

Beyond the Transformation: Professional Development, Community Support and Mentorship Opportunities for WISE Students

Grant Proposal Submitted to UA Parents and Family Association

Submitted by:



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OVERVIEW OF WOMEN IN SCIENCE AND ENGINEERING (WISE) PROGRAM:

WISE is dedicated to developing a system of support from middle school through graduate studies to recruit and retain women in science, technology, engineering and mathematics (STEM) fields to increase the pool of diverse, highly motivated and qualified scientists and engineers.

PROPOSAL ABSTRACT

In light of the recent University Transformation, budget cuts and broader economic challenges, WISE recognizes a need to re-think how our organization utilizes staff time and organizational resources. With additional budget cuts looming, it is important for our organization to reflect on the services we are offering, potentially re-prioritizing some programs while cutting others. In short, WISE offers a ton of programs and services with very little staff support—two part-time employees and one graduate student. Considering the small amount of WISE staff time and resources available, it is imperative that we reconsider how our current programs operate, and shift to operating in a more sustainable way. This includes restructuring our High School and College Student Mentorship Programs by shifting from a staff-supervised and maintained program to one that is largely self-driven and web-based. Secondly, a boost to our internship program would provide both additional professional development opportunities on campus as well as staff support to WISE. Lastly, by investing additional resources into the WISE Living Learning Community in Gila Hall, students will gain a greater sense of community. Each of these things—mentorship programs, supervised internships, and a greater sense of community support—will undoubtedly lead to increased recruitment and retention of women in the STEM fields.

STATEMENT OF NEED

It's no secret that women are severely under-represented within the science, technology, engineering and mathematics (STEM) fields. Consider these facts:

- In 2007, only 18.1% of Engineering degrees went to women. This is the lowest share since 1996.¹
- Fewer than 25% of post-doctoral awards in computer sciences, engineering, mathematics, and physical sciences were granted to women in 2006.²
- Since 1901 only 2% of Nobel Prize winners in the sciences have been women.³

Unfortunately, the statistics available on the numbers of women in the STEM fields at the University of Arizona suggest that we too must do a better job of recruiting and retaining women students and faculty in these areas. For example, only 19% of students graduating from the College of Engineering are female. As frightening, only 5% of full professors in the College of Engineering are women. The impact of this under-representation is well-documented. As engineer Elka Koehler states, "This lack of female role models in science, technology, engineering, and math (STEM) continues to hinder many young girls from pursuing careers as inventors, engineers, professors, or scientists."⁴

Clearly, the recruitment and retention of women within STEM fields is a major concern to anyone that cares about gender equity and diversity. But beyond this, it is a major concern for the future and well-being of our country. Jobs in the United States that require science skills are increasing at a rate five times greater than the rate of other jobs. In fact, President Obama has made clear that a central focus of the national Stimulus Package is to protect and create jobs in the U.S., with the package expected to create 300,000 Information Technology jobs alone.

WISE works toward increasing the diversity of our engineers, scientists, IT professionals and mathematicians to reflect the diversity of our world. Of course, meeting this goal means increasing the numbers of women and members of other marginalized groups within the STEM fields. To meet this end, it is imperative that we not only support current undergraduate students, but expand the scope of our operations to include recruiting and engaging young girls. Research shows that girls often disengage from science, math and technology in their pre-teen and teenage years. While girls show academic proficiency in these content areas, they often opt out of participating. Considering the complexity of eradicating

¹ I. S. Bertsch McGrayne, Nobel Prize Women in Science, National Academies Press, 1993.

² "Women, Minorities and Persons with Disabilities in Science and Engineering," National Science Foundation, 2006.

³ I. S. Bertsch McGrayne, Nobel Prize Women in Science, National Academies Press, 1993.

