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Division of Behavioral and Social Sciences and Education
Board on Science Education (BOSE)

Committee on the Equity of PreK-12 STEM Education, Meeting #4

Presenter Biographies

ANEESHA BADRINARAYAN, is the Director of State Performance Assessment Initiatives at the Learning Policy Institute where she leads projects related to state performance assessments. For the last decade, her work has focused on supporting states, districts, and educators to develop and implement student-centered systems of assessment that support all learners. Her passion for coherent and balanced systems of assessment stems from a commitment to high-quality teaching and learning for all and a deep interest in helping practitioners and leaders navigate their systems to achieve that vision. Prior to LPI, she was the Director for Special Initiatives at Achieve, a museum professional, and a neuroscientist. Her portfolio includes leading several multi-state teams of leaders and experts to redefine "alignment" in the era of new state standards; developing criteria for innovative large-scale and classroom assessments; providing professional learning and strategic guidance for state leaders; and conducting analyses of state, local, and expert efforts to design and implement performance assessments and systems of assessment in science. Badrinarayan earned a M.S. in Neuroscience at the University of Michigan, where she served as a research fellow for the National Institute of Mental Health, and a B.A. in biology from Cornell University.

ELIZABETH (LIZ) DE FREITAS, is a Professor of STEM Education and has worked internationally as an educator and researcher in the US, UK, Canada, and Italy. She is co-author of Mathematics and the body: Material entanglements in the classroom (Cambridge University Press, 2014) and What is a mathematical concept (Cambridge University Press, 2017), and co-editor of numerous journal issues, exploring topics such as: Body studies in mathematics education: Diverse scales of mattering (2019 - Special Issue of ZDM: International Journal of Mathematics Education Research); Rethinking social inquiry in the wake of science studies: Transdiscipline pursuits in times of climate change, information flows, and fading democracies (2019 - Special Issue of Cultural Studies-Critical Methodologies); Science and technology studies x educational studies: Critical and creative perspectives on the future of STEM education (2017 - Special Issue of Educational Studies: A journal of the American Educational Studies Association); The computational turn in educational research: Critical and creative perspectives on the digital data deluge (2017 - Special Issue of Research in Education).

Her research focuses on philosophical and anthropological investigations of mathematics, science and technology, pursuing the implications and applications of this work across education. Her work examines gesture, sensation, and embodiment in various kinds of mathematical activity, with the aim of developing a new materialist philosophy of mathematical behavior. She also studies the material and social semiotics of STEM classrooms, seeking new research methods that can address biosocial and biopolitical entanglements. Elizabeth writes extensively

on social science research methodology, exploring alternative ways of engaging with digital data and developing experimental research methods that draw on speculative computing and inventive diagramming. She co-leads a current project investigating school building architecture, in collaboration with architects, artists and cultural geographers in the UK, as well as a new STEAM MA in NYC, at Adelphi University's MIXI – Manhattan Institute for Studies of STEM and the Imagination. She has published five books and over fifty chapters and articles across the social sciences and humanities. Her work has been funded by the Social Sciences and Humanities Research Council of Canada, the Canada Council for the Arts, the Ontario and Toronto Arts Council, the US National Science Foundation, NYS Department of Education, and the UK Economic and Social Research Council.

JEFF DUNCAN-ANDRADE, **Ph.D**., is Professor of Latina/o Studies and Race and Resistance Studies at San Francisco State University. He is also a founder of the Roses in Concrete Community School, a community responsive lab school in East Oakland (www.rosesinconcrete.org) and the Community Responsive Education Group (www.communityresponsive.org). As a classroom teacher and school leader in East Oakland (CA) for the past 29 years, his pedagogy has been widely studied and acclaimed for producing uncommon levels of social and academic success for students. Duncan-Andrade lectures around the world and has authored numerous journal articles and book chapters on effective practices in schools. He has written two books and his third book with Harvard Press is due out Spring 2021. In 2015, Duncan-Andrade was tapped to be a Commissioner on the National Commission on Teaching & America's Future (NCTAF) and in 2016 was part of the great educators invited to the White House on National Teacher Appreciation Day by President Obama. He is also the 2019 Laureate for the prestigious Brock International Prize in Education. Duncan-Andrade is also consistently ranked as one of the nation's most influential scholars by EdWeek's Public Influence Rankings.

Duncan-Andrade's transformational work on the elements of effective teaching in schools is recognized throughout the U.S. and as far abroad as New Zealand. His research interests and publications span the areas of youth wellness, trauma responsiveness, curriculum change, teacher development and retention, critical pedagogy, and cultural and Ethnic Studies. He works closely with teachers, school site leaders, union leaders and school district officials to help them develop classroom practices and school cultures that foster self-confidence, esteem, and academic success among all students. Duncan-Andrade holds a Ph.D. in Social and Cultural Studies in Education and a Bachelor of Arts degree in Literature, both from the University of California – Berkeley.

