b) designing and evaluating animated pedagogical agents, (c) exploring ways of supporting English Language Learners working with multimedia environments focusing on science content; (d) exploring how learners use worked-out examples to solve problems in semantically-rich domains such as mathematics and physics.

Jason S. Augustyn, PhD is a research psychologist with the U.S. Army Natick Soldier Research, Development, and Engineering Center. His research examines human motor control, attention, visual perception, and affordance perception in both real and virtual environments. He is particularly interested in bridging basic and applied research, applying insights from laboratory studies to the design of better tools and technologies. Jason received a PhD from the Pennsylvania State University and completed a postdoctoral fellowship in spatial perception and virtual reality at the University of Virginia.
Tad T. Brunyé, PhD is a cognitive psychologist with the U.S. Army Natick Soldier Research, Development, and Engineering Center, as well as the department of psychology at Tufts University. He focuses on spatial cognition, working memory, spatial and verbal integration, discourse comprehension, training and educational system design, and human-systems integration. Tad received his PhD from Tufts University in experimental cognitive psychology and B.A. from the State University of New York at Binghamton.

Adriana Bus is professor of Education and Child Studies at Leiden University in The Netherlands. A former reading specialist, she teaches courses in reading, writing and learning problems. She is a leading scholar on the impact of attachment theory on children’s emergent literacy development, and on developmental changes in storybook reading among parents and children. Currently she is working with computer experts, instructional designers, and content specialists on building an Internet environment to promote rich literacy experiences for young children. She has won several awards including the International Reading Association’s ‘Computers in Reading Award’.

Kirsten R. Butcher is a postdoctoral research fellow at the University of Pittsburgh’s Learning Research and Development Center, with a joint appointment at the Pittsburgh Science of Learning Center. Dr. Butcher holds a PhD in psychology and cognitive science from the University of Colorado, Boulder. Her research focuses on cognitive processes of learning, particularly the impact of interactive technologies and visual information on high-level processes such as integration, inference, and transfer. Dr. Butcher’s current research includes intelligent tutoring research in classroom settings as well as laboratory research on learning with multimedia and visual representations.

Sebastian de la Chica is a PhD candidate in computer science at the University of Colorado at Boulder. Mr. de la Chica holds both a master’s degree in computer science and a bachelor’s degree in computer engineering, from Auburn University. He has over 15 years of commercial software R&D experience primarily focused on the design and evaluation of user interfaces across multiple domains. His current work focuses on scaffold design issues for digital library-based learning environments, integrating natural language processing and human information interaction approaches to support students writing scientific explanations online.

Anne Cook is an associate professor and cognitive psychologist at the University of Utah, whose research focuses on how readers retrieve information from long-term memory during reading, and the factors that affect this reactivation process. Her recent work has focused on the activation of inferences and general world knowledge during reading, as well as studies on cognitive load in problem solving and cognitive impairments in individuals with autism. Her research primarily uses response time and eye tracking methodologies.

Michael DeSchryver is PhD candidate in the Department of Counseling, Educational Psychology and Special Education at the Michigan State University.

Peter E. Doolittle is currently the director of the Educational Psychology Research Program in the Department of Learning Sciences and Technology at Virginia Tech, Blacksburg, VA. He is also the Executive Editor of the International Journal of Teaching and Learning in Higher Education (IJTLHE).
His academic background includes 19 years teaching primary, secondary, undergraduate, and graduate students, in public schools and private schools, using traditional and online formats, across several subject areas including mathematics, computer science, statistics, and educational psychology. His current research focus includes the investigation of learning efficacy in multimedia instructional environments.

**Tali Ditman**, PhD is a research fellow in cognitive neuroscience at Harvard Medical School, working at Massachusetts General Hospital and Tufts University. She focuses on language comprehension in healthy and psychiatric populations, and uses event-related potentials and functional magnetic resonance imaging to elucidate the brain mechanisms involved in discourse-level comprehension. Tali received her PhD from Tufts University in experimental cognitive neuroscience and MA and BA from the State University of New York at Binghamton.

**Qianyi Gu** is PhD candidate in computer science at the University of Colorado at Boulder. Mr. Gu holds a master's degree in computer science from State University of New York at Stony Brook and a bachelor's degree in chemistry from Peking University. His previous research has used information retrieval and web mining techniques to improve the quality of on-line library services, and to develop a visualization component of conceptual browsing interfaces for digital libraries. Currently, his research investigates the use of information retrieval, user modeling and information visualization techniques to provide personalization services for on-line educational technology.

**Michael J. Hannafin** is the Charles H. Wheatley-Georgia Research Alliance Eminent Scholar in Technology-Enhanced Learning, professor of Educational Psychology and Instructional Technology, and director of the Learning and Performance Support Laboratory at the University of Georgia. Previously, he held academic positions at the University of Colorado, Penn State University and Florida State University. His research examines the psychological and pedagogical principles underlying student-centered learning. He earned his doctorate in Educational Technology from Arizona State University in 1981.

