About the Contributors

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**Barbara Bartholomew** is an Associate Professor of Reading, Literacy, and English at California State University Bakersfield. Her fields of interest are educational policy, acquisition of knowledge, and motivation. She received her doctorate from New York University and previously served as a director of school improvement for the New York City Department of Education.

**Christine Browning** is a professor of Mathematics Education in the Department of Mathematics at Western Michigan University based in Kalamazoo, Michigan. She teaches undergraduate and graduate mathematics content courses for K-8 pre-service teachers and undergraduate and graduate mathematics education courses that focus on middle school. Christine is interested in developing mathematics curriculum for pre-service elementary/middle school teachers that a) makes appropriate use of digital tools and b) incorporates artifacts of children’s thinking. She is also interested in the use of digital tools that extend the walls of the mathematics classroom and engage pre-service teachers with mathematics teaching and learning. Her research areas of interest are on mathematical content knowledge for K-8 teaching, and Technology, Pedagogy, and Content Knowledge (TPACK).

**Lucy Bush** is an assistant professor in the Tift College of Education at Mercer University in Atlanta, Georgia. Prior to joining the faculty, Dr. Bush taught at the elementary, middle, and secondary levels. She currently teaches graduate courses in elementary social studies methods, elementary and secondary planning and
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**Tianxing Cai** is a researcher in the Dan. F Smith Department of Chemical Engineering, Lamar University. Tianxing specializes in the research fields of modeling, simulation, and optimization for the industrial operation, process safety, and environment protection. His major research is the development of optimization models (Linear Programming, Quadratic Constraint Programming, Nonlinear Programming, Mixed Integer Programming, Relaxed Mixed Integer Programming, Mixed Integer Quadratic Constraint Programming, Mixed Integer Nonlinear Programming, Relaxed Mixed Integer Quadratic Constraint Programming) to realize the synthesis of energy and water systems, manufacturing planning and scheduling and plant-wide optimization. Besides that, he also involves the software application of Aspen, HYSYS, ProII, MATLAB, and gPROMS to conduct simulation and optimization for the process design, environment impact reduction, and safety assessment.

**Charity Cayton** is an Assistant Professor in Mathematics Education at East Carolina University in Greenville, NC. She received her PhD in Mathematics Education from North Carolina State University in 2012. Her research interests include: discourse and interactions in mathematics classrooms, students’ use of technology while learning mathematics, teachers’ use of technology to design cognitively demanding tasks, and teachers’ implementation of technology while enacting tasks in their classroom.

**Erica Deahl** is a Research Assistant at the Civic Data Design Lab and a SM candidate in the Comparative Media Studies program at MIT, where she studies and designs media for education and social impact. Her research focuses on using digital media in K-12 education to support technological literacies and promote civic engagement. Previously she was a senior designer at 2x4 in New York City, where she designed and managed interactive projects for cultural sector clients. Erica studied graphic design at Yale University, where she graduated cum laude in 2007.

**Scott Fraser** was born in Framingham, Massachusetts and graduated from Holliston High School in 1986. He joined the US Navy shortly thereafter and retired honorably after 21 years. Stationed throughout the country and around the world, his greatest accomplishment is retiring as a Chief Petty Officer. He served on four ships and was a Recruit Division Commander at the Naval Recruit Training Center in Great Lakes, Illinois and Navy Recruiter in Mesa, Arizona. After retirement in 2008, he taught NJROTC for two years in Hawai‘i and California before enrolling at Mesa Community College in 2011. He is currently enrolled in the Teacher’s Col-
About the Contributors

George Gadanidis is Professor at the Faculty of Education, Western University, Ontario, Canada, and Lifetime Fellow of the Fields Institute for Research in Mathematical Sciences. He spends 50-60 days each year in research classrooms, collaborating with teachers to develop better mathematics experiences for young children. His research explores the intersection of mathematics education, technology, and the arts, with a focus on helping students and teachers experience the pleasure of mathematical surprise and insight. Documentaries of his work are available at www.researchideas.ca. George’s band, Joy of X, funded by the Fields Institute, tours elementary schools, and shares stories and songs from research classrooms.