ANDREW HO, **Ph.D.,** is the Charles William Eliot Professor of Education at the Harvard Graduate School of Education. He is a psychometrician whose research aims to improve the design, use, and interpretation of test scores in educational policy and practice. Professor Ho is known for his research documenting the misuse of proficiency-based statistics in state and federal policy analysis. He has also clarified properties of student growth models for both technical and general audiences. His scholarship advocates for designing evaluative metrics to achieve multiple criteria: metrics must be accurate, but also transparent to target audiences and resistant to inflation under high stakes.

Professor Ho is a director of the Carnegie Foundation for the Advancement of Teaching and has served on the governing boards for the National Council on Measurement in Education and the

National Assessment of Educational Progress. He has chaired the research committee for the Vice Provost for Advances in Learning (VPAL) at Harvard University, which governed research on "massive open online courses" (MOOCs). He holds his Ph.D. in Educational Psychology and his M.S. in Statistics from Stanford University. Before graduate school, he taught middle school creative writing in his hometown of Honolulu, Hawaii, and high school Physics and AP Physics in Ojai, California.

JENNY LANGER OSUNA, is an Associate Professor in the Graduate School of Education at Stanford University. She was a Spencer/National Academy of Education post-doctoral scholar. Her research focuses on student identity and engagement in collaborative mathematics classrooms and the ways in which authority and influence are constructed in interaction. Her research has contributed to the study of identity development in mathematics education, illuminating discursive links between learning and becoming through classroom experiences. She works with both pre-service and in-service elementary school teachers to develop productive and inclusive collaborative mathematics classrooms. She received her B.S. from Carnegie Mellon University and her M.A. and Ph.D. from University of California, Berkeley.

VICTOR R. LEE, Ph.D., is an Associate Professor in the Graduate School of Education at Stanford University. Through his research, he asks what STEM knowledge, tools, and practices are important to know in order to enable active participation and critical engagement with our increasingly digitally-infused lives. Currently, this work involves researching and designing experiences for K-12 teaching and learning about data - often through a "quantified self" perspective, documenting and supporting the development of computational thinking in elementary school classrooms, and analyzing and supporting maker education in out-of-school settings. Other longstanding lines of research have broadly examined and designed for enhancing science teaching and learning with visual representations and new technologies. He has been past recipient of the National Science Foundation CAREER Award, the Jan Hawkins early career award from the American Educational Research Association, and a National Academy of Education/Spencer Foundation Postdoctoral Fellowship and is a Fellow of the International Society of the Learning Sciences. His work appears in leading national and international journals, and he was a co-author on the National Academies of Science, Engineering, and Medicine's 2021 consensus report on authentic experiences for computing education. Lee completed his undergraduate education in the areas of Cognitive Science, Human-Computer Interaction, and Mathematics at UC San Diego and his Ph.D. in Learning Sciences at Northwestern University.

TIA C. MADKINS, Ph.D., is an assistant professor in the STEM Education Program in the College of Education and a faculty research affiliate with the Population Research Center and the Center for the Study of Race and Democracy at The University of Texas at Austin. She is also a faculty affiliate at Teachers College. Prior to earning her doctorate, she taught elementary students in the Los Angeles Unified School District. Dr. Madkins' research focuses on teachers' development and implementation of antiracist teaching dispositions and equity-focused teaching practices to transform STEM learning environments for minoritized learners, with an emphasis on Black girls in PK-8 science learning environments. Her research, teaching, and service reflect her deep commitment to learning with and from minoritized communities and centering social justice issues.

ANNA MAIER is a Senior Policy Advisor at the Learning Policy Institute. She co-leads the Deeper Learning team, with a focus on community schools. She is the lead author of Community Schools as an Effective School Improvement Strategy: A Review of the Evidence; Leveraging Community Schools: An Evidence-Based Strategy for Equitable School Improvement; Investing in Community Schools: How States and Districts Can Use Federal Recovery Funds Strategically; and California Community Schools Partnership Program: A Transformational Opportunity for Whole Child Education. Maier has experience with a variety of roles in k–12 education. She began her career managing an afterschool program for elementary school students in Oakland and went on to teach 2nd and 3rd grade in the Oakland Unified School District and Aspire Public Schools. She was also a member of the research and evaluation team at Coaching Corps, a youth sports nonprofit in Oakland. As a graduate student fellow with the Center for Cities & Schools at UC Berkeley, she worked with West Contra Costa Unified School District on implementing social services in schools. Maier received an M.P.P. from the Goldman School of Public Policy at UC Berkeley, a Multiple Subjects CLAD teaching credential from the New College of California, and a B.A. in Psychology and Education Studies from Carleton College.

SCOTT MARION, Ph.D., is the President and Executive Director of the National Center for the Improvement of Educational Assessment. He is a national leader in conceptualizing and designing innovative and balanced assessment systems to support instructional and other critical uses. He has also led extensive work across the country in accountability system and teacher evaluation design and evaluation. Dr. Marion's current projects include designing and supporting states in implementing assessment and accountability initiatives, providing technically defensible policy guidance, and implementing high quality, locally designed performance-based assessments.

