The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Enhancing Science and Engineering in Prekindergarten through Fifth Grades

Meeting 2 Open Agenda -- Virtual

August 26-27, 2020

ALL TIMES ARE EDT

Additional information regarding the project can be found here (including links to videos): https://www.nationalacademies.org/our-work/enhancing-science-in-prekindergarten-through-fifth-grade

Registration Info: https://www.eventbrite.com/e/webinar-discussion-enhancing-science-engineering-in-pre-k-thru-5th-gr-tickets-115231450370

Wednesday, August 26

2:30 pm **Equity, Justice, and Anti-Racism in Elementary Science and Engineering Panel Discussion**
Moderator: *Heidi Carlone,* University of North Carolina at Greensboro

Felicia Moore Mensah, Teachers College, Columbia University
Christopher Wright, Drexel University
Ananda Marin, University of California, Los Angeles

Each panelist has provided a 15-minute presentation that is available on the project page. This session time will be used exclusively for Q&A.

3:15 pm **Break**

5:00 pm **Public Comment and Discussion with Committee**

Registrants will be able to provide comments and pose questions to the committee in advance. The first 15 minutes will be for select committee members to respond to the questions/comments submitted. The remaining 15 minutes will be for audience Q&A.

5:30 pm **Adjourn**

Thursday, August 27

10:30 am **Welcome**
Betsy Davis, Study Chair

10:40 am **Integrating Science and Literacy in Elementary Education Panel Discussion**
Moderator: *Enrique Suárez,* University of Massachusetts, Amherst

Nell K. Duke, University of Michigan
Okhee Lee, NYU Steinhardt
Tanya S. Wright and *Amelia Gotwals,* Michigan State University

Each panelist has provided a 15-minute presentation that is available on the project page. This session time will be used exclusively for Q&A.

11:25 am **Break**

12:00 pm **Moderated Discussion on District Policies and Leadership in Elementary Schools**
Moderator: *Megan Hopkins,* University of California, San Diego

Vanessa Lujan, University of California, Berkeley, Lawrence Hall of Science
Donald J. Peurach, University of Michigan
Andrea Kane, Superintendent Queen Anne's County Public Schools, Maryland

This will be a facilitated conversation. There will be a few prepared questions, but the emphasis will be on Q&A.

1:00 pm **Adjourn**

Presenter Bios

NELL K. DUKE is a professor in literacy, language, and culture and also in the combined program in education and psychology at the University of Michigan. Her work focuses on early literacy development, particularly among children living in economic poverty. Her specific areas of expertise include development of informational reading and writing in young children, comprehension development and instruction in early schooling, and issues of equity in literacy education. She is the recipient of the P. David Pearson Scholarly Influence Award from the Literacy Research Association, and in 2018 she received the International Literacy Association's William S. Gray Citation of Merit for outstanding contributions to research, theory, practice, and policy. Among the other awards she has received are the Michigan Reading Association Advocacy Award, the American Educational Research Association Early Career Award, the Literacy Association Early Achievement Award, the International Reading Association Dina Feitelson Research Award, the National Council of Teachers of English Promising Researcher Award, and the International Reading Association Outstanding Dissertation Award. Duke is author and co-author of numerous journal articles and book chapters. Her most recent book is Inside Information: Developing Powerful Readers and Writers of Informational Text through Project-based Instruction. Duke has taught preservice, inservice and doctoral courses in literacy education, speaks and consults widely on literacy education, and is an active member of several literacy-related organizations.

AMELIA GOTWALS is an Associate Professor of Science Education in the Department of Teacher Education. As a former middle and high school science teacher, she has a particular interest in exploring the ways that students learn to engage in science practices with core ideas in science and the ways that curricular and assessment materials interact with teacher instruction to support this learning. She specifically focuses on researching the learning progressions students take as they develop more sophisticated understandings and ways of assessing this complex learning. She was the co-PI on an NSF grant, Deep Think, that developed and tested a learning progression and associated curricular and assessment materials that supported 3rd-5th grade students' reasoning about issues in biodiversity. She was the PI on the NSF-funded project, Learning Progressions in Science (LeaPS), which organized the first national conference on learning progressions and she is the co-editor of the LeaPS book that emanated from this conference. She was also the PI of the Formative Assessment for Michigan Educators (FAME) project that explored how a statewide professional development program can support teachers in developing formative assessment practices.

