

The Women's Industry Network at WPI: Career Mentoring for Women

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Abstract

Women are vastly under-represented in the fields of science, technology, engineering and math, constituting less than 10% of engineers employed today. However, enrollment is at an all time high for women at tech schools. This session will examine a program created at WPI to mentor these young women as they head into a field where they are the minority. From career exploration to development of self-efficacy, the WIN program addresses many facets of minority student education. WPI is committed to gender-appropriate programming for women. Through programs such as the Women's Industry Network (WIN) that are aimed at retaining our female students, we are responding to a compelling national need for a larger technologically literate workforce. Women comprise only 9.1% of the engineers in the U.S. labor force, (and 25% of the WPI student population), whereas they comprise more than half of our population. A recent report predicted the extent of this potential gap in our nation's intellectual capital—that by 2028, there will be 19 million more jobs than workers who are adequately prepared to fill them. In order for companies to maintain leadership in a global economy, more women and minorities must be prepared to assume positions as engineers and managers, and in general, to be technological decision-makers. Despite this expected career growth enrollment of women in undergraduate engineering programs has increased only marginally. There is no doubt there is great need for more female engineers and a great need to increase retention efforts for women at all technological institutions. WIN, a mentoring program that brings together female WPI students and professional women engineers, scientists and managers, is designed to help participating students explore their chosen field and prepare for the challenges ahead by providing networking opportunities and access to working women. According to leading professionals in technical education, role models are needed to sustain interest in math and science. One of the most important and effective actions we can take is to ensure that women have teachers who believe in them and strong, positive mentors, male and female, at every stage of their educational journey - both to affirm and to develop their talents. - John Hennessy, Susan Hockfield and Shirley Tilghman, presidents of Stanford University, Massachusetts Institute of Technology, and Princeton University, respectively. WIN is our most well attended program through the Office of Women's Programs and one of the best attended programs at WPI. From their first year until their senior year all female students are eligible to participate in WIN and with each academic year, students benefit from WIN in many different ways. First year students have the opportunity to further narrow their decisions on major fields of engineering while

upper-class students have gained internships and even job offers through the program. Through personal interaction with female professionals, female students have a chance to see women who are succeeding in male dominated fields, thereby giving our students the confidence they need to continue on in their intended majors at WPI.

Introduction and Background

Worcester Polytechnic Institute (WPI) is committed to increasing retention within our female population. Currently the number of females at WPI is approximately twenty five percent. When breaking down demographics by major, we find a large concentration of these women in the bio and bio medical fields where they comprise approximately fifty percent of the student population. In other majors such as computer science, the numbers are less than ten percent. In 2000, WPI established the Office of Diversity and Women's Programs, charged with creating/running programs to attract and retain minority and female students. In 2005, the Office of Women's Programs and the Office of Diversity Programs were split to allow more focus in each area by their respective departments.

Through programs such as the Women's Industry Network (WIN) at WPI that are aimed at retaining our female students, we are responding to a compelling national need for a larger technologically literate workforce. Women comprise only 9.1% of the engineers in the U.S. labor force, whereas they comprise more than half of our population. The number of working women is projected to reach nearly seventy six million by 2014 (Toosi, M., 2005) Additionally, it has been projected that by 2028, there will be nineteen million more jobs than workers who are adequately prepared to fill them. With more women in the work force and more jobs available in the future, it is imperative that we prepare our young women to fill these roles. Jobs in science, math, engineering and technology (STEM) areas will continue to be in demand thereby guaranteeing future job security at a livable wage. In order for companies to maintain leadership in a global economy, more women must be educated for employment in STEM fields. However, despite this expected career growth for women, female enrollment in engineering programs has increased only marginally.

In an effort to boost retention of female students, programs that support women in underrepresented fields such as engineering have a proven track record of success. Mentoring and clustering programs have long been in practice both inside and outside of the classroom. Programs such as MentorNet, a national internet based mentoring program for women and minorities, provides a similar mentoring experience minus the face to face interactions. This program, which has over twenty thousand current members, addresses some of the same issues that WIN strives to address including retention in engineering, exposure to various engineering disciplines, and the opportunity to make lasting industry connections that have often led to internships, summer jobs and full time positions. WIN brings this opportunity to the regional level and engages female engineers and scientists from a variety of disciplines. In addition to the mentoring experience, the quarterly WIN dinners provide the opportunity to hear from speakers who share their wisdom and experience as women in engineering.

