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BOARD ON SCIENCE EDUCATION

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ROUNDTABLE ON SYSTEMIC CHANGE IN UNDERGRADUATE STEM EDUCATION

National Dialogue on Transforming STEM Teaching Evaluation in Higher Education

January 14, 2021

Funding from National Science Foundation via TEval

Transforming STEM Teaching Evaluation in Higher Education

Gabriela Weaver, Assistant Dean for Student Success Analytics and Professor of Chemistry, University of Massachusetts, Amherst

Planning Group

Ann Austin, Michigan State University

Christine Broussard, University of LaVerne

Noah Finkelstein, University of Colorado, Boulder

Andrea Follmer Greenhoot, University of Kansas

Emily Miller, Association of American Universities

Gabriela Weaver, University of Massachusetts, Amherst

National Academies' work related to Teaching and Teaching Evaluation

Heidi Schweingruber, Director, Board on Science Education,
National Academies of Sciences, Engineering, and Medicine

The National Academies

- A non-governmental organization (NGO)
- Founded in 1863
- Bring together committees of experts in all areas of scientific and technological endeavor
- Address critical national issues and give advice to the federal government and the nation



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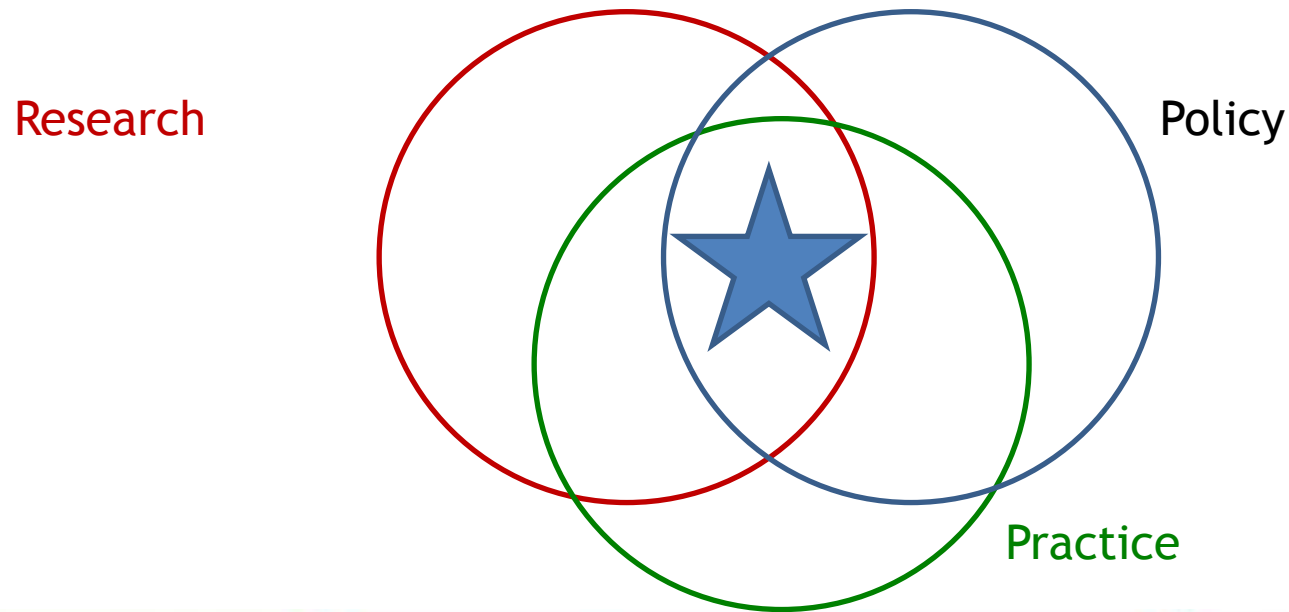


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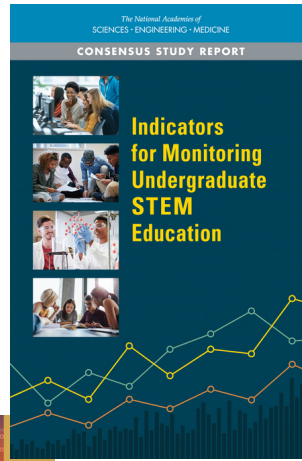
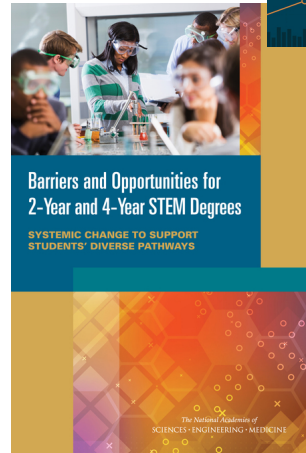
Our Mission

