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Board on Science Education
Division of Behavioral and Social Sciences and Education

**Taking Stock of Science Standards Implementation: A Summit
Biographies**

Virtual Sessions: October 14 and 15; December 8, 2021

Planning Committee Members



Maya M. Garcia (planning committee chair) joined the Colorado Department of Education as the Science Content Specialist in 2019, where she leads the implementation efforts for the newly adopted 2020 Colorado Academic Standards for Science and supports CDE's STEM education portfolio. Maya began her career in science education as a middle school science teacher and science department chair, in the District of Columbia, where she taught for over eight years. In 2013, Maya joined the District of Columbia Office of the State Superintendent of Education (OSSE), where she led the District's adoption and implementation efforts around the Next Generation Science Standards (NGSS), Common Core Mathematics, and developed the District's plan for advancing Pre-K- 12 STEM education. Maya has served on various national committees and boards including the National Academies Board on Science Education (BOSE) and the Council of State Science Supervisors. Maya holds a bachelor's degree in Neuroscience and Behavior from Mount Holyoke College and a Master's in Science Teaching from American University, where she served as adjunct faculty in the School of Education, and is currently pursuing her Doctorate of Education in Leadership for Educational Equity at the University of Colorado, Denver.



Aneesha Badrinarayan supports LPI projects related to 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. 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.

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James Blake, Ph.D., is the Director of Strategic Initiatives and Focus Programs for Lincoln Public Schools (LPS) and the retiring president of the National Science Education Leadership Association (NSELA). Dr. Blake was previously the K-12 Science Curriculum Specialist for LPS and state science supervisor for Nebraska. His areas of expertise include working with community partners to develop new focus programs, and supporting existing Science and Arts and Humanities focus programs as principal. Dr. Blake previously worked with the National Academy of Sciences January 9-10, 2019, at the workshop, “Realizing the Vision: NGSS District Implementation”. As president-elect of NSELA, he presented at the workshop alongside other large national support organizations interested in helping districts implement NGSS and the Framework: BOSE, Achieve, NSTA, NARST, CSSS, and AAAS. He earned his Masters of Science, Masters of Secondary Teaching, and Doctor of Education in Educational Administration at the University of Nebraska - Lincoln.



Ravit Golan Duncan, Ph.D., is a professor of Learning Sciences and Science Education with a joint appointment in the Graduate School of Education and the School of Environmental and Biological Sciences at Rutgers University. Dr. Duncan coordinates and teaches in the Certification Program in Biological Sciences at Rutgers University. Her current research focuses on two main strands: designing and studying of inquiry-based learning environments in sciences that foster epistemic reasoning through engagement with scientific practices; and studying learning progressions in science education, and specifically in genetics. Dr. Duncan has published in both education research journals, and practitioner journals and has co-edited the National Science Teachers Association Press book *Disciplinary Core Ideas: Reshaping Teaching and Learning*. She received her Ph.D. in Learning Sciences from Northwestern University.



Jessica Henderson-Rockette, Ph.D., currently serves as the Director of Science for Instruction Partners. She specializes in K-12 science education, specifically focused on building tools and processes for building long-lasting school leadership capacity that results in the successful adaptation and implementation of science instructional materials as a key lever for high quality standard implementation. In her current work, she leads her organization’s science research and development agenda to improve equitable access to high quality science opportunities for all students. This agenda currently includes (1) the design, testing, and publication of a science instructional observational tool for diagnosing science instruction in classrooms and informing changes in instructional practice and (2) the formation and launch of a web-based Science Leader Development Series created to improve principals and other school leaders’ ability to establish their own vision of excellent science instruction, speak to the conceptual

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	shifts that ground the NGSS and similar science standards, and diagnose instruction while leading change in instructional practice in their own schools. She received her doctorate in Educational Leadership and Policy Studies from the University of Memphis.
	Victor Sampson, Ph.D., examines how culturally and linguistically diverse groups of students participate in the practices of science, engineering, and mathematics and how to organize the interactions that take place between students, materials, and ideas in ways that promote and support learning. His current work focuses on the ways culturally and linguistically diverse groups of students support, evaluate, and revise ideas when attempting to develop explanations or solutions to problems, group and individual meaning-making during episodes of argumentation, the development of innovative instructional materials and strategies, and how to support teachers in making classroom instruction more equitable and inclusive. He has published numerous articles, book chapters, and books related to these issues. He has received several awards for his scholarship, including the 2008 National Association for Research in Science Teaching Outstanding Dissertation award and the 2012 National Association for Research in Science Teaching Early Career award.
	Sam Shaw is the Director of Science Review at EdReports.org. Sam came to EdReports from the South Dakota Department of Education, where he oversaw science education in addition to social studies, fine arts, advanced placement, the South Dakota Virtual School, among other programs, and was also a participant in the SD Governor's Leadership Program. Sam worked statewide with teachers and school leadership to advance education related to college and career readiness (CCR), specifically with regard to CCR standards implementation. Prior to his role at the Department of Education, Sam was a middle school science teacher. He has also held positions of board director and financial officer with the Council of State Science Supervisors (CSSS) where he was also a collaborator on the Science Professional Learning Standards. Sam earned his B.S. in Biology from South Dakota State University and his Executive Master in Public Administration from the University of South Dakota.
	Tricia Shelton worked with Kentucky students for 22 years as a middle school and high school science teacher and teacher leader. Tricia is a 2014 NSTA Distinguished Teaching Award winner for her contributions to and demonstrated excellence in science teaching. Tricia served as an EQuIP Trainer for Achieve and a Professional Learning Designer and Facilitator for many organizations before joining the NSTA team. At NSTA, Tricia is the Chief Learning Officer, and in that capacity, works to support educators and students across the country as they work to integrate contemporary research in science education into classroom teaching and learning.

