

The Expanding Your Horizons Network BROADCAST

www.expandingyourhorizons.org

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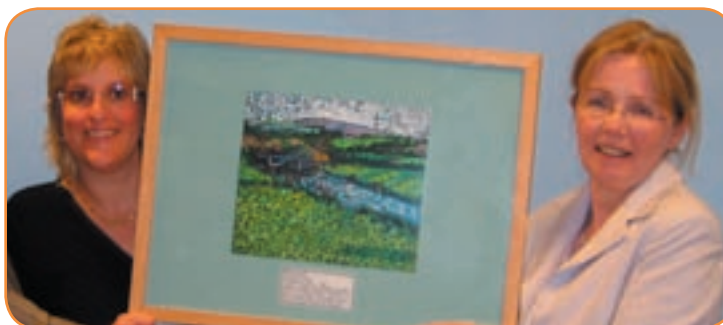
Expanding EYH

by Teri Perl

In the Spring of 2006 the national office of the Expanding Your Horizons Network announced an exciting new initiative. With the generous support of Seagate Technology, a worldwide leader in the development and distribution of storage and information management devices, the Network is currently funding a series of new programs designed to enhance the impact of the EYH conferences.

This new initiative addresses the goal of expanding the EYH conference experience beyond its current duration. The initiative supports current experimentation with non school events where girls can enjoy additional hands-on science activities, interact with women role models, and learn more about exciting, challenging and lucrative careers available to those who've taken lots of high school mathematics and science.

Conference organizers were invited to apply for \$4,000 in start-up funding to create new programs to extend the single-day conference experience. This funding can be used to support the hiring of a part-time coordinator to supplement the typical EYH volunteer program. Applicants could select from four previously tested programs or design their own. The suggested programs included the EYH Ambassador Program, the EYH/Science Buddies Partnership, a Science Sleep-over and the Science Friendship Circle.



The meeting concluded as Rosemary McDaid presented Stacey with a student painting of an Irish landscape.

Five conference sites have been selected as winners in the first year of this exciting new program. We warmly congratulate the following winners!

- **Science Sleepover:** Middle Tennessee State University EYH
- **Science Friendship Circle:** Science Pioneers EYH - Kansas City, Missouri
- **Hot Air Balloon Camp:** Tyler, Texas EYH
- **Saturday Science Field Trips:** San Diego EYH
- **EYH Ambassadors:** Santa Cruz EYH

In future Broadcast issues we will share information about how these new and innovative programs are being implemented. We look forward to continuing to help EYH sites expand their programs and, funding permitting, plan to continue this award process in 2007-2008.



EYH Conferences are held in 31 states.

Launching the First Irish EYH

by Teri Perl

On May 15th, Stacey Roberts-Ohr, National EYH Coordinator and I traveled our separate ways to London. After connecting at our South Kensington

hotel, we enjoyed an evening at a London musical and parted the following afternoon after a half day of sightseeing. Then, again on separate flights, we headed to Londonderry, Ireland. After a late evening reunion at the tiny Londonderry airport we picked up our rental car and headed off into a blustery night of wind and rain. With Stacey driving on the 'wrong' side of the road, as is the custom in the UK, and following a kind gentleman who offered to show us the way out of the airport and point us in the right direction, we finally arrived at our destination.

Getting to the hotel was a bit of a triumph, not just because Stacey was driving on the left side of the road. Another obstacle challenged us; the very confusing English roundabout. With questionable assistance from Stacey's newly rented device, a portable Global Positioning System (GPS), we were able to overcome this new and major challenge.

Stacey, avid user of technology as she is, was to spend many frustrating and often amusing hours battling with her GPS from the moment we put it to service in our rental car.

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Although I was exceedingly skeptical at first, there were several times when the GPS performed gloriously ... especially if it recognized our destination. (The GPS unit always knew where we were, though often could not recognize where we were heading.) And the GPS created a great deal of suspense as we were processing its robotic voice, British accent included. e.g. "Roundabout ahead; take the second (or third or fourth) exit." As we were often uncertain that we had maneuvered the roundabout correctly we'd hold our breaths for the next minute or so ... until the GPS responded either with silence (sigh of relief, from us that is) or, too often, "turn around the first chance you get and take the second (or third or fourth) exit at the roundabout ahead." As we literally blew into the hotel lobby after having settled our auto into the underground hotel garage, the receptionist announced that we were experiencing the first, ever, Irish tornado.

