

NATIONAL ACADEMIES

*Sciences
Engineering
Medicine*

Welcome!



Reimagining Graduate Education and Postsecondary Training

Across fields, demographics, &
universities, nearly 50% of those
who start PhD programs
do not finish.

An example of reimagining:

What if deans and chairs saw their
role not as *caretakers* but as
change-makers?

National Academies reports consistently point to graduate studies as a necessary investment & intervention.

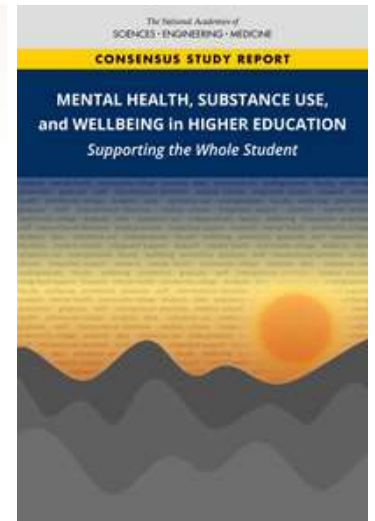
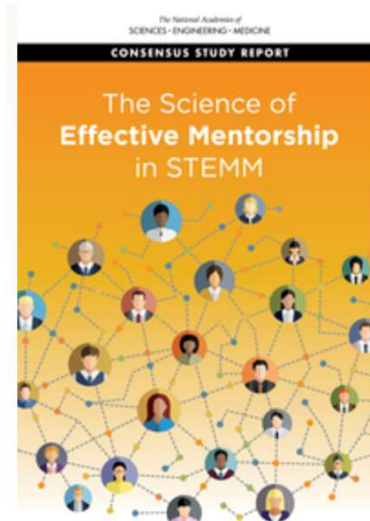
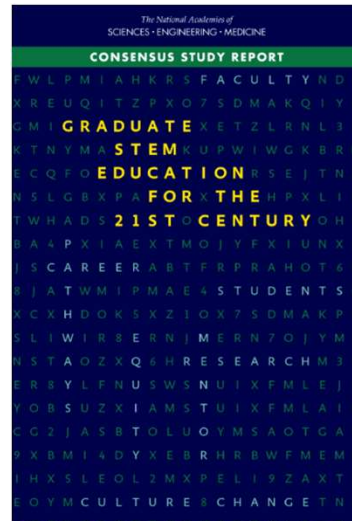
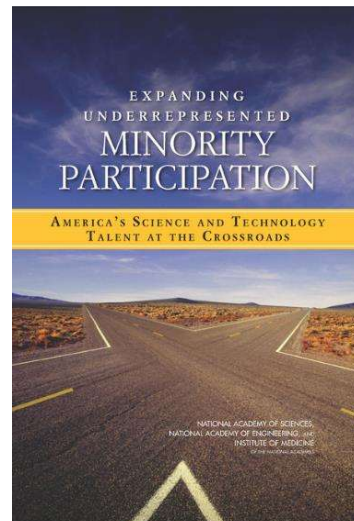
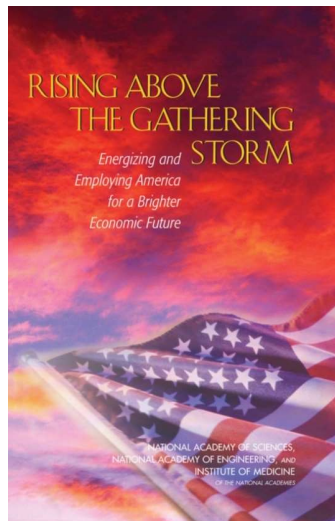
2005