- Provide evidence-based guidance for practice and policy
- Identify future directions for research
- Serve as a connection point between research, policy and practice



Synthesizing Evidence: Consensus Studies

- A committee of experts – researchers, practitioners, policy-makers
- Respond to a statement of task/charge
- Consider the evidence
- Provide guidance/recommendations
- Engage stakeholders throughout the process



Convening Power

- Roundtables and forums
- Workshops/large public meetings (with workshop proceedings)
- Webinars
- Small planning meetings or expert meetings – for federal agencies and other organizations

Spin-off Resources

- Briefs
- Practitioner guides
- Infographics
- videos, etc

Roundtable on Systemic Change in Undergraduate STEM Education

A Vision for the Future of Post-secondary STEM Learning

The roundtable focuses on the future of undergraduate STEM learning and helping drive a national effort on how best to educate students to be informed members of society and/or participate in the future STEM workforce. The vision takes into account the **dynamic context** and **builds strategies** to direct action and inspire change.

- Faculty are key to improving undergraduate STEM education - teaching evaluations are a potential lever for change
- Roundtable held workshop on teaching evaluation in Fall 2019 - explored innovative approaches to evaluation
Recognition and Evaluation of Teaching in Higher Education
- Board on Higher Education and the Workforce held a workshop on promotion and tenure in Fall 2019 - how to elevate teaching as a valued activity in faculty work
*Re-envisioning Promotion and Advancement for STEM Faculty:
Aligning Incentives with Values*
- Potential consensus study - Framework for Effective/High Quality Teaching in Undergraduate STEM Education

Campus Context for Efforts to Transform Teaching Evaluation

Bryan Dewsbury, Assistant Professor of Biological Sciences,
University of Rhode Island

Susan Elrod, Chancellor, University of Indiana, South Bend

Diane O'Dowd, Vice Provost, Academic Personnel, University of
California, Irvine

Yves Salomon-Fernandez, President, Greenfield Community College

Andrea Follmer Greenhoot, Professor of Psychology, Director of the
Center for Teaching Excellence and Gautt Teaching Scholar,
University of Kansas

DRAFT MODEL OF SYSTEMIC CHANGE LEADERSHIP

Elrod, Bauerle and Kezar (in development)

Leadership Context

Goals of Change

(e.g., science literacy, next generation scientists, Science teacher preparation, professional preparation, research innovation)

Locus/Level/Scope of Change

(e.g., dept, program, university, partnership)

Institutional Type,

Culture & Environment

(e.g., research, PUI, MSI; public/private)

Internal & External Factors

(e.g., competing forces, opportunities, pressures)

Leader Moves

The Black
Box of
Leadership

Levers that Lead to Change

→ Culture
→ Strategic Goals/Plans
→ Governance Structure
→ External partners/initiatives
→ Policies, practices, structures
→ Communication practices, structures
→ Budget models, revenue
→ Rewards, incentives, constraints
→ Feedback, assessment systems
→ Transactional efficiencies, barriers
→ Student and employee pools
→ Cost, aid, scholarships, etc.

Bigger Systemic Change

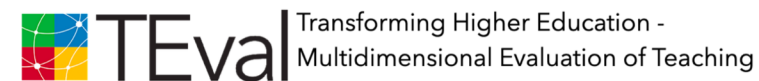
Systemic Change
Outcomes
Achieved and
Sustained Over Time

Teaching Evaluations are an important lever for change:

- Where do they fit, interact with, influence other levers?
- How effective are they as a lever now; how effective could they be if changed?
- How can YOU help lead the use of them as a lever for systemic change?

Goals for the National Dialogue Work on Transforming Teaching Evaluation

- **Christine Broussard**, Chair, Natural Science Division, University of La Verne
- **Kadian Callahan**, Assistant Dean for Faculty and Student Success in the College of Science and Mathematics and Associate Professor of Mathematics Education, Kennesaw State University



Teaching Evaluation Collective







National Academies of Sciences, Engineering, and Medicine 2020. *Recognizing and Evaluating Science Teaching in Higher Education: Proceedings of a Workshop in Brief*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25685>.