⁴ Koehler, Elka. "Women in the STEM fields still need support," Laser Focus World. January 2008. Retrieved on 4/2/09. http://www.laserfocusworld.com/display_article/317063/12/none/none/colum/Women-in-STEM-fields-still-need-support

the under-representation of women in STEM fields, WISE focuses on supporting girls and women of all ages in a variety of important ways. For example, middle and high school aged girls have several opportunities to participate in WISE:

- High School Mentoring Program, where they spend a day shadowing a U of A student and another day shadowing a woman in a professional career
- An annual Expanding Your Horizons conference, which is designed to engage girls in an interactive way while nourishing their interest and intellect, giving them confidence in using science, math and technology
- Scholarship Opportunities

Similarly, WISE supports undergraduate and graduate students in a variety of capacities:

- WISE Living-Learning Community in Gila Hall
- Seminar Course on STEM careers
- Scholarship Opportunities, Travel Stipends, Educational Events, Workshops, Field Trips and Socials
- WISE ASUA Club- students plan events, mentor a high school student, and participate in the EYH conference.
- WISE Internship Program, which provides excellent professional development opportunities for students

To recap, WISE sponsors a wide variety of programs, including educational and career development workshops, social networking events, mentoring and a conference for high school girls, as well as an internship program and a Living-Learning Community in Gila Hall.

PROGRAM OVERVIEW

In working to fulfill the WISE mission statement, we offer a variety of events and programs for undergraduate students, as discussed above. Unfortunately, our staff members never have enough time and resources to undertake as many projects as we would like, and the recent budget cuts have further restricted our ability to provide high quality and in-demand programs. For example, WISE normally provides mentors for undergraduate WISE members, but in 2008-09 we were unable to offer this popular program because we did not have the time resources necessary to implement a successful mentorship program. The Parents & Family grant would allow WISE to maintain and expand current programs that support undergraduate retention in the STEM fields, as well as offer new programs that have been requested by WISE members and the UA community at large. The following information provides details about these programs.

Mentorship Program

A recent survey of UA students by the Student Services Fee (SSF) found that 76.64% of students rated “expanded learning support, academic coaching, and tutoring programs” as “very important or moderately important” to them.⁵ These all relate to mentoring, and point to a need for increased mentorship programs, which WISE would like to offer. In past years when we have offered mentoring, WISE matched undergraduate students with mentors who are graduate students, professors, or professional women. To once again offer our mentoring program, we need two things: 1) funding for events that encourage interactions between mentors and mentees and 2) to re-structure the program so that it requires less staff time to be successful. The latter will be achieved through re-designing our website to include the biographies and information of the individual mentors. This way, students would self-select their mentors, and WISE staff would not need to invest time in recruiting mentors or pairing mentors and mentees. Secondly, we would host events to bring mentees and mentors together, which would include regular lunches or dinners, social events and a bigger reception or dinner to both kick off the mentoring program in September, and to conclude it in May. Two years ago, we had close to 30 mentor-mentee pairs, and we feel confident that in 2009-10 we could expand the program with additional resources.

Internship Stipends

We created an internship program in spring of 2009. Our first 2 interns work for course credit, and have been instrumental in the successes we have had this semester, including the largest-ever turnout for our Expanding Your Horizons conference and overshooting our fundraising goal for an annual diversity awards banquet. Intern stipends would increase the incentive to apply for and accept a WISE internship, as many students who originally applied were unable to accept the internship due to financial concerns related to the high cost of a university degree. In addition, the SSF survey found that 72.57% of UA students want “increased on-campus job opportunities within various areas related to student

⁵ “Spring 2009 Student Services Fee Evaluation.” http://studentaffairs.arizona.edu/servicesfee/exec_summary.pdf.

services.”⁶ This indicates the demand for paid internship opportunities, which WISE could fulfill. We hope to hire 5 interns for the 2009-10 academic year, who would support our mentoring programs, the marketing of our events, undergraduate programming, fundraising and development, and assistance with Gila Hall programming.

WISE Living-Learning Community in Gila Hall:

The WISE Living-Learning Community (LLC) at Gila hall is an important venue through which WISE is able to reach out and provide opportunities for women students at the U of A. The WISE LLC is open to female students who wish to live next-door to someone with similar academic interests, but it is also much more than that; it provides essential academic resources and a sense of solidarity for over 35 women in the STEM fields. In order to form close bonds, which support the retention of these students in the STEM fields, the WISE wing will sponsor a number of events. Through these events, bright and hard-working women are provided with the tools to form and maintain the bonds that WISE simply initiates. Some examples of events that have this effect are as follows:

- Wing dinners: informal ones in the wing (order food or cook together) and more formal ones at a restaurant with inspiring faculty members
- 3 academic field trips per year (i.e. Kitt Peak, Biosphere 2, AZ-Sonora Desert Museum)
- Social events (i.e. hikes, picnics, pizza/board game parties)
- Academic support (i.e. tutors for courses in common)
- Professional development & leadership programs (i.e. resume writing workshops)

For the 2008-2009 school year, Residence life provided \$80 to each Residence Assistant, which is clearly insufficient when students are increasingly strapped for cash due to the economic recession. The WISE LLC should provide needed academic and social resources to students.