2011

2018

2019

2021



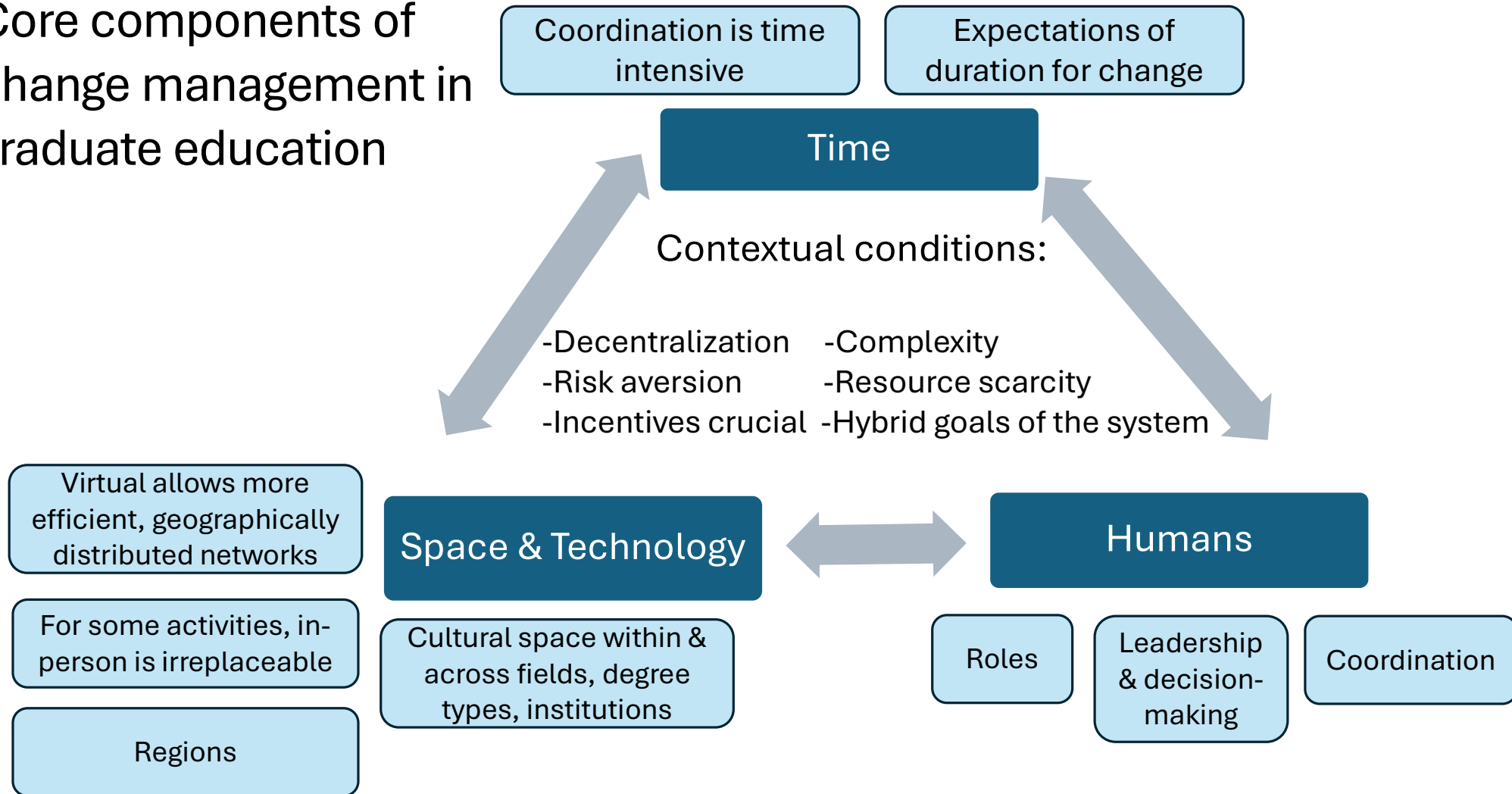
“The primary goal of the summit is to identify key levers and actions needed to ensure the sustainability of the U.S. STEMM research enterprise while continuing to support, engage, and promote the success of graduate students and postdoctoral scholars in STEMM careers.”

To reimagine graduate education and postdoctoral career development, what levers and actions did speakers on Day 1 say we need?

Meeting these will not directly solve all problems, but they may create conditions that move good ideas into productive action.

Raw materials
Consensus(es) on goals. What are we trying to do here?
Data! Our ability to describe the system and its shortfalls and strengths is increasingly limited.
Time for deep change to take hold
Adequate funding: for students and postdocs, and for the work of change
Norms and Standards
Awareness of innovation and human capital development as integral to the economy
Awareness that institutional norms and supervision practices have implications for wellbeing
Raise standards of supervision to include mentorship
Support for negotiating declining cohort sizes in relation to unionization and funding cuts
Skills
Mentorship: Faculty skill development in mentorship, generally and for industry roles
Change management: How to adopt evidence-based practices without it taking over the workweek?
Career and professional development, regardless of one's career path
Multi-sectoral Engagement
Enhanced alumni engagement
Enhanced employer engagement
Access to multi-sector collaborations that support institutional change
Evidence and learning from multi-sectoral partnerships

Core components of change management in graduate education



What might we mean when we say system redesign?

