



STEM Smart: Lessons Learned From Successful Schools

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SPEAKER

BIOGRAPHICAL INFORMATION

Philip Bell

Associate Professor of Learning Sciences and Human Development, College of Education, University of Washington

Philip Bell pursues a cognitive and cultural program of research across diverse environments focused on how people learn about science and technology in ways that are personally consequential to them. He is an associate professor of learning sciences and human development at the University of Washington, Seattle and holds the Geda and Phil Condit Distinguished Professorship of Science and Mathematics Education. His research focuses on everyday expertise development in science and health, culturally relevant science instruction, the use of emerging learning technologies in science classrooms, children's argumentation and conceptual change in science, and ethnographic and design-based research methods in education. Bell directs the UW Institute for Science and Math Education, which cultivates R&D projects focused on promoting equity in STEM education. He co-directs the Learning in Informal and Formal Environments (LIFE) Science of Learning research center, which investigates the social foundations of learning across diverse communities, contexts, and domains. Bell recently served on the Board on Science Education at the National Academy of Sciences where he co-edited a consensus report on Learning Science in Informal Environments and recently served on the committee that authored *A Framework for K–12 Science Education*, which is guiding the development of *Next Generation Science Standards*. Bell has a background in human cognition and development, science education, computer science, and electrical engineering.

Edward Britton (Ted)

Associate Director, STEM Program, WestEd

Ted Britton is an associate director and senior researcher in WestEd's program for Science, Technology, Engineering, and Mathematics (STEM). With the National Commission on Teaching and America's Future (NCTAF), he recently completed a knowledge synthesis about professional learning communities (PLCs) involving STEM teachers. He has discussed these results for a U.S. Congressional briefing in summer 2011 and in a January 2012 keynote presentation at the annual meeting of NSF's Mathematics and Science Partnership program (MSP). Britton has led several major research projects, including an international study of new ways to address the subject-specific needs of beginning mathematics and science teachers; a randomized controlled study of an artificial intelligence tutor for high school chemistry; and national reviews of curriculum materials in science, mathematics and technology. His earlier research includes helping design international procedures for analyzing curriculum materials during the original Third International Mathematics and Science Study (TIMSS). Prior to working at WestEd, Britton worked at the University of Florida, developing the first CD-ROM in science education and producing videos for teacher professional development. Britton also taught high school science in Florida for a number of years. He is the author of numerous publications and curriculum products. He

received a B.S. in chemistry and education, an MS in analytical chemistry, and an EdD in science education from the University of Florida. Britton was the principal investigator of the NSF-funded project, *Research on MSP Teacher Recruitment, Induction, Retention*.

Alan Burke

Deputy Superintendent, Washington State Office of Superintendent of Public Instruction

Alan Burke is the deputy superintendent for K–12 education at the Office of the Superintendent of Instruction (OSPI) in Washington State. In this role, he oversees several divisions and statewide efforts in teaching and learning, career and college readiness, assessment and student information, student support services, teacher and principal evaluation, and early learning. Before coming to OSPI in February 2009, Burke held a number of positions over a 35-year career in public education, including middle school teacher and principal, assistant superintendent, and, from 1998 through 2009, superintendent of the Yelm School District. Burke earned his EdD from the University of Washington in 1990, completing a dissertation that described middle-level practices in the state and outlined steps to complete a successful junior high to middle school transition. Burke has worked with many educational associations and boards, including serving as president for Region 113 of the Washington Association of School Administrators and as a founding member and president of the Washington State Association for Middle Level Education. He currently serves on the FIRST Robotics Pacific Northwest Regional Advisory Board, Washington State Education Coordinating Council, and the board and executive committee of Education Northwest. He also represents OSPI on the boards of Washington Association for School Administrators and Washington State School Directors Association.

James Dorsey

Executive Director, Washington State Mathematics, Engineering, Science Achievement (MESA)

James Dorsey is the executive director of Washington State MESA, a program that prepares and encourages underrepresented groups (K–16) to pursue science, engineering and technology careers. Dorsey's professional background includes 25 years with both Washington and California MESA, advancing K–20 STEM education equity on statewide and national levels. Before his tenure with Washington MESA, Dorsey was national director of program development for California MESA, where he fostered new and enhanced partnerships with Hewlett Packard, AT&T, Google, Amazon, and other companies, and helped triple the number of MESA's community college transfer centers in California as well as replicated the community college model nationally. Dorsey originally enrolled in college to be a civil engineer, but changed to geology after a faculty member discouraged him from pursuing his desired profession. This experience inspired him to seek a career to encourage and prepare underrepresented students to pursue careers in STEM.

