

Being good for something

Undergrads spend summer teaching

In her classroom, Sherri Geng '09 has put up a quote from Henry David Thoreau: "Aim above morality. Be not simply good, be good for something."

Being good for something and thereby becoming an agent of change is an idea she wants to get across to her students. "If you're truly invested in what you're doing," she says, "you can have an impact on the world."

Geng is one of several Harvard students teaching in Summerbridge, a program of the San Francisco-based Breakthrough Collaborative. She has been spending her days at the Kennedy-Longfellow School in East Cambridge teaching literature to eighth-graders and leading another group of youngsters in a community service project.

The project involves clearing the banks of the Charles River of non-native invasive plants such as purple loosestrife and mile-a-minute weed. Geng has found that the project is an effective way of connecting classroom study with service to the community. It is also a good way of showing youngsters that they can change the world.

"One of the students said that in the beginning she didn't think that we could make a difference, but now when she drives by the river she can see the change we've made."

The experience has had an impact on Geng as well. Before working for Summerbridge, her goal was to become a doctor. She hasn't given up that dream, but the excitement of molding young minds is not something she is willing to give up once the summer is over.

"I've learned a lot about myself and about connecting with students. I know that at some point in my life I'm going to teach."

Sherri, as a rising 11th grader, worked at Walter Reed Army Institute of Research summer internships. When she arrived, she was astounded by the amount of data from EEG (electroencephalograph) experiments that her neuroscientist mentor had to wade through.

EEG machines monitor electrical activity in a patient's brain and spew out yard after yard of strip-chart recordings. A doctor has to scrutinize multiple wiggly lines to discern if any abnormal brain activity is happening or has occurred, like a seizure, and if so, how severe it was and what part of the brain was affected. The analyses can take precious minutes — time the patient can ill afford. Later, the strip charts often get eyeballed again, as researchers hunt for telltale indications of a looming seizure or stroke.

Sherri Geng found a way to make analyzing massive amounts of data more efficient and effective. So she began developing an algorithm, based on statistical techniques, for "monitoring the monitor". The program analyzes the electrical signals flowing to the strip-chart pens. When signs of a seizure appear, the system automatically reports it; with this information, scientists can begin to deduce the signs indicating an impending seizure.

By the end of Sherri's 2nd summer, her program was performing well, and she began preparing a patent application. It asserts that the algorithm could be expanded to apply to other wave patterns, including electrocardiograms.

For this work, she was awarded the "Junior Nobel Prize", one of 40 finalists in the Intel Science Talent Search, in 2005, her senior year of high school.

It is rewarding to see her teaching and carrying out the environmental cleanup efforts with her students.