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In the summer 2007 edition of the Society of Women Engineers Magazine an article was devoted to the benefits of mentoring programs in the retention of women in engineering. According to Frehill, Fabio, Layne, Johnson & Hood (2007) there are two types of mentoring, career mentoring which provides network connections, career advice and collaboration on projects, and psychosocial mentoring which is characterized as being more of a friendship where the mentor serves as an overall role model, provides emotional support and shares personal stories. The Women's Industry Network offers both types of mentoring opportunities, career and psychosocial and in doing so has aided in the retention of women at WPI for the past seven years.

Program Description

WIN is a mentoring program that brings together female WPI students and professional women engineers, scientists and managers. In STEM fields women are under-represented, and only make up about twenty five percent of the student population at WPI. WIN is designed to help participating students explore their chosen field and prepare for the challenges ahead by providing networking opportunities and access to working women. In addition, the program is instrumental in female student retention in STEM fields.

Through out the program, we encourage clusters to set their own goals and expectations for the academic year. However, we do have overall stated goals for the program itself and they are as follows:

1. Increase female student retention in STEM majors at WPI
2. Provide a vehicle for career exploration for female students
3. Provide access to other female students within the same major or major field of interest
4. Provide female students with access to professional female engineers
5. Prepare female students for challenges that might lay ahead by exposing them to successful women in STEM fields
6. Showcase speakers and panels that address issues relevant to female engineers and provide a glimpse into the corporate culture of some of the industries top engineering firms

WIN is a year round endeavor. The summer proceeding the academic year, a mailing goes out to incoming first year students to recruit them to the program. A letter also goes out to past professionals volunteers and alumnae from WPI asking them to service as professionals (mentors) for the WIN program. The professionals respond back and are signed up. All students, even returnees, must sign up on line and space is limited on a first come first serve basis with a select number of spots designated per academic year (First Year 35, Sophomore 60, Junior 60 and Senior 70). This number was determined based on past patterns of attendance. The mailing allows for time to introduce the program to new students, as registration begins at the start of the academic year (late August).

The students and professional mentors are divided into clusters or groups; each cluster includes at least one professional in a particular field with students who intend to go into that field. The program is comprised of four dinners which bring all participants together for group meetings, with speakers. Additionally, each cluster meets independently of the larger group. The individual clusters meet at least once in between each of the dinners. This structure fulfills our goal of providing meaningful career based interactions for our female students that aid in the retention of women in the engineering fields.

The WIN program is our most well attended program through the Office of Women's Programs and one of the best attended programs at WPI. The Career Development Center also participates in the coordination of the program through aid in the recruitment of female professionals. Both the Office of Women's Programs and the Career Development Center are in the Student Life Division of WPI.

From their first year until their senior year all female students are eligible to participate in WIN and with each academic year, students benefit from WIN in many different ways. First year students have the opportunity to further narrow their decisions on major fields of engineering while upper-class students have gained internships and even job offers through the program. Through personal interaction with female professionals, female students have a chance to see women who are succeeding in male dominated fields, thereby giving our students the confidence they need to continue on in their intended majors at WPI. In addition, the program provides a measure of self efficacy and fosters a group efficacy directly created by the role modeling and involvement of our female professionals.

Once the students and professionals are registered; the Office of Women's Programs works to match the clusters in time for the first dinner in September. In addition, an orientation is held and is mandatory for all first time students. At the orientation, in early September, we discuss the attendance policy, dress expectations and provide general advice on interacting with professionals. The dinners are held one per term (September, November, January, and March). WIN is run on a yearly schedule to insure all dinners are run smoothly and the proper clusters are matched with professionals. In between the first and second dinner a directory is put together in order for the clusters to keep in contact with one another between meeting dates.

