

Women in Power: Networking On & Off Campus

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Abstract

While many universities have had some success in increasing the enrollment of women in graduate and undergraduate classes, they still struggle to increase the number of women faculty in their engineering departments. Besides challenges in recruitment, departments must also worry about retention of their women faculty especially since many departments may only have one or two women faculty. Isolationism can play a major role in women faculty leaving a university.

One of the solutions for successful retention and recruitment of women faculty (and all faculty) is to get them involved in a “network” so they feel part of the department, college, university or technical community. This paper will discuss networking opportunities for women faculty both on their home campuses as well as at technical meetings. Women faculty in power engineering from three different schools, Mississippi State, Texas A&M and Missouri-Rolla, will discuss their activities on campus including both formal and informal networking opportunities for women faculty. Additionally they will discuss how activities at IEEE Power Engineering Society meetings provide them with off-campus networking opportunities in their specific technical area. The paper will outline how these networking groups started, suggestions for others and lessons learned.

Introduction

Universities have been working very diligently the last twenty years to increase the diversity of their faculty and students. William Wulf, President of the National Academy of Engineering, discussed how we would have a shortage of engineers early in the 21st century if the engineering community does not reach out to women and minorities and encourage them to pursue careers in engineering¹. One key issue in the recruitment and retention of women into engineering careers is to provide role models for them in their engineering faculty. Women students see women faculty who are pursuing professional and personal activities similar to their ambitions and they might say, “If she can do it, I can do it too.”

Traditionally most universities have focused on pipeline programs with outreach programs for K-12 young women students and undergraduate women’s programs, such as those coordinated with the Society of Women Engineers (SWE) and the Women in Engineering Programs and Advocates Network (WEPAN). These programs are outstanding and are providing exciting activities to encourage young girls to consider and pursue careers in engineering. Programs such as MentorNet provide mentoring and networking opportunities for women engineering students². After graduation corporate women can be involved with professional SWE or IEEE Women in Engineering chapters in various cities. Several companies have women networks within them where technical women interact including IBM’s Diversity Network Groups³.

Many university towns/cities have student chapters of SWE but not professional chapters of SWE. Women engineering faculty often lack a networking opportunity with other women

engineers. There are many mid-size to small engineering departments, which have one or two women faculty within a department. Even in larger departments with more women, often they are scattered across various research/teaching areas and they may not have opportunities to network. Electrical Engineering, the discipline of the three authors, has traditionally had less women students than other disciplines and this often translates into lower women faculty percentages than in other disciplines, such as chemical and industrial engineering.

With less women colleagues within their own departments, sometimes women faculty have feelings of isolation and loneliness⁴. To combat these issues the women faculty members are developing networking groups within the college, university and their own disciplines. Sometimes these groups start because of help from university administrators while other times they are grassroots efforts by an individual faculty member.

Activities, both within their university and within their technical society, can help provide a necessary support system for faculty. Below the authors will outline some of their women faculty networking interactions both off-campus and on-campus and highlight the benefits of these activities. Through one's technical society, a faculty member interacts with many different people. Below we outline how interactions between women faculty within the Power Engineering Society are providing mentoring, networking and support for successful careers. The next section, On-Campus Networking discusses the various activities at four different universities to help provide networking and mentoring to retain women faculty. Together these two different aspects provide opportunities to increase the retention of women faculty within the ranks of engineering colleges.

Off-Campus Networking

The three authors are active members of the IEEE Power Engineering Society (PES). In the late 1980s there were less than five women faculty in power engineering who were active in IEEE PES meetings. During the early and mid-1990s, several new women faculty were hired in the area of power engineering around the United States. The first interactions were informal. A pair of women faculty would be talking over coffee and one or two others would join them. Soon the women faculty started planning a lunch or dinner activity at a local restaurant during each IEEE PES meeting. At first the dinner was three or four people. More recently the PES women faculty's dinner-out includes eight to ten women and is growing.

The dinner and other interactions with our technical area peers provide an opportunity to network and discuss discipline specific activities. Several of the women have been co-PIs together on successful NSF grants. Several women are co-authoring a review paper on a related research area. We discuss textbooks and exchange notes for classes. We share demonstrations and simulations. Discussions on graduate student recruitment and mentoring are frequent. Several of the women faculty have had administrative opportunities and have talked with other women within the group to discuss the pros and cons. Besides our teaching and research activities, the women faculty often team up together for service activities within the PES. This has provided them with the opportunity to network and gain experience related to committee chairs, session chairs and eventually PES leadership positions.