Tracy Goodson-Espy is a professor of Mathematics Education in the Department of Curriculum and Instruction at Appalachian State University in Boone, North Carolina. She also serves on the Board of Directors for the North Carolina Science, Mathematics, and Technology Center. She earned a BS and an MS in Mathematics from Middle Tennessee State University and an EdD in Mathematics Education from George Peabody College of Vanderbilt University. She has served as the principal investigator on several U.S. National Science Foundation projects, including NC NAEP: Improving Mathematics Content and Methods Courses and Project SMILE: Science and Mathematics for Literacy Enhancement.

Jeffrey Hall is an assistant professor in the Tift College of Education at Mercer University in Atlanta, Georgia. He is a former high school mathematics teacher, and currently teaches graduate courses in mathematics content, middle grades/secondary mathematics pedagogy, research methods, and assessment. Dr. Hall’s primary research interests include educational technology and mathematics education.

Trisha Hill is currently a third grade teacher at Fred L. Wilson Elementary School in Kannapolis, NC. She has taught first grade, second grade, and third grade for eight years. Mrs. Hill has also co-facilitated literacy professional development for Kannapolis City Schools.

Amy Hillen is an Associate Professor of Mathematics Education at Kennesaw State University. She received her EdD in Mathematics Education from the University of Pittsburgh in 2005. Her research interests include algebra, rational number, and the design and enactment of mathematical tasks intended to develop prospective
elementary teachers’ mathematical knowledge for teaching. Her teaching interests include mathematics content courses for prospective elementary teachers, with a particular focus on rational number and algebra.

**Edie Rice Hipchen** earned a Master’s Degree from Troy State University in Instructional Technology and Adult Learning and a Bachelor’s Degree from Armstrong Atlantic State University in Early Childhood Education. She has additional certifications in English Speakers of Other Language (ESOL) and Teacher Support Specialist (TSS). Mrs. Hipchen has been a teacher in the Glynn County School System for nearly 21 years. She currently teaches at Golden Isles Elementary where she works primarily with fourth and fifth graders who need additional support in reading and math. She uses a variety of lessons and online learning to assist them in working towards grade level standards. During the course of Mrs. Hipchen’s career, she has contributed to an article in the *Cable in the Classroom* magazine, presented at the Georgia Young Children’s Association conference, and participated in various professional organizations and programs related to her occupation.

**Charles B. Hodges** earned a PhD from the Learning Sciences and Technologies program at Virginia Tech, and mathematics degrees from Fairmont State University (BS) and West Virginia University (MS). His professional interests are self-efficacy and self-regulation in online learning environments, instructional software evaluation, and the preparation of instructional designers. He is an Associate Professor of Instructional Technology at Georgia Southern University where he teaches in the online Instructional Technology Program. Recently, his research has appeared in the journal *TechTrends: Linking Research and Practice to Improve Learning* and the *Journal of Computers in Mathematics and Science Teaching*.

**Carolyn McCaffrey James** is a doctoral candidate in mathematics education at Portland State University. Her research interests include teacher development of justification practices in middle school classrooms. She is also interested teaching with technology, including effective use of “flipped” classroom format. Her previous educational background includes a Master’s of Science in mathematics from Oregon State University in 2009 and Bachelors of Arts in mathematics from Carleton College in 2003.

**Irene Kleanthous** completed her PhD studies in Mathematics Education at the University of Manchester in 2012. She is a holder of an MSc in Educational Research (2008), an MEd in ICT in Education (2006), and a BA in Primary Education (2005). Irene explored perceived parental influence on students’ dispositions to study further mathematics in Higher Education for her doctoral thesis. She is also interested in
students’ attitudes towards the use of educational technology for learning primary mathematics. Irene is now working part-time at the European University of Cyprus where she teaches Didactics of mathematics.

