The National Academies of
SCIENCES • ENGINEERING • MEDICINE
Board on Science Education
Division of Behavioral and Social Sciences and Education
Agenda

Barriers and Opportunities for 2-Year and 4-Year STEM Degrees
Systemic Change to Support Students’ Diverse Pathways
Monday, June 6th, 2016
9:00-12:30
Lecture Room, NAS Building

9:00-9:45 Welcome and Introduction
Heidi Schweingruber, Director, Board on Science Education

Overview of Report, Commentary, Open Q&A
Report Overview presented by Shirley Malcom (committee chair), AAAS
Commentator: Lynne Molter, Professor of Engineering, Swarthmore College

9:45-10:45 Panel Discussion: Research Context Surrounding Issues of STEM Stratification and Data Collection
Moderator: Michael Feder (study director), Director, STEMx, Battelle Education

Panelists:
• Kevin Kinser, Chair, Department of Educational Administration and Policy Studies; Senior Researcher, Institute for Global Education Policy Studies, University at Albany, State University of New York
• Lindsey Malcom-Piqueux, Associate Director for Research and Policy, Center for Urban Education, Rossier School of Education, University of Southern California
• Mamie Voight, Director, Policy Research, Institute for Higher Education Policy

10:45-11:00 Break

11:00-12:00 Panel Discussion: Implications for College Completion
Moderator: Michelle Van Noy (committee member), Associate Director of Education and Employment Research Center, Rutgers University

Panelists:
• Lorelle Espinosa, Assistant Vice President, Center for Policy Research and Strategy, American Council on Education
• William “Brit” Kirwan, Chancellor Emeritus, University System of Maryland
• Emily Miller, Director, Undergraduate STEM Education Initiative, Association of American Universities

12:00-12:30 Funders/Closing Reflections
Susan Singer, Division Director, Division of Undergraduate Education, NSF
Shirley Malcom (committee chair), AAAS
Biographical Sketches

Lorelle Espinosa serves as assistant vice president for the American Council on Education’s Center for Policy Research and Strategy, where she is responsible for the co-development and management of the center’s research agenda which focuses on issues of diversity and equity in 21st century higher education, public finance and higher education systems, and transformational leadership. She has served the higher education profession for nearly 20 years, beginning in student affairs and undergraduate education at the University of California, Davis; Stanford University; and the Massachusetts Institute of Technology. She has contributed opinion and scholarly works to peer-reviewed journals, academic volumes and industry magazines on a variety of topics. Her most recent report, Race, Class, and College Access: Achieving Diversity in a Shifting Legal Landscape, examines how legal challenges to race-conscious admissions are influencing contemporary admissions practices at colleges and universities nationwide. Prior to ACE, she served as a senior analyst at Abt Associates, Inc. and as director of policy and strategic initiatives for the Institute for Higher Education Policy. She holds an M.A. and Ph.D. in higher education and organizational change from the University of California, Los Angeles.

Michael Feder is Director of STEMx at Battelle Education. In this role he facilitates collaboration across a consortium of state-wide STEM education networks. STEMx is a grassroots movement that defines what quality STEM teaching and learning looks like and connects state networks and partners across the country to accelerate the spread of universally rigorous and transformative STEM educational opportunities to reach and impact more students. Michael previously served as the senior program officer for the Board on Science Education (BOSE) of the National Academies of Sciences, Engineering, and Medicine. With BOSE he managed consensus studies on a broad range of issues including undergraduate STEM education, informal STEM education, K-12 STEM education standards, federal science education programs, and science communication. Michael also served as a policy analyst in the White House Office of Science and Technology Policy (OSTP). He provide the President and his advisors with accurate, relevant, and timely advice on all matters related to STEM education, created public-private partnerships to improve STEM education across the nation, and developed a 5-year federal STEM education strategic plan. Michael also has experience evaluating and providing technical assistance to STEM education programs. He received his Ph.D. in developmental psychology from George Mason University.

