



meet a member

Laura Sullivan Empowers Students To Make a Difference

Lynne Robinson

Laura L. Sullivan, Professor of Mechanical Engineering, Kettering University, has learned over the years as an Engineers Without Borders (EWB) advisor that having the best of intentions can actually be a hindrance in rendering effective humanitarian aid.

“It’s an adjustment every time to let go of my impulse to want to save people from their lives, rather than help them to live their lives,” she said. “The culture of poverty is confounding and confusing, and until I began to understand why people who live

in poverty are unable to rise above their conditions, I found the work of humanitarian aid very frustrating.”

“I have come to realize that being productive takes a willingness to completely let go of my plans, solutions, and ideas,” she continued. “This means turning off my voice and tuning in to the voices of those I hope to serve. And, I have to accept that, because it takes a long time to make an impact, I may never see the outcome.”

Sullivan began the EWB chapter at Kettering in 2006, after “noticing a dramatic increase in the number of students who expressed interest in the Peace Corps and other international humanitarian aid organizations.” Their first project actually took place close to home in the inner city of Flint, Michigan, where they designed and installed playground structures for

21 elementary schools, after raising enough money to buy all the materials. “This was a great first experience. I learned that there really isn’t anything that young people can’t do when they set their mind to making a difference,” said Sullivan. The chapter also started an initiative to build wheelchair ramps for Flint community members in need, installing one or two every year.

Within a year of establishing EWB at Kettering, Sullivan and her students started working with the village of Estanque de Leon in northern Mexico to develop a potable water supply in the drought-ridden area. “Our team investigated methods for collecting, filtering, and purifying surface water that ponded in a man-made reservoir,” she said. “Ultimately, we installed biosand filters in more than 50 homes and taught the villagers how to sterilize viruses in the water using ultraviolet radiation from the sun.”

When the drug wars that ravaged the region made it unsafe to continue their work with Estanque de Leon, Sullivan’s students began developing a water purification project with the people of Vukuzenzele, a village in the KwaZulu Natal province of South Africa. While water sources are plentiful in Vukuzenzele, poor sanitation has contaminated much of the water supply. To address this, the Kettering team helped install a centralized filtering and rain catchment system in the village school with mixed results, said Sullivan. “We learned an important lesson about the sustainability of systems that are not located in homes,” she explained. “There are miles separating the residents of Vukuzenzele and the school. As a result, the systems we installed were not maintained during school breaks. We turned to a solution more sustainable in this part of the world: Rainwater catchment.”

The Kettering EWB chapter is building on that experience to continue its efforts with Vukuzenzele, while also starting a new potable water project with a village



Mario Flores, the Kettering student who helped Laura Sullivan start the university’s EWB chapter, with children of Estanque de Leon at the village’s reservoir.



Kettering students work with Vukuzenzele community members to construct rainwater collection systems.

in Haiti. With the growth in the scope and measurable value of the program in educating future engineers, Robert McMahan, Kettering President, recently designated laboratory space on campus for the EWB chapter.

Outside of EWB, Sullivan is in the nascent stages of developing an initiative to foster interactions between a community college serving the poverty-stricken Pine Ridge Indian Reservation in South Dakota and undergraduate engineering students. “It’s my hope to build alliances among engineering departments across the U.S. with the technical programs at the Oglala Lakota College, as a pathway to increasing the number of Native Americans who are enrolled in science and engineering programs nationwide,” she said.

Project by project, the Kettering group has made the tiniest of dents in addressing world poverty. The true impact of the work, said Sullivan, is really on the lives of the students who have decided to take on these challenges.

“The most gratifying aspect of my work is to see transformations in the students as they spend more time with people in need,” she said. “I think that I witness, externally, the changes that occur within me. I see a wider perspective grow in them and a diminishing tendency to judge others. I see an urgency to understand the difference between governments that serve citizens and governments that are corrupt. I see joy on their faces as they re-tell stories of their adventures in places without Facebook and fast food—places that are dealing with AIDS, contaminated water, and life without electrical power.”

“And, places where people smile and appreciate life more than we ever do.”



Laura Sullivan (center, in pink), along with the Kettering EWB team and the nuns who hosted them during their work in Vukuzenzele.



The Kettering EWB chapter's first project was designing and building 21 playground structures in Flint, Michigan.

member news

TMS Members Honored by AAES

TMS members receive two of the six high-level awards that the American Association of Engineering Societies (AAES) will be conferring in April.

Julia Weertman, Walter P. Murphy Professor Emerita, Northwestern University, will be presented with the John Fritz Medal for “her exceptional contributions to our understanding of failure in materials and for inspiring generations of young women to pursue careers in the science and engineering disciplines.”

Donald Sadoway, John F. Elliott Professor of Materials Chemistry,

Massachusetts Institute of Technology, will receive the Norm Augustine Award for Outstanding Achievement in Engineering Communications. He is being recognized for “his effective and engaging use of traditional and new media in educating science and engineering students near and far and in communicating to the general public the potential and promise of materials science and engineering in solving global energy challenges.”

TMS nominated Sadoway and Weertman for their awards to AAES via the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME).



Julia Weertman



Donald Sadoway

Ainissa G. Ramirez Publishes *Newton's Football*

The reviews are in for *Newton's Football: The Science Behind America's Game*, a collaboration between Ainissa G. Ramirez, materials scientist and science author, and Allen St. John, a columnist for *Forbes.com*. Released in November 2013 by Random House, the book, in the authors's words, seeks “the common

ground between Issac Newton and Vince Lombardi, between Bill Walsh and Erwin Schrodinger.” Noted the *Los Angeles Times* in its December 19 review, “*Newton's Football* takes a Big Think approach, expanding the enjoyment of football like 3-D glasses enhance your perception of a movie.”