**Terri L. Kurz** is an associate professor who teaches mathematics and mathematics methodology at Arizona State University, Polytechnic in the Teachers College. She enjoys using tools and technology to support learning. Prior to becoming a professor, she was a middle school teacher for seven-and-a-half years in Los Angeles County.

**William Lacefield** is professor of Mathematics Education at Mercer University in Atlanta, Georgia. Prior to his appointment at Mercer University, Dr. Lacefield was an elementary school teacher and a secondary mathematics curriculum coordinator for the Upward Bound program. He teaches mathematics education courses for pre-service and in-service teachers, serves on dissertation committees, and develops and delivers professional learning opportunities for area teachers. He has presented at a variety of state, regional, national, and international conferences. His research interests include comparative mathematics education, integration of mathematics throughout the curriculum, and early childhood education.

**Douglas A. Lapp** is a professor of mathematics and mathematics education in the Department of Mathematics at Central Michigan University in Mount Pleasant, Michigan. He teaches undergraduate mathematics content courses, courses for pre-service secondary teachers, and graduate courses in mathematics education. Doug holds three degrees from The Ohio State University: a BSEd in Mathematics and Physics, an MA in Mathematics, and a PhD in Mathematics Education. His research interests are in the use of technology and dynamically connected representations for teaching mathematics concepts. In particular, he studies the use of computer algebra systems and other forms of dynamically manipulatable representations and their connection to the development of symbolic meaning. In addition to his research, he also provides professional development for teachers across the USA on the use of handheld and computer technologies.

**Marshall Lassak** has worked with future elementary and secondary mathematics teachers at Eastern Illinois University in Charleston, IL for over 12 years. He is an author on the UCSMP 3rd edition, as well as many articles regarding the use of technology in the classroom and for solving engaging problems. Currently, he is focused on working with teachers regarding dynamic teaching with technology and using problem-based lessons to engage students in the Common Core Mathematical Practices.
Vivian Lim is a Research Assistant for the City University of New York and a Doctoral Candidate at the University of Pennsylvania. Her main research interest is in the role of context-based mathematics curriculum in the civic engagement of youth. She was a founding member of the Community Based Mathematics Project of Philadelphia, a professional learning community of mathematics teachers, education researchers, and teacher educators who worked together to create and implement mathematics lessons based on locally relevant contexts. Vivian formerly worked as a high school mathematics teacher in Brooklyn, NY after graduating from Columbia University, where she majored in Psychology and minored in Mathematics.

Melissa Little is a fourth grade teacher at Shady Brook Elementary School in Kannapolis, NC. She has taught for 17 years and holds a certification from the National Board for Professional Teaching Standards. Mrs. Little has also served as a co-developer and co-facilitator for district-wide mathematics professional development about the Common Core Standards and the Investigations in Number, Data, and Space curriculum.

Chu Ly is a second-year doctoral fellow at the School of Education at Boston University. Her focus is on Developmental Studies with a specialization in Literacy and Language. Her research interests include the integration of technology in literacy. She is currently involved in the Ready to Learn initiative as a research assistant.

Christie Martin is an assistant professor in the Elementary Education program at the University of South Carolina. Her research agenda focuses on writing across the content areas and using technology to enhance learning. She has published in journals such as the School Science and Mathematics Journal, Early Childhood Education Journal, and Journal for Research in Childhood Education.

