Rebecca Berman and five other University of Rochester doctoral candidates dipped into their "optics suitcase" last summer to demonstrate the transformative power of sunlight to 70 students gathered outside a primary school in Chirapatre, Ghana.

"First, a lens was used to concentrate sunlight onto a piece of paper, which excited the children as they saw smoke rising from the paper where the light burned a hole," related Berman, an optics student who visited Ghana as part of the IGERT (Integrative Graduate Education and Research Traineeship) program. "Students laughed as they watched a mini car race around on the dusty ground, stopping whenever it entered a shadow."

It was a memorable "hands-on" learning experience for the students. And it was a memorable experience for Berman as well.

So much so, she willingly volunteered to help lead another group of Rochester IGERT trainees to Ghana this summer. The itinerary included exchanges with professors and graduate students there and teaching Ghanaian high school students how to build solar-powered cell phone chargers.

The IGERT program, funded by the National Science Foundation, is designed to train future global leaders in science and engineering. The Rochester IGERT program, one of 20 chosen for funding in 2010, focuses on solar energy. The $3.2 million grant is for five years. Each year, a new cohort of six PhD students in science and engineering are accepted for the program, which provides a $30,000-a-year stipend.

Of the 24 students selected so far, two-thirds are from the Hajim School. Matthew Yates, chair of chemical engineering, is the director; Vicki Heberling, administrative assistant for the Energy Research Initiative, is program coordinator.

Berman learned about the program from her advisor, Professor Duncan Moore, who suggested that IGERT would be a "good fit," given Berman's research interest in photovoltaics. "I jumped at the chance," Berman said. She enjoyed studying abroad as an undergraduate and relished the opportunities for outreach and teaching. "IGERT has all of that. I wouldn't have found that in a regular graduate program."

Moreover, IGERT's emphasis on additional training in entrepreneurship allowed her to earn a master of science degree in technical entrepreneurship and management through the University of Rochester's TEAM program, in addition to a master's in optics.

Berman says she is struck by the impact she and her IGERT teammates have had on the Ghanaians they meet.

"Some students (at Chirapatre) even approached us after class, enthusiastically expressing that they wanted to learn more and that they'd return with us to the United States if we could be their teachers."

(A final cohort of six IGERT trainees will be selected next spring. For more information about the program, go to www.rochester.edu/igt.)