

The National Academies of **SCIENCES • ENGINEERING • MEDICINE**

Imagining the Future of Undergraduate STEM Education
Technology for Educating the Students of the Future
Wednesday, March 16th, 2022 · 1:00 PM–4:00 PM EDT

Moderator:

NICHOLAS HORTON is the Beitzel Professor of Technology and Society (Statistics and Data Science) at Amherst College. He is also a fellow of the American Association for the Advancement of Science and will serve as the vice president of the American Statistical Association as of 2022. Horton has held numerous leadership positions including chair of the Committee of Presidents of Statistical Societies and chair of the ASA Curriculum Guidelines for Undergraduate Programs in Statistical Science. His research involves the development and application of statistical methods with applications in psychiatric epidemiology and substance abuse research. Much of his work in recent years has focused on statistics and data science education. Horton completed his A.B. at Harvard College and his Sc.D. at the Harvard School of Public Health.

Future Educational Technology for Learning

BARBARA MEANS is the Executive Director of Learning Sciences Research at Digital Promise. She has been working with colleges and universities to redesign high-enrollment introductory courses to incorporate equity-minded pedagogy and digital learning technology in ways that enhance student engagement and course outcomes for low-income students and students of color. She has also been studying the equity impacts of the shift to remote instruction caused by the COVID-19 epidemic. Means has authored or edited more than a half dozen books related to learning and technology. She has served on many study panels related to science education for the National Academies of Sciences, Engineering, and Medicine. Means earned her undergraduate degree in psychology from Stanford University and her Ph.D. in educational psychology from the University of California, Berkeley.

LEANNE CHUKOSKIE is an Associate Professor in the Department of Physical Therapy, Movement, and Rehabilitation Science in the Bouvé College of Health, and the Games Program in the College of Arts, Media, and Design at Northeastern University. Her lab develops sensor-enabled experiences for assessment, intervention, and education, especially for individuals with developmental differences. Chukoskie's research on gaze-driven video games for intervention and assessment has been funded by NIH for children on the autism spectrum and older adults experiencing cognitive decline. She has translated her training in the NSF-funded Science of Learning Centers into practice by applying active learning principles both in classes and in the internship program she leads

for neurodiverse young adults. In 2017, Chukoskie co-founded BrainLeap Technologies which has won Phase I and II NSF SBIR awards and is seeking to change the way attention challenges are addressed by working through schools and directly with families. Chukoskie received her BA in Biological Basis of Behavior and Anthropology from the University of Pennsylvania and a Ph.D. in Neuroscience from New York University.

Undergraduate Student Perspectives

MONICA VAN is a recent graduate of the University of California San Diego, earning a degree in cognitive science.

ANDREW (NIYI) OWOLABI is a recent graduate of Olin College, earning a degree in Mechanical Engineering.

WILLIAMS OCHOA is in his first year with Montgomery College, majoring in Biotechnology.

JACKIE FLORES is close to completing her bachelor's degree in Translational Life Science Technology at the University of Maryland, Baltimore County.

The Future Role of Technology in Undergraduate Learning

MICHAEL TORRENCE is the seventh seated President of Motlow State Community College. He has worked in higher education for more than 25 years as faculty, mid-level, and senior administrator, and ultimately CEO. His diverse areas of expertise include research, adult education, student success, academic affairs, staff development, distance learning, and diversity, equity, inclusion, and belonging. Additional interests include applied learning within open education resources, virtual reality, augmented reality, mixed reality, automation, robotics, mechatronics, and gamification as platforms for education, learning, and training business and industry to increase efficiency and scalability. Torrence is a Tennessee Board of Regents Maxine Smith Fellow. He received his BA and MA in English from South Dakota State University and Ph.D. in Exceptional Learning (Literacy) from Tennessee Technological University. He recently earned a welding certificate through Motlow's Automation and Robotics Training Center.

FERNANDO PÉREZ is an assistant professor in Statistics at UC Berkeley and a Faculty Scientist in the Department of Data Science and Technology at Lawrence Berkeley National Laboratory. His research focuses on creating tools for modern computational research and data science across domain disciplines, with an emphasis on high-level languages, interactive and literate computing, and reproducible research. Pérez is a National Academy of Science Kavli Frontiers of Science Fellow and a Senior Fellow and founding co-investigator of the Berkeley Institute for Data Science. He is a co-founder of the NumFOCUS Foundation and Project Jupyter, as well as a member of the Python Software Foundation. Pérez received his BA in Physics from Universidad de Antioquia and Ph.D. in Physics from the University of Colorado, Boulder.