The WIN Program - A Mentoring Program for Women in Engineering at the University of Arkansas

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ABSTRACT

Engineering has traditionally been a male-dominated profession. While progress has been made in opening up technical fields to women and minorities, there is room for improvement. Nationwide, 18% of undergraduate engineering students are female, whereas the percentage is 15% at the University of Arkansas. At the University of Arkansas, the College of Engineering is losing a disproportionate number of female undergraduates between their sophomore and junior years. Because female engineering undergraduates tend to be an exceptionally bright group (women generally do not just "happen" into engineering), the profession is losing some of its best engineering candidates.

Now in its second year, the WIN (Women IN engineering) Program provides a mechanism to deal with this situation. The program consists of matching female freshmen and sophomore engineering majors with upperclass females in their department for the purpose of receiving advice and encouragement. The development of a support network for female undergraduates is making a positive difference with the University of Arkansas' female undergraduates, and hopefully will result in keeping some of the best and brightest students in engineering.

While it is too early in the program to tell how retention rates will be affected, anecdotal evidence indicates that the WIN program is making a positive difference in the lives of female engineering undergraduates. The program has been described as forming a "sense of cohesiveness" among the women in the various departments, and has definitely made them more comfortable in the engineering environment. If retention rates can be improved, both the engineering profession and the society it serves will benefit from the unique skills that women bring to engineering.

INTRODUCTION

Engineering has traditionally been a male-dominated profession. While progress has been made in opening up technical fields to women and minorities, there is room for improvement. Nationwide, 18% of undergraduate engineering students are female, whereas the percentage is 15% at the University of Arkansas. At the U of A, the College of Engineering is losing a disproportionate number of female undergraduates between their sophomore and junior years. Because female engineering undergraduates tend to be an exceptionally bright group (women

generally do not just "happen" into engineering), the profession is losing some of its best engineering candidates.

The purpose of the WIN (Women IN engineering) Program is to prevent this attrition from occurring wherever possible by pairing female underclassmen within the engineering college with upperclass females in their department for the purpose of receiving advice and encouragement. To reduce attrition, it is necessary to assess why it occurs. Perhaps the most significant factor is the lack of a support network for female engineering undergraduates. Because of their numbers, men can more easily meet and develop a support network. They may have other engineering students in their dorm, their fraternity, or other organizations. This is a luxury female engineering undergraduates may not have, especially in the freshman and sophomore years.

Studies have shown that educators treat women and men differently in the classroom, and it would be logical to assume that this happens in engineering classrooms as well. The effects of subtle biases become much more apparent when there are only one or two women in the class. Students would be better prepared to resist discouragement under these circumstances if they had others with which to share their experiences, ideally someone of their gender who has successfully dealt with similar situations.

The WIN Program provides a mechanism to deal with these situations, and shows all students and faculty that retention of female undergraduates is a priority of the College of Engineering. The development of a support network for female undergraduates is making a positive difference with the U of A's female undergraduates, and hopefully will result in keeping some of the best and brightest students in engineering. Pairing female underclassmen with female upperclassmen is also a good way to initiate freshmen into their department's professional organizations, providing a sense of belonging.

WIN PROGRAM BACKGROUND

The WIN Program was conceived, planned and implemented by a graduate student as a way to fulfill the mentoring requirements of the William Randolph Hearst Fellowship for Women and Minorities. The expenses of the program have been fully supported by the College of Engineering. In addition, a grant has recently been awarded to the College of Engineering from the Alcoa Foundation for the purpose of supporting the WIN Program.