The discussions are not all technical. Several in the group are part of dual career couples. We share stories about hiring challenges and now advancement opportunities. Those with children (we sometimes have a high chair at dinner) discuss balancing challenges and tips for handling professional and family activities. Two recent weddings have created discussions about changing your name and balancing professional and personal tasks.

Our discussions are not limited to twice a year. Various subsets of the group get together at ASEE and other meetings throughout the year. During one NSF workshop, three of the women faculty talked over dinner. We have an informal e-mail network and e-mail occasionally to discuss activities or seek advice. Recently we had queries to the group on faculty leave policies at other universities and articles related to gender bias in teaching evaluations. We share resources of interest with the group.

In addition to our informal PES faculty women's network we have had three more formal activities for all women within PES. In 1998, several women faculty organized an IEEE Women in Engineering reception at the IEEE Winter Power Engineering Meeting in Tampa, Florida. Approximately 40 power engineers including women professionals and students and several men, attended this activity. At the 1998 Summer Meeting in San Diego, one of the women faculty organized an open breakfast with past IEEE President Martha Sloan who was in town for the PES meeting. Approximately 10 women PES members talked with Dr. Sloan. A second IEEE Women in Engineering Reception was held at the 2002 Winter Power Meeting in New York City in January. This reception drew over 50 people with approximately one-third being men. Jill Tietjen, past National SWE President, gave a short presentation on networking. All three women members of the PES governing board also attended and interacted with attendees. Several male engineering faculty attended and took away literature and ideas to share on their campuses. More information on the IEEE WIE Reception Program can be found at <http://www.ieee.org/organizations/committee/women/>

The benefits of this off-campus network are both tangible and intangible. Women faculty members have gained opportunities in both research and teaching through discussions. Senior women faculty are able to provide advice as new women faculty start their faculty careers. The ability to have a peer-network outside your university allows us to ask "What do they do at your university?" and see how other universities handle today's challenge. The common technical link combined with similar personal situations has amplified the camaraderie within the group. The group celebrates together as members get new honors or promotions. The group members also console when a colleague needs to talk. This sisterhood is held together with the glue of a common technical expertise.

On-Campus Networking

On campus activities provide a local way to network with other women faculty. The increase in tenure track and senior women faculty over the last ten to fifteen years has provided a critical mass of women faculty to create both informal and formal networking activities. This section discusses how four universities are tackling issues related to women faculty within engineering. Each university and its faculty have their own personality and not all activities will work at all universities.

Texas A&M University

The activities with the women faculty in engineering have not been a part of a formal program but activities organized college-, department- or university-wide. One of the Associate Deans, a female electrical engineering faculty, and the Director of Women's Programs of the College of Engineering decided to spearhead activities that would be responsive and create an environment of trust and community among the women engineering faculty. In 1995, they invited all women engineering faculty to lunch. From this, the women expressed an interest in meeting after work so it was more personal and less business. Since most of the women were new to the Bryan/College Station area, the group started touring different restaurants so people could see different places. The women asked that the "meetings" not be called meetings, so the term "gatherings" came about. They thought meetings had to have a purpose and it was much too much like business. There has been about 20 women engineering faculty during any given time, about 8-10 attend the gatherings. Over the years, the gathering has rotated between lunch and after-work, to accommodate the different family responsibilities of the women. Further during visits to campus of distinguished women engineers and scientists, lunch discussions with the group have been held. These visitors have included: Dean Denice Denton, Associate Dean Lesia Crumpton, Dean Eleanor Baum, Professor Emeritus Irene Peden, and Professor Sheila Widnall.

In addition to these gatherings, the one senior woman faculty member in civil engineering has organized monthly gatherings of the four women faculty in civil engineering. Also the faculty-led Women's Faculty Network organization on campus hosts several activities a year for the women faculty on campus. Last year they hosted a working dinner meeting where senior faculty met individually with relatively new (less than two years) tenure-track women faculty to develop a plan to achieve tenure.

