

GETTING A PROGRAM STARTED: THE DEVELOPMENT OF THE WOMEN IN ENGINEERING PROGRAM AT PENN STATE

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The Women in Engineering Program (WEP) at Penn State was initiated in 1989 when the first director was hired. This paper will suggest ways to initiate and develop a women in engineering program. It will also discuss the development and organization of the Penn State WEP and present some information from its strategic plan.

INITIATING A PROGRAM

The creation of an institutional program is a policy response to an issue or problem. Therefore, the issues and problems surrounding women in engineering must be recognized by policymakers (deans, faculty) before a program will be created. In public policy, issues typically fall into two categories -- efficiency (or economics) and equality (or equity). Even though these categories can overlap, they are sometimes competing interests. When considering women in engineering, some of the economic issues of the 1990's are (1) the concern about the decline in U.S. manufacturing competitiveness, and (2) possible future shortages of technical workers due to changing demographics. Some of the equity issues are (1) the severe underrepresentation of women (by percentage) in engineering education and the technical workforce, and (2) the difficulties women face when participating in a stereotypically white, male profession.

Other powerful issues which operate on the social or cultural level should also be kept in mind. One issue is gender stereotyping, which shows females how to be girls/women and males how to be boys/men according to our cultural expectations. Gender stereotyping begins at birth and affects a person's personal development, education, and career choices. Another issue is the "battle of the sexes" in our society which affects relationships between women and men. First, our society tends to assume that everyone is heterosexual, then, it assumes people are always looking for spouses or sexual relationships with members of the opposite sex. This makes it difficult for women and men to be colleagues, lab partners, co-workers, study buddies, and friends.

The bottom line to all of these issues is that the U.S. needs more women in engineering and technology, and a special effort must be made to attract and keep women in these degree programs and professions. This is the message that must be taken to the policymakers. When delivering this message, realize that some people will

buy into certain issues more readily than others; therefore, you need to find out what issues are most important to the policymakers you are dealing with. Also, keep in mind that technical people like to see statistics and graphs.

If you are interested in starting or enhancing a program, these issues must first be brought to the attention of the dean through a letter, report, or meeting. If you are starting from scratch, you should recommend the formation of a task force or committee to look at the issues and statistics surrounding women in engineering, both nationally and at your school. Also, if a minority engineering program exists at your school, you could use it as a model and basis for your request to start a similar effort for women.

Penn State's WEP was initiated after a task force recommended such an effort be established in the College of Engineering. Students, faculty, and staff were members of the task force, which was created by the Dean. The task force made its final report in April 1988, the WEP director's position was created in late 1988, and the position was filled in June 1989.

INITIAL PROGRAM DEVELOPMENT

If you are starting a brand new program, it will probably take six months to one year to become fully organized and operational. The first thing to do is gather information about other women's (and minority) programs and their activities. This can be done by looking through the engineering education literature, talking to program administrators, gathering written information from other programs, and attending professional conferences. Talking to other interested people on your campus can also be helpful and can give you information about institutional resources you may need to use. Creating a network of colleagues on campus will also help get your job done and keep you informed about activities and issues on campus.

Initially, take lots of notes and make lists of any ideas that might be used in your women in engineering program. Because every program is under constraints of time, money, and/or personnel, you will have to choose and prioritize which activities the program undertake. When the program is initiated, decisions will also need to be made about what the program should look like. For example, the scope, structure, goals, responsibilities, and audiences for the program should be identified as early as possible. One way make these decisions is by writing a strategic plan for the program.

A strategic plan is a document that discusses a realistic vision for the program. It allows you to put your ideas on paper and gives the program a framework and direction. The strategic plan should be drafted and distributed in a preliminary form to the dean and other interested parties including administrators, faculty, students, and an advisory committee. Your school may already be on a strategic planning process in which the program can participate. In addition, budget requests may also be tied to the strategic plan, which would make it a very important document.