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National Academies Staff	
	Heidi Schweingruber, Ph.D., is the director of the Board on Science Education at the National Academies of Sciences, Engineering, and Medicine. She oversees a portfolio of work that includes K-12 science education, informal science education, and higher education. Dr. Schweingruber joined the staff of the board in 2004 as a senior program officer. In this role, she directed or co-directed several projects including the study that resulted in the report <i>A Framework for K-12 Science Education</i> (2012), the blueprint for the Next Generation Science Standards. Dr. Schweingruber is a nationally recognized leader in leveraging research findings to catalyze improvements in science and STEM education policy and practice. She holds a Ph.D. in psychology (developmental) and anthropology from the University of Michigan.
	Amy Stephens, Ph.D., (study director) is a senior program officer for the Board on Science Education of the National Academies of Sciences, Engineering, and Medicine. She was the study director for several consensus studies including <i>English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives</i> (2018), <i>Changing Expectations for the K-12 Workforce: Policies, Preservice Education, Professional Development, and the Workplace</i> (2020), <i>Cultivating Interest and Competencies in Computing: Authentic Experiences and Design Factors</i> (2021), and <i>Science and Engineering in Preschool through Elementary Grades: The Brilliance of Children and the Strengths of Educators</i> (2021). She holds a Ph.D. in cognitive neuroscience from Johns Hopkins University.
Sponsor	
	Taunya Nesin, Ph.D., is a Senior Program Officer at the Bill & Melinda Gates Foundation. At the foundation, her portfolio includes organizations that specialize in supporting the development and sustainment of coherent instructional systems. Prior experience includes accountability work at the DC Public Charter School Board and policy research at The George Washington University. Her primary research investigated how principals use evidence from research practice partnerships to inform decision making. She was an editor at NSTA, National Geographic School Publishing, and Houghton Mifflin Harcourt where she developed curricula for science and ELA. Taunya started her career as a public school teacher in Hoboken, Atlanta, and Boston. Taunya earned her bachelor's degree from Harvard University, her master's degree in Curriculum and Instruction from Columbia University, Teachers College, and her doctorate in Educational Administration and Policy Studies from The George Washington University.

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DAY 1: October 14, 2021

Plenary Session Panel



Philip Bell, Ph.D., studies equitable science and STEM education in school and informal contexts. He is a Professor of Learning Sciences & Human Development in the College of Education at the University of Washington where he holds the Shauna C. Larson Endowed Chair in Learning Sciences. His current research focuses on understanding and resourcing equity improvements in PK-12 science education—with a key focus on promoting climate and environmental justice across scales of educational implementation. Bell is a white settler scholar who has studied equitable approaches to science and engineering instruction, how people learn science and engineering across formal and informal environments, youth argumentation and conceptual change, culturally expansive and resurgent science instruction, scaled implementation of educational improvement, and how learning technologies support science learning. He has worked with families and communities in their home settings and neighborhoods, in classrooms and school districts, in informal education programs, and across school districts and national networks in partnership with educational leaders and teachers. He edits an NSF-funded educator resource collection called STEM Teaching Tools and has an academic background in human cognition and development, science education, computer science, and electrical engineering.



Elizabeth A. (Betsy) Davis, Ph.D., is a science educator and teacher educator at the University of Michigan. She is especially interested in beginning and experienced elementary teachers, teachers learning to engage in rigorous and consequential science teaching, and the roles of curriculum materials and practice-based teacher education in promoting teacher learning. Davis received her doctorate from the University of California at Berkeley in 1998, and received the Presidential Early Career Award for Scientists and Engineers at the White House in 2002. She was a member of the National Research Council consensus committee that developed the report *Science Teachers' Learning* and the workshop planning committee on *Design, Selection, and Implementation of Instructional Materials for the Next Generation Science Standards (NGSS)*. Most recently, she served as the chair of the National Academies consensus committee that developed the report *Science and Engineering in Preschool through Elementary Grades: The Brilliance of Children and the Strengths of Educators*.