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This PDF is available at <http://nap.edu/25685>

SHARE    



Recognizing and Evaluating Science Teaching in Higher Education: Proceedings of a Workshop in Brief (2020)

DETAILS

12 pages | 8.5 x 11 | PDF
ISBN 978-0-309-67199-6 | DOI 10.17226/25685

GET THIS BOOK

FIND RELATED TITLES

CONTRIBUTORS

Susan J. Debad, Rapporteur; Roundtable on Systemic Change in Undergraduate STEM Education; Division of Behavioral and Social Sciences and Education; National Academies of Sciences, Engineering, and Medicine

SUGGESTED CITATION

National Academies of Sciences, Engineering, and Medicine 2020. *Recognizing and Evaluating Science Teaching in Higher Education: Proceedings of a Workshop in Brief*. Washington, DC: The National Academies Press.
<https://doi.org/10.17226/25685>

Accelerating Systemic Change Network (ASCN) Working Group 6



- ASCN webpage <https://ascnhighered.org/index.html>
- Resources
 - Working Group 6 Critical Resources
 - https://ascnhighered.org/ASCN/wg6_resources.html
 - TEC Guidelines for Change
 - <https://drive.google.com/file/d/1gX-X9NXDYMD3yoZvyM3FXeEo693CRBeB/view?usp=sharing>
 - Other <https://ascnhighered.org/ASCN/resources.html>
- In-progress
 - Curating the matrix
 - Broaden participation
 - Gather resources for defining teaching effectiveness
- Contact info.
 - Christine Broussard, University of La Verne
cbroussard@laverne.edu
 - Kadian M. Callahan, Kennesaw State University
kmcallahan@Kennesaw.edu

Next Steps? *Inclusive and Effective College Teaching...*

*Inclusive and Effective
College Teaching:*

*A Framework for Achieving
Quality Instruction in Higher
Education.*

New consensus study?

Themes and Approaches to Transforming Teaching Evaluation

- **Ann Austin**, University Distinguished Professor, Higher, Adult, and Lifelong Education; Associate Dean for Research, College of Education; Assistant Provost for Faculty Development—Career Paths; Michigan State University
- **Noah Finkelstein**, Professor of Physics and Director of the Center for STEM Learning, University of Colorado, Boulder

Question for Participants

Why do we need a national dialogue on teaching evaluation?

What motivated you to participate in this national dialogue on teaching evaluation?

Issues and Challenges Highlighted in the Posters

- Engaging stakeholders
- Recognizing and addressing the diversity of teaching contexts
- Handling logistical and technical issues
- Addressing change in teaching evaluation as culture change
- Fostering sustainability

Participant Input

- In the chat, share one word or a short phrase that captures the most important topic(s) for us to consider during the national dialogue.

National Dialogue on Transforming STEM Teaching Evaluation in Higher Education

January 14-27, 2021

*Organized by the Roundtable on Systemic Change in Undergraduate STEM Education
of the National Academies of Sciences, Engineering, and Medicine*

The National Dialogue is hosted by the NASEM/BOSE Roundtable on Systemic Change on Undergraduate STEM Education in collaboration with partners. The goals are to contextualize the critical importance of effective and inclusive teaching today; understand the broad array of models and approaches to improve the evaluation of teaching; and examine strategies on how to address cross-cutting challenges to reform processes for evaluating teaching.

Schedule overview:

Jan. 14: Opening Plenary with panel on Campus Context for Efforts to Transform Teaching Evaluation

Jan. 14-17: Discussion Forum on Teaching Evaluation Project Posters

Jan. 19-22: Interactive Project Showcase

Jan. 27: Closing Plenary

Poster Symposium on Changing Conversation and Culture



Please find below projects focused on Changing Conversation and Culture. To discuss these posters, [please visit the Discussion Forum](#). You may also check the [Interactive Project Showcase Schedule](#) to see if there are Office Hours hosted for posters of interest.

