

Giving Women in Science, Engineering and Mathematics Support and Leadership Experience through a Women in Science and Engineering Program at The University of Texas at El Paso

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The University of Texas at El Paso (UTEP) is a commuter campus that mainly serves students of the region, a majority of which are first generation college students. The Women in Science and Engineering (WiSE) program at UTEP was created to give successful women majoring in science, technology, engineering, and math (STEM) fields educational stipends as well as opportunities to use their talents, leadership abilities, and academic skills to positively influence girls in the El Paso community to focus on math and science through outreach activities. These opportunities allow young girls to interact with young women who are educationally focused and demonstrate success, confidence and competence in STEM fields. A high percentage of members in the WiSE program are Hispanic and through their active participation, positively impact the girls of our region, who are themselves primarily Hispanic. This paper will discuss the WiSE initiative on the UTEP campus and our progress thus far.

UTEP's WiSE program was established in the spring of 2001 with 23 students. The program began as a way to involve female, university science and engineering majors with one another through regular meetings, interesting workshops, and community outreach activities. Students with a 3.0 GPA or above who were interested in joining were asked to submit a letter of interest, a transcript, a resume, and two letters of recommendation from a faculty or staff member. A committee of faculty and staff selected the students and they were awarded a \$400.00 educational stipend award for the semester. The program is overseen by a coordinator and a graduate student assistant. Throughout the course of the semester, students were offered opportunities to meet and participate in workshops that they had expressed an interest in attending. The first workshop that the students were invited to was one on self-esteem, gender differences, and time management. A training company was hired to present and facilitate the first workshop. With the success of that first workshop, we have continued to offer similar ones with themes such as stress management, time management, resume writing, and financial planning. The WiSE program is now 59 women strong with nine graduates, with five of those graduates currently enrolled in graduate programs.

Through meeting with the students, we inquire what they believe would most help them while they are pursuing their careers. Through these workshops, female students have a venue to discuss their challenges, share their feelings, and offer advice to other female students who are going through similar situations as they pursue careers in non-traditional fields. Since there is no active Society of Women Engineers (SWE) chapter on campus, this group is the best option for those students who are interested in being in an organization that focuses on women's issues.

Part of WiSE's mission is to create opportunities for students to interact socially and educationally with one another and to provide personal development and leadership

opportunities. Last year, the students actively participated in two outreach activities: (1) Expanding Your Horizons Conference for Girls in Science, Engineering, Math and Technology and (2) Girl Power.

The Expanding Your Horizons Conference was a day-long conference held on the UTEP campus for eighth grade girls from area middle schools. Women professionals in the fields of science, engineering, math and technology facilitated hands-on workshops for the eighth graders. Students in the WiSE program planned the opening ceremonies and served as group leaders to guide the eighth graders from workshop to workshop. Throughout the day, they interacted with the girls to give them information about what majoring in science or engineering is like. Our goal was to have the girls who visited the college identify positively with the college students they met at the conference. We also wanted them have an opportunity to interact with the women who facilitated the workshops and envision themselves in these types of careers. Through this experience, we also expected to leave a lasting impression on the girls with their visit to the University. It was our hope that they would begin to re-evaluate the direction they see their lives moving in and consider these types of non-traditional careers as possible avenues of exploration.

Girl Power is another activity that the WiSE students participated in last year. Several schools in the El Paso Independent School District have Girl Power clubs. These clubs met at one school for a Girl Power Conference this past year. The students in WiSE were invited to be a part of the conference and present hands-on science and engineering presentations to showcase the importance of academics after high school. Many of our students met and prepared presentations on the properties of liquid nitrogen to promote chemistry as a college major. Some students introduced pewter casting to the girls in order to introduce metallurgy and materials science as a profession. The young girls who attended the WiSE presentations were impressed that female college students were studying these fields and didn't know that science or engineering had the types of applications that were being demonstrated. Through these activities, our students are gaining confidence in themselves by serving as mentors and role models to these girls. They are also promoting an image to young girls that women can be confident, competent and accepted in careers that were once completely dominated by men.

Through mentoring young girls in these ways, we want them to naturally feel empowered as speakers, leaders and role models. By sharing their experiences with others, the students can become aware that they have made significant accomplishments themselves. This type of awareness can build their self-esteem in ways that can encourage them to extend their boundaries.

Recently, through the Institute for Women in Technology's (IWT) initiative, a Virtual Development Center (VDC) was started on campus and six members of the UTEP WiSE program are participating in this on-going community-based design project. The focus of this project is to get women involved in creating technology that will positively impact the community. The VDC is a collaborative network of nine colleges and universities that draws technical and non-technical women, and their supporters, into technology by making the connection between technology creation and social impact.

Guided by a few basic concepts and fresh communication processes, VDC participants create

technology-based products that engage and build on women's ideas and vision^[1].

In reference to the Virtual Development Center, students in the WiSE program who were interested in becoming a part of this new project were asked to attend an Innovation Workshop, where female members of the community came together to discuss products and technology that they would like to see developed. One of the reasons why there is a conception that women do not show an interest in technology is that the majority of it is not created or initiated by women.

The Institute for Women in Technology's mission is to increase the impact of women on all aspects of technology and to increase the positive impact of technology on the lives of the world's women ^[1]. If more technology was created for women by women, more females would probably become more interested in it. This Innovation Workshop gave way to interaction between the college students in WiSE and community members to discuss what types of helpful inventions they would like to see developed. A voice-activated spell check pen was the project chosen for the students to work on. Throughout the semester, the students met in a group to accomplish this project, developed a proposal for the pen, assessed the parts and design that was going to be needed to build it, and did this under the supervision and guidance of electrical engineering professor Dr. Patricia Nava. To date, the designers have reached a point where the equipment recognizes certain words and displays them on an LCD screen. They need to work out the bugs, and explore the secondary objective of having the circuit spell out the word. The design team is prepared to continue the project through the spring semester to bring this product to fruition. More information on the progress of these efforts will be available in the near future. Certainly, the advancements that all students participating in our outreach and design projects are making, is giving women in our community the opportunity to demonstrate their abilities and competencies in STEM areas.

In the future, WiSE hopes to continue awarding stipends to female undergraduates who are serving as positive role models for their community. WiSE would also like to remain as a source of information for women majoring in STEM fields. It is our hope that the WiSE program can continue to motivate females to participate and create activities to bring awareness to the advantages of women pursuing degrees in science, engineering and math, as well as be a source of support and encouragement to the women and girls in our community.

BIBLIOGRAPHY

[1] Institute for Women in Technology Home Site. January 2002. Institute for Women in Technology. 14 January 2003; <http://www.iwt.org/home.html>

BIOGRAPHY INFORMATION

ROSA M. GÓMEZ is the Assistant Director of the Academic Center for Engineers and Scientists at UTEP. She graduated from UTEP in 1996 with a degree in Civil Engineering. She worked for The Boeing Company in

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Seattle, Washington, and in 1998, she returned to El Paso and UTEP to take a position with the Circle of Learning for Entering Students (CircLES) program as a Student Development Specialist. In the fall of 2000, she accepted the position of ACES Coordinator, and in 2001 accepted the responsibility of coordinating the Women in Science and Engineering program (WiSE).

PATRICIA NAVA attended New Mexico State University (NMSU) where she received both her BSEE and MSEE degrees. She has worked for IBM in Boulder Colorado and at White Sands Missile Range in New Mexico. She has taught at North Arizona University and returned to NMSU to receive her doctorate in Electrical Engineering with a minor in Computer Science in 1995. She joined the faculty at the University of Texas at El Paso in the Fall of 1996.

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