The gatherings have been very successful in creating a community among the women engineering faculty and an environment in which the women can feel comfortable discussing climate issues that they are facing. In 1995, there were few senior (associate and full professors) engineering women faculty at Texas A&M. Hence many of the conversations at the gatherings were about getting tenure. Now that there are more senior engineering women faculty the group is having discussions to determine where it should concentrate its efforts and what activities would be of interest to the group. Recently, the women formed a university-recognized organization called Women Engineering Faculty Interest Group to serve as a conduit for the next phase of activities.

University of Missouri-Rolla

At the University of Missouri – Rolla, the number of women faculty in Engineering and Science at all levels is considerably behind that of the UM-Rolla student body and similar academic institutions. Of the nearly 300 tenured or tenure-track faculty members, only 9% are women. The women faculty members are dispersed among all academic ranks. This indicates two issues both positive and negative: on the positive side, the distribution of women faculty among the ranks indicates that they are progressing through tenure and promotion in a timely manner. However, on the negative side, this also indicates that the University of Missouri – Rolla has not effectively exploited the growing percentages of women Ph.D. graduates who are entering the academic workforce. One matter of considerable concern is the inability of UM-Rolla to retain their women faculty. Of the thirty-two women tenure-track faculty members hired in the past

fifteen years (including non-Engineering and Science departments), seventeen (53%) of the women have left the university. While faculty members of all academic ranks have left UM-Rolla, there is a far greater percentage of women faculty members who leave early in their careers than men.

A preliminary study of the poor retention of women faculty has yielded several trends. On the positive side, the Engineering and Science (E/S) women faculty are successful comparable to their men colleagues. This conclusion is based on qualitative and quantitative metrics such as leadership positions, national awards and recognition, external funding levels, and scholarly publications. Of the fourteen E/S women faculty, four hold significant leadership positions: one is a department chair, one is the Director of an Industrial Research Center, one is a named endowed professor, and one is the Associate Dean of the School of Engineering. Five of the fourteen E/S women have been awarded at least one Faculty Excellence Award which is a university award that recognizes the top 5% of the entire UM-Rolla faculty based on excellence in research, teaching, and service. The women faculty members have, on average, more external funding than their male counterparts. No E/S woman faculty member has ever been denied tenure, and only one has left UM-Rolla because of tenure uncertainties. The women faculty time in rank is comparable or better than their male counterparts. Thus, the women faculty members are well qualified for their positions, and are thus leaving UM-Rolla for non-technical reasons.

To address the poor retention issue, the administration provided financial resources in 2000 to hire a one-time consultant to survey the women faculty and provide a one-day career development workshop. The consultant contracted was Dr. Suzanna Rose of Florida International University (FIU). Dr. Rose is the Director of Women's Studies and Professor of Psychology at FIU and specializes in academic career counseling for women faculty. The survey consisted of questions regarding campus climate, departmental support, and a variety of other issues⁵. Sixty-four percent of the women faculty responded to the survey that was mailed out in advance of the workshop. Participants were asked to indicate the extent to which the UM-Rolla environment facilitated or enhanced their career and research productivity. Both positive and negative trends were obtained from the survey.

On the positive side, the women rated their overall satisfaction level with the university slightly above average and their perceived rate of career success between good and very good. Most women felt informed of the formal tenure and promotion policies and salary review procedures. Most women reported that they perceived their salaries to be comparable with their peers.

However, several areas were also identified as problematic. Activities that were judged by many to have impeded their careers included lack of support from their department, and family issues (dual career, child care, etc.) Many women reported a lack of knowledge about informal policies such as salary negotiations, professional norms, and campus politics. In general, most women faculty perceived the level of professional mentoring from campus colleagues as weak, but many also indicated that they were able to overcome this by receiving information and guidance from colleagues at other universities. It is obvious that developing a formal or informal network of mentors would greatly improve the women faculty's academic experience. Therefore, the women faculty at UM-Rolla have begun meeting on a monthly basis for lunch at an off-campus restaurant to network and provide informal mentoring. These luncheons are typically not structured, but topics for discussion are frequently suggested in advance. Junior

women faculty have responded very positively to this opportunity to meet and interact with other faculty.