[Poster Index](#)

1. "Reframing Teaching Effectiveness Evaluation at the University of La Verne" at University of La Verne: Christine Broussard
2. "Accelerating Systemic Change Network (ASCN): Working Group 6 Aligning Faculty Work with Systemic Change" from Kennesaw State University and University of La Verne: Kadian Callahan and Christine Broussard
3. "From Evaluation to Reflection" from Michigan State University: Melanie Cooper and Lynmarie Posey
4. "A Comprehensive Approach to Measuring, Describing, and Supporting Teaching in Liberal Arts Colleges" from Associated Colleges of the South and Rollins College: Stephanie Fabritius and Susan Singer
5. "Redefining Faculty Scholarship: Counting Service to Students as Part of Tenure and Promotion" from Davenport University: Melissa Haswell
6. "Department Review of Inclusive Course Design for Continuous Improvement" from Stanford University: Melissa Ko
7. "REFLECT: Redesigning Education For Learning through Evidence and Collaborative Teaching" from University of Portland: S. Salomone, C. James, V. Peterson, T. Prestholdt, E. Anctil; UW Tacoma, H. Dillon
8. "Implementing a Framework for Assessing Teaching Effectiveness" from Boise State University: Shawn R. Simonson, Megan Frary, and Brittnee Earl
9. "A Cultural Shift to a System of Evaluation for Learning Improvement" from Tufts University: Annie Solsson, C. Swan, and S. Thomas
10. "The Evaluating Teaching (ET) Project: Promoting Excellence in Teaching and Learning" from Florida International University: Uma Swamy, Leanne Wells, and Erica Caton

Introducing Teaching Portfolios for Evaluation of Teaching in Promotion and Tenure Cases

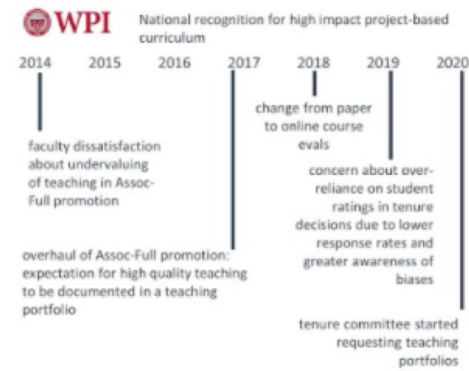
Chrysanthé Demetry, Ph.D. – Worcester Polytechnic Institute

National Dialogue on Transforming STEM Teaching Evaluation in Higher Education (January 2021)

ABSTRACT

WPI's most recent efforts to improve the evaluation of teaching focus on the use of teaching portfolios to present multiple sources of data about various types of teaching: courses in any modality, project advising, and academic advising and mentoring. The work has been driven by our institute-wide promotion and tenure committees and grass-roots faculty concern about the limitations and problems associated with student ratings. This poster presents work-in-progress to support creation and evaluation of teaching portfolios, particularly the outcomes of a working group in summer 2020. The working group was part of a larger project, funded by a NSF ADVANCE grant, to improve the Associate-to-Full promotion system for tenured faculty.

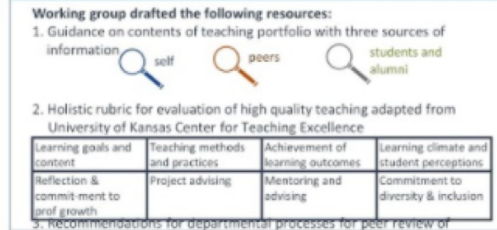
DRIVERS & STARTING POINT



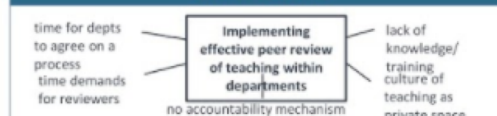
STAKEHOLDERS & LEVELS OF INVOLVEMENT

Summer 2020 Working Group Reviewed best practices, surveyed all department heads	
Accountable person	Director of Teaching & Learning Center, Grant Co-PI
Faculty governance representatives	Promotion committee (Assoc-Full, NTT promotions) Tenure committee
Mid-level leadership	Engineering department head
Faculty	Associate Teaching Professor

FRAMEWORKS & TOOLS



CHALLENGES



CHALLENGES (cont'd)

Strategies to address challenges:

- Keep workload manageable by reviewing each faculty member only once in 3-5 year period
- Provide training and resources as a starting point
- Distribute reviewer role and recognize it as a service contribution
- Share positive stories about value of peer review for all parties
- Link need for peer review to tenure and promotion processes
- Please share others!