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	Michael Lach, Ph.D., is the Assistant Superintendent for Curriculum, Instruction, and Assessment at Township High School District 113, a small school district on the outside of Chicago. Dr. Lach began his professional career teaching high school biology and general science at Alceé Fortier Senior High School in New Orleans in 1990 as a charter member of Teach For America. In 2009, he was appointed by Secretary Arne Duncan to lead science and mathematics education efforts at the U. S. Department of Education. Starting in 2013, he led a variety of research and technical assistance projects focusing on large scale improvements in mathematics and science education as the Director of STEM Education and Strategic Initiatives at UChicago STEM Education at the University of Chicago. Key funders included NSF, NASA, Microsoft, Google, and Magentar Capital. As a senior fellow at Achieve from 2016 to 2019, he led all content-related work, including standards work in mathematics, science, and English language arts. He earned a bachelor's degree in physics from Carleton College, master's degrees from Columbia University and Northeastern Illinois University, and a doctorate from the University of Illinois at Chicago.
	Tiffany Neill is the Deputy Superintendent of Curriculum and Instruction for the Oklahoma State Board of Education and the Past-President for the Council of State Science Supervisors, an organization comprised of state leaders for science education. Neill serves as co-PI for the NSF-funded Advancing Coherent and Equitable Systems of Science Education (ACESSE) project and is a member of the NSF STEM Advisory Panel and board member for Carnegies OpenSciEd Project and EdReports for Science. Prior to her current role, Neill served as the Executive Director of Curriculum and Instruction for three years and as the Director of Science and Engineering Education for five years at the Oklahoma State Department of Education. She began her career in education as a middle and high school teacher. She served on the National Academies of Sciences, Engineering, and Medicine consensus committee that authored the report, <i>Changing Expectations for the K–12 Teacher Workforce: Policies, Preservice Education, Professional Development, and the Workplace</i> (2020) and <i>Science and Engineering in Preschool through Elementary Grades: The Brilliance of Children and the Strengths of Educators</i> (2021). Neill is completing a Ph.D. in instructional leadership and academic curriculum in science education at the University of Oklahoma.

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Stephen Pruitt, Ph.D., took office as the sixth president of the Southern Regional Education Board in July 2018. He started his education career as a high school chemistry teacher in Fayette County, Georgia. During his career, Pruitt has amassed education policy, assessment, and instructional background at the local, state and national levels. Before coming to SREB, Pruitt was Kentucky's state commissioner of education. He served on the National Academies of Science's Committee on Conceptual Framework for New Science Education Standards that developed the *Framework for K-12 Science Education* setting the vision for science education in the country. Additionally, he worked with a broad coalition of states to lead the development of the Next Generation Science Standards. Pruitt holds a bachelor's degree in chemistry from the University of North Georgia, a master's degree in science education from the University of West Georgia and a Doctor of Philosophy in chemistry education from Auburn University.

Large Scale Implementation Panel



Stefanie L. Marshall, Ph.D., is an Assistant Professor at the University of Minnesota- Twin Cities. Dr. Marshall has worked as a middle and high school science teacher as well as a district manager for an educational service provider in districts across the State of Michigan. Dr. Marshall does not take her intersectional identity as a Black woman who is a doer of science for granted. She strives to engage key decision-makers and policymakers to disrupt the status quo of limited opportunities for marginalized youth to engage in the sciences. Dr. Marshall, situates her work at the intersection of educational policy, leadership and science education, focusing on the systemic and organizational needs for science education. Specifically, Dr. Marshall researches: 1) ways to support equity in science/STEM education through building and sustaining networks, 2) the impact of policies on science/STEM education, and 3) the role of school administrators in science/STEM education.



Bill Penuel, Ph.D., is Distinguished Professor of Learning Sciences and Human Development in the School of Education and Institute of Cognitive Science at the University of Colorado Boulder. He designs and studies curriculum materials, assessments, and professional learning experiences for teachers in science. He works in partnership with school districts and state departments of education, and the research he conducts is in support of educational equity in three dimensions: (1) equitable implementation of new science standards; (2) creating inclusive classroom cultures that attend to students' affective experiences and where all students have authority for constructing knowledge together; and (3) connecting teaching to the interests, experiences, and identities of learners. Penuel is an elected member of

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	the National Academy of Education and is a Fellow of the International Society of the Learning Sciences, the International Society for Design and Development in Education, and the American Educational Research Association. He received his B.A. from Clark University in psychology in 1991, his Ed.M. in Counseling Processes from Harvard University in 1992, and his Ph.D. in developmental psychology from Clark University in 1996.
	Jenny Sarna directs NextGenScience, providing leadership and vision for the project's work supporting science educators and leaders nationwide. She assists district and agency leaders with planning, implementing, and evaluating science education programs—paying special attention to equity and access. Prior to joining WestEd, Sarna served as Achieve's director of district support, overseeing strategic planning initiatives that brought district-level leaders together to implement college and career-ready STEM policies. Sarna also led Chicago Public Schools' NGSS implementation strategy, as the district's high school science specialist and preK-12 science manager where she built strategies focused on professional learning and external partnerships, strengthened graduation requirements, and oversaw the development and adoption of new K-8 science instructional materials. Sarna began her career teaching middle school and high school science, in Hidalgo, Mexico, and Chicago. Sarna graduated from the University of Notre Dame with a Bachelor of Science. She earned a Master of Arts in Teaching from University of Chicago and a Master of Educational Studies from University of Illinois at Chicago.
	James P. Spillane, Ph.D., is the Spencer T. and Ann W. Olin Professor in Learning and Organizational Change at the School of Education and Social Policy at Northwestern University. A former primary school teacher at St. Mary's on the Hill N.S., Cork, Spillane has published extensively on issues of education policy, policy implementation, school reform, and school leadership. His work explores the policy implementation process at the state, district, school, and classroom levels, focusing on intergovernmental and policy-practice relations. He also studies organizational leadership and change, and distributed leadership in schools. Recent projects include studies of relations between organizational infrastructure and instructional advice-seeking in schools and the socialization of new school principals. In recognition of his contribution to educational research, Spillane was elected to the US National Academy of Education in 2013 and to the American Academy of Arts and Sciences in 2020.