Marketing

Currently, WISE has no specific marketing budget and relies primarily on listservs and word of mouth to advertise events. Funding for graphic design and printing of posters and flyers would greatly increase the number of students reached by our marketing efforts, and thus increase student participation in WISE programs.

Website Re-Design & IT Support

WISE desperately needs a new website; our current site is poorly designed and difficult for WISE staff to update. This is highly problematic for ensuring our event and program information is accessible to students, who typically rely on the Internet for information. Our website should be our biggest marketing tool, but since WISE staff is not trained in web design we are unable to make improvements. Since we need to be able to make regular updates, we require ongoing IT support to do so. As previously described, re-designing our website would also allow us to re-structure our mentorship programs. Rather than being operated and maintained by WISE staff, we would include a webpage on our new website that would allow students to self-select their mentors and contact them directly. WISE staff would then be able to support the mentorship program in other ways, but would no longer be required to individually match students and mentors, follow up to make sure shadowing dates had been completed, and so on.

ASSESSMENT METHODOLOGY

In order to assess the impact of the shifts in the WISE programming and opportunities this grant would create, evaluations will be conducted with WISE members, the residents in the Gila Hall Living-Learning Community and the WISE interns. This information will be used to evaluate the ways in which WISE can continue to meet the needs of our students. Additionally, WISE is dedicated to providing programming to students, faculty, and staff that meets broad needs. To ensure we are doing this, we will conduct formal evaluations at our events. In a less scientific way, we will also be able to identify impact of individual projects proposed by this grant, such as the website re-design and availability of advertising materials, by an increase in event attendance, membership numbers and general campus visibility.

⁶ *ibid.*

ITEM	DESCRIPTION	COST
INTERNSHIP STIPENDS	5 interns at \$500/semester for academic year.	\$5,000
WEBSITE RE-DESIGN and IT SUPPORT	This cost includes the restructuring of our mentorship programs, which is imperative for the continuation of these services.	\$4,000
MARKETING	Advertising and marketing to students and community about the WISE Program.	\$3,000
LIVING LEARNING COMMUNITY	Programming to increase feeling of community support within the LLC.	\$2,000
MENTORSHIP PROGRAMS	Various events throughout the semester to bring together mentees and mentors.	\$2,000
Total Budget Requested		\$16,000

Potential Funding Sources:

- National Science Foundation (NSF)
- Commission on the Status of Women
- Corporate Support
 - WISE has received support from IBM, Raytheon, Freeport McMoRan Copper and Gold and other local corporations in the past. We have also received small grants through the Faculty-Student Interaction and the Corporate Partners funding programs available through the University.
- Departments
 - Department of Women’s Studies, the Southwest Institute for Research on Women, the College of Engineering, and several Science departments support WISE.

With the recent University Transformation, WISE’s finances are completely up in the air. The majority of our funds come from individual departments and colleges, most of which have had to drastically cut their support of WISE (for example, the College of Engineering cut WISE funding by 80% in the past year). We also continue to apply for outside grants to fund our programs and services. Nonetheless, this amount of money is insufficient to meet the needs of women in the STEM fields. The benefits of this proposal reach far beyond the 75 student members of WISE, to our current and future interns, the 300 middle school, high school and college students involved with this year’s Expanding Your Horizons conference, the 100 high school and college students participating in our High School Mentorship program, the residents in our Living-Learning Community, and so on. The potential benefits of funding this proposal lie in both continuing to provide successful programs that WISE currently offers (but will have to cut without increased support) and being able to grow at a time when our resources are being depleted. Thank you for your time and consideration of our proposal, and your commitment to ending gender discrimination for women in the STEM fields at the University of Arizona.