To gauge interest in the program, a survey was sent to all the female undergraduates and graduate students (approximately 235 students) in the College of Engineering in the Spring of 1995. Forty-one surveys were returned, a return rate of approximately 17%. Some of the comments returned on the questionnaires are as follows:

"...I would have liked to have had someone to tell me about the teachers and classes so that I would have been more prepared... (the program) would be helpful because it would give us a sense of belonging and acceptance."

junior, civil engineering

"I think the main reason women drop out after sophomore year is because either they realize they don't like it or they got discouraged by the environment."

junior, electrical engineering

"I think it would be helpful. I have already semi-dropped out and this summer/fall I will be returning to engineering classes. I think having students to go to for help and encouragement will be wonderful."

sophomore, chemical engineering

"...right now I only know one female that is in my major and it would be nice to see if there is anyone else out there.."

sophomore, computer systems engineering

"If I am able to help a student develop a deeper interest in science, math, and engineering, or help a student do better in her schoolwork, I will be very glad."

graduate student, chemical engineering

"I have seen more than one female undergraduate become discouraged early in the program and I think this mentoring program is a good solution...this would have made a big difference to me. Many times female students can feel out of place because of their "minority status". If they were to see other students that have completed engineering, I believe that they will feel more confident."

senior, industrial engineering

"I would be highly interested. I feel that it has been needed for a long time. When I was a freshman I could have used a mentor and now I want to help the younger students to stay in the college."

junior, mechanical engineering

"Yes! I would love to have a mentor to show me the ropes."

sophomore, computer systems engineering

"I know I had many doubts about staying in engineering just for lack of friendship...this would be an outlet for young engineers to actually learn what they'll be doing in few years."

junior, civil engineering

"as a female in engineering sometimes you feel a little left out. This support group could help females feel like they fit in"

junior, civil engineering

"It helps to get advice from someone who has been through the classes that you're taking or are going to take. Decisions such as dropping a class or taking 16-18 hours are best discussed with someone who has been through the same situation."

senior, civil engineering

It is clear from the comments received that some female engineering students feel outnumbered and sometimes even intimidated in class. They also may not have anyone that they feel comfortable with to go to for advice. The WIN Program helps to alleviate both of these concerns, by providing a helpful resource for undergraduates and by providing a sense of belonging for participants.

Because the response to the survey was overwhelmingly positive, a formal proposal to establish the WIN Program was prepared and submitted to the Dean's office. When the proposal was approved, the WIN Program was initiated during the 1995/1996 academic year.

PROGRAM STRUCTURE

The basic premise of the WIN Program is to match female engineering undergraduates with female upperclassmen in their department for the purpose of providing support and encouragement. To accomplish this, there are several levels in the WIN Program structure, described as follows:

Program Coordinator The Program Coordinator is the recipient of the William Randolph Hearst Fellowship. She is responsible for the overall success of the WIN program and works with the Engineering Dean's office and the various engineering departments to ensure that the WIN Program runs smoothly.

Department Mentor Coordinators A Department Mentor Coordinator (DMC) is appointed for each department by the Department Head. DMCs work directly with the Program Coordinator, and are responsible for making sure the program runs smoothly within their department. DMCs recruit mentors and match them with mentorees, and ensure that all potential mentorees are personally contacted and encouraged to participate in the program. They receive a $250 dollar scholarship for Fall and Spring semesters for their participation in the program ($500 total per academic year), and are recognized at a yearly Faculty Awards Meeting.

Mentors Mentors are women who are juniors, seniors, and graduate students who have attended the U of A throughout their course of study. DMCs can also be mentors. They receive recognition from the Dean's office, a certificate, and a nice line on their resume. They are appointed by their DMC, after consultation with the Department Head. There are three things that mentors are required to do for their mentorees:

- Provide guidance at registration - After a mentoree has met with her academic advisor, she can call her mentor for advice on what professors to take, and how to best combine classes.
- Introduce them around the Department - Mentors are to take their mentorees into their departments to introduce them to faculty and staff. They are also to take them to meetings of student organizations. The idea is to make them feel comfortable within their departments as early as possible.
- Help them find existing tutoring services if they are experiencing difficulty with their schoolwork.

Mentorees The WIN Program is targeted toward female engineering students of freshman or sophomore status. Mentorees can also be upperclassmen if they transferred into engineering, are transfer students from other universities, or would otherwise benefit from the program. They receive guidance on classes and registration, and the opportunity to be introduced into engineering organizations. If tutoring on coursework is needed, mentors may help mentorees get the help they need through existing tutoring services.