**David Hicks** is currently an associate professor of history and social science education in the Department of Teaching and Learning at Virginia Tech, Blacksburg, VA. His current research interests include the teaching of history in England and the U.S., the use of technology as a partner to support the teaching of history, the impact of standards on student learning, the history of education, and special education and parental advocacy.

**Jana Holsanova** is an associate professor at the Cognitive Science Department at Lund University, Sweden. Important topics in her research include the relationship between visual perception, spoken language production and cognition; interactive aspects of communication, multimodal discourse, the interplay between linguistic, pictorial and graphic representations and users’ interaction with new media. Her recent book *Discourse, Vision and Cognition* has been published at Benjamins (Amsterdam/Philadelphia). Jana Holsanova is currently working as a visiting research fellow at the Hansa Institute for Advanced Study in Delmenhorst, Germany with her project "Multiple Windows on the Mind and Action”.

**Putai Jin**, (PhD), has published his research in the areas of quantitative methods, motivation, psychophysiology, language learning, and personality in *Psychological Bulletin, Journal of Educational*
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Alan Koenig is a senior research associate in the Center for the Study of Evaluation at the University of California Los Angeles. His research focuses on the design and evaluation of games and simulations that are used for training and instruction in both professional and academic settings. Alan holds a PhD in educational technology from Arizona State University, a bachelor of science in mechanical engineering from the University of Hartford, and a bachelor of arts in economics from the University of Connecticut.

Min Liu is professor of Instructional Technology (IT) at the University of Texas at Austin. She has been teaching courses on new media design, production, and research over 15 years. Her research interests center on the impact of new media technology on learning and the design of engaging and interactive learning environments for all age groups. She publishes widely in leading IT research journals and serves on a number of editorial/manuscript review boards of IT research journals. She is also active in professional organizations such as AACE, AERA, and ISTE. She has directed and managed both CD-ROM and Web based development projects, including award winning ones.


Caroline R. Mahoney (PhD) is a research psychologist at the U.S. Army Natick Soldier Research, Development, and Engineering Center. She focuses on nutritional and dietary effects on cognition and behavior, spatial memory, motor control, attention, and human factors. Caroline received her PhD from Tufts University in experimental cognitive psychology and BA from Denison University.

Gina J. Mariano is currently a doctoral candidate in the educational psychology program in the Department of Learning Sciences and Technology at Virginia Tech, Blacksburg, VA. She is an associate editor of the International Journal of Teaching and Learning in Higher Education (IJTLHE). Her academic background includes a bachelor’s degree in psychology and gerontology, and a master’s degree in counseling psychology. Her research focus includes the investigation of knowledge transfer, knowledge application, working memory and long-term memory retrieval.

James H. Martin is a professor in the Department of Computer Science and the Department of Linguistics, and a fellow in the Institute of Cognitive Science at the University of Colorado at Boulder. He received a BS in computer science from Columbia University and a PhD in computer science from the University of California at Berkeley in 1988. He has over 70 publications in computer science and computational linguistics including the books A Computational Model of Metaphor Interpretation and Speech and Language Processing.
Stephen Reed is professor of Psychology and a member of the Center for Research in Mathematics and Science Education at San Diego State University. He was previously a member of the faculty at Case Western Reserve and Florida Atlantic University. He is primarily interested in applying research in cognitive psychology to the design of computer instruction to support visual thinking. His books include *Psychological Processes in Pattern Recognition*, *Word Problems: Research and Curriculum Reform*, *Thinking Visually*, and seven editions of *Cognition: Theory and Applications*.

Lloyd P. Rieber is a professor in the Department of Educational Psychology and Instructional Technology at the University of Georgia. He is interested in visualization, cognitive psychology, and constructivist orientations to instructional design. His research focuses on using dynamic visualizations in the design of interactive learning environments. His most recent research is about the integration of computer-based microworlds, simulations, and games using play theory as the theoretical framework. He is now applying this research to support online learning environments and to help students with cognitive disabilities.

Wolff-Michael Roth is Lansdowne professor of applied cognitive science at the University of Victoria. As a research methodologist, he has a variegated method toolbox that he applies to interesting research questions pertaining to knowing, learning, identity, and emotion across the life in the areas of technology, mathematics, and science. Among his recent publications are *Doing Teacher-Research: A Handbook for Perplexed Practitioners* (Sense Publishers, 2007) and *Talking Science: Language and Learning in Science Classrooms* (Rowman & Littlefield, 2005).