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Leadership Panel



Gudiel R. Crosthwaite, Ph.D., is currently the superintendent at Lynwood Unified School District (LUSD) in the County of Los Angeles. Dr. Crosthwaite has enjoyed over 25 years in education, including teaching, mentoring and leadership focused on removing educational barriers. In 2013, as the Assistant Superintendent of Educational Services, his leadership team was instrumental in the District's extraordinary gains in achievement, including in graduation rates and enrollment in Advanced Placement (AP) coursework. In 2017, LUSD was one of only three Districts in the nation – and only one in California – to be named 2017 AP District of the Year by the College Board for their AP performance.



Zoe Evans is the principal of Bowdon High School in Bowdon, Georgia. Before becoming an administrator in 2012, she served as a middle grades science teacher for nineteen years in both Florida and Georgia. Mrs. Evans is a National Board Certified teacher in Early Adolescent Science and a Georgia Master Teacher. She is the 2005 Georgia recipient of the Presidential Award of Excellence in Mathematics and Science Teaching. Mrs. Evans served as a member of the writing team for the Next Generation Science Education Standards and has collaborated on many projects including the NGSS EQuIP Professional Learning Facilitator's Guide, NGSS Example Bundles, and NGSS Evidence Statements. Zoe also serves as an EQuIP Rubric Facilitator, a member of the NSTA Professional Learning Cadre, and a member of the NextGen TIME network. A native Georgian, Zoe earned a bachelor's degree in middle grades education, master's degree in middle grades science, and specialist's degree in middle grade science from the University of West Georgia. Additionally, she has received certification in Educational Leadership from the University of West Georgia.



Michael Heinz serves as the Science Coordinator for the New Jersey Department of Education, a position that he has held for more than 16 years. His work focusses on academic standards and their implementation in K-12 public schools. He is currently the President of the Council of State Science Supervisors, a professional organization whose members have direct accountability to the state territorial agencies given the constitutional authority for education.

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Elizabeth Mulkerrin, Ph.D., is the Vice President of Education at the Omaha Zoo and Aquarium and the NSTA President Elect. In this position, Mulkerrin creates and designs zoo exhibits and associated educational materials, works to provide positive visitor experiences, partners with local leaders to engage the community, develops unique partnerships to drive the zoo's mission, developed of a 5-year strategic plan for the Zoo, and raises funds through donors and corporate relations. She leads the team that provides quality STEM education programming to 158,000 students annually and is co-founder of the Omaha STEM Ecosystem, a grassroots organization that brings business and education together in developing Omaha's STEM workforce. In addition to her position on the NSTA Executive Board as President Elect, Mulkerrin also served on the executive board and as President of the National Science Education Leadership Association (NSELA). She served as division director for informal science for both the NSTA and NSELA Board of Directors. She also completed the Association of Zoos and Aquariums (AZA) Executive Leadership Development Certificate Program in 2019. She received her Master and Ph.D. degrees at the University of Nebraska at Omaha.



Takako Olson, Ed.D., is the Director of Curriculum and Instruction for Lincoln Public Schools (LPS) in Lincoln, Nebraska. Growing up as a student in Tokyo, as well as being an elementary teacher and a high school administrator in the United States, her experience in education is versatile. Her area of expertise and interests include the intersectionality of being a woman and of color, intercurricular connections, equitable teaching practices and mindset, and implementation of curriculum and instruction in K-12 public school systems. She has earned her M.Ed., Ed.S., and Ed.D. from Doane University in Nebraska.

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DAY 2: October 15, 2021

Centering Student Experiences Panel



Rabiah Harris, Ph.D., hails from a little bit of everywhere in the United States, but is happy to call Washington, DC home. She currently teaches 8th Grade Science in Washington, DC. She has taught and supported science instruction for 16 years in DC Public Schools, a DC and New Orleans public charter school and Pittsburgh Public Schools. Dr. Harris has taught a number of science courses and STEM electives from sixth grade to twelfth grade. She also helped support NGSS adoption in DCPS through training and course blueprint realignment.



Lauren Kaupp, Ed.D., is the Science Specialist for the State of Hawai'i Department of Education, where her work is centered on supporting NGSS-aligned teaching and learning, and providing leadership in Science and STEM education state initiatives. Prior to this position, she designed curriculum and developed and facilitated professional learning for teachers in Marine Science and Physics at the University of Hawai'i at Mānoa. She also taught high school chemistry and physics at a public charter school in Hawai'i. She holds a B.S. in Chemistry from the University of Maryland, Baltimore County, an M.S. in Oceanography (Chemical) from the University of Hawai'i at Mānoa, and an Ed.D. in Educational Leadership from the University of Southern California.