ANDREA KANE is the Superintendent of Queen Anne's County public schools in Maryland. She is an educator with extensive background in teaching and leadership that spans from Head Start to higher education. Kane's professional career as an educator began in 1991 where she served in a multitude of instructional and leadership roles in Anne Arundel County Public Schools including computer technologist, classroom teacher, assistant principal, principal, senior manager for elementary school improvement, Assistant Superintendent for Curriculum & Instruction, and Associate Superintendent for School Performance. She was awarded the Governor's Citation for Instructional Leadership for her accomplishments with increasing Maryland State Assessment scores in one of the district's lowest-performing elementary schools.

Kane provided leadership for the district's 125 Pre-K – 12 comprehensive and specialty schools; senior and executive level staff; instructional programs including Special Education, Title I, and English Language Learners; professional development; district-wide efforts to eliminate achievement gaps; a newly developed dual language immersion program in elementary schools; teacher and principal evaluation models; and the district-wide transition of 6,000 teachers to Common Core Standards also known as Maryland College and Career Readiness Standards and the accompanying PARCC assessments. Kane joined Richmond Public Schools (Richmond City, VA) in August 2014 to serve in the role as Associate Superintendent of Academic Services/Chief Academic Officer before becoming Superintendent in 2017. Kane holds a Bachelor of Arts in Economics from Sweet Briar College, a Master of Education in Curriculum & Instruction and Administration/Supervision certification from Loyola College in Maryland, and a Ph.D. in Educational Leadership from Northcentral University.

OKHEE LEE is a professor of childhood education at New York University Steinhardt and previously taught in the School of Education at the University of Miami, FL. Her research areas include science education, language and culture, and teacher education. She is currently leading collaborative research to develop instructional materials aligned with the Next Generation Science Standards (NGSS) to support the language development of elementary studies, including English learners. She is also leading collaborative research to integrate computational thinking and modeling in NGSS-aligned instructional materials. Lee was a member of the writing team to develop the NGSS and leader for the NGSS Diversity and Equity Team through Achieve Inc. She was a member of the Steering Committee for the Understanding Language Initiative at Stanford University and a member of the NASEM committee that produced the report English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives (2018). Currently, she serves as a member-at-large for the American Educational Research Association and a member of the Advisory Committee for the NSF Education and Human Resources Directorate.

VANESSA LUJAN is Deputy Director of the Learning and Teaching Group at the Lawrence Hall of Science, leading capacity building and professional support for math and science leaders and teachers in districts and schools, early childhood educators, postsecondary and university faculty, museum educators, and other informal educators. Lujan also directs a California statewide initiative to help support district-wide capacity building for the implementation of equitable, high-quality science education and environmental literacy, titled BaySci. She is lead author of the "LCAP Toolkit for Science and Environmental Literacy", a toolkit to help California school districts and county offices of education better understand why and how support for science and environmental literacy should be included in every district's Local Control Accountability Plan. Her research expertise includes understanding the intersection of ethnic and gender identity within the sciences and cultural diversity as it relates to science teaching and learners. Lujan served as a panel member for the National Research Council's Successful STEM Education in K-12 Schools, and has experience teaching high school and undergraduate science, developing undergraduate science curriculum, and program leadership of a comprehensive district community and parent involvement program. Lujan has a PhD and MA in science education from the University of Texas at Austin and a BA in human biology from Stanford University.

ANANDA MARIN is an assistant professor in the Graduate School of Education & Information Studies at the University of California, Los Angeles. Marin explores questions about the socio-cultural dimensions of learning and development in everyday and intergenerational contexts. In one line of work she examines the practices that children and families use to reason and build knowledge about the natural world. She is particularly interested in (1) how families coordinate attention and observation while participating in science activities, (2) how mobility and place structure activity and (3) cultural variability in sensemaking practices such as question-asking and explaining. Marin also investigates Native American participation in STEM and cultural models of self as related to senses of capability and competence. Across her scholarship, she takes a participatory approach and employs a variety of research designs and methods including: community-based design research, cognitive tasks, studies of everyday practices, content analysis, discourse analysis, interaction analysis and video-ethnography. Through her work she aims to answer basic research questions about development, innovate methods, and design teaching and learning tools that contribute to the goals and well-being of Indigenous and non-dominant communities.