STATUS & NEXT STEPS

Accomplishments:

- Tools and guiding documents for teaching portfolios under consideration by full promotion and tenure committees in AY 2020-2021
- Framework and suggestions for teaching portfolios introduced at 2020 New Faculty Orientation

Next steps:

- Pilot peer review resources and training with volunteer departments
- Assemble a small but diverse collection of WPI teaching portfolios that fully address guidelines
- Integrate teaching portfolio work and support in writing retreats

ASK ME ABOUT

- WPI's "Student Reports on MQP and IQP Learning and Advising" for degree-required major capstone and interdisciplinary capstone projects
 - Early work on implementing a new Associate-to-Full promotion policy that defines and welcomes multiple forms of scholarship including the scholarship of teaching and learning and scholarship of management
- Material is based upon work supported by the National Science Foundation under Grant No.1760577 (ADVANCE Adaptation)

"Introducing Teaching Portfolios for Evaluation of Teaching in Promotion and Tenure Cases" from Worcester Polytechnic Institute:
Chrysanthé Demetry

Office Hours: Friday, January 22 from 2:00-3:00pm with Chrysanthé Demetry

[Zoom Link for Office Hours](#)

Interactive Project Showcase: Office Hours

[Zoom Link for all Office Hours](#)

Please find below a schedule of office hours to discuss teaching evaluation projects. To view projects, visit the poster symposium pages on [Changing Conversation and Culture](#), [Multiple Measures](#), and [Student Voices](#).

National Dialogue on Transforming STEM Teaching Evaluation in Higher Education

Teaching Evaluation Showcase Office Hours

Each session is highlighted a certain color based on its category:

Changing Conversation and Culture
Multiple Measures
Student Voices

JANUARY 19, 2021			
12:00 PM	Melanie Cooper	Michigan State University	From Evaluation to Reflection
1:00 PM	Rick Cleary, N. Langowitz, L. Turner, T. Bayar, R. Hanna	Babson College	Assessing the Pandemic Pivot to Remote Learning: A Crowd Sourced Approach
2:00 PM	Sarah E Andrews, Mark Gammon, Cynthia Hampton,	University of Colorado Boulder	The Teaching Quality Framework Initiative



Discussion Forum





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4 of 4 topics (4 unread)

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Please share your ideas about transforming STEM teaching evaluation in higher ed here. There will be discussion threads for each of the groups of posters and for cross-cutting themes.

[Edit welcome message](#) [Clear welcome message](#)

- | | | |
|--------------------------|--|----------|
| <input type="checkbox"/> |  Discussion of Posters on Changing the Campus Conversation and Culture (1)
By National Dialogue on STEM Higher Ed Teaching Evaluation - 1 post - 0 views | 10:28 AM |
| <input type="checkbox"/> |  Discussion of Posters on Using Multiple Measures for Evaluating Teaching (1)
By National Dialogue on STEM Higher Ed Teaching Evaluation - 1 post - 0 views | 10:27 AM |
| <input type="checkbox"/> |  Discussion of Posters on Student Voices (1)
By National Dialogue on STEM Higher Ed Teaching Evaluation - 1 post - 0 views | 10:26 AM |
| <input type="checkbox"/> |  Discussion of Opening Plenary on January 14, 2021
By National Dialogue on STEM Higher Ed Teaching Evaluation - 1 post - 8 views | 12/13/20 |



12:00 pm ET

Transforming STEM Teaching Evaluation in Higher Education

- **Gabriela Weaver**, Special Assistant to the Provost for Educational Initiatives, University of Massachusetts, Amherst

12:10 pm ET

National Academies' work related to Teaching and Teaching Evaluation

- **Heidi Schweingruber**, Director, Board on Science Education, National Academies of Sciences, Engineering, and Medicine

12:20 pm ET

Campus Context for Efforts to Transform Teaching Evaluation

- **Moderator: Andrea Follmer Greenhoot**, Professor of Psychology and Director of the Center for Teaching Excellence and Gautt Teaching Scholar, University of Kansas



Bryan Dewsbury

Assistant Professor of Biological
Sciences, University of Rhode
Island



Susan Elrod

Chancellor, University of Indiana,
South Bend



Diane O'Dowd

Vice Provost, Academic Personnel,
University of California, Irvine



Yves Salomon-Fernandez

President, Greenfield Community
College

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