Maria C. Olivares, Ph.D., is a Research Assistant Professor at the Earl Center for Learning and Innovation in Boston University's Wheelock College of Education and Human Development. Dr. Olivares' designs learning environments and experiences that locate creativity and nurturance as a foundation and a product of expansive STEM-learning. Originally from South Central Los Angeles, Maria is the proud daughter of Mexican immigrants and the first in her family to gain access to higher education. In her research, Maria collaborates with youth, teachers and other researchers to co-design learning settings that elevate creative and critical inquiry in science and computational thinking, with a commitment to transforming educational opportunities for youth and communities of color.



Enrique (Henry) Suárez, Ph.D., is an assistant professor of science education at University of Massachusetts, Amherst. He is committed to making science learning equitable for students and teachers, emphasizing the importance of knowing about the natural world through investigation. Drawing on a range of learning theories, Suárez works in partnership with K–12 schools and communities to make science learning more equitable for learners from historically underserved communities. Suárez has extensive experience teaching elementary science methods courses, co-designing and co-facilitating professional development for K–12 science teachers, and developing physics-based K–12 curriculum. He is an astrophysicist who did

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	cosmology research for five years before choosing a career in K-5 science education. Suárez holds a B.S. in astrophysics from the University of Oklahoma, an M.S. in science education from Tufts University, and received his Ph.D. on curriculum & instruction—science education from the University of Colorado, Boulder.
	Edna Tan, Ph.D., is professor of science education at the University of North Carolina at Greensboro. Her collaborative research investigates the design, support and outcomes of equitable and consequential STEM learning for historically minoritized youth across learning contexts and over time. Current National Science Foundation funded projects include longitudinal, community-engaged research with minoritized and refugee youth engaging in makerspace work, focused on identifying the elements of an authentic, community-owned and youth-centered making space; and working with middle school teachers in co-developing and enacting an engineering for sustainable communities curriculum that attends to students' identity work and engineering toward justice-oriented ends. In 2020, Dr. Tan was elected as a Fellow of the American Association for the Advancement of Science.

Professional Learning Panels – Educator Prep

	Melissa Braaten, Ph.D., is an Assistant Professor of STEM Education and Teacher Learning, Research, and Practice at the University of Colorado in Boulder. She taught upper elementary, middle, and high school science for thirteen years. Her research focuses on the complexities of teaching science in culturally sustaining and responsive ways that advocate for justice. She is interested in how teaching is shaped by the political and institutional contexts of schools, education reforms, and education policy and how teachers' voices and experiences should be part of shaping those contexts. As a teacher educator and research, Dr. Braaten conducts research in long-term partnerships with teachers, schools, and systems examining teacher learning from pre-service throughout the career trajectory.
	Lizette Burks, Ed.D., taught middle and high school science in Texas and Kansas supporting schools with high percentages of learners impacted by poverty. In 2016, Lizette joined the Kansas State Department of Education where she led the Department's state-wide implementation efforts around the Next Generation Science Standards (NGSS) advancing equity-focused innovations for Pre-K- 12 STEM education. Currently, she is an assistant professor of educational leadership at the University of Houston-Downtown, Texas. Dr. Burks' developing lines of research are motivated by learning English as a second language as a child, and later, committing to making learning more equitable for students from historically underserved

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	communities. She has joined the University of Houston- Downtown to develop a Master's degree in Educational Leadership focused on equity.
	Todd Campbell , Ph.D., is the Department Head of Curriculum and Instruction and a Professor of Science Education in the Neag School of Education. His research focuses on cultivating imaginative and equitable representations of STEM activity. This is accomplished in formal science learning environments through partnering with pre-service and in-service science teachers and leaders to collaboratively focus on supporting student use of modeling as an anchoring epistemic practice to reason about events that happen in the natural world. This work extends into informal learning environments through a focus on iterative design of informal learning spaces and equity focused STEM identity research. He is currently the Co-Editor in Chief of the Journal of Science Teacher Education and the Co-PI on NSF funded projects focused on teacher education and informal science learning.
	Thomas M. Philip , Ph.D., is a professor in the Graduate School of Education at UC Berkeley, where he also serves as the Faculty Director of teacher education. Philip's research focuses on how teachers make sense of power and hierarchy in classrooms, schools, and society. He is interested in how teachers act on their sense of agency as they navigate and ultimately transform classrooms and institutions toward more equitable, just, and democratic practices and outcomes. His recent scholarship explores the possibilities and tensions that emerge with the use of artificial intelligence, data analytics, and digital learning technologies in the classroom, particularly discourses about the promises of these tools with respect to the significance or dispensability of teacher pedagogy.

