Supporting first- and second-order departmental change with the Effective Practices for Physics Programs (EP3) Guide

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EP3 is a collaborative effort between the American Physical Society and the American Association of Physics Teachers.

EP3’s foundational product is the EP3 Guide (https://ep3guide.org/), an online living document compiling evidence-based resources and strategies for topics like:

- Recruitment of Undergrad Majors
- Retention of Undergrad Majors
- Teaching Computational Skills
- Equity, Diversity, and Inclusion (EDI)
- How to Undertake a Program Review

Over 240 people (faculty, administrators, industry professionals, and more) from 140+ institutions contributed to the Guide.

Written documents like the EP3 Guide are potentially effective tools to support first-order change (change that happens within existing systems).

Users applied Guide content “just in time” to existing initiatives, faculty discussions, and strategic planning. The Guide’s organization supported learning (e.g., about the dimensions of a topic) but not the capture of ideas for continuous improvement.

However, departmental change initiatives like EP3 need to provide active engagements to support second-order change (change that transforms systems and cultures).

The EP3 Initiative has shown that intensive leadership institutes are effective, and they should investigate the role of lighter supports (workshops, webinars, etc.) in supporting effective departmental change.

The EP3 Guide is applicable beyond physics and STEM

Many of the strategies in the EP3 Guide – such as addressing retention by focusing on departmental culture and understanding students’ diverse career pathways – are not unique to physics, leading to invitations to work with other fields. For example, in 2022, we led a workshop series on enrollment issues with humanities faculty.

Key results from EP3’s 2020 survey of US physics department chairs (N=310)

- 63-70% agreed that undergraduate program changes were driven by departmental goals and seen as ongoing processes
- Only 37% agreed that changes involve multiple stakeholders, and only 42% agreed changes are supported by data

Key results from EP3’s 2022 survey of US physics department chairs (N=239)

- Top problem reported by departments was low enrollment in the major (71%)
- 76% reported facing a moderate threat in the last 2 years, such as low enrollments (55%) or a reduction in faculty lines (32%)
- 19% reported facing a severe threat, such as a department merger or closure.
- Most faculty and/or chairs considered the EP3 Guide relevant and valuable (61-72%)

Key results from EP3’s interviews of US physics department chairs (N=8)

- Many faced severe situational overwhelm
- Several wanted regular reminders and small targeted ways to engage with EP3
- Guide was a gateway to understanding topics like recruitment, especially through organized heading structure, though users often focused on familiar content
- They tended to use the Guide “just in time” for program and curriculum reviews, presentations, and taking on new roles
- They (N=3) had plans to use the Guide to support departmental strategic plans
- They (N=5) used the Guide to spark faculty discussions, with headings providing “major bullet points” and “jumping off point[s]”

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References: