

Symposium on Imagining the Future of Undergraduate STEM Education

National Academies of Sciences, Engineering, and Medicine

Board on Science Education

Board on Higher Education and Workforce

PUBLIC AGENDA as of November 12, 2020

All times listed below in **Eastern Time Zone**.

Pre-symposium activities begin in early November.

Thursday, November 12

11:00 ET

Welcome and Vision of the Future

The importance of undergraduate STEM education and how changes in science, technology, economics, and society coming in the next 20-40 years should drive changes in undergraduate STEM learning.

Marica McNutt, President, National Academy of Sciences

F. Fleming Crim, Chief Operating Officer, National Science Foundation

Annette Parker, President, South Central College, committee co-chair

Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington University in St. Louis, committee co-chair

11:30

Changing Landscapes: 2040 vs 2020

Rethinking how we see the history of higher ed and pivoting to how and why undergraduate STEM education will (and should) look very different in 20 years than it does today

Presentation on Commissioned Paper on **Transformational Moments in U.S. Higher Education: Implications for Racial Equity**

Lindsey Malcom-Piqueux, Senior Institutional Research Analyst, Caltech

Panelists:

Vicki Chandler, Provost and Chief Academic Officer, Minerva

Mark Mitsui, President, Portland Community College

Tonya Matthews, Director of STEM Learning Innovation and Assoc.

Provost for Inclusive Workforce Development, Wayne State University

Vicente Talanquer, Distinguished Professor, University of Arizona

Lindsey Malcom-Piqueux, Senior Institutional Research Analyst, Caltech

Moderator:

Annette Parker, President, South Central College, committee co-chair

12:30

STEM Education for What? Goals for the Future

What purposes does undergraduate STEM education serve now and how will (should) that change in the future?

Panelists:

William F. Tate IV, Provost, University of South Carolina

Eloy Oakley, Chancellor, California Community College System

Wanda Sigur, Lockheed Martin (retired)

Francis Su, Benediktsson-Karwa Professor of Mathematics,
Harvey Mudd College

Moderators:

Arthur Lee, Fellow and Principal Advisor, Chevron Services Company,
committee member

Cathy Manduca, Director, Science Education Resource Center, Carleton
College, committee member

1:30

Break

2:00

STEM Education for Whom?

A look at current research and trend data on equity, inclusion, and outcomes for undergraduate STEM students at various types of institutions.

Presenters:

Anne Marie Nunez, Professor of Educational Studies, The Ohio State
University

Will Tyson, Associate Professor of Sociology, University of South Florida

Erin Cech, Assistant Professor of Sociology, University of Michigan

Moderator:

Josipa Roska, Director of Strategic Academic Programs and Professor of
Sociology and Education, University of Virginia

2:45

Creating Inclusive Higher Education for STEM Students of the Future

Opportunity for participants to share ideas on making undergraduate STEM education resilient, adaptable, and equitable.

Moderators:

Ryan Kelsey, Executive Director, Partnership Development, Markle
Foundation, committee member

Leanne Chukoskie, Director of the Power of NeuroGaming (PoNG) Center,
University of California, San Diego, committee member

3:45

Break

4:15

Access and Inclusion: Beginning with the End in Mind

How could we redesign the future of STEM learning to increase access, create equity, and leverage community connections?

Panelists:

Theresa Maldonado, Vice President for Research and Innovation,
University of California System

Yves Salomon-Fernandez, President, Greenfield Community College

Shanika Hope, Principal Amazon Future Engineer, Amazon

Monica Van, student, University of California, San Diego

Moderator:

Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington
University in St. Louis, committee co-chair

5:15-5:30

Day One Wrap Up and Preview of Day Two

Annette Parker, President, South Central College, committee co-chair

Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington
University in St. Louis, committee co-chair

Friday, November 13

11:00 ET

Seeds of Innovation: Lessons from Current Innovations in STEM Education

Current and recent work to reform undergraduate STEM education and ideas for improving equity in the future.

Presenters:

Karen Marrongelle, Assistant Director for Education and Human
Resources, National Science Foundation, Study Sponsor

Aikaterini (Katerina) Bagiati, Research Scientist, Massachusetts Institute
of Technology

Moderators:

Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington
University in St. Louis, committee co-chair

Kirk Kolenbrander, Executive Vice President, College of Engineering,
Technology, and Aeronautics, Southern New Hampshire
University, committee member

11:30

Fast-Changing Technology: Uses and Ethical Issues

The role of technology in altering both educational experiences and our larger society, the complexity of issues raised by current and potential changes, and how we as individuals and as a society can make informed decisions about its use.