Erin Fitzgerald

Senior Professional Development/Curriculum Associate, Museum of Science

Erin Fitzgerald is a senior professional development/curriculum associate on the Engineering is Elementary (EiE) Professional Development team. She received her SB from MIT where she studied mechanical engineering and literature, and received her M.Ed. from Marquette University in educational policy and leadership with a focus in secondary math education. Prior to joining EiE, Erin was a corps member in Teach for America. While at Teach for America, she taught high school math in Milwaukee, WI, in both the public and private school systems and led trainings for first- and second-year Milwaukee math teachers. Fitzgerald is a representative of the NSF-funded project, *Engineering is Elementary: Engineering and Technology Lessons for Children*.

Patricia Galloway

Member, National Science Board and CEO, Pegasus Global Holdings, Inc.

Patricia Galloway has been a member of the National Science Board (NSB) since 2006, and is the chief executive officer of Pegasus Global Holdings, Inc., an international management consulting firm providing services to the energy and infrastructure industries. She served as the first woman president of the American Society of Civil Engineers (ASCE) in 2004. A leader in the field of engineering and construction, she is a licensed professional engineer in 14 U.S. states, Canada, and Australia and a certified project management professional. Galloway sees engineering education as the number one challenge facing engineers today as current education does not provide for the soft skills necessary to survive in the 21st century. Galloway holds a certificate of director education by the National Association of Corporate Directors and has served on a number of private and nonprofit boards. She is an elected member of the National Academy of Construction (NAC) and the Pan American Academy of Engineering, where she serves on the board of directors. Galloway also serves on the Advisory Boards of the Discovery Science Channel and the Governor's Eastern Washington Advisory Council. She received a Distinguished Engineering Alumna award from Purdue in 1992. She is also the author of *The 21st Century Engineer—A Proposal for Engineering Education Reform*, published by ASCE Press. Galloway was appointed to the National Science Board in 2006 and served as vice chairman of the NSB from 2008 to 2010. She also chaired the Task Force for the NSB 60th Anniversary. She received her BS from Purdue University, her MBA from the New York Institute of Technology and her PhD from the Kochi University of Technology.

Kara Jackson

Assistant Professor, McGill University

Kara Jackson is currently an assistant professor in mathematics education at McGill University. She earned her doctorate in education, culture, and society with an emphasis in mathematics education in 2007 from the University of Pennsylvania. From 2007 to 2010, she was a postdoctoral research fellow at Vanderbilt University's Peabody School of Education in the Department of Teaching and Learning. While at Vanderbilt, she worked on the NSF-funded project, *Designing Learning Organizations for Instructional Improvement in Mathematics*. She is currently a co-principal investigator on an NSF-funded extension of this study. In 2010, she received a National Academy of Education/Spencer Post-Doctoral Fellowship to investigate how districts and schools (with diverse organizational constraints and resources) can configure aspects of institutional settings to support middle grades mathematics teachers' development of ambitious and equitable instructional practices. She has taught mathematics to students in grades 2–12 and adults. Her research interests focus on specifying forms of practice that support all learners to participate in rigorous mathematics, particularly youth who are underserved in U.S. classrooms, and how to support teachers to develop such forms of practice.

Barbara Means

Director, Center for Technology in Learning, SRI International

Barbara Means is an educational psychologist whose research focuses on ways in which technology can support students' learning of advanced skills and the revitalization of classrooms and schools. She is regarded as a leader in defining issues and approaches for evaluating the implementation and efficacy of technology-supported educational innovations. Currently, she is leading a study of the effectiveness of high schools with a STEM focus and a study of science learning in California after-school programs, both for the National Science Foundation. She is also directing the evaluation of the Next Generation Learning Challenges grants awarded by the Bill & Melinda Gates Foundation. Means' other recent work includes supporting the development of the new U.S. National Educational Technology Plan (*Transforming American Education: Learning Powered by Technology*). A fellow of the American Educational Research

