

## **The Preparing Future Faculty Program at Arizona State University and Its Role in Preparing Graduate Engineering Students for the Professoriate**

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*“Doctoral students preparing for faculty careers should begin to learn about the entire range of faculty roles – teaching, research, and service – while in graduate school. Further, they ought to have direct personal experience with faculty life in various kinds of colleges and universities to determine a good fit between their aspirations and the needs of institutions. Colleges and universities that employ faculty and the universities that award doctoral degrees should work together to bring this about.”*<sup>1</sup>

In 1994 the American Association of Colleges and Universities and the Council of Graduate Schools provided grants to universities and then departments to develop this vision. As its basic premise, the Preparing Future Faculty (PFF) program readies participants for the teaching, research, and service roles at institutions for higher education and educates students to the context of these roles in the variety of university settings. The 47 institutions involved in the institutional wide phase of the PFF program share this framework and apply the concepts to fit their graduate program needs.<sup>2</sup> Arizona State University was one of the first five universities awarded a grant funded by Pew Charitable Trusts. It is not only one of the strongest programs among the doctoral-granting institutions, but it is recognized as the flagship of the graduate college with full support of the university’s president. The program expanded from 25 students in five departments in 1995 to now include over 100 students in over 30 different departments and programs in 2001. PFF at ASU is a two-year program, coordinated and directed by the Graduate College. Student participants are selected based on their application and letter of recommendation.<sup>3</sup> Students finish the program with a better understanding of faculty life not only at ASU, but at the partner institutions as well.

Cluster campuses, the partner institutions, are an integral and important part of the PFF experience. The national office stresses the importance of doctoral education to expand student socialization past the departmental level.<sup>2</sup> Teaching, research and service responsibilities and perspectives vary across the different institutions: research extensive/intensive institution, comprehensive university, liberal arts college, and community college. PFF’s goal is to introduce the student to the diverse nature of the academy, allowing them to decide where they might best apply their interests and strengths at their future “professional homes.” ASU’s program, situated in the Graduate College, includes the following local partner institutions: Arizona State University East & West, Grand Canyon University (a private, religious liberal arts institution), and the Maricopa Community Colleges.<sup>3</sup> In the first year of the program, students visit the campuses and receive their first introduction to the different environments of each campus. In their second year, students identify mentors at each partner institution; through experiences with these mentors students gain a more detailed sense of the responsibilities at the campus.

At ASU the first-year Exploratory Phase is structured as a bi-weekly seminar series that meets on Friday afternoons and is one credit hour for the fall and the spring semesters. The seminars include such diverse topics as faculty roles in different settings of higher education, teaching strategies, grant writing for a diverse student population, preparing for the job market, and understanding the future of institutions of higher education. These are eye opening, 3-hour seminars that leave the participants excited yet full of questions about academia and grateful for the career development. Students submit a reflective journal to the Graduate College following each session. This not only serves as an arena for students to reflect on various aspects of the afternoon and comment on the format, but it also provides feedback to the graduate college for future changes to each session. Those who wish to be considered for the second year are selected on the basis of their involvement in the first year.<sup>3</sup>

In the Participatory Phase, participants develop individualized, professional experiences on the partner campuses. The partner institution experiences provide hands-on opportunities for the participants to understand the dynamics of the various types of institutions. The participants are encouraged to evaluate the gaps in their CVs and to seek opportunities through PFF to gain a well-rounded perspective of the teaching, research, and service roles at the institutions as well as round-out their professional development. These experiences are diverse: one-day shadowing, teaching a lecture, creating a new course with a faculty mentor, creating on-line courses, etc. The program culminates in a Capstone Fair where second year participants showcase their experiences in PFF.<sup>3</sup>

Upon completion of the first year, students receive a certificate stating they have completed the Exploratory Phase of PFF. Second-year participants receive such benefits as travel funds for PFF-related projects as well as a Graduate Student Tuition Waiver. If students complete the second year they not only receive a certificate from the Graduate College for the Participatory Phase, but they are also recognized as “PFF Fellows” by the National Office and receive a letter for their docie. This letter informs perspective employers of the training the student received in the PFF program and their preparedness for careers in higher education.<sup>3</sup>

The importance of this program, especially to engineering students, cannot be overstated for many reasons. Engineers may be unaware of opportunities outside of their research extensive/intensive institutions though best fits might be found at a liberal arts or community colleges. Through PFF, or other similar programs, engineers most often have their first taste of teaching, creating syllabi, and participating on committees among other opportunities. Participants of professional development programs often have an advantage over their colleagues as they are better prepared not only for the job search (and the requirements of the teaching and research philosophies), but also for the essential balance required in the first years as associate professor with the various roles and responsibilities.