Maria Meletiou-Mavrotheris is an associate professor at the European University Cyprus, and Director of the Research Laboratory in ICT-Enhanced Education. She has a PhD in Mathematics Education (University of Texas at Austin, 2000), an MSc in Statistics (University of Texas at Austin, 1994), an MSc in Engineering (University of Texas at Austin, 1998), an MA in Open and Distance Learning (UK Open University, 2008), a BA in Mathematics (University of Texas at Austin, 1993), and Teacher’s Diploma in Elementary Education (Pedagogical Academy of Cyprus, 1990). Her research work focuses on the study of issues related to the teaching and learning of statistics, while at the same time equally contributing to several other areas of mathematics, science, and technology education.
About the Contributors

Traci Newton has been an early childhood education teacher for 14 years. She currently teaches fifth grade in Glynn County Georgia, but has taught third and second grade. Her educational background includes Early Childhood Education degrees from Abraham Baldwin Agricultural College (AS), Valdosta State University (BS and MS), and a Teacher Leadership degree from Walden University (EdS). Traci was recognized as the Golden Isles Elementary Teacher of the Year for 2014-2015. Her interests include reading and mentoring former students. She resides in Saint Simons Island, Georgia.

Margaret (Maggie) L. Niess is Professor Emeritus of Mathematics Education at Oregon State University. Her research focuses on integrating technology in teaching science and mathematics and the knowledge teachers require for integrating technologies in their teaching – TPACK. She has authored multiple peer-reviewed journals and chapters including multiple teacher preparation books. She directed the design, implementation, and evaluation of an online Master of Science program for K-12 mathematics and science teachers with an interdisciplinary science, mathematics, and technology emphasis. Her research from this program explores the effectiveness of a social metacognitive constructivist learning trajectory in online graduate coursework. She is an editor of an upcoming IGI Handbook of Research on Teacher Education in the Digital Age. She has chaired multiple committees for the Association of Mathematics Teacher Educators (AMTE) and currently serves as chair for the American Educational Research Association’s SIG-TACTL (Technology as a Change Agent in Teaching and Learning).

Susan O’Hara is the Executive Director of the Center for Cooperative Research and Extension Services for Schools (CRESS) at the University of California, Davis. She is also co-director of the ALDNetwork. Before coming to the CRESS center, she was a professor at Stanford University and at Sacramento State University. An educator for 20 years, Susan began teaching mathematics and science to secondary students in Ireland. She has an MA in applied mathematics from the University of Southern California and a PhD in education from the UC Davis. Susan has extensive experience in the design and delivery of teacher professional development. Her scholarship includes a focus on STEM education and on the education of linguistically diverse populations. Her research in this area has spanned 15 years and has resulted in numerous grants and publications including co-authoring: Common Core Standards in Diverse Classrooms: Essential Practices for Developing Academic Language and Disciplinary Literacy, Stenhouse, 2014.

Lisa Poling is an assistant professor of Mathematics Education in the Department of Curriculum and Instruction at Appalachian State University (ASU), Boone.
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North Carolina. At ASU, she teaches junior and senior level undergraduate, as well as graduate courses in elementary mathematic pedagogy and content. Her current research interests include the examination of teacher preparation programs, how teachers’ define their sense of responsibility in educating all children in the science of mathematics and employing mathematics to critically assess social justice issues. Prior to receiving her doctorate from The Ohio State University in 2010, she taught elementary school for seven years.

Robert Pritchard, professor of Education at Sacramento State University, earned a PhD in Reading Education and Second Language Learning from Indiana University in 1987. A classroom teacher and reading specialist for thirteen years, Dr. Pritchard is a language and literacy specialist who has worked extensively with school districts and county offices of education on a variety of professional development projects. Dr. Pritchard also worked internationally for nine years as an ESL teacher and teacher trainer. He has authored and edited numerous publications related to English learners, innovative uses of technology, and professional development for teachers, including Kids Come in All Languages: Reading Instruction for ESL Students and Teaching Vocabulary with Hypermedia.

Gerard Rambally is a full professor of computer science in the Department of Mathematics and Information Sciences at the University of North Texas at Dallas. He earned his Bachelor’s degree in Mathematics from the University of Saskatchewan, Canada, his Master’s degree in Mathematics from the University of Waterloo in Ontario, Canada, and his Doctoral degree in Computer Science from the University of Oregon, USA. Dr. Rambally served as the Founding Dean of the School of Liberal Arts and Life Sciences at UNT Dallas and has served as an academic dean for 13 years. He teaches both computer science and mathematics courses at UNT Dallas and has published research papers in the areas of Computational Thinking, Computers in Education, Algorithms, Bioinformatics, and Artificial Intelligence.

