

Foundations of Data Science for Students in Grades K-12: A Workshop

Committee

Nicholas J. Horton

Co-Chair

NICHOLAS HORTON is Beitzel Professor of Technology and Society (Statistics and Data Science) at Amherst College. He is passionate about improving quantitative and computational literacy for students with a variety of backgrounds and has worked to deepen engagement and mastery of higher-level concepts and data acumen. As an applied biostatistician, Dr. Horton's work is based squarely within the mathematical and computational sciences, but spans other fields in order to ensure that research is conducted on a sound footing. The real-world research problems that these investigators face often require the use of novel solutions and approaches, since existing methodology is sometimes inadequate. Bridging the gap between theory and practice in interdisciplinary settings is often a challenge, and has been a particular focus of Dr. Horton's work in missing data methods and longitudinal regression. He served as the chair of the Committee of Presidents of Statistical Societies, as a member of the Roundtable on Data Science Postsecondary Education, on the NASEM (2018) Data Science for Undergraduates consensus study, and is co-chair of the NASEM Committee on Applied and Theoretical Statistics. Dr. Horton has published more than 190 papers in statistics and biomedical research and four books on statistical computing and data science. He has been the recipient of a number of teaching awards and the American Statistical Association Founders Award. Dr. Horton is a fellow of the American Statistical Association and the American Association for the Advancement of Science. He earned his A.B. from Harvard College and his Sc.D. in biostatistics from the Harvard School of Public Health.

Michelle H. Wilkerson

Co-Chair

MICHELLE HODA WILKERSON is an Associate Professor in the Graduate School of Education and the Graduate Group in Science and Mathematics Education at the University of California, Berkeley. Dr. Wilkerson's research addresses the question: How is computing changing what is important to teach and learn in grades 5-12 science and mathematics classes? This has led her to study how young people learn with and about scientific computing tools such as simulations, data analysis packages, and interactive visualizations. Most recently, her work has explored how learners' status as consumers, subjects, and creators of data shape what they understand and engage with during analysis. Dr. Wilkerson's work has been supported by the U. S. National Science Foundation, the George Lucas Education Foundation, and Google Education Research. Her work was awarded by a 2014 Early CAREER grant from the NSF and the 2020 American Educational Research Association's Jan Hawkins Award for Humanistic Research and Scholarship in Learning Technologies. Dr. Wilkerson received her PhD in Learning Sciences in 2012 from Northwestern University, and has previously coauthored (in 2018 with Victor Lee) a commissioned report about the use of data in middle and high school science classes for the NRC.

Tamara L. Clegg

Member

TAMARA CLEGG is an associate professor in the College of Information Studies at the University of Maryland, where she co-directs the Youth eXperience (YX) Lab. She received her Ph.D. from Georgia Tech's College of Computing and her B.S. in Computer Science from North Carolina State University. Tamara's work focuses on designing technology (e.g., social media, mobile apps, e-textiles, community displays) to support life-relevant learning where learners, particularly those from underrepresented groups in science, engage in science in the context of achieving personally relevant goals. She seeks to understand ways such learning environments and technologies support scientific disposition development. Tamara's work has been funded by the National Science Foundation, the Institute of Museum and Library Studies, and Google.

Zarek D. Drozda

Member

ZAREK DROZDA is currently serving as a Data Science Fellow at the Institute of Education Sciences (IES), focused on data science and data literacy education. His work includes building awareness for data literacy education, providing technical assistance to states and districts piloting new programs, and facilitating research to improve pedagogy and practice in data science education. Before joining the Department, Zarek helped build a new research institute (Center for RISC) at the University of Chicago, where he launched a national initiative to modernize K-12 mathematics with a focus on data science education. Zarek has worked with over 20 states on state math standards, organized two national conferences on data literacy education, and built a coalition for data literacy education including fmr. U.S. Secretary of Education Arne Duncan and fmr. Google CEO Eric Schmidt. Zarek was trained in Economics from the University of Chicago.

Timothy E. Erickson

Member

TIM ERICKSON is a senior scientist at Epistemological Engineering, where he develops curriculum and provides professional development for mathematics, science, and data education at the school level. He has primarily done this work as a freelancer since 1992, with occasional stints as a faculty member at the high school or college. Since about 2000, most of this work has involved data education of some kind, ranging from modeling activities in physics to designing materials for introducing data science to high-school students. Nearly all of this work recognizes the need for technology in data education and has included creating software to help students collect and analyze data in various ways. Contracts with nonprofits such as The Concord Consortium have been Tim's main source of funding; however, he has also received independent funding, including 4 SBIR awards from NSF. Although he initially trained in astronomy and astrophysics at Caltech and Berkeley, Tim was always interested in education and has spent nearly 40 years in that pursuit

Camillia Matuk

Member

CAMILLIA MATUK is Assistant Professor in the Educational Communication and Technology program at New York University. Her research examines the design of interdisciplinary STEM learning experiences, with a focus on exploring how arts-based inquiry can promote K-16 learners' research and data literacies. She received her PhD in the Learning Sciences from Northwestern University, and was a postdoc at the Graduate School of Education at the University of California, Berkeley.

Leigh F. Peake

Member

LEIGH PEAKE joined the Gulf of Maine Research Institute (GMRI) in 2014 as Chief Education Officer, leading GMRI's extensive work with K-12 teachers and students across Maine in order to nurture scientific literacy in the next generation of Mainers. Leigh is a seasoned educational publishing executive and entrepreneur who came to GMRI from Education Development Center (EDC) in Waltham MA where she was Director of New Enterprise Initiatives. Prior to EDC, Leigh served as President of Corwin and Sr. VP of SAGE Publications in California. Leigh also spent fifteen years at Heinemann Publishing in Portsmouth NH where she directed the work of ten editors in the development of one of the premier lines of professional resources and services for teachers. Leigh is Principal Investigator of numerous NSF awards that research the affordances of informal learning experience in building data literacy in the context of investigations of climate change. She is also PI on a NASA Science Activation project that aims to leverage a learning ecosystem framework to enable teachers, librarians, and informal educators to collaborate on climate/data learning experiences for youth. Finally, as a member of the Chair teams for the 2019, 2021, and 2023 Gordon Research Conference on Visualization in Science and Education, Leigh has had the opportunity to learn from a wide interdisciplinary network of experts who constantly push her practice with, and ambitions for, youth and educators.

Hollylynn Stohl Lee

Member

HOLLYLYNNE LEE is a Distinguished Professor of Mathematics and Statistics Education in the STEM Education department at NC State University, and a Senior Faculty Fellow at the Friday Institute for Educational Innovation. She directs the Hub for Innovation and Research in Statistics Education at the Friday Institute. Her research focuses on teaching and learning of probability, statistics, and data science in grades 4-12 and early college. She is an expert on the design and use of technology tools to facilitate students' learning of mathematics and statistics, as well as preparing preservice and inservice teachers to use technology. She is the 2022 recipient of the Robert Foster Cherry Award for Great Teaching, from Baylor University. In 2020 she was named a Fellow of the American Statistical Association and awarded the University of NC Board of Governor's award for excellence in teaching. She designs and offers free online professional development for teachers related to teaching statistics and data science and creates and distributes open educational resources for preservice teacher education. Dr. Lee earned her Ph.D. in 2000 from University of Virginia, M.A. Ed. from William & Mary in 1995, and B.S. from Pennsylvania State University in 1991.