Elaine Seymour interviewed science, mathematics and engineering undergraduate students to evaluate the students who switched from S.M.E. majors to non-S.M.E. majors verses those who graduated in their S.M.E. major. A common complaint between both groups concerned faculty pedagogy – poor teaching was the third most commonly mentioned factor for undergraduates who switched majors and the most commonly cited complaint of those who remained.<sup>4</sup> If institutions want to change the face of the academy, it might be easiest to promote teaching and learning styles to graduate students preparing for the job market. PFF programs use pedagogy as

one of their foundation pieces, and the different programs utilize this tool to various degrees. The importance of pedagogical preparation for jobs in the academy is even gaining hold at the societal level. At its 2000 summer meeting, the American Physical Society held a session entitled “Preparing Future Faculty for Teaching.”<sup>5</sup> The panel included five reports on departmental PFF programs, including one from the University of Arkansas, Fayetteville. Fayetteville reported on the burnout rate of new faculty who were not prepared for the balance of roles required in academia. Their PFF program’s primary goal is for “...future faculty to be prepared to be as professional about their roles as educators as their roles as researchers.”<sup>5</sup>

Engineers started graduating from ASU’s PFF program in 1999, and they recognized the valuable recourses and skills they gained as they prepared for the job market. One student became quite active in her department, teaching various courses and incorporating learning styles promoted in various workshops. Though she recognized the time commitment was a sacrifice for the years she participated in PFF, she feels it was the best thing she ever did for her career. “...Most importantly it helped clarify my expectations of what it would be like in academia. I was so naive. Hearing the guest speakers and interacting with other doctoral students was enlightening. PFF provided so many resources to help me through my PhD...” She credits PFF for introducing her to the Center for Learning and Teaching Excellence, where she continued her professional development on various aspects of teaching. Most importantly, PFF helped her recognize that the Research I institution fits “her style” over other institutions.

How much do doctoral students at your institution know about the academic world? How many students understand how colleges and universities function? How many are prepared to assemble a teaching and a research portfolio? How many understand the differences in faculty positions across the various types of universities? How many students understand the year-long preparation needed for applying for academic positions? How many know what to expect from the campus visits? Richard Reis in “Tomorrow’s Professor: Preparing for Academic Careers in Science and Engineering” found that most students know relatively little about academia, “...despite their having spent most of their adult lives immersed in it.”<sup>6</sup> He suggests that faculty must serve as mentors and leaders for the graduate students and postdocs and to actively include them in “professor-like” activities. Such activities might include their participation on hiring committees, workshops on “procedures and processes” at the various types of institutions, and introducing them to colleagues at conferences or those visiting the university. PFF provides an overview on many of these topics throughout the two-year experience, but departments as well would be wise to actively participate in the graduate student’s preparedness for all facets of the academic world – research, teaching, and service.

Research is often the only area that graduate students receive training in during their graduate school tenure. Yet, the roles of a professor encompass not only research, but also teaching in their department (or others) and service to their department, institution, and the community at large. In addition, the relationship between and requirements of these roles vary at the different types of colleges and universities. Alas, the typical path of a doctoral engineering student is from research to dissertation, then from graduation to the job search. Wisely, a well-rounded preparation for the academy should be integrated into graduate schools and departments with graduate programs where faculty mentors are a valuable and abundant resource. Colleges and universities should work together to prepare future engineering faculty for life in academia. The vision of Preparing Future Faculty—to prepare graduate students for academic life while providing the tools for students to choose the best fit in the diverse arena of colleges and

universities—can be easily adopted as a vision for any engineering department that includes a doctoral program.

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