

Give Girls a Chance: Building a Bridge to Science and Technology

by Roberta Furger

For thirteen-year-old Stephany, a young Latina from East Oakland, California, seventh grade will always be remembered as a year of "firsts."

It was the first time she built an AM/FM radio or wired a circuit board, the first time she visited the city's preeminent science center, and the first time she was able to explore her love for science in an all-girl setting.

Stephany, a friendly, enthusiastic eighth grader at Frick Middle School, is part of a citywide effort to provide middle and high school girls with hands-on experiences in science and technology. She's one of nearly 200 girls participating in [Techbridge](#) [1], an innovative program born of a partnership between [Oakland Public Schools](#) [2], two area universities, and [Chabot Space and Science Center](#) [3], the city's state-of-the-art science and technology education facility. It's one of more than one-hundred programs funded by the [National Science Foundation](#) [4] and designed to promote gender equity in science, engineering, and mathematics.

Linda Kekelis, Techbridge project director, describes the goal of the program: "With Techbridge, I wanted girls to see the possibilities that technology has to offer and to feel that those possibilities were within their reach." The girls benefit tremendously from these opportunities, says Kekelis, adding that the high-tech industry also benefits from the ideas and enthusiasm that Techbridge girls bring with them.

"You Have Been Selected"

In the fall of 2000, word spread throughout nine middle and high schools in Oakland: A new program was starting just for girls. Led by Oakland public school teachers, the programs would feature hands-on science and technology activities, field trips, role models, and more. Some groups would meet once a week during lunch or after school. At one school, Techbridge became an elective class, with the girls meeting every morning for an hour

before the first bell rang. At Frick Middle School, science teachers Ron Bremond and Judy McGinty had interested girls fill out an application form before being admitted to the program. Other schools sent letters home to parents explaining the program or handed out invitations to girls they thought would benefit from the camaraderie and hands-on activities. In each case, says Kekelis, the goal was to make the girls feel special and to make participating in Techbridge a highly sought-after opportunity.

For Stephany and many of her Techbridge classmates, the girls-only focus immediately made the after-school club attractive. "This was the first club just for girls," explains Patricia, a quiet African American girl who at times seemed uninterested in her regular classes, but excelled at many of the Techbridge activities.

"Patricia took to the circuit board activity like a duck to water," says McGinty, smiling. The activity was led by Mills College computer science professor and Techbridge principal investigator [Ellen Spertus](#) [5], who worked with the girls for three weeks on the project. "Ellen was really impressed with Patricia," adds McGinty. "She stuck with the activity, even though it was really difficult for all of the girls -- for all of us," she adds quickly, including herself.

A fleeting smile is all Patricia offers to indicate her sense of accomplishment and satisfaction at completing the difficult project. When asked how she felt, she says simply, "Like I'd done a good job."

An Antidote for Peer Pressure

In its 2000 report, *Tech-Savvy: Educating Girls in the New Computer Age*, the American Association of University Women Educational Foundation observed that remarkably little has changed since the mid-1980s in girls' attitudes about and interaction with computers and related technology. The authors write, "We face a classroom situation that in many ways seems stuck in time, even as the technology itself races ahead. ... Girls who behave aggressively in computer-rich settings risk becoming unpopular with boys and girls alike. In this context, a passive response often seems the safest and most rational one."

The supportive, encouraging nature of the Techbridge program serves as a much-needed antidote to the pressure many adolescent girls feel to "be

cool," which can often mean anything but excelling at science and technology. Techbridge gatherings, says teachers, become a haven of sorts, where girls can explore their interests -- or develop new ones -- without worrying about being ridiculed or rushed.

"Techbridge girls are more interested, more motivated, and more willing to stick to long-term projects," says eighth-grade science teacher Dan Fleming, who heads up the Techbridge club at John Swett Elementary School. The reason: In Techbridge, girls are in control of their own learning. They decide what activities to pursue and what topics to explore. And without the pressure of a mixed-gender environment, girls are less worried about conforming to a certain image or being teased when they struggle with an activity or concept.

Among their many activities, the Techbridge girls at John Swett wrote and produced an educational video on the phases of the moon, launched a campaign to educate the community about the harmful effects of motor oil and lawn fertilizer runoff seeping into San Francisco Bay, and studied the effect of ultraviolet light on plant growth.

Several blocks away at Bret Harte Middle School, Techbridge girls worked with Mills College graduate student Jeri Countryman to design and create their own video games using Stagecast Creator, a point-and-click programming tool. The project gave girls a unique opportunity to fashion a new type of game play -- one that focused on "beating the clock" rather than pulverizing an opponent. It also provided the thirteen- and fourteen-year-olds with a firsthand look at the creative and technical sides of software development.

Throughout the city, girls explored a wide range of activities, supplemented with field trips, visits from women in science and high-tech careers, and participation in weekend and summer programs at the Chabot Space and Science Center, often offered for free or reduced prices. In the summer between seventh and eighth grade, Stephany spent two weeks at the Space and Science Center, taking part in a creek restoration project and learning about video production -- opportunities she knows wouldn't have been possible without Techbridge. "We went around Chabot filming people," recalls Stephany. "I was a reporter," she adds, laughing as she recalls the "bloopers" her team added to the end of their broadcast.

Changing the Face of Science

For many girls, Techbridge has provided a first-ever opportunity for hands-on exploration of science and technology. But the long-term impact of the program goes beyond a single project or activity.

With the help of women in science and technology, these girls began to develop a new vision of what it means to be a scientist. They began to think beyond the stereotypical male in a white lab coat and associate science with real women, with real lives. The reflection of one eighth grader after a visit by NASA scientist [Dr. Aprille Ericsson-Jackson](#) [6], an African American, says it all: "What I really liked about Dr. Ericsson-Jackson was that she seemed so real. Not like some brainiac with no people skills."

Through their Techbridge experiences, the girls are also reshaping their views of themselves and their peers. In conversation after conversation, teachers point to a change in the Techbridge students. They are growing more self-confident, beginning to speak up in class, and assuming leadership roles in their school.

"It's like we planted a seed when we invited girls to participate in Techbridge," says Frick science teacher McGinty. "Suddenly they believed they had what it took to be a leader."

If Techbridge teachers planted the seed, then the girls themselves nurtured it and helped it to grow. And they created a safe, nurturing place to celebrate their newfound selves. Every week before the Frick girls begin a new activity, they gather in a circle to check in and talk about their week. McGinty recalls one memorable Friday afternoon when the talk turned to their recently distributed report cards.

"They started talking about grades and they were so proud of one another. Every time one of the girls shared that she got an 'A,' the other girls would cheer and say, 'Hey, that's cool,'" says McGinty. "They even helped each other figure out how they could get a better grade from certain teachers," she adds, "sharing tips like, 'Oh, with him you just need to make sure you turn in all of your homework.'"

For some, the conversation might not seem exceptional, but McGinty knew she was witnessing something very profound -- perhaps even life-changing. "It's not cool to be a girl and smart in this school. But it is in Techbridge."

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Links:[1] <http://www.chabotspace.org/visit/programs/techbridge.asp>[2]

<http://webportal.ousd.k12.ca.us/index.aspx>[3]

<http://www.chabotspace.org/>[4] <http://www.nsf.gov>[5]

<http://www.mills.edu/academics/faculty/cs/spertus/spertus.php>[6]

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