Transform Your Department Culture – Helpful Examples for Inspiring Change

Dr. Tessa Andrews
Dr. Michael Wittmann
Dr. Teodora Rutar Shuman
This presentation is being recorded. The recording and slides will be available in the coming week at

https://aaas-iuse.org

Please note: The discussion break-out groups following the presentations will NOT be recorded.
Closed Captioning:

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The AAAS-IUSE initiative supports faculty, students, and the greater undergraduate STEM education community by disseminating research and knowledge about STEM teaching, learning, equity and institutional transformation.

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- Blog
- Workshops
- Summer Labs On-Demand
- Resources
- Lessons Learned During COVID
- NSF IUSE Proposal Preparation Toolkit
Transform Your Department Culture – Helpful Examples for Inspiring Change

Dr. Tessa Andrews
Dr. Michael Wittmann
Dr. Teodora Rutar Shuman
Transforming teaching evaluation with department chairs

Dr. Tessa Andrews, Dr. Paula Lemons, Hannah Ericson
Dr. Erin Dolan, Dr. Peggy Brickman, Dr. Sandhya Krishnan
Talk Outline

• Background – Why do we aim to reform teaching evaluation?
• Intervention – What approach to departmental change do we use?
• Research – What have we learned?
• Resources for reforming teaching evaluation in departments
To improve teaching, we need to improve evaluation

Most institutions rely solely on student course evaluations

Inadequate teaching evaluation means we cannot recognize nor reward evidence-based teaching

Robust evaluation relies on multiple perspectives

**Student Voice**
- Student end-of-course evaluations
- Pre/post tests
- Mid-semester evaluations

**Peer Voice**
- Classroom observations
- Syllabus evaluations

**Self Voice**
- Systematic self reflection
- Documentation of efforts to improve

Andrews et al. 2020; Reinholz et al. 2018; Teval.net
DeLTA convenes department chairs to change teaching evaluation

12 STEM department chairs gathered for facilitated meetings ~5 times per year for three years.
Social cognition change perspective:
Change requires developing new ways of thinking

Provide chairs with new frameworks for thinking about evaluation

Invite chairs to share what they have done in their department

3-voice framework
Robust & equitable evaluation of teaching relies on three voices

Guiding perspectives on how to achieve change
Cultural change perspective: Change requires recognizing and challenging underlying values and forming new practices

Ask targeted questions with respectful but direct facilitation

Engage chairs in self-assessment of department practices

<table>
<thead>
<tr>
<th>BITs &amp; PIECES</th>
<th>TARGET PRACTICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department lacks standards or relies on inappropriate standards for using data from students in evaluating teaching.</td>
<td>Department holds expectations for the use of data from students rely on historical precedent or university-level policies without further specification or clarification. For example, the department may expect faculty to summarize results of mandatory student evaluations without any standards for which data are reported, when, and how they are analyzed.</td>
</tr>
<tr>
<td>Department accepts and/or relies on data from mandatory student evaluations, but does not: • Attend to low response rates • Use standard protocols for analyzing rating data (e.g., excellent, very good, good, poor). Such data should not be averaged! • Use systematic guidelines to select student comments.</td>
<td>Department explicitly encourages, but does not provide support faculty to: • Achieve a high response rate on mandatory student evaluations. • Analyze quantitative data from mandatory student evaluations using distributions rather than averages. • Analyze qualitative data from mandatory student evaluations by systematically selecting comments (e.g., randomly). • Collect and analyze data beyond mandatory student evaluations, including data about student perceptions and learning. Department accepts and/or relies on data from multiple items on mandatory student evaluations.</td>
</tr>
<tr>
<td>Department places little or no emphasis on changes in student evaluations or other student data over time.</td>
<td>Department explicitly encourages but does not provide support to help faculty to document growth by making some comparison(s) across time of some data from students.</td>
</tr>
</tbody>
</table>

How do your department's current policies and practices help when student learning is not going well in the courses in your department?
Research methods

Meeting recordings
Information from authentic interactions

One-on-one interviews
Targeted, comprehensive information

Participant profiles
Holistic summaries of a chairs’ thinking across all data

Assessment of departmental practices
Systematic characterization of changes in teaching evaluation
Lessons Learned from DeLTA
Collaborating with department chairs

Create space for thought and learning & compel reflection

Provide scaffolding for learning and differentiated support

Be persistently present with positive regard

Images created by Thom Ingebretsen, Nithinan Tatah, and Arafat Uddin from the Noun Project (CCBY3.0)
Some departments changes and some did not

- Five departments made no significant changes.
- Two departments added self-reflection to annual review, with limited structure.
- Four departments changed multiple voices, with best practices.
Department chairs who saw a clear need for change achieved more change.

“We have an amazing research enterprise here, but sometimes teaching is sort of viewed as a necessary evil, or it’s like a bitter pill to swallow... I think that developing a system for evaluation is a way to positively highlight the importance of that job and the value that we place on [teaching] in the department and in the university.”
What facilitated teaching evaluation reform?