Mississippi State University

With cooperation between the College of Engineering (COE) Dean's Office (including a woman Associate Dean) and several women faculty, a monthly COE women faculty luncheon was initiated in the Fall of 2001. The first several meetings were used to introduce newer faculty to returning faculty and discuss the issues of interest to the women faculty. An interest survey was distributed. The top five topics for future meetings were:

1. Lunch time to network/visit
2. Teaching, Learning and Gender Issues
3. Balancing Research, Teaching and Service
4. Dealing with Problem Students
5. Goal Setting and Career Management.

Based on the results of the interest survey, the group leaders planned informal lunches and one social event. One session focused on problem situations and solutions using four scenarios about student actions and faculty responses. Early in 2002, the group visited with Jill Tietjen on recruitment and retention issues and with Rich Felder on teaching, learning and gender. In March a career-planning seminar, similar to the one at UMR, is planned for the women faculty. The organizers are developing a COE Women Faculty Book that includes a one-page entry on each woman faculty member with information about her background (schools and work experience); research interests and equipment; teaching interests and keywords for her work. This will be distributed for networking opportunities.

Overall these lunches have provided a time for networking especially among the newer women faculty. It has also highlighted areas of concern within the women faculty ranks. Future activities include an annual meeting with the Dean of Engineering.

Michigan Technological University

One of the authors recently moved from Michigan Tech and was very involved with the creation of the MTU Women in Science & Engineering (WISE) faculty group. In the Fall of 1997, several women faculty organized an informal network for the women faculty in engineering and sciences. Due to Michigan Tech's technical focus and size, the organizers included the sciences to provide a larger critical mass. Additionally the sciences had more senior women faculty than the College of Engineering. At the initial organizational meeting, participants were asked what they wanted most out of such a group. The overwhelming answer was an opportunity to socialize with other technical female professionals. As many of the departments had only one or two women faculty, there were not many opportunities for talking and networking with other technical women in day-to-day activities.

The first activity was to create an e-mail listserve with all women faculty on it. This included both tenured, tenure-track and non-tenure track teaching and research faculty. This listserve was used to publicize events, forward information of interest to the women faculty and facilitate discussions on topics of interest. Over the next four years activities fit into three areas: socials, networking and professional development. Table 1 lists a summary of activities.

Table 1: Activities within MTU's WISE faculty group (1997-Present)

Social	Networking	Professional Development
Potluck dinner	Short talks on research to group	"Teaching, Learning & Gender" with MTU's Director of Center for Teaching, Learning & Faculty Development
Baby Showers	Breakfast meeting with woman Board of Control member	"Is Administration Right for you?" with Dr. Karan Watson, Associate Dean, Texas A&M
Cookie Exchange	Lunch or coffee with women faculty candidates and group	
Appetizers/Drinks @ Home	Lunch or coffee with woman seminar speakers	
Happy Hour @ Local Restaurant	Reception with Presidential Council of Alumnae Members	

The socials provided an opportunity for different faculty to host at their homes enabling a relaxed setting. The networking opportunities included interactions with each other, MTU's distinguished alumnae, the Board of Control and campus visitors. For several meetings each faculty member gave a 10-15 minute summary of her research. From these interactions individuals in different departments discovered that they were working in similar areas and joint

research activities and proposals started. Additionally new faculty learned about research facilities outside their own department enabling equipment sharing. The meeting with the Board of Control member provided an opportunity for both sides to discuss improving the climate on campus for women faculty.

Summary

As demonstrated by these examples, two or three women being proactive and starting informal meetings created most of the networks. Depending on the campus climate and women faculty, these opportunities sometimes grow into a formal program while other times they stay informal. One key issue is that one person can make a big difference in creating and sustaining such networking groups. While formal programs may take staff and financial resources, these informal networks often take very little resources to develop, but provide large dividends for participants and even the organizers.

The goal of this paper was to highlight how networks both on and off campus can provide a resource for women faculty. The common strand of technical expertise provides a link between those women within a field as they can exchange information about teaching and research issues as well as other personal and professional topics. The individual university activities are unique to each place as the faculty needs and leadership are different and may change with time. The goal of these networks is to provide support opportunities for women faculty as they need them to allow them to thrive, not just survive, in their engineering faculty careers.

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