The following morning, May 18th, Stacey's Seagate contact, June Coates, picked us up at the arranged time. Stacey was pretty sure the young attractive, red haired women who entered the lobby at 9:30 was much too young to be June since June was a new grandmother. But June she indeed was, and with a warm greeting from the new grandmother, we were off to our meeting at Lumen Christi College, a twenty minute drive from our hotel.

Lumen Christi College is a public co-ed high school, even though its name suggests otherwise. It is also reputed to be one of the premier schools in Northern Ireland, having recently received extra funding from the Irish government to enhance its science curriculum. The school is in a beautiful old building. The hallway walls, in fact every vertical surface, were hung with wonderful drawings and paintings, all examples of students' work. Perhaps as

part of the planned agenda, or perhaps as an improvised response to our enthusiastic reaction, we were invited to visit the art studio and meet the art teacher.

We arrived at the conference room to find most everyone seated at the conference table except for one or two young women who were fiddling with the computer and projection screen in preparation for Stacey's presentation.



Seated were several people from the host school including the Deputy Headmistress, the head of the science program, and John Dunne, the Headmaster/Principal. Seven Seagate representatives, including June, our host, were also present. Three were Seagate women scientists, potential role models. Also present was a woman from Future Images, a Northern Ireland PR firm hired by Seagate, two men from Seagate (one we learned later is on the Londonderry Chamber of Commerce) and a non-Seagate gentleman, Bill Cannon, from Sentinus. Sentinus is an organization based in Lisburn, a town directly southwest of Belfast in Northern Ireland. Like EYH/N, this organization shares the same goal of encouraging young people to learn about and pursue careers in STEM. Sentinus, however, targets boys as well as girls. EHY/N of course, is predicated on the observation that fewer girls than boys choose STEM careers and our mission is to eliminate that disparity.

Stacey introduced the history and mission of EYH, with much emphasis on conference details, particularly on EYH conference hands-on workshops. She also debuted our new EYH DVD film. Stacey then spent a good deal of time describing

the materials that the Network provides to conference coordinators, such as the new organizational database, and the packets for conference coordinators, workshop leaders, and adult attendees (i.e. teachers and parents). Emphasized was the role of workshop leaders and the importance of these women talking about themselves, their lives, perhaps their mentors, and sharing their excitement about their current careers.

At the afternoon meeting, following a pleasant lunch in the teacher lounge, several important details about the first international conference were discussed. The plan is to target 150 girls at this first Irish EYH. Seagate will doubtless be the major sponsor of the event. The gentleman from the Chamber of Commerce was confident that other support would be easy to come by if desired. Pending technically official permission, Lumen Christi College will be the setting for this conference. Despite Stacey's cautionary remarks about the tight schedule, all agreed that the conference will take place in September or October of 2006. I sensed a deep pride within this group that Londonderry, this most northern of Irish cities, will be taking the lead in Ireland's first EYH conference.

The meeting concluded as Rosemary McDaid, Deputy Head of Lumen Christi College, presented Stacey and me with a student painting of an Irish landscape. Without a doubt, this was a successful & significant meeting!



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Why I Support Women in STEM—A Man's Perspective

An interview with Dave Wickersham, Seagate Technology's executive vice president and chief operating officer.

Q: How did you get involved with the Expanding Your Horizons Network?

A: Last summer, Seagate's CEO, Bill Watkins, challenged his executive team to find an area within the community where we could become more involved as a company and make an impact. Having a college-age daughter and a wife who helped initiate a family math and family science program for elementary school kids, I know about the social and academic challenges young girls face in the fields of science, technology, engineering and math (STEM.)

I also wanted to learn more about why many young girls lose interest and stop pursuing studies in these areas—specifically in the middle-school grades. The Expanding Your Horizons Network is focused on inspiring young women through hands-on workshops and conferences and providing positive role models in these fields. They are making important strides in this area and through Seagate's and my involvement, I believe we are helping break down some of the barriers and lingering stereotypes that might dissuade girls from following their natural interests in STEM subject areas.

Q: Why is it important to encourage young women to enter STEM fields?

A: Some recent figures I read stated that only 21 percent of scientists and 11 percent of engineers in the U.S. are women. Interestingly enough, a 2001 study showed that 66% of girls liked science in the fourth grade—so what is happening between ages 10 and 25? Clearly, girls are interested and can excel in science, but for some reason they don't continue studying in these fields.

As corporate executives, I believe it is our responsibility to support and enable young women interested in science to continue to follow their interests and have an equal opportunity to create satisfying careers in STEM areas.

Being the chief operating officer of a global technology company, I know firsthand the challenges we face in recruiting top talent, specifically women and minorities. There is enormous opportunity for women in the STEM career fields and if through our partnership with EYH we can help women better position themselves for success and career growth, then we have definitely achieved something valuable and sustainable.

