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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 Session: 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 <i>Disciplinary Core Ideas: Reshaping Teaching and Learning</i>. 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 *A Framework for K-12 Science Education* (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 *English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives* (2018), *Changing Expectations for the K-12 Workforce: Policies, Preservice Education, Professional Development, and the Workplace* (2020), *Cultivating Interest and Competencies in Computing: Authentic Experiences and Design Factors* (2021), and *Science and Engineering in Preschool through Elementary Grades: The Brilliance of Children and the Strengths of Educators* (2021). She holds a Ph.D. in cognitive neuroscience from Johns Hopkins University.

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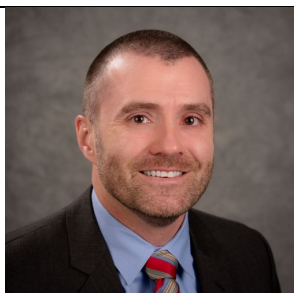
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DAY 3: December 8, 2021

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 <i>Evaluation of the National and State Assessments of Educational Progress</i>, the Committee on <i>Learning Research and Educational Practice</i>, and the Committee on the <i>Foundations of Assessment</i>. Most recently he served on the Committee on <i>Science Learning: Games, Simulations and Education</i> and the Committee on a <i>Conceptual Framework for New Science Education Standards</i>. He chaired the Committee on <i>Defining Deeper Learning and 21st Century Skills</i>, and co-chaired the Committee on <i>Developing Assessments of Science Proficiency in K-12</i>. He is a lifetime National Associate of the National Academy of Sciences, and a past member of the <i>Board on Testing and Assessment</i> 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.