The 2006-2007 academic year hosted one hundred and eighty two students and sixty two professionals. This is the total number of people who completed the program and participated in all four sessions. Every year, we typically lose about fifty students due to various time constraints. Our students are on the quarter system, so it is difficult for them to predict their class schedule in advance and they often find themselves with class at the same time as the WIN dinner and the need to drop the WIN program. Similarly, many of our students study abroad. We do allow students to miss one dinner and this is considered an excused absence. Students who fail to attend more than one dinner are automatically dropped from the program, but are allowed to register the next academic year.

At the completion of the program, all participants were given an evaluation. We found that out of ninety respondents only two people said they did not value their individual cluster time, both of whom were students. Similarly, only three respondents said that overall they did not enjoy the large group meetings. However, they did rate their cluster time as a positive

experience. Overall the comments on the large group meetings were very positive, the following is some constructive feedback that was received and taken into consideration for future planning:

It would be helpful to have more time for discussion within the cluster
I would have liked to have cluster activities as part of the large group meeting
I think that you need to bring in more women to speak about leadership and excelling in the workplace. Also, everyone would benefit from a speaker on finance or investments
I particularly enjoyed panel-type discussions. They allow us to stay more involved, relate to the speakers and as a result pay better attention to the advice
It would be more beneficial to have more talk time among cluster. Hard to schedule cluster meetings outside. Cut back on speaker time
I enjoyed them but would like to see some younger successful professionals talking about their first year experiences or how they got jobs
Would be better if they were more interactive
I really liked the panel guests better

One of the reoccurring themes in our assessment was more time at the meetings to talk as a cluster and a broader variety of topics from our speakers and panels. We have adjusted this years schedule accordingly to provide more cluster time and offered clusters use of our room both before and after the meeting to make use of time when the entire group is on campus. An additional theme that arose when asked for general comments was that students wanted to see more time devoted to questions and answers following our speakers and presentations. Again, we have adjusted this years schedule accordingly. Overall, students had a very positive experience and we hope to replicate similar results this academic year.

The number of participants who are on track to complete the 2007-2008 academic year program is two hundred thirty one students and sixty eight professionals. Results from this year's survey should be available in the summer of '08.

Historically, WIN has been supported by industry leaders in the field of engineering. However, as corporate dollars are shrinking and become less available we are looking to subsidize the cost with grant funding. Company sponsors in the past have included Gillette, General Electric, Karl Storz Endovision, Raytheon, Electric Boat, and Pratt and Whitney. We are hoping to obtain additional funding from grants and other resources. We have been able to offer the program free of cost to students and professionals and would like to be able to continue in this offering. As corporate money has begun to shrivel, we have moved from one sponsor for the entire academic year to sponsorship of individual dinners. For the sponsors, this includes the option to provide speakers or panel members and increase their visibility among our female students. This has worked well, but there is the danger of the evening becoming too commercialized and the concern that we will ostracize some of our professionals. For this reason, we have extensive conversations prior to the dinner with the entire team at the sponsoring organization, including speakers. Having women familiar with the program involved in the negotiation process is crucial as they can articulate the general feel of the program and insure that the speakers and topics will reflect the goals of the WIN program. Our partnerships with industry are very delicate and we walk a fine line between pleasing our corporate sponsor and

insuring the students are provide the best overall experience through the WIN program. Most of our industry funding comes from corporations that employ our female professional volunteers. For this reason, we tend to have a high success rate in maintaining that balance.

Summary and Conclusion

In conclusion, as demonstrated by the positive feedback of our survey and numerous anecdotal accounts, WIN continues to be a success at WPI and provides our women with networking opportunities and career guidance. As we look to the future, we need to keep in mind the shifting demographics in today's society and plan accordingly to afford our young women in the sciences equal footing with their male counterparts. While our biggest challenge is funding, we are not alone in this situation and know that if and when resources become available, WIN is the type of program that is an ideal match for corporate sponsorship. As the climate shifts on campus with the entrance of more women into STEM majors, we hope to be able to sustain the program even as the direct need diminishes. Our hope is that women will always seek and benefit from this type of networking and mentoring opportunity.

Bibliography and End Notes

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