FELICIA M. MENSAH is a professor of science education and vice chair of the Department of Mathematics, Science and Technology at Teachers College Columbia University. Mensah has worked collaboratively and independently in developing as a scholar in the areas of science teacher education and teacher professional development. Mensah has published extensively in the area of science teacher education. Her research interests are in diversity and social justice education with an emphasis on improving science experiences and for PreK-16 teachers and students in urban classrooms. She uses culturally relevant/responsive pedagogy in the preparation of science teachers, and also in teacher development, assessment and curriculum. This approach allows students who are traditionally marginalized in science learning, and their teachers in many instances, to view science as accessible, fun, and empowering. She conducts professional development workshops and institutes with elementary, middle, and high school science teachers as well as provide outreach activities for schools, such as hosting elementary students to attend science courses at the university. She also has an exceptional record in advising and developing early scholars with sponsoring more than 30 doctoral dissertations and serving on many more dissertation committees. Mensah has received a number of awards, honors and acknowledgements, such as the Early Career Award, Division K, from the American Educational Research Association (2012), the Race, Culture, and Diversity Research Grant from Teachers College, and four Provost Investment Grants to support her research. She is currently serving as a lead editor of the Cultural Studies of Science Education journal, and will be an incoming associate editor of the Journal of Research in Science Teaching (2015-2020), the premier journal of the National Association for Research in Science Teaching (NARST). Mensah also served three years as an executive board member of this association (2011-2014). Mensah received her doctorate in Science Education at The Florida State University (May 2003).

DONALD J. PEURACH is an Associate Professor of Educational Policy, Leadership, and Innovation in the University of Michigan's School of Education. He is also a Senior Fellow of the Carnegie Foundation for the Advancement of Teaching, a Faculty Associate in the Center for Positive Organizations in the University of Michigan's Ross School of Business, and a Senior Research Specialist at the Consortium for Policy Research in Education at the University of Pennsylvania. Peurach's research, teaching, and outreach focus on the production, use, and

management of knowledge in practice, among social innovators and those they seek to serve. Peurach examines these issues in the context of large-scale educational improvement initiatives in public school districts and in school improvement networks, focusing specifically on how districts and networks continuously learn and improve over time. Peurach is the author of *Seeing Complexity in Public Education: Problems, Possibilities*, and *Success for Al* (2011, Oxford University Press) and co-author of *Improvement by Design: The Promise of Better Schools* (2014, University of Chicago Press). Peurach holds a BA in computer science from Wayne State University, an MPP from the Ford School of Public Policy at U-M, and a PhD in Educational Studies from the School of Education at U-M.

CHRISTOPHER WRIGHT is an assistant professor in the School of Education at Drexel University. He earned a Bachelor of Architecture from Hampton University prior to serving as a high school engineering education teacher in Baltimore, MD. He later earned a master's degree in Technology Education from the University of Maryland Eastern Shore, and a PhD in Science Education from Tufts University. Wright has worked with in-service teachers in examining ways in which to recognize the intellectual and linguistic resources that young people from urban communities bring to the disciplines of science and engineering. He served as co-PI on the project entitled, Multimedia engineering notebooks tools to support engineering discourse in urban elementary school classrooms. This project is interested in equipping elementary school teachers with the necessary tools for promoting and supporting students' reflective decision-making throughout the engineering design process. Previous work can be viewed in the Journal of African American Males in Education and in the book, "Show me what you know:" Exploring student representations across STEM disciplines.

TANYA S. WRIGHT is an Associate Professor of Language and Literacy in the Department of Teacher Education at Michigan State University. Wright is a former kindergarten teacher whose research and teaching focus on curriculum and instruction in language and literacy during the early childhood and elementary years. Her research examines instructional practices that promote oral language, vocabulary, and knowledge development for young children. Wright is co-author of several books for teachers and parents including a new book to be released in Fall 2020, *A Teacher's Guide to Vocabulary Development Across the Day: Grades K-3* (Heinemann). Her work has been published in journals such as *American Educator, The Elementary School Journal, The Reading Teacher, Reading and Writing, Reading Research Quarterly, the Journal of Literacy Research* and the *Journal of Teacher Education*. Wright's research has been funded by the National Science Foundation, the Spencer Foundation, the Institute of Education Sciences, the W. K. Kellogg Foundation, and the CREATE for STEM foundation at MSU. Wright is currently the Senior Editor of *The Reading Teacher*, the International Literacy Association's peer-reviewed journal for educators working with children up to age 12. She is the lead author of the *SOLID Start c*urriculum (**S**cience, **O**ral Language, and **Li**teracy **D**evelopment from the **Start** of School), an open access science and disciplinary literacy curriculum for grades K-2 (solidstart.msu.edu).