Q: As a key executive at Seagate, what do you do and what does your company do to support women in science?

A: At Seagate, we understand the value diversity brings to a company. We benefit greatly from the creative energy and dialogue generated from a conference room or lab filled with unique perspectives versus a quiet consensus from a group of like-minded people.

It is critical to our success to maintain and build a diverse employee population. Bringing more women into key decision-making roles within the company is a big focus for my organization and for Seagate. I work closely with our human resources department to be sure we are recruiting and retaining top female talent.

Recently at Seagate, in conjunction with Women's History Month, we honored our own women in technology and invited several female employees from different organizations and backgrounds to share their career stories with other employees. These discussions were well attended by both women and men.

Through my partnership and board involvement with EYH, I have also tried to increase the visibility and awareness of the organization's efforts to further build the pipeline of future women scientists and engineers. Within my organization, more than



Dave Wickersham, joined the Expanding Your Horizons Board of Directors last fall. Having worked with EYH for several months now, Dave shares his perspective and reasons for supporting an organization focused on helping young women stay interested in science.

25 employees are working together on hands-on science workshops targeted at young girls for the conferences and are anxious to learn about more ways to get involved. By next March, we hope to bring Seagate-sponsored EYH conferences to Minnesota, Colorado and possibly Asia.

Q: Do you have any advice for young women considering pursuing a career or further studies in these areas?

A: Yes—go for it! Pursue your interests and don't let any preconceived ideas of who or what a scientist or engineer might look or be like influence your decisions. Find a mentor that will help you, too. And, of course, attend—or help start—an EYH conference in your area so you can interact with other young women with similar interests and passions. The world of science is fascinating and if it interests you, don't allow anything, or anyone, to stop you from following your dreams.

First National Summit on the Advancement of Girls in Math and Science

On May 15, 2006, the U.S. Department of Education sponsored the First National Summit on the Advancement of Girls in Math and Science in Washington, DC. In attendance was Professor Lenore Blum, Distinguished Career Professor of Computer Science, Carnegie Mellon University and one of the founders of the Expanding Your Horizons Network. Reprinted here are comments made by Professor Blum to the conference organizers.

1. It is important to distinguish between two related but distinct goals:

a) Increasing math/science/technology facility and literacy generally, and

b) Enabling girls and women to become our future creative thinkers and leaders in math/science/technology areas.

These goals are related and many of the same efforts will apply to both. But they are also different and require different programs and emphases.

As an example: Emphasizing the “relevance” of science/math/technology to everyday life and societal problems is clearly an important tactic, particularly for the former goal. However, an overemphasis on “relevance” may in fact have negative implications for the latter goal.

To a large extent, our most creative and intelligent mathematicians, scientists, & technologists have been motivated by the excitement of the STEM fields themselves, not by relevance.

This phenomenon was also happily and amply apparent in the presentations of each of the remarkable young women who participated in the Summit panels --each of whom recounted stories of being turned on by the science itself. An overemphasis on relevance rather

than substance could actually marginalize (as well as turn off) many young women and not prepare them technically or intellectually to become the curiosity/wonder-driven scientists whose fundamental research is critical for our nation’s secure future. This leads to my second comment.

2. One of the most critical ways to get girls and women engaged in math/science/technology is to provide positive and substantial “hands-on” experiences with the science itself. Ideally, this would be through the schools. But also critical experience can be gotten from after school and extra school activities designed by organizations like the Girl Scouts, the YWCA, the Expanding Your Horizons conferences, science museums, local colleges and universities, community centers and at summer camps promoting science experiences for young women, etc... Well designed internships at local industries and government agencies can also provide important engaging experiences.

3. Intertwined with the importance of positive hands-on experiences is the critical importance of role models to provide positive examples of women who enjoy and are successful in a wide variety of math/science/technology fields and fields that utilize skills in these disciplines. Role models can, and should, reflect a wide variety of life styles and come from a wide variety of cultural, ethnic and socio-economic backgrounds.

4. Ancillary to positive experiences and role models is the promotion of positive images and realistic information about math/science/technology fields and the educational background needed to enter and succeed in these fields.

5. Effective mentors are critical to ones’ success in math/science/technology areas as they are in any endeavor. Role models may be effective mentors, but effective mentors abound everywhere. They can be parents, teachers, counselors, coaches, troop leaders, friends, etc... Mentors’ roles are

manifold: to care, to provide guidance, information and support, to help provide entrée into the field.

