

PFF and Disciplinary Societies

This PFF project involved partnerships with five disciplinary societies in the sciences and mathematics. The collaboration with disciplinary societies was based on the assumption that the societies could entice graduate faculty and their departments to consider the diverse world of higher education in which new assistant professors work. By such a focus, faculty are more likely to enrich their doctoral programs in ways that respond to challenges and take advantage of opportunities facing the doctorate.

PFF joined with the following disciplinary societies to develop model PFF programs in academic departments in the sciences and mathematics:

- ◆ American Association of Physics Teachers (AAPT)
- ◆ American Chemical Society (ACS)
- ◆ American Mathematical Society (AMS) and the Mathematical Association of America (MAA)
- ◆ Special Interest Group on Computer Science Education of the Association for Computing Machinery (SIGSCE/ACM)



Executive Summary

Preparing Future Faculty in the Sciences and Mathematics: A Guide for Change

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A New Publication from the *Preparing Future Faculty Program* of the Council of Graduate Schools and the Association of American Colleges and Universities



PREPARING THE SCIENCE AND MATHEMATICS PROFESSORIATE

This publication offers a new vision for the preparation of college and university faculty in the sciences and mathematics. Preparing Future Faculty (PFF) asserts that graduate students preparing for faculty careers should begin learning about the expectations for faculty — in research, teaching, and service — at different types of institutions of higher education. This new volume describes the benefits and challenges of creating PFF programs in the sciences and mathematics, as well as the structure and content of the programs.

Implementing A Vision

In 1998, academic departments in the biological and life sciences, and departments and disciplinary societies in chemistry, computer science, mathematics, and physics embraced the PFF vision and embarked on a collaboration to infuse PFF concepts into the preparation of future faculty in these disciplines. Chapter one describes model PFF programs in the sciences and mathematics. Chapters two and three contain both conceptual and practical information about how PFF can be part of the response to the growing number of recommendations for the improvement of doctoral preparation for the professoriate. Chapter four addresses the challenges of forging new programs in departments burdened with tradition and limited resources. Also included are summaries of assessments of PFF and participant testimony that identify the benefits to students, faculty members, departments, and institutions of persevering with the task of broadening doctoral programs for students preparing for academic careers.

Insights Gained

A decade of assessments of PFF programs confirms that the benefits of participation extend beyond doctoral students, for whom PFF is primarily intended, to graduate and partner faculty, departments, and universities. These assessments and testimony of PFF participants include the following specific insights:

- ◆ Doctoral students and alumni are enthusiastic about the benefits of their PFF programs.
- ◆ Graduate faculty members learn about faculty life in different institutions and appreciate the professional development their students receive through PFF programs.

- ◆ Departments and universities enhance recruitment and placement of graduate students.
- ◆ Planning for sustainability from the outset makes it more likely that they will continue as an integral component of graduate programs.

A confluence of forces, originating from disciplinary societies, universities, foundations, and federal agencies, has resulted in a number of common recommendations for changing doctoral education. All of the recommendations and reports are compatible with the vision of PFF, and many are to some extent stimulated by PFF successes. Collectively, these initiatives point toward a change in the “culture of preparation” of future science and mathematics faculty.

Aspects of PFF Programs in the Sciences and Mathematics

No two PFF programs are exactly alike. Faculty members design their offerings based on the distinctiveness of their respective disciplines and departments. Yet all focus on core PFF concepts, providing the next generation of faculty members with exposure to a broad range of experiences and settings that will better prepare them for their careers. Listed below are a few of the common types of PFF activities and their benefits.

- ◆ *Seminars and Workshops* expose students to teaching and learning concepts, information about job search strategies, and discussions about faculty life.
- ◆ *Mentoring Programs* in teaching and service, as well as research, provide personal and professional enrichment to student participants and to faculty members.
- ◆ *Activities at Partner Institutions*, such as visits and talks, offer PFF participants alternative ways to forge connections with undergraduates at partner institutions. **And teaching “internships”** allow students to experience the full range of instructional roles of faculty.
- ◆ *Attention to Diversity* – a critical element in any PFF program – includes broadening access to underrepresented groups, supporting activities that have an impact on retention and graduation, and teaching for inclusiveness.

A National Science Foundation grant supported development of PFF programs in the Sciences and Mathematics, the third of four PFF program phases. Other phases of PFF have been supported by the Pew Charitable Trust and the Atlantic Philanthropies. PFF currently involves 76 clusters of institutions and departments encompassing 324 institutions, 11 disciplinary associations, scores of departments, thousands of doctoral students, and hundreds of faculty members in all kinds of colleges and universities.

For more information visit the PFF web site (www.Preparing-Faculty.org).

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