Dr. Marion is one of three measurement specialists on the National Assessment Governing Board (NAGB), overseeing the National Assessment of Educational Progress and coordinates and/or serves on ten state or district Technical Advisory Committees (TAC) for assessment and accountability. He has served on multiple National Research Council (NRC) committees including to support designs for next generation science assessments, investigating the issues and challenges associated with incorporating value-added measures in educational accountability systems, and outlining best practices in state assessment systems.

Scott is a co-author of the validity chapter in the forthcoming volume of *Educational Measurement* and is the co-chair of a National Academy of Education panel currently producing a volume on balanced systems of assessment. Additionally, he has published dozens of articles in peer-reviewed journals and edited volumes; he also regularly presents his work at the national conferences of the American Educational Research Association (AERA), National Council on Measurement in Education (NCME) and the Council of Chief State School Officers (CCSSO). In addition, Scott serves his community as a member of the Rye (NH) School Board.

Scott received a Ph.D. from the University of Colorado Boulder with a concentration in Measurement and Evaluation.

SUSAN LETOURNEAU, Ph.D., is a Senior Research Associate at the New York Hall of Science. She collaborates with educators and designers to develop and study museum experiences that emphasize play, exploration, and creative expression as avenues for STEM learning. She has over ten years of experience conducting interdisciplinary research on children's learning and caregiver-child interactions in science centers, children's museums, and other informal learning environments, and recently earned an NSF early CAREER award for a

research-to-practice initiative examining how science centers and museums can recognize and support families' agency as STEM learners. She holds a Ph.D. in Cognitive Neuroscience from Brandeis University.

NIRAL SHAH, Ph.D., is an Associate Professor of Learning Sciences and Human Development in the College of Education at the University of Washington in Seattle, where he also directs the Race, Theory, and Design Lab. His research concerns how people learn racism and anti-racism. Shah's prior work has focused on race and racism in STEM education, specifically how racial narratives about STEM ability affect students' identities and participation in classrooms. He is also a co-developer of the EQUIP classroom observation tool (https://www.equip.ninja/), which supports teachers and educational leaders to identify and mitigate bias in classrooms. Dr. Shah is a National Academy of Education/Spencer Dissertation Fellow and Postdoctoral Fellow, and his work has been funded by the Institute of Education Sciences, Spencer Foundation, and the National Science Foundation.

GUILLERMO SOLANO-FLORES, Ph.D., is Professor of Education at the Stanford University Graduate School of Education. His research focuses on the intersection of assessment, cultural and linguistic diversity, and fairness. This research is relevant to the testing of students who are not proficient in English in the U.S., students from different countries in the context of international comparisons, and students with disabilities. His research is based on the use of multidisciplinary approaches that use psychometrics, sociolinguistics, semiotics, and cognitive science in combination. He is the author of the theory of test translation error, which addresses testing across cultures and languages. Also, he has investigated the use of generalizability theory—a psychometric theory of measurement error—in the testing of English language learners and indigenous populations. He has advised Latin American countries on the development of national assessment systems. He has been the advisor to countries in Latin America, Asia, Europe, Middle East, and Northern Africa on the adaptation and translation of performance tasks into multiple languages. Current research projects examine academic language and testing, formative assessment practices for culturally diverse science classrooms, the design and use of testing accommodations and accessibility resources for students with special needs in computer-administered tests, and the use of Boolean algebra in complex coding endeavors. He has been member of technical advisory boards or panels for several assessment projects and institutions, including the Smarter Balanced Assessment Consortium, the National Assessment of Educational Progress, the National Academy of Sciences, and the Department of Education of Hawaii.

SARA TOLBERT, **Ph.D.,** is Associate Professor in the Faculty of Education at University of Canterbury (UC) in Aotearoa, New Zealand, previously Associate Professor in Teaching, Learning, and Sociocultural Studies at the University of Arizona (USA). Sara is a former science and ESOL teacher and environmental educator, and has worked with students in multilingual contexts in the USA, Aotearoa, New Zealand, Mexico, and Guatemala. Her scholarship draws from feminist studies, sociolinguistics, anti-colonial/critical theory, science-and-technology-studies, and critical pedagogy to explore possibilities for justice through science and education in the Anthropocene(s). She has collaborated on several funded research projects designed to prepare teachers for responsive and inclusive instruction, including Effective Science Teaching for English Learners (ESTELL) and Secondary Science Teaching with English Language and Literacy Acquisition (SSTELLA), sponsored by the NSF K-12 Discovery Research Program, and Integrating Science and Diversity Education (ISDE) at the UC-Berkeley Center for Research on Education, Diversity, & Excellence (CREDE), sponsored by the USDOE. As a National

Academy of Education (NAEd)/Spencer postdoctoral fellow (2015), she explored how classroom teachers enact socially transformative and justice-oriented approaches to science education within rigid constraints. Some of her current projects include Postdigital Pedagogies of Care, Pāngarau Unleashed: a Multiple Case Study of De-streaming [detracking] Secondary Mathematics, Freire: A Praxis of Radical Love and Critical Hope for Science Education, and Reimagining Science Education in the Anthropocene. She co-leads the Ōtautahi Food Justice Research Collaborative and the UC Learning for Earth /Ako Futures (LEAF) research cluster.