

Girls Rock at UCSC's GIE

by Diane Siri, Ed.D.

Even at UCSC's Baskin School of Engineering, it is not every professional symposium that opens with an address by the university's chancellor or its dean of computer technology. The GIE Program, which ran from July 5-20, included not only those but discussions by a Stanford PhD candidate in materials engineering, a geotechnical engineer who designs and constructs soil improvement systems, a specialist in biomedical devices, and a civil engineer who designs and reviews all of the construction projects for the city of Watsonville.

What made the program particularly noteworthy was that GIE stands for Girls in Engineering, and the audience did not consist of graduate engineering students but of sixth, seventh and eighth grade girls.

Now in its second year, the Girls in Engineering program is co-sponsored by the UC Santa Cruz Educational Partnership Center, UCSC Baskin School of Engineering, and Santa Cruz County Office of Education. The program is designed to encourage young women to consider careers in science, technology, engineering and math.

"Peggy Downes Baskin had the initial idea as she wanted to see more girls entering the Baskin School of Engineering," said Carrol Moran, Executive Director of the UC Santa Cruz Educational Partnership Center.

Baskin approached both the author of this article in my former office as County Superintendent of Schools and the UCSC chancellor. The Educational Partnership Center was invited to administer the program. The idea would be not only to encourage and prepare students for college but to recruit more businesses to enter the partnership and consider the workforce needs in our region.

More than Two Dozen Girls from North to South

The 30 girls from Rolling Hills, Lakeview, Scotts Valley, Cesar Chavez, San Juan, Aptos Junior High, New Brighton, and North Monterey Middle schools who attended GIE this year were not initially sure what to expect.

Darneé from Rolling Hills Middle

School said she had expected "a boring summer school project," but agreed to go at the urging of her parents. However, her reaction at the conclusion of the program was markedly different.

"When I got there, it wasn't at all what I thought it would be. No words can describe how I felt about going," she wrote in her summary. "It's one of the most wonderful things you will do in your life."

After the opening day presentations by women academics and engineers representing various disciplines, the girls immediately launched into some hands-on activities.

During the second day, Gretchen from New Brighton and Maria from North Monterey County were impressed to find that graphing calcu-

lators could be used to spell out "GIE ROCKS" on the screen. But more importantly, they also learned that the calculator could visually display the solution to the equation " $y < 4x + 5$."

Even though I taught high school mathematics years ago, I was amazed at what these middle school girls were doing after just two days. Before the end of the program, the girls even programmed the calculators to solve quadratic equations.

Robot Building a Hit

Judging from the girls' critiques, it was

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the robots that were the consistent hit.

Brian Laschkewitsch from Learn to Discover and Michael Salazar led the girls in building and programming robots. The girls made their own small versions of R2D2 and then programmed them to execute turns and follow other commands.

After a bit of tutelage plus a certain amount of trial and error, Marilu and her partner were able to program their little machine to move in a square pattern, then stop when it heard a sound.

One of the founding precepts of the GIE program was that the girls should have fun. A good engineer is one who enjoys tinkering with machinery, and the girls were presented with plenty of opportunity to do just that.

During their two weeks at GIE, the girls competed to see who could build the tallest tower from a single sheet of paper. They built bridges out of card stock, scissors, and tape, then tested their structures to see whose effort could

bear the most weight.

They used straws, paper and wheels to build vehicles and then competed to see which one would roll the farthest when placed in front of a fan. One morning the girls designed foil boats. The winning design was the one that was able to hold the greatest number of pennies.

Talking to the Pros

The final week the girls took tours of the campus and engineering labs, and visited The Tech Museum of Innovation in San Jose.

Over 20 scientists and engineers met with the girls to talk about new research on circuits, robotics, bridge structure, nanotechnology and science technology with the intent of engaging the middle school students in careers open to them.

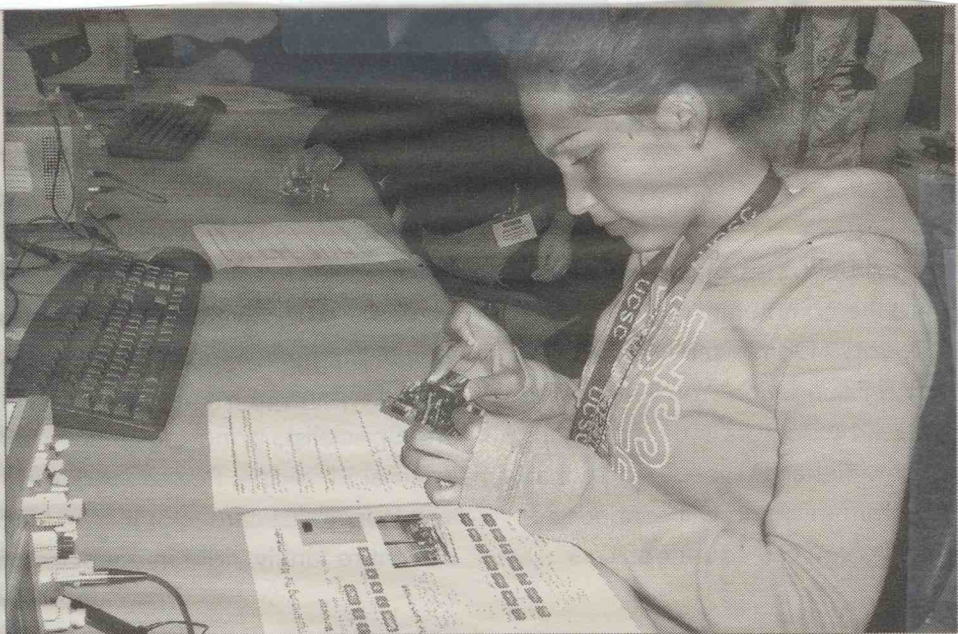
Participant Daniela summed it up for many of the girls: "It's a wonderful experience, fun and exciting, while still being educational. Each day is a new thing which makes getting up early in the morning worthwhile."

Vivian Moutafian, Grace Patino and Carol Kaneko are three Watsonville High School math teachers who helped found the new program last year. Moutafian said that the girls came away with a good understanding that not only is engineering a field that is open to them, but one where their participation is actively being sought.

"I think that the entire field of engineering will be strengthened as more and more women become engineers," she said. "I believe that women bring a different perspective to problem-solving than men. As both of those perspectives get represented, the field of engineering stands only to gain."

Parents, too, noted a change in their daughters. One mother said of her daughter Krystal: "When I tried to talk to my daughter about college last year she wasn't really interested; now she is researching engineering majors at colleges on her own and talks about how she only has four years in high school to get prepared for college," she added. "Meeting all the women engineers has really motivated her and she is really considering going into engineering."

Another of the girls put it more simply: "Anyone with [even] a slight interest in engineering will love GIE." ■



Above: Melissa learns how to program a nano-mouse.

Right: Gabriela and Krystal are two of 30 girls who attended GIE.