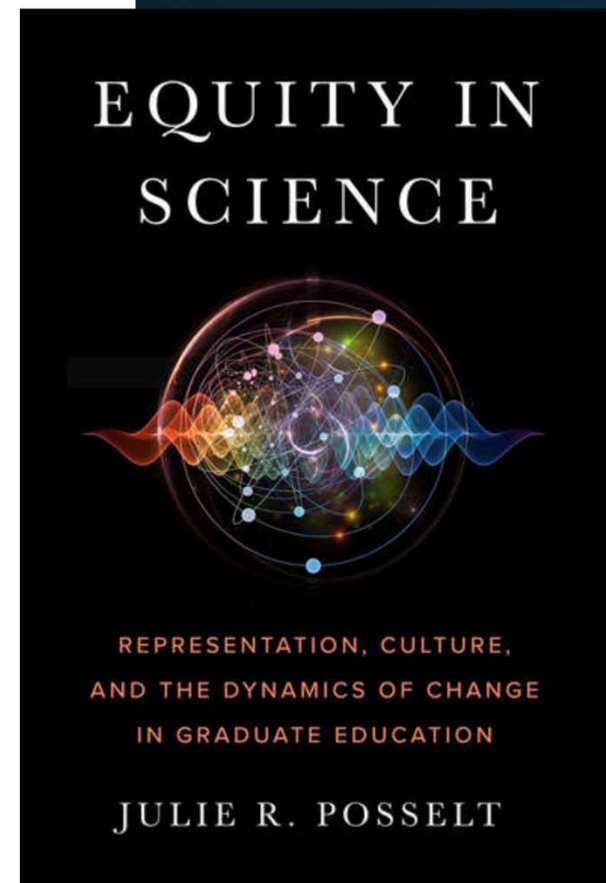
- **Broadening what approaches are used at all**
 - Regional innovation hubs where NSF may invest a concentration of GRFP's
- **Legitimizing promising innovations**
 - Integrating career professional development into PhD course requirements, regardless of career goals
 - Industry- university partnerships that change how students spend grad years
- **Changing the primary career development model that universities, disciplines, or the labor market considers superior**
 - Following the UK model
- **Eliminating a well-established structure and replacing it with something new**
 - Postdoc

- System characteristics
 - Decentralization
 - Hybrid goals
 - Complexity
- Incentives crucial
- Risk aversion
- Resource scarcity
- Legal and political pressures
- Higher education's "tarnished brand"

Contextual
conditions that we
are managing

Cross –Case Patterns on the Dynamics of Change in STEM Graduate Education

- **An evolving context** compels alignment with principles, not entrenchment of “best practices.”
- **Political and emotional** aspects of change cannot be ignored.
- **Limits of managerial approaches** to change, especially for graduate student wellbeing
- Necessity of **design, strategy, and coordination** across settings
- Imperative of well-moderated, ongoing **discussion** across our difference.



BOTTOM UP

- Cultural change** via routines, habits, interactions.
- Our default actions in “discretionary spaces” (Ball, 2018)
- Advocacy about community needs
- ”Small is all” (adrienne marie brown)

TOP DOWN

- Structural change** via institutionalization depends on resources & coordination.
- Coordination and management should themselves be carried out equitably & inclusively.

INSIDE OUT

- Systemic change** rooted in individual reflection & collective learning about inherited norms, practices, narratives.
- Data (numbers & stories) are powerful resources.
- So is an environment of trust & respect.

Forces for systemic change in STEMM graduate education

Day 2 Summit Quote Board

“One of the greatest things about US graduate education is that no one’s in charge or in control. That’s also its Achilles Heel.”

-Debra Stewart

“The system works well enough to keep the system going.”

-Keith Micoli

“What could we do, together?”

-Kenneth Olliff

“It is better to be imprecisely right than precisely wrong.”

-Michael Clemens