## Equitable and Effective Teaching in Undergraduate STEM Education: A Framework for Institutions, Educators and Disciplines

**5th Committee Meeting, NAS Lecture Room, 2101 Constitution Ave. NW, Washington, DC**

## TUESDAY, DECEMBER 05, 2023

**Open Session**

**10:30–10:45** **Welcome, overview of committee charge and study process**
Archie Holmes, Committee Chair

**10:45–11:45** **Panel 1: Perspectives from Disciplines**

Danny Caballero, Michigan State University
Nicole LaDue, Northern Illinois University
Jon-Marc Rodriguez, University of Wisconsin, Milwaukee
Sarah Rodriguez, Virginia Tech
Tati Russo-Tait, University of Georgia
April Strom, Chandler-Gilbert Community College
Moderator: Anne Egger, Central Washington University

**11:45 - 11:55** **Break**

**11:55–12:45** **Panel 2: Motivation, Identity, and Belonging in STEM**

Terrell Morton, University of Illinois, Chicago
Amber Simpson, Binghamton University
Greg Walton, Stanford University
Moderator: Melonie Sexton, Valencia College

**12:45–1:30** **Lunch**

**1:30–2:15** **Panel 3: The Role of Technology in STEM Learning**
Karen Vignare, Association of Public and Land Grant Universities
Angela Gunder, Online Learning Consortium
Muhammad Hossain, Claflin University
Moderator: Michael Dennin, University of California, Irvine

**2:15-3:00** **Panel 4: Learning in the Classroom, Laboratory and Field**

Jim DeKloe, Solano College
Kelly Neiles, St. Mary's College of Maryland
Kari O'Connell, Oregon State
Moderator: Josephine Pino, Portland Community College

**3:00-3:15** **Break**

**3:15-4:00** **Panel 5: Supporting the Instructional Workforce**
Linda Powell, Community College of Philadelphia
Adam Fontecchio, CIRTL
Francine Glazer, New York Institute of Technology
Moderator: Tracie Addy, Lafayette College

**4:00-4:45** **Panel 6: Supporting the Students in STEM**
Susan Bickerstaff, Teachers College, Columbia University
Alison Cook-Sather, Bryn Mawr College
Sarah Whitley, Center for First-generation Student Success
Moderator: Erin Doran, Iowa State University

**4:45-5:30** **What is needed to make equitable and effective learning widespread? Participatory Discussion and Polls**

**5:30-5:45** **Overview of Next Steps**

**5:45** **Adjourn, Open Session Concludes**

## WEDNESDAY, DECEMBER 06, 2023

**Open Session**

**10:45–12:00** **Panel 7: Roles of Departments and Institutions in Advancing STEM Education**
Steve Dandaneau, Colorado State, Undergraduate Education at Research Universities
Anne-Marie Núñez, The University of Texas, El Paso
Gita Bangera, Northwest Commission on Colleges and Universities
Moderator: Archie Holmes, The University of Texas System

**12:15** **Open Session Concludes**

**Statement of Task:**

The National Academies of Science, Engineering, and Medicine will convene an ad hoc committee on equitable and effective teaching in undergraduate STEM education. Through examination of successful efforts to improve and support instruction, the committee will develop a framework for equitable and effective teaching in undergraduate STEM and identify policies and practices at the departmental, programmatic, and institutional levels that can facilitate implementation of the principles in the framework.

The committee will conduct a two phase study. The first phase will produce a discussion draft that outlines a framework for equitable and effective teaching. It will call out practices that may be particularly important for virtual, blended, and hybrid instruction. The discussion draft will serve as a tool to solicit input from stakeholders that will be used to improve the framework. The second phase will revise the framework, call out areas in need of further research, and provide guidance and recommendations for institutions, educators, and disciplines. Specifically, the final report will:

1. Present a framework for equitable and effective teaching that includes attention to:
   - Approaches to and guidelines for evidence-based, inclusive teaching;
   - Equitable and effective teaching practices for different modes of teaching (e.g., in-person, online, blended and hybrid teaching), and different educational contexts (e.g., 2-year colleges, hybrid program, research institutions);
   - The roles that technology does, or can in the future, play in supporting equitable and effective teaching.
2. Discuss the experiences and training opportunities graduate students and postdoctoral students will need in order to be prepared to employ equitable and effective instruction as future faculty members.
3. Examine the institutional infrastructure, policies, and practices needed to encourage and support evidence-based teaching, such as opportunities for professional development, faculty evaluation policies and practices, and reward and advancement systems.
4. Provide actionable recommendations for institutions, disciplinary societies, funders, and policy makers on steps that could support implementation of the framework.