Kevin Kinser is currently Chair of the Department of Educational Administration and Policy Studies and Senior Researcher at the Institute for Global Education Policy Studies at the University at Albany, State University of New York. In Fall 2016, Kinser will join Pennsylvania State University as professor and head of the department of Education Policy Studies. He is also a Senior Fellow for Internationalization at NAFSA: Association of International Educators, and at Penn State will be a Senior Scientist at the Center for the Study of Higher Education. He is a graduate of Columbia University's Teachers College (New York). Kinser studies non-traditional
and alternative higher education, particularly the public policies and organizational structures related to private for-profit institutions and international cross-border higher education. He is regularly sought out by national and international media outlets for commentary on for-profit and international higher education. Kinser is the author of more than 50 articles, chapters, and scholarly reports, and regularly presents papers at conferences in the United States and abroad. His most recent books are The Global Growth of Private Higher Education (Wiley, 2010) and Multinational Colleges and Universities: Leading, Governing, and Managing International Branch Campuses (Jossey-Bass, 2011).

William “Brit” Kirwan is Chancellor Emeritus of the University System of Maryland. He is a nationally recognized authority on critical issues shaping the higher education landscape. Prior to his 13 years as chancellor of the University System of Maryland, Kirwan served as president of Ohio State University, president of the University of Maryland, College Park, and as a member of the University of Maryland faculty. He is a sought-after speaker on a wide range of topics, including access and affordability, cost containment, diversity, innovation, higher education's role in economic development, and academic transformation. Along with his national and international presentations on key issues, he has authored many articles on issues in higher education and has been profiled and cited in academic and mainstream publications. Currently, he chairs the National Research Council Board of Higher Education and Workforce and is past chair of the boards of the Business-Higher Education Forum, the Association of Public and Land Grant Universities (APLU), the American Council for Education (ACE), and the American Association of Colleges and Universities (AAC&U). Among other honors, he is the recipient of the 2009 Carnegie Corporation Academic Leadership Award and the 2010 TIAA Theodore Hesburgh Leadership Excellence Award. He received his Ph.D. in Mathematics from Rutgers, The State University of New Jersey.

Shirley Malcom (Chair) is head of the Directorate for Education and Human Resources Programs of the American Association for the Advancement of Science (AAAS). She serves on several boards, including the Heinz Endowments, Public Agenda, and Digital Promise. She is an honorary trustee of the American Museum of Natural History, a regent of Morgan State University, and a trustee of the California Institute of Technology. She is a member of the National Academy of Sciences and a recipient of its Public Welfare Medal. She is a fellow of the AAAS and of the American Academy of Arts and Sciences. She served on the National Science Board and on the President's Committee of Advisors on Science and Technology. She has a B.S. in zoology from the University of Washington, an M.A. in zoology from the University of California at Los Angeles, and a Ph.D. in ecology from Pennsylvania State University.

Lindsey Malcom-Piqueux is the associate director for research and policy at the Center for Urban Education and a research associate professor in the Rossier School of Education at the University of Southern California. Her work focuses on the relationship between higher education policy, institutions and practitioners and educational inequity experienced by minoritized student populations. Her primary interest centers on postsecondary access and success for women and men of color in STEM fields. Following this interest, she has conducted research in several areas including the relationship between financial aid and STEM outcomes, community college pathways to STEM degrees, STEM education at minority-serving institutions, and gender equity in STEM within minoritized racial/ethnic groups. Prior to joining
the Center for Urban Education, she was on the faculty at the George Washington University and before that, at the University of California, Riverside. She received a B.S. in planetary science from the Massachusetts Institute of Technology, an M.S. in planetary science from the California Institute of Technology and a Ph.D. in urban education with an emphasis on higher education from the University of Southern California.

**Emily Miller** joined the Association of American Universities (AAU) in 2012 as the Director for AAU’s Undergraduate STEM Education Initiative. She is responsible for leading and directing a multi-institution project aimed at systemic and sustained improvement of undergraduate STEM education at research-intensive institutions. She also manages a number of external grants in support of the initiative and serves as a liaison to member universities, national associations, and federal agencies on behalf of the Initiative. Previously, she was a research and curriculum specialist for the Association for Community College Trustees, an assistant director of career services at Tufts University, worked in alumni relations at Harvard Business School, and collaborated with the Association of Governing Boards. She has published on the topics of post-secondary institutional leadership, specifically as it relates to governance and administration; organizational change in universities and colleges; and higher education policy. She is also a professional lecturer of higher education at The George Washington University. She earned her PhD in Higher, Adult, and Lifelong Education from Michigan State University; MA in Education Policy and Management from Harvard Graduate School of Education; and BA in Political Science from Gettysburg College.

