

**TO: Don Coers**  
**FROM: Grady Price Blount, Flor Madero, Susan Neste**  
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**re: Pod Notes for STEM, women and under represented groups**

Although ASU has well-documented deficiencies in retention and overall enrollment, those problems are not necessarily systemic for women and under represented groups. Rather, they are tactically isolated in individual pockets throughout the institution, particularly in STEM (Science, Technology, Engineering, Mathematics) fields. We welcome the opportunity to create a formalized strategy at ASU to increase the representation of women and other underrepresented groups in STEM fields.

In this pod report we will provide an overview of individual *ad hoc* efforts, furnish a listing of new initiatives, and make four recommendations which can, if approached holistically, form the core of a coherent effort to tap into one of ASU's great unrecognized resources.

### **Extant Programs:**

Teacher Quality Grant (Andy Wallace, David Bixler and John Miazga). This program involves in-service science teachers working with students at or near the poverty level in ESC Region XV. The goal of the program is to produce highly-effective teachers through 100 plus hours of professional development in an academic year.

Science Days (Nick Flynn). Funded internally, about \$2,500/year. Directed to 4<sup>th</sup> graders. About 1,000 participants annually. Mostly from SAISD but also including Ambleside, Big Spring, Cornerstone Christian, and Irion County. Internally funded. Brings students onto campus every spring for a round-robin tour of science demonstrations and hands-on activities from Biology, Physics, Mathematics and Chemistry/Biochemistry. We may expand this to include Physical Therapy and Nursing. This high profile program started in 2000 and continues to grow with 1-2 new schools added each year.

First-Generation R.A.M.S. (Flor Madero). Raising And Meeting Standards is designed to equip first-generation students with the knowledge and skills necessary for success in higher education. In addition, students will be connected to peer mentors, faculty/staff, organizations, events, and programs that will enrich their college experience. The goals are 1) to provide valuable skill sets necessary for a successful transition into college; 2) to connect participants with first-generation role models and mentors that will encourage and support the participants' higher education goals; and 3) to increase participants' cultural capital through participation in campus and community activities.

Region XV Partnership (Flor Madero). Through a partnership with Region XV, the Multicultural and Admissions Offices have organized a face-to-face meeting with high school counselors with the purpose of identifying effective ways of communicating with Hispanic students and their parents. The goal is to identify and recruit qualified Hispanic

students from Region XV and to establish a positive rapport with the parents, particularly non-English speaking parents.

Planetarium Shows (Mark Sonntag). Approximately 9,000 K-8 students annually are brought to campus and hosted for a planetarium program.

Joint Admission Medical Program (Russell Wilke). Created by the Texas Legislature to provide services to support and encourage highly qualified, economically disadvantaged students pursuing a medical education, award undergraduate and medical school scholarships, and provide for the admission of those students who satisfy both academic and nonacademic requirements to at least one participating medical school.

ASU, along with 30 other public and 10 private institutions participate in the program in conjunction with 8 Texas Medical Schools. Our program is administered through the Health Professions Advisory Committee. Approximately 50 ASU students have been successfully processed through this program since 2002.

Discover ASU (CoS Faculty) has nominal participation by all departments in the Sciences. This involves informal meetings with students in a *walk-up* setting. No internal budget. Typically 180-200 students annually. Within the existing format, there are special breakout sessions hosted by Nursing and Physical Therapy (Leslie Mayrand and Scott Hasson). These breakouts include parent/student tours of the High Fidelity Sim Lab. These special sessions typically welcome 80-100 students annually.

Mother/Daughter Program (Leslie Mayrand) includes tours of the Nursing High Fidelity Sim Lab and introduction to Nursing careers. Tied to Career Day in which Education, Business and the Sciences participate with mock schedules and an introduction to how to succeed in higher education. 100-120 students annually.

Physics on the Road (Toni Sauncy) is a week long road trip around the region each May. The target audience is 6-8<sup>th</sup> grade and the preferred venue is low-income highly diverse, rural school districts. Each year a different route is planned. Over the past two years, ASU undergraduate physics students have interacted with over 2500 public school children around south-central and west Texas. The event stems from a *World Year of Physics* award of \$10K (2005) for the ASU Society of Physics Students outreach group, “The *Peer Pressure Team*”. The road trip relies on volunteer students (9-10 undergraduate physics/applied physics majors) and volunteer faculty. The trip is funded by donations from physics faculty and has most recently been assisted with a President’s Circle award (2007). The total travel expenses for the 5 day /4 night trip run around \$4K. Trip length is adjusted to match available funds, since this outreach/service activity does not have a regular budget.

Peer Pressure Team Outreach. The ASU Peer Pressure Team (Society of Physics Students) routinely visits local elementary schools to present hands-on physics demonstrations. The team has participated in several *Family Science Nights* around the community. The group also works with the San Angelo Amateur Astronomy Association to present public education programs during specific events (e.g. eclipses, comets, etc.).

## **Growing New Programs:**

TAME (Texas Alliance for Minorities in Engineering), <http://www.tame.org>.