Elizabeth Rodgers is a first grade teacher at teacher at Shady Brook Elementary School in Kannapolis, NC. She has taught for five years and holds a Bachelor’s degree from Appalachian State University.

Michael Rogers is an assistant professor in the department of Mathematics, Computer Science, and Information Systems and teaches computer science courses at Northwest Missouri State University. His interests are eclectic, but include mobile computing and computer science education. Michael earned degrees in Statistics from the University of Winnipeg and Iowa State University, and a degree in Com-
About the Contributors

computer Science from Illinois State University. He lives in Maryville, MO with his wife, assorted children, and his trusty steed, a Cessna Skyhawk.

Laurie Rubel, associate professor of Secondary Education, City University of New York, teaches graduate and undergraduate mathematics teacher education courses in New York City. Her research and teaching interests include probabilistic thinking, designing learning environments, and supporting teachers in developing culturally relevant pedagogy. She is the recipient of multiple awards, including the Knowles Science Teaching Foundation Young Scholar Award, the Brooklyn College Excellence in Teaching Award, and an Early Career Award from the National Science Foundation.

Alejandra Salinas is an assistant professor of Mathematics Education at Boston University where she teaches both undergraduate and graduate-level courses in mathematics content and methods. Her broad research interest is the improvement of teacher quality in mathematics. Currently, she is focused on exploring prospective teachers’ conceptions of equity and teaching for social justice in mathematics. She is also involved in the Ready to Learn initiative as a mathematics education and professional development specialist.

Milan Sherman is an Assistant Professor of Mathematics Education at Drake University. He received his EdD in Mathematics Education at the University of Pittsburgh in 2011, and holds an MS in Mathematics from the University of Pittsburgh (2002). His research interests are in the areas of the teaching and learning of school algebra, and the use of technology in the teaching and learning of mathematics at the secondary level. His teaching interests include teacher education courses aimed at supporting mathematics teachers in designing and implementing instruction using technology, and the use of dynamic geometry software to promote conceptual understanding in calculus.

Amanda Sibley is a recent graduate of Barrett, The Honors College at Arizona State University, Polytechnic. Her focus of her final graduating creative project was teaching sustainability in middle school through inquiry and scientific argumentation. She recently received her degree in Elementary Education and enjoys writing hands-on lessons that integrates both math and science. This past summer she spent time in the Panama rainforest sharpening her skills as a science teacher and learning how to bring the rainforest home for her students. She hopes to be teaching middle school science this upcoming fall. When she is not completing course work, she is exploring the outdoors with her three boys in the warm Arizona sunshine.
**Dustin Owen Smith** is a graduate student and PhD Candidate at Western Michigan University. In addition to the research related to statistics and technology shared in this chapter, his research interests include a type of statistical reasoning called Informal Inferential Reasoning. His dissertation work centers on eliciting this type of reasoning in young children through storytelling.

**Denny St. John** is a professor of mathematics education in the Department of Mathematics at Central Michigan University based in Mount Pleasant, Michigan. He teaches undergraduate mathematics content courses and courses for aspiring K-8 and secondary teachers, and graduate mathematics education courses. A former Iowa middle school mathematics teacher, Denny holds three degrees from The University of Iowa: BS in Mathematics, MA in Mathematics Education, and a PhD in Mathematics Education. While at Iowa for all those years of graduate school, Denny taught in the Iowa City Community School District. Denny has mathematics education related publications, presented at local, state, regional, national, and international conferences, and conducted several hand-held technology workshops in the United States as part of the Teachers Teaching with Technology (T3) program. His research areas of interest are on hand-held technology use, classroom communication systems, middle school mathematics, and mathematical content knowledge for teaching mathematics.