The strategic plan for Penn State's WEP has been developed over the last six months. It follows a university format and discusses the following: mission and goals, external and internal environment, implementation evaluation, conceptual plan, and implementation plan. The most important parts are the conceptual and implementation

plans that outline the organization, activities, priorities, performance criteria, and resource needs for the program. A variety of people in the College and the WEP advisory committee reviewed a draft of the plan and made suggestions that were very helpful. Much of the discussion in the next section is based on the WEP strategic plan.

PENN STATE'S WOMEN IN ENGINEERING PROGRAM

Penn State is a land-grant, state-assisted, research university offering a wide range of educational programs. Campuses are located throughout Pennsylvania and include the University Park campus, seventeen Commonwealth Campuses, and five other associated campuses. The College of Engineering is one of thirteen degree-granting, academic units in the university. It offers associate degree programs in engineering technology and bachelor's, master's, and doctorate programs in engineering. In 1989, approximately 7700 students were enrolled in the College of Engineering, and slightly over 1000 of them were women.

The WEP has a director who is a full-time staff member and shares a secretary with the Minority Engineering Program. The Dean's office provides the director's salary and also gives the WEP some support for travel, operating expenses, and activities. Fundraising is part of the WEP director's job; however, the College development office will assist the WEP in raising money. This summer, the WEP will have a half-time research assistant who is a graduate student. An advisory committee was also formed for the WEP by the Dean. It currently consists of several alumni, program directors from other schools, and people from other units on campus. The committee met twice last year, and several faculty and students will be added to its membership before it meets again this fall.

The WEP director reports to the Associate Dean for Undergraduate Studies and the program office is in the Dean's office area. Penn State's University Park student section of the Society of Women Engineers and the WEP work together and collaborate on some activities. In addition, the director works with people across the Dean's office, College, and University, and keeps in contact with the Women's Studies program, Center for Women Students, Commission for Women, and President's Council on Undergraduate Recruitment and Retention (the director chairs a committee on women in science and engineering for this council).

In the strategic plan, the following ideals have been established for the WEP: **MISSION** -- Increase the number of women graduating at all degree levels from engineering and technology programs; **RESPONSIBILITIES** -- Recruitment, retention, and professional development of women students; and **ROLES** -- Advise, inform, organize activities, perform research, and be an advocate. In order to meet these goals, the WEP operates a variety of activities on three levels: intervention programs, support services and climate improvement, and marketing and public relations.

Intervention programs are focused on recruitment and retention. Recruitment programs include: a fall career day for high school juniors and seniors; a graduate school recruiting seminar and tag-a-long program; a presentation and luncheon at the annual Engineering Open House; a spring career day for middle school and early high school students; and (possibly) an Expanding Your Horizons in Mathematics and

Science conference in the State College area. Retention programs include: fall freshman orientation; fall undergraduate student social; fall graduate student orientation; fall graduate student social; a freshman seminar course for women in engineering; and student involvement with the 1991 College alumnae reunion.

Some support services also need to be provided in order to improve retention. Study halls, study buddies, and tutoring are possibilities for academic support. A newsletter to students, faculty, and staff will help raise awareness and inform the College about WEP activities and services. Students who change colleges are being tracked and surveyed to find out why they leave engineering. In addition, the "climate" in the College for women must be improved. The College of Engineering is concerned about the climate for women, minorities, and internationals, and has taken some steps to address climate issues. The WEP can help by informing the College about gender issues and encouraging sensitivity about issues of diversity.

Marketing and public relations activities are aimed at getting the word out about the WEP. On campus, these activities include: a WEP newsletter, a bulletin board near the engineering library, WEP information in College and University publications, and ad advertisement in the campus newspaper during women's history month (March). Other activities include: posters and brochures to Pennsylvania high schools and middle schools, a congratulations letter and brochure to admitted undergraduates and graduate students, a phone-a-thon to admitted freshmen in January, and articles in the College alumni magazine. The director is also making herself available to speak to campus and civic groups and will produce a yearly report for internal and external use.

Finally, WEP activities will be evaluated and modified when necessary. Written evaluation forms will be used to evaluate all individual events. The advisory committee will also evaluate the WEP and give guidance on the priorities for the program. In addition, student input and evaluation will be sought through group and individual discussions and occasional written surveys.