THE WIN PROGRAM

In the summer, the Program Coordinator contacts the Department Heads about appointing DMCs for their departments. At the beginning of the Fall semester, the DMCs are appointed and a meeting with the Program Coordinator and the DMCs is held to plan the WIN Program for the academic year. All potential mentorees are contacted and the Fall meeting is held where mentors and mentorees are matched up. In the Spring semester, DMCs organize a gathering for program participants within their individual departments. Women who are interested in having a mentor but are unable to attend the meeting are assigned mentors. Attendance of the meetings, while desirable, is not required to participate in the WIN Program.

There are several variables essential to the success of the WIN Program:

Publicity An aggressive approach is used to publicize the program and the Fall meeting. During the summer orientation sessions, female engineering students are identified, and letters sent to them after they return home from orientation describing the WIN Program and its benefits. After the beginning of the Fall Semester, the DMCs or their mentors call all the female freshmen and sophomores within their departments and personally invite them to the Fall meeting. In addition, formal invitations are mailed from the dean's office to every female freshman and sophomore woman in the College of Engineering. DMCs and Mentors put up flyers all over campus. This blitz approach contributed greatly to the high participation rates the program has enjoyed its first two years.

Fun The format of the Fall meeting is informal. Door prizes such as T-shirts and coffee mugs are given out and an icebreaker game is played. Pizza and cokes are provided (Feed them, and they will attend! The importance of this cannot be overestimated.). The WIN Program Coordinator, the DMCs, and the mentors from each department are introduced, along with female faculty in attendance. If the WIN Program can develop a reputation for being an enjoyable activity as well as a beneficial one, it will positively affect participation rates. In the Spring, smaller meetings are held within the various departments to get the mentors and mentorees together in a relaxed environment for the purpose of fun and fellowship.

Commitment The program must continue to enjoy a high level of commitment from the Engineering College administration to ensure success. To date, the Dean's office and the Department Heads have been very supportive both financially and conceptually. Of course, without enthusiastic participation from the Department Mentor Coordinators and the mentors the

program cannot succeed. Thus far, the level of commitment by all involved in the program has been exceptional.

Philosophy The intent of the WIN Program must be to "mainstream" women in the College of Engineering, not segregate them. The WIN Program must strive to make women active participants in their departments, not separate them out. To this end, DMCs and mentors must have successfully accomplished this themselves, and have a positive attitude regarding the unique challenges women face. Another strength of the program is that it was developed and is being operated by a student for the purpose of helping her fellow students, and so the needs of the mentorees are more likely to be understood and met.

The first WIN Program meeting was held at 7:00 PM on September 28, 1995. The response was quite positive, with approximately 65 people in attendance. Of those eligible to receive a mentor, 36% were in attendance. In all, 62% of eligible women were assigned mentors and participated in the program. Approximately 40 people attended the 1995 Spring meeting (the first year, two big meetings were held - one in the Fall and one in the Spring). Attendance at the Fall 1996 Meeting was good, with about 45 in attendance, and would undoubtedly have been better if the meeting had not inadvertently been scheduled for the same night as the Freshman Chemistry Exam. Participation rates for the 1996/1997 academic year are not yet available, but preliminary indications are that participation has increased from the first year. Although freshmen and sophomores are targeted for participation, junior transfer students and women who have switched majors were assigned mentors if they felt they could benefit.

CONCLUSION

In summary, the WIN Program is progressing satisfactorily at this point. While it is too early in the program to tell if retention rates will be affected, anecdotal evidence indicates that the WIN Program is making a difference in the lives of the University of Arkansas' female engineering undergraduates. The program has been described as forming a "sense of cohesiveness" among the women in the various departments, and has definitely made them more comfortable in the engineering environment. It is expected that as the program continues, it will perpetuate itself as mentorees progress into mentor roles. This has already begun to occur, as women who were sophomore mentorees have volunteered to become mentors based on their experience with the program.

In order to increase women's contributions to engineering and science, it is first necessary to keep those who initially chose engineering and science as their program of study. If retention rates can be improved, both the engineering profession and the society it serves will benefit from the unique skills that women bring to engineering.

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