6. Well-trained teachers and a stimulating up-to-date curriculum are really essential. Many teachers in the primary grades have little or no formal background in the STEM areas. They may not even particularly like or appreciate these areas themselves. In the upper grades, science and math teachers often are not up-to-date on the latest exciting advances and directions in these fields. Computer science and computational thinking, so critical for our world today, is essentially absent from the K-12 curriculum. Nationwide summer training workshops, reminiscent of the NSF programs in post-Sputnik years, are needed both a) to train specialists who can work together with primary and middle school teachers and b) to serve as continuing education programs for high school STEM/CS/IT teachers.

7. In collecting and relating information, it is important not to homogenize, rather to be mindful of the critical role culture, micro-culture and counter-culture play in determining the successful participation of girls and women in STEM fields.

8. Successful programs must be sustained and we have to support and build on model programs that work. Having worked in this area for over 35 years, I have continually seen successful programs peter out for lack of sustained support (seed funding is not the answer) and be continually re-invented. Many programs developed in the 1970’s to increase the participation of girls and women in mathematics-based fields are as relevant today as they were then. These programs emphasize(d) positive hands-on experiences in STEM fields, role models, providing information about the relevance of study in these areas (in particular

mathematics) to future careers, effective access into courses leading to advanced study, etc.... Attached, please find information about Expanding Your Horizons (EYH) in Science and Mathematics, a program that has served over 675,000 girls across the country (and now internationally) since inception in 1976. EYH embodies many of the features outlined above and can serve as a model for other programs. Also see our Web site: www.expandingyourhorizons.org

9. In short, there is no magic bullet. What is called for is a comprehensive sustained and common sense effort that includes, at minimum, at every stage of the educational ladder, well-trained teachers and programs that combine:

- **Active Recruitment** (including broadening images)
- **Effective Access** (into a substantive and stimulating curriculum)
- **Professional Support** (including all those good things such as role models, mentoring and networking)

Looking for a cool free poster?

Check out the Women at the Carnegie Mellon University School of Computer Science website at:

women.cs.cmu.edu

Click: **What**

Then: **Outreach**

Then click on:

Exciting World of Computer Science Poster

And, download this free poster showing application areas for people with degrees in Computer Science.



Why no boys? Are they falling behind?

by Teri Perl

When the Network was originally established over 30 years ago, the mission stated that the target population for EYH conferences would be young women because many girls were not taking math classes in high school when offered as an elective. Contrary to popular belief, it was never the case that girls performed significantly poorer than boys in high school math and science classes. In my doctoral dissertation (1980), I examined a large database generated by the federally funded National Longitudinal Study of Mathematics Abilities (NLSMA) which looked at the “new math” movement in the 1960’s. The study followed both boys and girls through secondary school. The NLSMA databank included many attitude and achievement variables. In the 60’s and 70’s after a year each of algebra and geometry, math at the high school level became an elective. Some college-bound students continued to take math classes, but many did not. The NLSMA data provided information on students


who did and did not elect to take these upper division math classes.

A complex data analysis, that included a huge range of variables, showed that for girls and boys of comparable ability and achievement, the major variable that explained gender differences in electing optional math classes was “perception of usefulness”. Girls, few who aspired to become doctors or scientists, saw no reason to jeopardize their grade point average by taking demanding courses that were not required. At that time, only a few young women arrived at college prepared to enter higher level math classes, therefore many did not have the background to prepare them for a wide range of careers. Based on data such as this, the mission of EYH was to encourage girls to take all the math and science classes they could in high school in order to maximize their career options.

Over the years, math courses that were formally optional have become standard prerequisites for all college-bound students. Even with this requirement, a large disparity still exists in the numbers of men and women employed in STEM careers (other than medicine), thus the EYH mission has broadened to emphasize STEM career options. Conferences now introduce young girls to women who enjoy exciting and rewarding STEM careers. At each conference, participants interact with a group of talented and diverse professionals, learn what math and science courses helped them in their careers, engage in hands-on activities related to a variety of careers, and learn something about the personal lives of the female role models. All of these experiences help students gain an understanding of what career options are open to them.



Go to: women.cs.cmu.edu/What/Outreach



"My interest in Environmental Engineering came from attending an EYH as an 8th grader. I was able to take the classes I needed in high school to enter a quality engineering program."

"Participating in EYH conferences helped clarify my own career goals and was an experience that shaped the engineer and woman I am today."

"I fell in love with the topic of the speaker which was underwater science and deep sea biology...I went to college to be a marine biologist in part because of her speech."

Motivating Young Women in Science & Mathematics

expanding your
horizons network

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