

*The National Academies of*  
**SCIENCES • ENGINEERING • MEDICINE**

**Workshop on Advancing Systemic Change in Undergraduate STEM Education**

**Roundtable on Systemic Change in Undergraduate STEM Education**

NAS Building Lecture Room (and via Webcast)  
2101 Constitution Ave, NW Washington, DC 20418  
September 6 & 7, 2018

**Workshop Take-aways**

- Identify ideas for thinking broadly and systemically about improving student learning in undergraduate STEM education.
- Promote thinking on the interconnections between societal change and undergraduate STEM education.
- Advance strategies for change in undergraduate STEM education.

**Driving Questions**

Systems Issues:

- How can using systems thinking lead to new insights about improving learning for undergraduate STEM students?
- How can higher education leaders stay in touch with the broader changes in society impacting needs and delivery of undergraduate STEM education?

Key Factors:

- What are the critical changes that undergraduate STEM education must take into account?
- How can higher education meet the needs of STEM learners from diverse backgrounds and preparations?

Advancing Change:

- What do leaders need to know and do?
- What is needed to support local and national leaders?
- What are the national tasks and what are the campus level tasks?
- Are there ways to target strategies most appropriate to each local context or type of institutions?
- What does the broader higher education community need to know and do?

**DAY 1: Thursday, September 6, 2018**

9:30 am      **Welcome and Opening Remarks**

9:45 am      **Changes in the Context of Higher Education and Implications for the Future**

- **John Cavanaugh**, Consortium of Universities of the Washington Metropolitan Area
- **Rufus Glasper**, League for Innovation in the Community College
- **Christine Ortiz**, Station1 and Massachusetts Institute of Technology
- **Francesca Purcell**, American Academy of Arts and Sciences

Moderator: Ann Austin

11:30 am      Lunch

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12:30 pm	<b>Changes in the Learners: Increased Variety of Students and Student Goals</b> <ul style="list-style-type: none"><li>• <b>Ryan Kelsey</b>, Achieving the Dream</li><li>• <b>John Michael Lee</b>, Elizabeth City State University</li><li>• <b>Lindsey Malcom-Piqueux</b>, California Institute of Technology</li><li>• <b>Pablo Sacasa</b>, Miami Dade College</li></ul> Moderator: Mica Estrada
1:45 pm	<b>Break out Activity #1: Reimagining Higher Education</b> <ul style="list-style-type: none"><li>• Prompt for small groups: <i>Based on the morning's discussion about the future of higher education and learners, imagine you are given the power to redesign a model to deliver higher education. You have no restraints, financial or otherwise.</i></li><li>• Small groups will streamline ideas into a 90-second sales pitch marketing their new system/model of higher education for the future.</li></ul>
3:00 pm	Break and return to Lecture Room
3:15 pm	<b>Reimagining Higher Education:</b> Reporting back by Groups from Break out Activity #1
3:45 pm	<b>Break out Activity #2: Creating Change within Our Current System: Bridging the Present and the Future of Higher Education</b> <ul style="list-style-type: none"><li>• The objective of this activity will be to bridge the ideas pitched in break out activity #1 to the existing system of undergraduate education. What could be done practically within our current structures to push toward the new visions?</li></ul>
4:30 pm	<b>Getting Practical on Creating Change:</b> Reporting back by Groups from Break out Activity #2
5:30 pm	<b>Synthesis of the Discussions from Day 1 and Ideas for Day 2</b> Mark Rosenberg and Ann Austin
5:45 pm	Adjourn to Reception and Networking Hour

**DAY 2: Friday, September 7, 2018**

8:00 am	Breakfast
8:45 am	<b>Opening Remarks: Ann Austin and Mark Rosenberg</b>
9:00 am	<b>Key Factors for Advancing Systemic Change in Undergraduate STEM Education</b> <ul style="list-style-type: none"><li>• <b>Gita Bangera</b>, Bellevue College</li><li>• <b>Cathryn A. Manduca</b>, National Association of Geoscience Teachers and Carleton College</li><li>• <b>Marilyne Stains</b>, University of Nebraska</li><li>• <b>Ivory Toldson</b>, Quality Education for Minorities (QEM) Network and Howard University</li></ul> Moderator: Kamau Bobb

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10:00 am	Break
10:15 am	<b>Leadership and Systemic Change to Improve STEM Learning</b> <ul style="list-style-type: none"><li>• <b>Jaime Lester</b>, George Mason University</li><li>• <b>Vincent Manno</b>, Olin College of Engineering</li><li>• <b>Jeffrey Osborn</b>, The College of New Jersey</li><li>• <b>Uri Treisman</b>, Charles A. Dana Center, University of Texas at Austin</li></ul> Moderator: Andrea Beach
11:30 am	<b>Making Change Happen: Role of Various Actors in Driving Systemic Change to Improve Undergraduate STEM Education</b> <b>Adrianna Kezar</b> , University of Southern California (participating virtually) Moderator: Ann Austin
12:30 pm	Lunch
1:30 pm	<b>Potential Roundtable Actions to Elevate Ongoing Efforts and Advance the National Conversation</b> Ann Austin
2:45 pm	<b>Concluding Remarks on Systemic Change to Improve Undergraduate STEM Education</b> Ann Austin
3:00 pm	Adjourn