Department chairs who empowered a faculty leader to develop and pilot new practice achieve more change. This required:

• Willingness to delegate & advocate
• Willing & knowledgeable faculty leader
What was NOT necessarily a barrier to change?

ALL department chairs anticipated faculty resistance to change.

ALL department chairs had concerns about the time that new teaching evaluation practices would require.
Ongoing and future work

Expanded DeLTA approach that supports department chair AND faculty leaders

Studying leadership perspectives related to achieving change.
Resources for teaching evaluation reform

Departmental self-assessment of teaching evaluation practices

Document with resources, including link to the GATEs

Guides to Advance Teaching Evaluation (GATEs): A Resource for STEM Departments Planning Robust and Equitable Evaluation Practices

Sandhya Krishnan, Jessica Gehrtz, Paula P. Lemons, Erin L. Dolan, Peggy Brickman, and Tessa C. Andrews

Cynthia Bauerle, Monitoring Editor

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Thank you!

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Thank you to department chairs and faculty at the University of Georgia for their steadfast commitment to supporting students and faculty.

Document with resources, including link to the GATEs.

[QR Code]
Discussion questions

• In your context, what benefits might the department, faculty, and students experience as a result of using multiple voices to inform teaching evaluation?

• What ideas about pursuing departmental change resonated with your experience? What would be different than your experience?
Proposed take aways

- STEM Faculty and department chairs are generally dissatisfied with current teaching evaluation systems, many of which rely solely on student evaluations.
- Many faculty and chairs need opportunities to learn about more robust and equitable teaching evaluation, including what approaches are used, how they benefit faculty and students, and how to make better evaluation feasible in their department.
- The departments that achieved the most change in our project had three main features:
  - A department chair who saw a critical need to better support and reward teaching.
  - A department chair who prioritized and was able to generate consensus among faculty about the need for better ways to evaluate teaching.
  - A department chair who empowered interested faculty to develop and pilot new evaluation approaches for the department.
- Valuable resources are available for teaching evaluation, allowing STEM departments to adapt existing tools and processes rather than starting from scratch.
An Introduction to the EP3 Initiative

Michael Wittmann, APS Head of Education and project director for the EP3 Initiative
Why is a Guide needed for academia?
The need for thriving education

• A changing academic landscape requires dynamic departments

• Sustainable change takes time, self-reflection requires data and evidence, action requires shared ownership, and plans require evaluation

• It’s in the best interests of professional societies to attend to education, and change is hard in academia.
Faculty want support

- Departmental politics
- Undergraduate research
- Threats to the department
- Outreach
- Recruitment and retention

- Curricular reform
- Teaching innovation
- Online teaching
- Mentoring
- Equity and access, Diversity and inclusion
Departments face problems

N = just over 200 respondents out of ~750 physics departments asked about the past 2 years

**Moderate threats**

- Has your department faced a moderate threat* that you are aware of in the past 2 years?

<table>
<thead>
<tr>
<th>No (specified below)</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>24%</td>
<td>76%</td>
</tr>
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</table>

* Survey indicated that "Moderate threats are those which threaten the ability of the department to function well."

**Severe threats**

- Has your department faced a severe threat* that you are aware of in the past 2 years?

<table>
<thead>
<tr>
<th>No (specified below)</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>81%</td>
<td>19%</td>
</tr>
</tbody>
</table>

* Survey indicated that "Severe threats are those that threaten the ability of the department to exist."

Examples: Low enrollments (55% of all), reduction in faculty lines (32%), budget cuts (32%), reductions in staff (28%)

Examples: Merger of dept. or program (11%), Closure of dept. or program (8%)
A Guide of practices arranged thematically and strategies to address each practice

https://ep3guide.org
Effective Practices for Physics Programs (EP3)

Supporting physics programs with collections of knowledge, experience, and proven good practice for responding to challenges and engaging in systematic improvement.

Be intentional.

The EP3 philosophy for effective departmental change can be summed up in two words: be intentional.

Successful physics departments...

Want to learn how to most effectively use this guide? Get Started

Why did you come here? Let’s figure out your goal. Map Your Program’s Goals
https://ep3guide.org/

Sections on students and instruction
Sections on department, culture, and climate

<table>
<thead>
<tr>
<th>How to Be an Effective Chair</th>
<th>How to Create and Use a Strategic Plan</th>
<th>How to Create and Use Foundational Documents</th>
<th>Departmental Culture and Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity, Diversity, and Inclusion</td>
<td>Ethics</td>
<td>How to Undertake an Undergraduate Program Review</td>
<td>How to Serve as an Undergraduate Program Review</td>
</tr>
</tbody>
</table>

Physical Environment: Encouraging Collaboration and Learning

https://ep3guide.org/
Building thriving programs

Map your program’s goals

We’ve organized the EP3 Guide around content relevant to challenges commonly faced by physics departments. Make a selection to start learning how you can improve your program.