**Lynne Molter** is a professor of engineering at Swarthmore College. She is an authority on optical waveguide devices for signal processing applications and optical communications systems. She also studies issues of student access and retention in natural sciences and engineering. She has made several presentations and published numerous articles on these topics including in the IEEE Journal of Quantum Electronics, Journal of Lightwave Technology, and Applied Optics. She teaches courses in electromagnetic theory, physical electronics, communications systems, electrical circuits, and physical systems. She received a B.A. in mathematics and a B.S. in engineering from Swarthmore College and a S.M. and Sc.D. in electrical engineering and computer science from the Massachusetts Institute of Technology.

**Susan Singer** is Division Director in the Division of Undergraduate Education at NSF and Laurence McKinley Gould Professor, in the Biology and Cognitive Science Departments at Carleton. She is a nationally recognized leader in undergraduate education and plant biology. In addition to a PhD in biology from Rensselaer, she completed a teacher certification program in New York State. A developmental biologist who studies flowering in legumes and also does research on learning genomics, Susan is an American Association for the Advancement of Science (AAAS) fellow and received both the American Society of Plant Biology teaching award and Botanical Society of America Charles Bessey teaching award. She directed Carleton’s Perlman Center for Learning and Teaching, was a National Science Foundation (NSF) program officer in Biology, and is a co-author of the Vision and Change in Undergraduate Biology report, as well as two introductory biology texts. She has served on numerous boards, including the NSF Education and Human Resources Federal Advisory Committee, Biological Sciences Curriculum Study Board, the American Society of Plant Biology Education Foundation, and the Botanical Society board of directors; was a member-at-large for the AAAS Education Section; participates
in the Minnesota Next Generation Science Standards team; and was a member of the National Academies’ Board on Science Education. She has participated in six National Academies studies, including chairing the committees that authored America’s Lab Report, Promising Practices in STEM Undergraduate Education and Discipline-based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering. Currently she is improving undergraduate education through her leadership at NSF and across Federal agencies, implementing the undergraduate goals of the Federal Science, Technology, Engineering, and Mathematics 5-year Strategic Plan.

Michelle Van Noy (committee member) is associate director at the Education and Employment Research Center at the School of Management and Labor Relations at Rutgers, The State University of New Jersey. Her research focuses on the role of higher education, particularly community colleges, in workforce development. Her current work focuses on effective practices in community college workforce education, student decision making about majors and careers, and linkages between education and employers. Previously, she worked at the Community College Research Center at Teachers College at Columbia University, where she conducted research on contextualized basic skills education, employer perceptions of the associate degree for information technology technician jobs, and community college noncredit workforce education. She also previously worked at Mathematica Policy Research, Inc. She has a B.A. in psychology and Spanish and an M.S. in public policy from Rutgers University and a Ph.D. in sociology and education from Columbia University.

Mamie Voight is the vice president of policy research at the Institute for Higher Education Policy (IHEP). She leads IHEP’s projects on affordability, accountability, and postsecondary data policy and works with the organization’s senior leadership team to inform the strategic direction of the organization. Voight and the policy research team launched and manage the Postsecondary Data Collaborative, which brings organizations together to advocate for the use of high-quality postsecondary data to advance student success and educational equity. At IHEP, she also has co-authored more than 10 reports and briefs on higher education topics. Before joining IHEP, Voight was a research and policy analyst and assistant director for research and policy at The Education Trust (Ed Trust), an organization that works to promote high academic achievement for all students, with a particular emphasis on closing opportunity and achievement gaps. At Ed Trust, she researched college access, success, and affordability issues, advocated for policies that would enhance equity in America’s higher education system, and was lead author on several publications. Before entering the field of education policy, she worked as an engineering consultant for departments of transportation in multiple states. She holds a bachelor’s degree in civil engineering from Villanova University, a master’s in civil engineering from the University of Delaware, and a master’s in public policy from Georgetown University.