Katharina Scheiter is an assistant professor in the Department of Applied Cognitive Psychology and Media Psychology at the University of Tuebingen, Germany. In her research she focuses on ways of designing and using educational technology as cognitive tools by linking basic cognitive psychology models of information processing to the design of multimedia and hypermedia learning environments. Recent projects deal with the effects of realism in dynamic visualizations on knowledge acquisition in the Natural Sciences, on ways of combining verbal and visual representations in multimedia learning, and on the affordances of representations in learner-controlled hypermedia environments. Dr. Scheiter’s research has been funded by the Deutsche Forschungsgemeinschaft (DFG) and the Leibniz Gemeinschaft.

Florian Schmidt-Weigand, PhD studied psychology, mathematics, and linguistics at Philipps University Marburg and did her doctoral dissertation in psychology at Justus Liebig University Giessen. Dr. Schmidt-Weigand is currently a post-doc researcher at the Institute of Psychology, University of Kassel.

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Rand Spiro is a professor of educational psychology at the Michigan State University. His research areas are knowledge acquisition in complex domains, hypermedia learning environments, multimedia
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case-based methods in professional education, biomedical cognition, and constructive processes in text comprehension and recall. A central part of his research involves the development and testing of theory-based hypermedia learning environments designed to promote cognitive flexibility.

**Tamara Sumner** is an associate professor at the University of Colorado at Boulder with a joint appointment between the Department of Computer Science and the Institute of Cognitive Science. Prior to joining the University of Colorado, Dr. Sumner served as a lecturer with the Knowledge Media Institute at The Open University in the UK. Dr. Sumner’s research interests include human-computer interaction, design research, educational technology, and interactive scholarly publishing.

**John Sweller** is an Emeritus professor of Education at the University of New South Wales. His research is associated with cognitive load theory, an instructional theory based on our knowledge of human cognitive architecture. He initiated work on the theory in the early 1980’s. Subsequently, “ownership” of the theory shifted to his research group at UNSW and then to a large group natural of international researchers. The theory is now a contributor to both research and debate on issues associated with human cognitive architecture, its links to evolution by selection, and the instructional design consequences that follow. It is one of the few theories to have generated a large range of novel instructional designs from our knowledge of human cognitive architecture.

**Krista P. Terry** is the director of Radford University’s Technology in Learning Center and is an associate editor of the *International Journal of Teaching and Learning in Higher Education* (IJTLHE). Her academic background includes six years of higher education administration and leadership in the instructional design and technology area. She currently works with faculty in a training and development capacity to assist with the integration of technology into teaching and learning. Her research interests include a wide array of technology integration issues including the application and integration of new media technologies.

**Paul Toprac** is a Hart eCenter lecturer at the Southern Methodist University in the Guildhall, the premier graduate video game education program in the U.S. His dissertation work involved the design, development, and implementation of a digital game to help middle school students learn science. Prior to graduate school, Toprac was in the information technology industry for more than twenty years, where his roles ranged from CEO to executive director to product manager to consultant. Toprac holds a Bachelor’s of Science in chemical engineering, a Master’s of Business Administration, and a Doctor of Philosophy (instructional technology, curriculum and instruction, College of Education) from The University of Texas at Austin.

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**Richard E. West** is a doctoral candidate in the Educational Psychology and Instructional Technology Department at the University of Georgia. He studies the role of communities and collaborative relationships in learning and innovation, in both face-to-face and online settings. He also has worked as a mixed-methods evaluator in education, technology, and health care settings.
Eric Wiebe is an associate professor in the Department of Mathematics, Science, and Technology Education at North Carolina State University. Dr. Wiebe has focused much of his research on issues related to the use of technology in the instructional environment, with a particular emphasis on multimedia tools and techniques. Recent projects include a multi-year grant to help develop cutting edge research techniques in K-12 STEM education and a 3-year NSF project developing curricula using scientific and technical visualization in middle and high school. Dr. Wiebe is currently serving as a Senior Research Fellow at the Friday Institute at North Carolina State.

Philip H. Winne is professor and Canada Research Chair in the Faculty of Education, Simon Fraser University. He researches metacognition and self-regulated learning, specifically, how students monitor qualities of their study tactics, and how they use those evaluations to adapt old tactics and invent new ones. Winne and colleagues are currently developing nStudy, a leading edge educational technology for researching self-regulated learning and promoting student skills for learning. He co-edited the Handbook of Educational Psychology (2nd ed.) and the field-leading journal Educational Psychologist (2001-2005).

Timothy T. Yuen is a doctoral candidate in Instructional Technology Program at the University of Texas at Austin. His research interest is in multimedia-based cognitive tools and computer science education. Tim received his master’s degree in computer science from the University of Southern California and a bachelor’s degree in information and computer science from the University of California, Irvine.

Mingming Zhou is a PhD candidate and research assistant in the Educational Psychology Program, Faculty of Education, Simon Fraser University. Her research interests focus on exploring new methodologies to measure motivational constructs as well as how students use study tactics. She is currently coordinating the research project “nStudy,” the successor of “gStudy” – educational software which helps learners learn more effectively and advances research in learning.