Association, Means served on the National Research Council's Working Committee on Highly Successful Schools or Programs for K–12 STEM Education and currently is a member of the National Academy of Engineering/National Research Council Committee on Integrated STEM Education. Her earlier professional activities included membership on the National Academy of Sciences' Committee on Developments in the Science of Learning, which produced the volume *How People Learn*. Her published works include the edited volumes *Evaluating Educational Technology, Technology and Education Reform*, and *Teaching Advanced Skills to At-Risk Students* as well as the jointly authored volumes *Using Technology Evaluation to Advance Student Learning, The Connected School*, and *Comparative Studies of How People Think*. Means earned her bachelor's degree in psychology from Stanford University and her PhD in educational psychology at the University of California, Berkeley.

Babette Moeller

Senior Research Scientist, Education Development Center, Inc.

Babette Moeller is a senior research scientist at the Center for Children and Technology (CCT) of Education Development Center, Inc. (EDC). Her work focuses on the development of and research on educational programs across the curriculum that help to ensure that elementary, secondary, and post-secondary students with disabilities will be included in and benefit from educational reform efforts. As project director of numerous research and development projects, Moeller has had extensive experience in designing and implementing technology-supported programs in general and special education, providing professional development for teachers and administrators in a variety of settings, and conducting formative and summative evaluation research. Moeller currently serves as past president of Science Education for Students with Disabilities (SESD), a professional group affiliated with the National Science Teacher Association (NSTA). Moeller has taught courses in technology integration, media research, and child development at Fordham University's Graduate School of Education and the New School for Social Research, and currently serves as adjunct faculty at Bank Street College of Education. Moeller holds a PhD in developmental psychology from the New School for Social Research. Moeller is PI of the NSF-funded project, *Supporting Staff Developers in the Implementation of Professional Development Programs to Improve Mathematics Education for Students with Disabilities*.

John Moore

NREL Director/Research Scientist, Colorado State University

John Moore is a professor and head of the Department of Ecosystem Science and Sustainability and director of the Natural Resource Ecology Laboratory at Colorado State University. Since the 1990s, Moore has been a national leader in developing ecology education programs based on innovative active learning exercises. These educational lessons are located in all types of easily accessible habitats, are available to K–12 teachers and students and undergraduate and graduate students, and emphasize outreach to minority and low-income populations. Moore's integration of research and education encompasses soil foodweb dynamics, impact of climate change on ecosystem processes, and the ways in which humans interact with ecosystem function through invasive species distribution; engages audiences of varied interests; and helps them to become active environmental stewards. Moore is the principal investigator of the NSF-funded project, *Targeted Partnership: Culturally Relevant Ecology, Learning Progressions and Environmental Literacy*.

Barbara Olds

Deputy Assistant Director (Acting), Directorate for Education and Human Resources, National Science Foundation

Barbara Olds is acting deputy assistant director in the Directorate for Education and Human Resources (EHR) at the National Science Foundation (NSF) in Washington, D.C. Prior to joining the NSF on a full-time basis, she was a faculty member at the Colorado School of Mines for many years, serving most recently as associate provost for educational innovation and professor of liberal arts and international studies. During her career at Mines, Olds also served as the principal tutor/director of the McBride Honors Program in Public Affairs for Engineers and as the director of the EPICS program. From 2003 to 2006, Olds was a “rotator” at the NSF, where she served as the division director for the Division of Research, Evaluation and Communication (REC) in the EHR Directorate. During the 2006–2007 academic year she was a visiting professor in Purdue University’s Engineering Education Department. Her research interests lie primarily in understanding and assessing engineering students’ learning. She has participated in a number of curriculum innovation projects and has been active in the engineering education research and assessment communities. She has published widely on engineering education topics and has made numerous presentations and conducted workshops throughout the United States and around the world, including China, Abu Dhabi, South Africa, Malaysia, and Saudi Arabia. She is a Fellow of the American Society for Engineering Education and was a Fulbright lecturer/researcher in Sweden.