Professional Learning Panels – Professional Development

	Jody Bintz serves as BSCS Associate Director for Strategic Partnerships and Professional Learning and as co-director of the NEXUS Academy for Science Curriculum Leadership. She works primarily in the areas of leadership development and teacher professional learning. Jody designs, studies, and leads programs to develop organizational leadership capacity, particularly as related to implementing the Next Generation Science Standards (NGSS). Jody serves as co-principal investigator of an efficacy study of the professional development program, Science Teachers Learning from Lesson Analysis (STeLLA), and its impact on high school biology student learning and teacher practice. She also leads the professional learning and leadership development components of a study of STeLLA scale up and sustainability in grades 4 and 5 with partner organizations and schools from across Kentucky and Tennessee.
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	K. Renae Pullen is the Elementary Science Curriculum Instructional Specialist for Caddo Parish Public Schools in Shreveport, Louisiana, and she is a member of the Caddo Teaching Academy faculty. Prior to being a science specialist, she was an elementary classroom teacher for 16 years. Ms. Pullen has received numerous awards including the Wal-Mart Local Teacher of the Year, Caddo Parish Teacher of the Year, Greater Shreveport and Bossier Chamber of Commerce's 40 Under 40 Honoree, and the Presidential Award for Excellence in Math and Science Teaching. Besides being dedicated to growing as an educator through professional learning opportunities, Ms. Pullen has elevated the profession by serving on several local, state, and national committees, presented at numerous workshops, webinars, and conferences, and serves as a member of the Board for Science Education for the National Academies of Sciences, Engineering, and Medicine. Ms. Pullen was a consulting expert for NASEM's practitioner's guide, <i>Seeing Students Learn Science: Integrating Assessment and Instruction in the Classroom</i> and served on the committees that produced <i>English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives</i> and <i>Science and Engineering in Preschool Through Elementary Grades: The Brilliance of Children and the Strengths of Educators</i>.
	Breigh Rainey Rhodes is the Director of Math, Science, and STEM at the Louisiana Department of Education. Breigh serves Louisiana's 800,000+ students by ensuring teachers, schools, and systems have access to high-quality math, science, and STEM instructional materials and aligned professional development. Prior to joining the Department, Breigh taught math and science and worked to support fellow educators through curriculum writing, teacher training, and STEM program innovation in Louisiana's public schools. Breigh has earned several honors and awards for her work in STEM education, including the Essie Beck Rising Star Award, the Disney Planet Challenge Grand Prize, a National Geographic Grosvenor Fellowship, and the Council for Elementary Science International Muriel Green Award. Breigh holds a B.S. in Elementary Education from Southeastern Louisiana University and M.Ed. in Gifted Education from Louisiana State University.
	Stacey (Gruber) van der Veen has extensive experience designing and delivering professional development programs to support New Jersey school districts as they implement the Next Generation Science Standards. She spends much of her time in schools working elbow to elbow with teams of teachers as they implement the vision behind the NGSS in their classrooms. She also works with science coaches and administrators, building their leadership skills for supporting science teachers. Before founding Leadership in Science, Stacey was the Manager of Education Programs for the Merck Institute for Science Education (MISE), a nationally recognized

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	nonprofit organization dedicated to improving science teaching and learning in public schools. She started her career teaching science and math at high schools in Newark, New Jersey, and New York City and has over 20 years of K-12 teaching and administrative experience in both public and private schools. She co-founded the Hoboken Charter School, one of the first cohort of schools chartered in New Jersey, where she served as Co-Principal and Child Study Team Coordinator. Stacey earned her Ed.M. in secondary science education from the Harvard Graduate School of Education and her B.A. in biology from the University of Pennsylvania.
	Julie Yu, Ph.D., is a Senior Scientist at the Exploratorium, San Francisco's museum of science, art, and human perception. She provides science content support throughout the museum and works with teachers to bring inquiry-based science learning to their classrooms as part of the Exploratorium's Teacher Institute, a nationally-recognized teacher professional learning center. With broad interests in science and education, her research has spanned from viruses and stem cells to teacher learning and inquiry to concrete and cement. This has led to a myriad of opportunities, including teaching science to Tibetan monks and nuns, launching an explosion of 2000 ping pong balls, and acquiring a US patent. Julie holds a BS in chemical engineering from Brown University and a PhD in chemical engineering with a minor in molecular and cell biology from the University of California, Berkeley.

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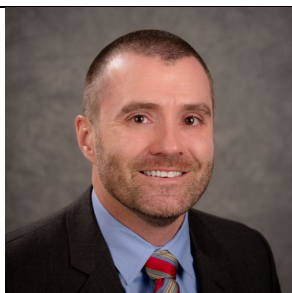
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DAY 3: December 8, 2021

Curriculum/Instructional Materials Panel



Philip Bell, Ph.D., studies equitable science and STEM education in school and informal contexts. He is a Professor of Learning Sciences & Human Development in the College of Education at the University of Washington where he holds the Shauna C. Larson Endowed Chair in Learning Sciences. His current research focuses on understanding and resourcing equity improvements in PK-12 science education—with a key focus on promoting climate and environmental justice across scales of educational implementation. Bell is a white settler scholar who has studied equitable approaches to science and engineering instruction, how people learn science and engineering across formal and informal environments, youth argumentation and conceptual change, culturally expansive and resurgent science instruction, scaled implementation of educational improvement, and how learning technologies support science learning. He has worked with families and communities in their home settings and neighborhoods, in classrooms and school districts, in informal education programs, and across school districts and national networks in partnership with educational leaders and teachers. He edits an NSF-funded educator resource collection called STEM Teaching Tools and has an academic background in human cognition and development, science education, computer science, and electrical engineering.