- Increase the Number of Majors
- Improve Student Satisfaction or Engagement
- Better Meet the Needs of Diverse Students
- Improve Curriculum and Instruction
Effective Practices for Physics Programs

Trust and
Keeping up with the times
EP3 Guide Development Process

Contribution

Editorial Board Synthesis
An Editorial Board subcommittee and
the Editorial Director synthesize
contributions, research, reports,
etc. into one cohesive document.

Review

Initial Contributors

3+ Independent Reviewers

110+ Contributors
from 90+ institutions

130+ Reviewers from
100+ institutions

Scheduled Review

Publish to ep3guide.org

Editorial Director
incorporates feedback and
revisions

Editorial Board
reviews and approves

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finalize section
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Community Engagement

- Knowledge curation: Collection & dissemination of effective practices*
- Network building: Facilitated cohorts* & focused teams* (e.g., DALIs)
- Leadership training: Workshops* & webinars
- Programmatic assessment: Site visits* & departmental reviews
- Program improvement: Action plans* & data-driven change*

(We have begun to pilot some activities* and will expand our efforts)
REVOLUTIONIZING AN ENGINEERING DEPARTMENT BY CHANGING ITS CULTURE

Teodora Shuman
Students, staff, and faculty

culture of doing

Engineering with Engineers

identity of being an engineer
Students Doing Engineering with Engineers

- ME Faculty
- ME Staff
- RED Team
- Facilities
- Administrative Support
- Industry Advisor
- Industrial Partners
- Pandemic
- DEI
Culture change is a long design project

Culture is changed through doing, interactions

Acknowledge and celebrate what we’re good at

Research and identify problems
  Problem solve together: faculty, staff, students, alumni, industry,….

Periodically connect on common themes to maintain a shared vision

It’s a snowball effect
Annual Performance Review

- APR

- Faculty and staff invited to include grant-related activities in their APRs
- The chair celebrated their efforts
- The chair encouraged each faculty and staff to pursue their passions
- The chair offered financial support for training relevant to the grant
Mission statement

The mission of the Mechanical Engineering Department is to provide a **technically rigorous, design-focused** education in a **collaborative** environment that emphasizes **individual attention** and **connections to industry**, while preparing students to help create a **more just and humane world**.
Four change strategies as a roadmap
Connection with Industry

• Senior Design – industry sponsored – weekly interactions

• Real engineering projects starting in freshmen year - varied

• Project mentoring by practicing engineers - weekly

• Industry advisor
Curriculum

1st-Year Design

Year 1

Year 2

Year 3

Year 4

Senior Design Projects
Working w/ Industry Sponsors

WCERTE May 2023

Seattle U

Teodora Rutar Shuman
Data changed minds

Implicit association tests showed that both genders perceive engineering as a male field.

Women and URMs identify less strongly with engineering than males.

When their gender roles and their occupations don’t match, women may experience identity conflict.

This gender role conflict may affect women’s disproportionate attrition from STEM fields.

External evaluator, Inverness Research, reported exclusion of some students.
Curriculum Development took two years

- Collecting information from student evals and researching literature
- Idea generation and brainstorming
- Prototypes
  - Asked students
  - Commitment by everyone: to make changes
Final Design agreed upon, celebrated!

- Innovative Teaching
- Vertically Integrated Design Projects w/ Industry Mentors
- Integrated EE & DAQ
- Senior Design Projects Working w/ Industry Sponsors
**Classroom Instruction**

First-Year Students  
Second-Year Students  
Third-Year Students

**Design Project**

Industry Consultants
Monthly Teamings

• **Discussions that feature:**
  - a simple prompt
  - a session of modest duration
  - no preparation
  - time-constrained opening contributions from everyone present
  - self-organized turn-taking
  - discussion, and
  - a humble mechanism for providing a trace of a session

• **Process:**
  - individual opportunities to feel valued
  - collective opportunities to make sense of varied information

• **Outcome:**
  - Sense of belonging and trust is deepened
From Here....

1. Co-designing a toolkit with faculty across the country

2. Sustainability of Change Workshop at the ASEE Annual Conference

3. FIE
Revolutionizing a Department
by changing its culture

Kathleen Cook   Jennifer Turns   Yen-Lin Han   Greg Mason   Teodora Shuman

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CULTURE OF ENGINEERING WITH ENGINEERS AND INCLUSION

- Lab Manager position change
- Administrative Assistant position change
- Industry Advisor
- Student Advocate position
- Advising
- Student Advisory Council
- Student Mentoring
Improving Undergraduate STEM Education Initiative

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Thank you for attending!

Slides and recording will be available in the coming days.

We value your feedback, please take a few minutes to complete the survey.

@IuseProgram

https://www.aaas-iuse.org

AAAS IUSE Initiative