Panelists:

Michael Torrence, President, Motlow State Community College
Sae Schatz, Director, Advanced Distributed Learning
Nishal Mohan, Founder, mohuman
Nicole Jackson, Chief Technology Officer, Duet Health

Moderator:

Christine Ortiz, Dean for Graduate Education, Massachusetts Institute of Technology, committee member

12:30

Challenging Our Strategies and Expectations:

What Students Learn, Why, and How

Which of our current structures best support these goals and which should be rethought?

Panelists:

Amitava 'Babi' Mitra, PhD, Executive Director, New Engineering Education Transformation (NEET), Massachusetts Institute of Technology
Suzanne Weekes, Associate Dean of Undergraduate Studies, Worcester Polytechnic Institute
Clarissa Sorensen-Unruh, Professor of Chemistry, Central New Mexico Community College
Sakereh Carter, PhD Student, Community Engagement, Environmental Justice, and Health, University of Maryland

Moderators:

Lynn Andrea Stein, Professor of Computer and Cognitive Science, Olin College, committee member
Monique Umphrey, President, Houston Community College, committee member

1:30

Break

2:00

A Call to Action: Creating the Future that We Want

The Future STEM Ecosystem of 2040

Presenter:

Susan Singer, Provost, Rollins College

Panelists:

Alegra Eroy-Revelse, Assistant Teaching Professor, Chemistry and Biochemistry, University of California, Santa Cruz

Rufus Glasper, President and CEO, League for Innovation in the Community College

David Soo, Chief of Staff, Jobs for the Future

Moderator:

Kinnis Gosha, Hortenius I. Chenault Endowed Associate Professor in the Department of Computer Science and Director of the Culturally Relevant Computing Lab, Morehouse College, committee member

3:00

Building on Current Innovations to Create a Vision for the Future

Participant activity to imagine visions for the future of undergraduate STEM education

Moderators:

Cathy Manduca, Director, Science Education Resource Center, Carleton College, committee member

Lynn Andrea Stein, Professor of Computer and Cognitive Science, Olin College, committee member

4:00

Break

4:30-5:30

Where Do We Go from Here?

Next Week and Beyond

Annette Parker, President, South Central College, committee co-chair

Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington University in St. Louis, committee co-chair

November 16-18: Participant activities to expand on visions for the future of undergraduate STEM education and to revisit earlier discussion topics.

Thursday, November 19

1:00 ET

Returning to the Present, Creating the Future

Working together to drive local and national change

Annette Parker, President, South Central College, committee co-chair
Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington
University in St. Louis, committee co-chair

1:15

Redesigning Campuses, Classrooms, and Learning Experiences

Creating more accessible and successful student experiences for 2040

Panelists:

Pam Eddinger, President, Bunker Hill Community College
Amber Luther, Planner and Senior Associate, Populous
Annmarie Caño, Dean of the College of Arts and Sciences, Gonzaga
University
Michael Roberts, Founder and CEO, San Diego Code School

Moderators:

Nicholas Horton, Beitzel Professor in Technology and Society (Statistics
and Data Science), Amherst College, committee member
Leanne Chukoskie, Director of the Power of NeuroGaming (PoNG) Center,
University of California, San Diego, committee member

2:00

New Learning Pathways

Participant activity on designing flexible, personal, problem-focused, and life-long learning experiences.

Moderators:

Leanne Chukoskie, Director of the Power of NeuroGaming (PoNG) Center,
University of California, San Diego, committee member
Nicholas Horton, Beitzel Professor in Technology and Society (Statistics
and Data Science), Amherst College, committee member

3:00

Break

3:30

Sharing Symposium Learning and Action Items for Change

Catalyzing innovations on our campuses and through our networks and soliciting participant input on NSF-sponsored activities to share insights from the symposium throughout 2021

Moderator:

Ryan Kelsey, Executive Director, Partnership Development, Markle Foundation, committee member

4:15-4:30

Reflections and Closing Remarks

Robin Wright, Division Director, Division on Undergraduate Education, National Science Foundation, Study Sponsor

Annette Parker, President, South Central College, committee co-chair

Barbara Schaal, Mary Dell Chilton Distinguished Professor, Washington University in St. Louis, committee co-chair