Kit Peixotto

Program Director, Education Northwest, Oregon

Kit Peixotto directs Education Northwest’s Curriculum, Instruction and Assessment Program. The Program provides research-based resources and services to enable educators to implement high-quality curriculum, instruction, and assessments that foster improved learning, performance, and achievement for all students. Prior to this position, she served as the director of the organization’s Mathematics and Science Education Center as well as the Northwest Eisenhower Regional Consortium and Northwest Regional Comprehensive Center. In these capacities, Peixotto provided leadership for the development of two models for teaching and assessing mathematics problem solving and science inquiry and a series of publications and videos. Peixotto leads Education Northwest’s efforts to provide up-to-date information and guidance about the Common Core State Standards initiative to regional stakeholders. Peixotto’s team has recently developed a series of six workshops designed to help K–8 teachers, coaches, administrators, and paraprofessionals understand the Common Core State Standards for Mathematics and the classroom instruction that will support student learning of the content contained in the standards. A former middle school science teacher, she completed doctoral coursework and exams in supervision at the University of Louisville.

Oscar Porter

Executive Director, California's Mathematics, Engineering, Science Achievement (MESA)

Oscar Porter currently serves as executive director for the statewide office for California’s Mathematics, Engineering, Science Achievement (MESA), and president of MESA USA. MESA’s mission is to increase the number of educationally disadvantaged students who succeed in math and science, and eventually major in and/or assume careers in science, engineering and other math-based fields. Prior to becoming executive director, he was California MESA’s chief operating officer with responsibility for the daily operation of the program that serves over 300 schools, colleges, and universities across the state. Porter joined MESA in 1995 as associate director for research, evaluation and information management after serving four years as associate vice president for academic affairs at the University of Redlands. Porter has been a high education researcher and administrator for over 30 years and has worked in a variety of

institutional environments, including an experimental cluster college, an HBCU, a graduate school of law and diplomacy, and two stints with the University of California. He also served as assistant executive director of the National Institute of Independent Colleges and Universities, the research arm of NAICU in Washington, D.C. Porter earned his dual-major BA in history and political science from Tufts University, his MA in political science from Michigan State University, and his PhD in higher education from UCLA.

Keisha Scarlett

Principal, Seattle Public Schools

Keisha Scarlett is a principal in the Seattle Public Schools, and she has also been a middle school mathematics, science and technology teacher. Prior to becoming a school administrator, she was a mentor for Seattle School's novice secondary mathematics and science teachers and a middle school mathematics coach. She received her master's degree in education from Heritage University and her administration credentials from University of Washington. Scarlett has had the opportunity to receive professional development training from National Urban Alliance consultants in an ongoing project with the Seattle Schools Literacy Initiative. She facilitates mathematics professional development for teachers and administrators, including *Secondary Lenses on Learning: Team Leadership for Mathematics in Middle and High Schools*. Scarlett is a representative of the NSF-funded project, *Lenses on Learning: Research-Based Mathematics Professional Development for K–12 Principals, Teacher Leaders, and District Leaders*.

Nikki Schechtman

Senior Education Researcher, SRI International

Nikki Schechtman is a senior researcher at SRI International. Her work focuses on using dynamic representational technology to support mathematics learning, engagement, and motivation in the middle school classroom, on teacher professional development to support classroom mathematical argumentation, and on how to bring productive playfulness into serious classrooms. She is the principal investigator of an NSF-funded research project whose goal is to understand the complexities of “engagement” in the middle school math classroom, and examine what it takes to engage different types of learners. She received her B.S. from Carnegie Mellon University and her PhD in psychology from Stanford University. Schechtman is a representative of the NSF-funded *Scaling Up SimCalc Project*.

R. Bryce Seidl

President and Chief Executive Officer, Pacific Science Center

R. Bryce Seidl became president and CEO of Pacific Science Center in 2003. He directs a staff of 275 full- and part-time employees and 500 volunteers, and oversees the operations of a seven-acre, nine-building complex including a planetarium, a classroom complex, and two IMAX® theaters. Prior to joining the Science Center, Seidl was director, president, and CEO of Fisher Mills Inc. For 25 years prior to that, he held a variety of senior executive positions at the Simpson Companies, an integrated forest products and pulp and paper company. Seidl also served for 10 years in elected office both as a city councilman and as mayor of Vancouver, Washington, and in a wide variety of community service, arts, and educational positions. He holds a degree in ecology from the University of California, Berkeley, and an MBA from the University of Michigan. In the local community, he has served on numerous civic committees related to arts and culture and also is a member of the board of the Rainier Club. In the Science Center field, Seidl has been active in the Association of Science and Technology Centers as a board member, where he has served as a vice president, and as a member of the Finance and Audit and Advocacy Committees. Currently, he serves as president of the ASTC Board and is a member of the Nominating and the Executive Committees.