Cory Epler, Ph.D., is the Academic Officer for the Nebraska Department of Education. As the Academic Officer, Dr. Epler provides strategic leadership, support, and coordination of activities, resources, and programs related to teaching, learning, and assessment in order to lead and support the preparation of all Nebraskans for learning, earning, and living.



Dora Kastel is a Curriculum Development and Professional Learning Manager for Science at New Visions for Public Schools. She supports science teaching and learning in the New Visions network and beyond through the development of standards-aligned instructional materials along with facilitation of professional learning for both teachers and leaders. Dora previously taught middle school science and math in East Harlem, and was a professional development provider at the American Museum of Natural History. While at the museum, her projects included the *Five Tools and Processes for Translating the NGSS Into Instruction and Classroom Assessment*, the NSF-funded *Moving Next Generation Science Standards into Practice: A Middle School Ecology Unit and Teacher Professional Development Model*, and an NGSS video series with the Teaching Channel. Dora holds a B.A. in geology from the

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	University of Pennsylvania, M.A. and Ed.M. degrees in science and math education from Teachers College, Columbia University, and is currently working on her Ph.D. in science education.
	Spencer Martin attended Texas Tech University for his undergraduate teacher preparation and then joined the Peace Corps and taught science in Malawi, Africa. Directly after the Peace Corps, Spencer moved to Austin to work in Austin ISD and then Manor ISD at Manor New Technology High School. While at Manor New Tech, Spencer completed his Master's in STEM Education: Engineering degree at UT Austin. He then worked for a short time at an education technology startup in downtown Austin before moving to Kansas City, KS for his current role as the Lead Secondary Science Curriculum Instructional Coach for Kansas City, Kansas Public Schools. While in Kansas City, Spencer completed his Ed.S. degree in curriculum and Instruction at the University of Missouri, Kansas City.
	Carol O'Donnell, Ph.D., is Senior Executive and Director of Smithsonian Science Education Center, dedicated to transforming K-12 Education through Science in collaboration with communities across the globe. Dr. O'Donnell's career spans being a K-8 science teacher, curriculum developer, research scientist for the Institute of Education Sciences, group leader at the US Department of Education Office of State Support, and Adjunct Faculty for George Washington University's Physics Department. She serves on numerous STEM committees, including FC-STEM of the White House Office of Science and Technology Policy; and the UN Broadband Commission Working Group on Digital Learning. Through a NASEM appointment, Carol represents the US on the Science Education Programme Global Council of the InterAcademy Partnership, the global network of 143 national academies. She is a member of CSSS and the International Dialogue on STEM Education, where she co-authored the position paper on STEM Education for Sustainable Development.
	Jamie Rumage serves as the Science Education Specialist at the Oregon Department of Education (ODE). In her role, she strives to elevate educational equity by supporting a statewide science education system that intentionally broadens the participation and engagement of all students. She develops science policy, practices, and procedures that build affirming science classrooms that harness students' culture, linguistic diversity, interests, and knowledge. She continues to coordinate these efforts through the implementation of the Next Generation Science Standards (NGSS) to advance high quality science education. She currently serves as the First Year Director on the Council of State Science Supervisor (CSSS) Board and served as a co-chair of the Access and Equity Ad Hoc Committee; co-leading the development of the CSSS Position Statement on Equity and Access to Science Education. She holds a B.S in environmental education from

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	Western Illinois University and a M.S. in science education from Oregon State University.
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Assessment Panel



Daniel Alcazar-Roman leads the science assessment efforts at the state education agency in the District of Columbia. In this role, Daniel has led the design and implementation of a new state-level large-scale assessment based on the Next Generation Science Standards. As part of this effort he also launched a science assessment for students with significant cognitive disabilities. Prior to joining the DC government, he spent 12 years as a district science supervisor supporting schools in the Houston Independent School District in Texas and Alexandria City Public Schools in Virginia. During those years he gained extensive experience in the development of curriculum tools, assessments, and professional development opportunities in support of rigorous science teaching and learning. He started his education career as a bilingual science teacher and school administrator in downtown Houston. He holds a Bachelor of Science degree in Engineering from Lipscomb University and a Master's degree in Education Administration from Texas Southern University.



Alec Barron, Ed.D., is the Director of the San Diego Science Project at UC San Diego CREATE. Alec has worked to develop teachers, curriculum, and instructional practices that engage students in learning science. In his previous role as a Science Content Specialist in Escondido Union High School District, he led the design of new curricula, professional learning events, and instructional coaching to support NGSS implementation. He has 13 years of experience as a teacher and taught a variety of science subjects from grades six through twelve at schools with culturally and socioeconomically diverse students. Alec's experience in the classroom inspired him to complete a social justice-based Education Doctorate in Leadership for Educational Equity with the University of Colorado Denver. This graduate work supported his equity design work in grant funded projects like Competency X, an assessment practice for workforce informed performance tasks that was developed to broaden access to STEM college and career opportunities.



