THE FUTURE OUTLOOK
FOR TEACHING AND LEARNING BEYOND COVID

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What have we learned during COVID?

• Inequities in higher education are big, deep, and old
• Online communication and teaching have some valuable affordances
• Students need a wide variety of different kinds of support
• Communities and all aspects of communities are essential
• We and our systems/structures can change more and more rapidly than we thought – at a tremendous cost
What have we accomplished during COVID?

• Visioning on the Future of Undergraduate STEM Education

• Major experiments in teaching methods and technology, as well as institutional structures and support structures

• Renewed vigor in our work on diversity, equity, inclusion (including access) in higher education
  • Major step in the voices we are hearing
  • A multi-perspective history of higher education
  • Increased resources and attention
  • Structured and structural work at institutions across our nation including a focus on anti-racism
With this to build on, what do we want our future to look like?

With credits to Kerry Brenner, Janet Cho, Leanne Chukoski, Nick Horton and Lynn Stein, and all involved
What is the goal of Undergraduate STEM Education?

To enable a thriving, sustainably, and just society

- Workforce preparation
- Civic participation
- Helping individuals flourish
How would this STEM Education be different than the past?

To enable a thriving, sustainably, and just society
Centering STEM in society

- Teaching through problems in their socio/political context
A Big View of Doing STEM

• Providing authentic (real-world) learning experiences
  • Making learning meaningful through application context
  • Importance of contributing
  • Building skills: Communication, Collaboration, Critical Thinking and Creativity
  • Practicing action – in work place and in society

To enable a thriving, sustainably, and just society
Full Attention to Ethics And Justice

“It is critical to develop STEM learners’ ability and willingness to acknowledge and resolve ethical issues in their work.”

• Ability to recognize a situation where ethics issues arise
• Understanding that there are genuine and well-grounded points of difference between people on ethical issues
• Ability to interrogate and critique ethical views
• Practice ethical decision making
• Develop humility, empathy and respect

To enable a thriving, sustainably, and just society
What could make this vision possible?
Students at the Center

• Centering the goals, needs, interests of the student rather than of the discipline or content

• Recognizing all that the student brings to the table – experiences, knowledge, ways of knowing

• The importance of instructional design, mentoring and support, institutional structures

“Learning environments are student-centered, project-based, and personalized.”
“Equity and inclusion are foundational principles.”

Lessons for the Future

To enable a thriving, sustainably, and just society
The Role of Technology

“Technology holds promise for creating equitable learning environments, but it also alters the skills we need in the future, and changes what and how we teach” - NSF 2020

STEM Education for the Future: A Visioning Report

- Improving instruction
- Enabling access
- Providing knowledge of the system
- As a topic of learning
Working in Communities

• All parts of the campus
Working in Communities

- All parts of the campus
- Education and society
Working in Communities

- All parts of the campus
- Education and society
- Across institutions
The Importance of You (and Us)

IUSE integrates implementation and research for the purposes of supporting widespread improvement in higher education.

Broader Impacts: How does your work come into use at scale?