Andrew Shouse

Associate Director, UW Institute for Science and Mathematics Education

Andrew Shouse is associate director of the University of Washington Institute for Science and Math Education. He focuses on equitable science education in formal and informal settings, and communication of research to policy and practice audiences. Shouse's work is informed by a breadth of experiences in practice, including teaching elementary and middle grades, science center administration, and policy analysis. Prior to his appointment at UW, Shouse was senior program officer at the National Research Council's Board on Science Education (2003–2008), where he directed two consensus studies and edited the reports *Learning Science in Informal Environments: People, Places, and Pursuits* (NRC, 2007; with Bell, Lewenstein, and Feder) and *Taking Science to School: Learning and Teaching Science in Grades K–8* (NRC, 2007; with Duschl and Schweingruber) and authored (with Michaels and Schweingruber) *Ready, Set, Science! Putting Research to Work in K–8 Science Classrooms*. Shouse serves on advisory bodies for numerous organizations, including the National Geographic Society, the National Association for Research in Science Teaching, the Pacific Science Center, The Museum of Science and Industry (Chicago), and The NSF Center for Biophotonic Science and Technology at the University of California-Davis. Shouse completed a PhD in curriculum, teaching, and educational policy at Michigan State University in 2005.

Cary Sneider

Associate Research Professor, Portland State University

Cary Sneider is associate research professor at Portland State University in Portland, Oreg., where he teaches courses in research methodology in a master's of science teaching degree program. He also serves as a consultant on diverse issues in STEM education, such as youth programs at science centers, educational standards, and assessment. He is currently a member of the writing team for Achieve, Inc., working on *Next Generation Science Standards*, and is also a member of the National Assessment Governing Board, which sets policy for the National Assessment of Educational Progress (NAEP), also known as "The Nation's Report Card." Until 2007, Sneider served as vice president for educator programs at the Museum of Science in Boston, and prior to that he served as director of astronomy and physics education at the Lawrence Hall of Science at the University of California. Sneider's curriculum development and research interests have focused on helping students unravel their misconceptions in science, on new ways to link science centers and schools to promote student inquiry, and on integrating engineering and technology education into the K–12 curriculum. Sneider earned a BA in astronomy from Harvard College (1969), and a MA (1976) and PhD in science education (1982) from the University of California at Berkeley. In 1997, he received the Distinguished Informal Science Education award from NSTA, and in 2003, he was named National Associate of the National Academy of Sciences.

Mike Town

Teacher and former Einstein Fellow

Mike Town is a former Einstein Fellow with the National Science Foundation. Mike has been teaching science at Redmond High School in Washington for the past 27 years. Currently, he teaches Advanced Placement environmental science. He is on the planning team for a new STEM school in Redmond, which will feature a CTE course in environmental engineering and sustainable design. Town earned a degree in environmental science at Huxley College of the Environment, a science education degree from Western Washington University, and a master's of education from the University of Washington. He has been recognized with numerous awards, including National Education Association Foundation Green Prize for the United States; Environmental Educator of the Year from the North American Association of Environmental Educators; Pemco/KCTS Golden Apple Award; Conservation Fund Environmental Educator Award for the United States; Western Washington/Huxley College Distinguished Alumni

Award; Amgen Science Teacher Award; AP/Siemens Math/Science Teacher of the Year for Washington State; and Cox/KIRO TV Environmental Hero. Town has written significant environmental and STEM curricula; the most notable being the *Cool School Challenge* (CSC), which won the EPA Clean Air Award.

Keisha Varma

Professor, University of Minnesota

Keisha Varma is a professor in the College of Education and Human Development at the University of Minnesota. Her research examines learning and cognition and teacher knowledge development in technology-enhanced classroom settings. She is currently looking at ways to leverage psychological methodologies to understand changes in teachers' pedagogical content knowledge and their representations of effective teaching practice. She earned her PhD at Vanderbilt University. Varma is a representative of the NSF-funded project, *Supporting Teachers and Encouraging Lifelong Learning: A Web-Based Integrated Science Environment (WISE)*.