**Jesús Trespalacios** is an assistant professor in the Educational Technology department at Boise State University, where he teaches graduate courses on instructional design and research methods. He earned his PhD in Instructional Design and Technology from Virginia Tech. As part of his work designing instructional environments, he is interested in exploring and promoting the use of technology in mathematics learning at upper elementary grades. For three years, he was part of the Learning Games Lab at New Mexico State University exploring the design of serious games and animations and their implementation in the classroom.

**Karen Trujillo** is research faculty at New Mexico State University. She has served as a high school teacher, a principal, a professional development specialist and a researcher in mathematics education. Her research interests include mathematics learning, how technology facilitates learning, and the impact of technology on assessment. Her current work focuses on developing Math Snacks and how the use of Math Snacks products impact teacher practice and student learning.

**Lida J. Uribe-Flórez** is an assistant professor in the Curriculum and Instruction department at New Mexico State University, where she teaches graduate research courses and mathematics education courses for graduate and undergraduate students.
in the college of education. She earned her PhD in Mathematics Education from Virginia Tech. With almost 15 years of teaching experience at different levels and countries such as Colombia, Puerto Rico, and United States, she is interested in research related to mathematics education at the K-12 level and teacher preparation at elementary and secondary programs.

**Tabitha Vuljanic** is a former elementary school teacher for Kannapolis City Schools, and Charlotte-Mecklenburg Schools. While teaching, Mrs. Vuljanic facilitated professional development for schools and school districts about both reading workshop and writing workshop.

**Jennifer Wall** is an assistant professor in the department of Mathematics, Computer Science, and Information Systems, and teaches mathematics education courses at Northwest Missouri State University. Her interests include improving pre-service teachers’, and hopefully their future students’, Standards for Mathematical Practice, particularly their problem solving skills. She is also interested in improving pre-service teachers’ pedagogical content knowledge: not only knowing what the distributive property is but also knowing how it relates to third grade mathematics instruction, for instance. Jennifer earned degrees in Spanish and Mathematics Education from Northwest Missouri State University and a PhD in Mathematics and Education from the University of Missouri – Kansas City. She lives in Maryville, Missouri with her supportive and loving husband, two brilliant young daughters, and their playful dog, Huckleberry.

**Nick Wasserman** is Assistant Professor in the Program in Mathematics Education at Teachers College, Columbia University. He received his BS in Mathematics from the University of Texas at Austin with the UTeach program and graduated from Columbia University with a PhD in Mathematics Education. His scholarly interests focus on teacher content knowledge and development, as well as how the use of technology can influence the secondary mathematics classroom. He has authored articles and presented about ways to incorporate technology into the secondary mathematics curriculum, particularly the use of dynamic technologies such as Geometers Sketchpad and SketchUp for re-creating historically significant mathematical methods, such as Archimedes’ approximations of π and spherical calculations.

**Sarah Williams** is an assistant professor of Urban Planning and the Director of the Civic Data Design Lab at the Massachusetts Institute of Technology. The Civic Data Design Lab employs data visualization and mapping techniques to expose and communicate urban patterns and policy issues to broader audiences. Before coming to MIT, Williams was Co-Director of the Spatial Information Design Lab.
About the Contributors

at Columbia University. Sarah has won numerous awards, including being named one of the top 25 planners in technology and 2012 Game Changer by *Metropolis Magazine*. Her work is currently on view in the Museum of Modern Art, New York.

Jeff Zwiers has worked for more than 15 years as a professional developer and instructional mentor in urban school settings, emphasizing the development of literacy, thinking, and academic language for linguistically and culturally diverse students. He has published books and articles on reading, thinking, and academic language. His most recent book is *Academic Conversations: Classroom Talk that Fosters Critical Thinking and Content Understandings*. His current work at CSET at Stanford focuses on developing teachers’ core practices for teaching academic language, comprehension of complex texts, and oral communication skills across subject areas. He holds a BA in Psychology from Stanford, an MAT in Language and Reading from Stanford, and a PhD in Education from USF.