

C. Outreach to the Community

THE WOMEN'S SCIENCE FORUM: A TARGETED OUTREACH PROGRAM AT ST ScI

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The Women's Science Forum is a monthly series of meetings for high school junior and senior girls who are already interested in science and are contemplating a college degree and a future career in the physical sciences. We are not trying to "sell" science; the participants are girls who are already interested and have shown some aptitude for science in their high school classes. Instead we endeavor to provide information and perspectives that may prevent the potential female scientists from leaving the field prematurely.

The causes which may contribute to the well documented attrition of women from the science education "pipeline" are many and varied. Concerns range from practical issues such as economic considerations and balancing career and family obligations to personal issues such as gender-based communication differences and low self-esteem (see article by S. Brush, 1991, *Am. Sci.*, 79, 404, and references therein). Studies have shown that both role-models and women's support networking can be very effective in addressing the concerns that young women have in entering scientific fields. Our program provides both role models and networking, while conveying both the content and the excitement of scientific research. All of our lecturers and role models are active researchers or participants in technical careers, and all are women.

The Women's Science Forum meets Saturday mornings from 9:00 AM to 1:00 PM once a month throughout the academic year. During the first hour, the girls attend a lecture and/or demonstration on some topic in Astronomy delivered by an astronomer from the Space Telescope Science Institute. The second part of the program addresses career options and opportunities, with a focus on introducing the girls to a broad spectrum of female scientist role models. Some of the role models have included researchers from all areas of the physical sciences, engineers, medical doctors, an even an astronaut. The girls get to hear first-hand accounts of the educational and career paths of women who have "made it" in technical fields. The final part of the program is a group lunch discussion in which the girls are encouraged, and more or less persuaded, to participate by speaking extemporaneously on their views and experiences. Their participation in this forum develops their confidence as they learn to speak spontaneously on matters of science with a supportive and responsive audience.

Our goal is to prevent young women from becoming discouraged and leaving scientific fields prematurely. By providing them with a scientific learning experience in an all-female environment, we help abate the sense of isolation and estrangement that often underlies a young female student's decision to leave the field. By bringing together the same group of girls regularly throughout an entire year, we foster a relaxed group atmosphere that is supportive and fun. Our experience last year showed us that very quickly the girls overcome their initial shyness and participate actively by asking questions, talking among themselves and initiating longer-term relationships with the speakers and role models. Many of the girls will be attending colleges with other participants in the Women's Science Forum, so that their support networking has already

begun. As a direct result of the Forum, several of our girls participated in summer research programs with professional scientists or engineers or in other institutional programs.

Lessons From the 1991–1992 Forum

The Women's Science Forum was successfully conducted during the 1991–1992 academic year, providing information and opportunities for 60 high school students in the Baltimore–Washington, D.C. area. Last year, placement in the Women's Science Forum was oversubscribed by about a 2:1 margin. This year, we are accepting 100 students.

While it is difficult to evaluate objectively the success of our program, the very enthusiastic response of the participating girls suggests we have made a positive impact. Through questionnaires and evaluations, the participants rated our program very highly (we received a 'grade point average' of 3.65 out of 4.0 in our final evaluation, with no ratings below a 3.0, or 'very good'). During the August reunion party, the girls whom we set up in the summer reported their activities to next year's participants, with more than one claiming, 'this was the best month of my life!' Others have written privately to express gratitude for helping them to overcome their fears and decide to major in physical sciences in college.

Perhaps the most disturbing experience from last year is the strong attrition among the Baltimore City minority students. In the beginning of the program we had roughly equal numbers of minority and non-minority students. By the end, the regularly attending participants were strongly dominated by non-minority students: about two-thirds of the minority students had dropped out compared to an attrition of about one-sixth among the Caucasian students. Many of the remaining minority students were from suburban or private schools.

We believe the two primary causes for the minority attrition were (1) lack of adequate transportation, and (2) lack of support from within their community. In the coming year we are providing support for three Baltimore City high school teachers to regularly attend the workshops and help lead discussions. Last year, one such teacher attended roughly half the workshops on a volunteer basis. When she was present, the minority participation doubled! This year, we are establishing a more formal role by such teachers. We also plan to supplement travel expenses for some of the Baltimore City minority students where needed. The vast majority of our regularly participating students are brought to ST ScI by parents. We found a marked difference between the city minority students and students from the suburban or private schools in this regard.

Programmatically, we are also making the following changes in this year's Forum:

- (1) We are placing greater emphasis on choosing and applying to college. We were surprised by the number of girls in last year's forum who had little or no information on the range of choices available to them. Many very highly qualified girls severely underestimated their chances of getting into more selective schools; they felt their SAT scores or their grades were not good enough. Many of the girls felt they were lazy (this coming from girls getting up early on Saturday morning once a month to attend the Forum!).
- (2) This year we will also give them assignments. In the fall term, they will be assigned essays where the questions are typical of those found on college en-

trance applications. The girls will meet in small groups where they will read and evaluate the essays. In addition to helping the girls strengthen their writing techniques, this method will provide a springboard for discussion of the girls' aspirations and perceptions. In the spring term, after college applications are in, we will assign physics problems; this year we will focus on gravitation. We intend to assign problems that are beyond the scope of their present training so that each girl can experience 'failure' in a supportive environment, and find ways to cope with academic challenges among friends.

- (3) We wish to provide more information about further programs and opportunities for women in science, including scholarships, summer and/or term-time research programs, science 'camps,' etc. With a very minimum of investigation, we were able to uncover quite a bit of material, and were able to send several girls on to continuing activities. There is certainly much more material to be uncovered. We welcome input from our colleagues on continuing programs.
- (4) We wish to develop a better means to evaluate and disseminate the results of our program. This includes establishing collaborative relationships with social scientists and/or education specialists, and documenting our activities to a greater degree. Last year we gave the participating girls extensive questionnaires to learn more about their backgrounds and aspirations. We have already begun to video-tape some of our activities, and plan to conduct a series of video interviews this year. With these and other data, we hope to track some of the girls over a longer time period to assess their progress.

Overall, our experience with the Women's Science Forum was very positive, and it was fun. It provided a learning experience for those involved as well. We encourage any who may be interested in setting up a similar program to contact us if we may be of any assistance. Similarly, we welcome any comments, materials, or suggestions that may help us improve our program.

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