

TOMORROW'S WOMEN IN SCIENCE AND TECHNOLOGY

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Introduction

Today most people would agree that boys and girls, men and women deserve equal opportunities. However, while equal access is a generally accepted principle, and equal treatment an assumed practice, equal outcomes have not been achieved, especially in math and science education. Because by the year 2000, women of all ethnic backgrounds will comprise at least 66 percent of the new entrants into the job market, and because that job market will be increasingly technology-oriented, it is imperative that our nation adopt measures to encourage girls to study math and science and choose careers in science, engineering and technology.

SUNY Institute of Technology at Utica/Rome is an upper division and graduate level institution. Its primary role is to provide specialized transfer opportunities for graduates of lower division two year colleges and to offer graduate programs in selected disciplines. Because the institution specializes in professional and technical programs, we have experienced first-hand the relative scarcity of women studying and teaching in these fields.

Program

TWIST (Tomorrow's Women in Science and Technology) was established by SUNY Institute of Technology in 1988 to broaden participation and interest in science and engineering among adolescent girls. The original goal of the TWIST program was to engage local junior high school age young women in activities that were designed to elicit a favorable response to mathematics and science. Since 1988, the program has evolved to include programs for guidance personnel. Future plans include programs for math and science teachers, school administrators, vocational personnel, community groups and parents.

For many girls, especially by the time they reach adolescence, deciding that math and science are not for them is a consequence of their beliefs, attitudes and values regarding these subjects rather than their inability to successfully perform in these areas. In fact, "Women at Thirtysomething: Paradoxes of Attainment," the study conducted by the U.S. Department of Education and published in June, 1991 showed that women who studied more than two years of math and science in high school performed just as well as men with the same curricular backgrounds on the SAT and that women's G.P.A.'s in college were higher than men's no matter what field they studied. The TWIST

program was created to change the negative perceptions of math and science held by a large percentage of adolescent girls and to encourage them to pursue these areas of study in high school, college, academia and the work place. Additionally, programs have been developed to raise the consciousness of guidance counselors, teachers and parents, dispelling gender stereotype myths and encouraging these groups to support and encourage their students and children.

Since 1988, nearly 600 girls and 100 counselors have participated in TWIST programs. In addition to the involvement of the Task Force on Women's Issues at SUNY, student members of the Society of Women Engineers and women from the community currently working in non-traditional careers play an invaluable role in the success of TWIST programs.

Arriving on campus in the morning, participants begin the day with an orientation and then move along to engage in a number of hands-on demonstrations in technology areas such as Robotics, Photonics, Telecommunications, Mechanical Engineering Technology, Computer Information Science and Electrical Engineering Technology. It is important to note that these demonstrations are conducted by SUNY WOMEN students (many are members of the Society of Women Engineers) who, through their demonstrations, show their competence and success in technological areas of study while serving as positive role models for our participants. They are also available to answer the many questions from students and counselors, i.e. How did you decide on this major? Did you receive any support from your math and science teachers while you were in high school? Did your guidance counselor encourage or discourage you from choosing engineering? Were your parents supportive of your decision to study engineering?

Following the demonstrations, a luncheon is served. Female SUNY students, members of the Task Force on Women's Issues, college faculty and staff join our guests to talk about their reactions to the morning program, answer questions and stimulate discussion. The afternoon program varies somewhat but has come to include a speaker on gender issues and self-esteem. Following this address, a panel of women currently working in technological fields in our community is assembled, and each of them tells her personal story, emphasizing the importance of studying math and science throughout high school. At the conclusion of their presentations, the panelists are available to answer the many questions that come from the audience.

The Future

The response to TWIST has been extremely positive and the program has met with enormous enthusiasm in high school districts from a three county area. Although we have applied for several grants which would allow us to add new components to the program, at the present time we receive sporadic funding from our area congressman for this effort.

We learned a great deal from the two counselor programs that we presented this year. Based on these findings, plans are underway to take our Society of Women Engineers students out to area schools to speak to math and science classes. We will also produce a TWIST video for distribution to area schools, and we will try to become part of a teacher inservice day so that we may reach additional counselors as well as math and science teachers. Providing a program during this

time avoids the cost of substitutes since classes are not held on these days.

We also realize that there is a need to focus our efforts at an even younger female population. Research now shows us that girls begin to lose self-esteem and turn away from areas and subjects perceived to be "male" (i.e. math and science) as early as the fourth grade. We are very much aware of the connection between self-esteem and success in math and science for girls and hope to create new programming for elementary girls.

We will continue to work on funding issues for TWIST, soliciting support from local industry as well as foundations, state and federal sources.

SUNY Institute of Technology's commitment to TWIST has been unwavering. The Institute continues to provide institutional support and guidance for this program and strongly supports efforts to dispel myths and erase the gender stereotyping which prevent young women from reaching their potential and taking their place in our technological world.

The following letter was written in response to a loss of state funding from TWIST. It summarizes the success of TWIST and should serve to encourage all WEPAN members to consider this kind of collaborative effort for young women in your area schools.

"I am writing in response to the article, 'Techno-gender gap: Where are the Girls?' in the April 5 Sunday Observer-Dispatch. I was greatly distressed to hear of the lack of funding for the Tomorrow's Women in Science and Technology (TWIST) program in which I participated at the SUNY Institute of Technology campus.

Prior to this, my intended career had been education, but I then realized that I had overlooked those male-dominated fields that were perfectly suited for my abilities, interests and determination. I have since enrolled in technical courses in school that I would never have otherwise considered, where I have been one of only a few females, and am now looking into mechanical engineering programs at various colleges.

I realize that in an economic recession cuts must be made, but the thought that younger females may not receive the opportunity that I was given is frightening, considering the minority of women currently in these careers and the waste of intelligence and creativity that consequently must be occurring."