Establish a TAME chapter in San Angelo. The purpose of TAME is to enable Texas students to pursue careers in Science, Technology, Engineering and Math (STEM) by:

- 1) Creating partnerships among educators, industry, government and families to inform, educate and motivate students
- 2) Implementing classroom and extra-curricular programs and activities
- 3) Focusing on populations that remain underrepresented in fields of STEM
- 4) Promoting diversity in STEM careers

Resurrect TxPREP pre-engineering summer program (Department of Physics). Previous program was active under direction of Dr. Fred Wilson from 1998 to 2002. The program involved 45 middle school students, three SAISD teachers, two pre-service teachers, outside speakers, and field trips related to STEM. TxPREP was free to qualified students and held for 6 hours/day during June and July. Current budget requirement would exceed \$30K annually plus office space, computer, and a phone for the program director. Students were taught basic engineering principles through algebra, c++ programming, and hands-on activities.

Formalize ASU sponsorship of and responsibility for District XI Science & Engineering Competition (Nick Flynn). Budget approximately \$10K annually. Serves 250-300 students from 6<sup>th</sup>-12<sup>th</sup> grade in 18 surrounding counties. Serves as springboard to compete at the state and national science competition.

Formalize administrative support for new Girl Scout Council initiative (Bonnie Amos and Toni Sauncy). Several faculty are planning day-long STEM events targeting young women. Tentatively start date is 02-28-2009. Sauncy has secured faculty commitment within the College of Sciences. Could serve as many as 300 young women annually.

Add Planetarium shows for parents and prospective students to Discover ASU programs. *The Totally Awesome, Way Cool, Human Body* (Mayrand) would be a program similar to science Days but pointed towards Kindergarten and 1<sup>st</sup> grade students as an introduction to health careers. A proposal on this project was presented to SAISD administrators a couple of years ago.

Children's Health Museum (Leslie Mayrand). Would be included in the new Allied Health Building and would feature rotating exhibits, perhaps quarterly, in a format similar to our existing Planetarium programs. This venue would feature hands-on exhibit stations including a giant brain the kids could walk/climb around inside of.

Health Occupation Students of America (Leslie Mayrand). Nursing personnel would like to recruit future medical caregivers from surrounding counties for tours of the high fidelity simulation lab in a fashion similar to the existing Science Days. Costs for transportation and lunch would be approximately \$25/student.

Grow Our Own Underachieving STEM Majors program (Blount and Shankle). As outlined in the 2007 SAS Action Plan, this would be an early intervention program identifying 6th through 9th grade students meeting *Achievement Trap* criteria of low income, high achievement, and low potential for attending college. This program would function as an early-admissions opportunity in which ASU personnel would become actively involved in identifying and selecting candidates for intensive summer science and math camps, college-readiness training and dual credit admission. This program should also include scholarships to be encumbered 4 to 5 years in advance as we identify candidates in middle school or early high school. Budget approximately \$50K annually for an eventual roster of 50 students going through the pipeline.

### **Recommendations:**

From the listing above it is obvious that there are numerous *ad hoc* programs geared towards STEM fields, women and under represented groups. But there is not any single point of responsibility for coordinating these efforts. Likewise, there are numerous good ideas for new programs, but again, no overall coordination into a coherent approach to the problem. Similarly, student retention efforts operate independently and with little strategic coordination. We therefore make the following four recommendations:

1) First and foremost, we recommend adding formal policy language recognizing and rewarding faculty involvement in outreach activities for STEM, Women and under represented group success. At a minimum, this language should be included in both the P&T Policy and the Professional Achievement Award criteria.

2) We recommend creation of a STEM, Women and under represented groups outreach coordinator, perhaps under the auspices of the newly created First Generation Mentors program. A single point person can both coordinate programs and help energize faculty and keep these efforts focused.

The director would be responsible for developing the following initiatives:

- Coordinate outreach programs between departments and faculty to assure that all K-12 are included and that all disciplines, not just the sciences, participate.
- Develop effective assessment methods designed to improve outreach programs and allow them to be included in our upcoming SACS initiative. If handled properly and coordinated with our upcoming FYE, a First Generation initiative could be our QEP.
- Coordinate recruitment and retention efforts around our regional Hispanic populations with emphasis on STEM fields with interdisciplinary minors to reach the goals of the new ASU Mission and Vision.

A director can be recruited from existing faculty with a ½-time release. Budget allocations should be provided for outreach program supplies (\$5,000) and promotional materials (\$3,000).

3) Integrate First Generation Mentor Program (Madero). This program has just received funding and can easily serve as a keystone for STEM, women and under represented groups.

4) In conjunction with our emerging First Year Experience and First Generation Mentors programs, establish a centralized tutoring program through the Center for Academic Excellence. This would involve setting aside 10 rooms across campus designated solely as Study and Tutorial Rooms with 10-20 tutors to staff the rooms on a regularly-scheduled basis. This program would also include peer tutors (student tutors hired, trained, supervised through the Center for Academic Excellence). The goal of the Tutoring Program will be to help students succeed in traditionally difficult courses. Objectives of this goal are as follows:

- 1) Increase the number of As, Bs, and Cs in the courses supported with tutoring
- 2) Decrease the number of Ds, Fs, and Ws in the courses supported with tutoring
- 3) Improve the overall graduation rates of students at the University

Collectively, these recommendations can demonstrate ASU's commitment to success in recruiting, retaining and graduating STEM, women and under represented groups. They position us to take advantage of our own demographic realities and can send a powerful message to the faculty and staff about the importance we attach to our new ASU Mission and Goals.