Tamara "TJ" Heck has been involved in Framework-based curriculum and assessment design since 2011. Currently, she is leading the development and implementation for Michigan's NGSS-aligned state summative science assessment. Through this process, TJ has designed professional learning for teacher/researcher teams to write item clusters for state summative use.

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Angela Landrum has, for more than 13 years, served as the Principal Consultant for Assessment Systems at the Colorado Department of Education. She led the design and implementation of the 2009 Colorado Academic Standards revision process, served as the facilitator of the Interim and Formative Assessment Subcommittee during the state's 2010 assessment system revision, and led the Colorado Race to the Top Program. In 2013 Angela led the development of the Colorado Assessment Literacy Program which includes online professional learning modules, formative assessment supports, and a workshop series on developing high quality classroom assessments. Currently she is leading the development of the performance assessment component of the Colorado Graduation Guidelines Menu of Assessment Options. Angela has been in the classroom at the preschool, high school and university levels, and has served in executive leadership roles in the university and non-profit sectors. She holds a B.A. from Loyola Marymount University and a M.A. from the University of California, Los Angeles (UCLA).



James W. Pellegrino, Ph.D., is Liberal Arts and Sciences Distinguished Professor and Founding Co-director of the Learning Sciences Research Institute at the University of Illinois at Chicago. He studies children's and adult's thinking and learning and the implications of research and theory for assessment and instructional practice. He has chaired several National Academy of Sciences study committees that have issued major reports related to teaching, learning and assessment, including the Committee for the *Evaluation of the National and State Assessments of Educational Progress*, the Committee on *Learning Research and Educational Practice*, and the Committee on the *Foundations of Assessment*. Most recently he served on the Committee on *Science Learning: Games, Simulations and Education* and the Committee on a *Conceptual Framework for New Science Education Standards*. He chaired the Committee on *Defining Deeper Learning and 21st Century Skills*, and co-chaired the Committee on *Developing Assessments of Science Proficiency in K-12*. He is a lifetime National Associate of the National Academy of Sciences, and a past member of the *Board on Testing and Assessment* of the National Research Council. He is also a lifetime elected member of the National Academy of Education and the American Academy of Arts and Sciences.

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Breakout Group Reporters



Andres Bustamante, Ph.D., is an Assistant Professor at the University of California Irvine’s School of Education, and directs the Social, iTerative, Engaged, and Meaningful (STEM) Learning Lab. He designs and implements play-based early childhood STEM interventions in places and spaces that children and families spend time. He maintains an intentional focus on translating rigorous science from the lab, into meaningful research in the classroom, and the community. Andres is invested in research that has practical implications for school and life success for children and families from under-served communities. He is also committed to sharing and interpreting early childhood research with a broader audience through blog posts and other media outlets.



Christine Cunningham, Ph.D., is the founding director of Youth Engineering Solutions (YES), which develops equity-oriented, research-based, field-tested curricula and professional learning resources for preK-8 youth and their educators. Her research focuses on articulating frameworks for precollege engineering education and exploring affordances of engineering for learners. Her book, *Engineering in Elementary STEM Education*, describes her groundbreaking work in engineering education. Previously, Cunningham was a vice president at the Museum of Science in Boston where she founded Engineering is Elementary (EiE), which reached 200,000 educators and 20 million children under her leadership. Cunningham currently serves as a member of the National Assessment Governing Board and the Chair of the National Academy of Engineering’s Inclusive, Diverse, Equitable Engineering, for All (IDEEA) Committee. She is a fellow of the American Society for Engineering Education and has received numerous awards including the American Society of Engineering Education K-12 and Pre-College Division Lifetime Achievement Award, the IEEE Pre-University Educator Award, and the International Society for Design and Development in Education Prize. Christine holds joint B.A. and M.A. degrees in biology from Yale University and a Ph.D. in Education from Cornell University.



Sara Cooper, Ed.D., is a dedicated science education leader who applies over fifteen years of experience as an educator—in formal and informal settings ranging from elementary to college-level—to her work developing creative solutions in educational systems. As a former state department of education science specialist, Sara has a deep understanding of the opportunities and challenges related to systemic and systematic educational change. Work in multiple roles has allowed her to evaluate and develop instructional materials, engage educators in high-quality professional learning experiences centered on instructional shifts and 5D assessment, and to coordinate science implementation within a variety of local and state system contexts. Sara holds BA degrees in Biological Sciences and Secondary Education-

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	Natural Sciences, an MA degree in Teaching, Learning, and Teacher Education, and an EdD degree in Educational Studies all from the University of Nebraska-Lincoln.
	Katherine L. McNeill , Ph.D., is a Professor of science education at Boston College. A former middle school science teacher, she received her doctorate in science education from the University of Michigan. Her research focuses on how to support students with diverse backgrounds in engaging in science practices as they make sense of phenomena. She has worked on projects designing and researching curriculum, assessments, professional development and other resources to support students, teachers and instructional leaders in scientific sensemaking. Currently, she is leading the development of both teacher and facilitator professional learning materials for OpenSciEd, which provides high quality open-source NGSS aligned instructional materials.