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Dr. Eric Ledet, RPI, Biomedical Engineering Professor

Rensselaer Polytechnic Institute and the Center for Disability Services are no strangers to inspiration and innovation, especially in their highly successful collaboration in which the best and brightest among tomorrow’s innovators are applying technology to transform the lives of people in Tech Valley. “The Center is well known as a place where people get better at life, and thanks to RPI’s engineering students, they have been doing just that,” says Alan Krafchin, President and CEO of the Center for Disability Services.

Since 2007, RPI’s School of Engineering students enrolled in its senior-level Biomedical Engineering Capstone Design Course have participated in a collaboration in which students develop solutions to problems presented by physicians, dentists and therapists from the Center for Disability Services to improve the health, well-being and independence of its consumers. Products with promising commercial marketability developed in the Biomedical Engineering Course then move to a development phase, where faculty and students from RPI’s O.T. Swanson Multidisciplinary Design Laboratory, directed by Dr. Mark Steiner, lead students through fabrication and evaluation of actual working prototypes.

Products developed through these courses are not mere gadgets; they are practical engineering solutions with real-world applications addressing unmet medical and physical needs of individuals in Tech Valley who have some disability. Both the Center and RPI expect that some of these prototypes will result in commercial products with general marketability, thus contributing to economic development in our region.

The Center keeps elite company — the Design Lab also works closely with sponsors like Boeing, GE, IBM, and Momentive Performance Materials. Dr. Steiner explains, “Our students work in a similar fashion with industry sponsors who provide significant grants. We approach the design in a more detailed and in-depth fashion, bring it to practice, and produce the prototypes. [Our students] are involved in projects involving software engineering, advanced computer systems, robotics, wind turbines, business processes, logistics, and materials development.”

Dr. Steiner oversees about 25 projects per semester, and over two-thirds of engineering students that graduate from RPI participate in the Lab program.

Marcia Pucci, Physical Therapist at the Center for Disability Services, and Dr. Eric Ledet, Biomedical Engineering Professor at RPI, are the champions of the collaboration. They were inspired to address real life challenges facing disabled individuals and to challenge Center providers to think beyond current delivery methods. Through their discussions, the collaboration was born, and now over 100 engineering students have touched the lives of, and had their lives touched by, consumers at the Center.

“...The relationship between the Center for Disability Services and RPI has allowed our students to gain a real-world meaningful experience through this special learning opportunity. Our students get a real sense of satisfaction by developing new technology which enables the Center’s clients to lead more functional and productive lives. It is a fruitful relationship on both sides,” says Dr. Ledet.

Prototypes developed by RPI’s engineering students to meet challenges presented by the Center include a non-clogging tracheotomy device for children, a less cumbersome home oxygen delivery system, a portable feeding pump to allow toddlers mobility, and an apparatus mitigating poor oral hygiene.

The first prototype for the oral hygiene device has gone through four phases and is now in the Design Lab. The product was recently demonstrated on three of the Center’s consumers, whose smiles and excitement were proof enough of the significant impact RPI’s students and faculty are making on the lives of individuals in Tech Valley.

RPI’s engineering students are not only gaining valuable real world experience that will help propel them into their careers — they are also learning the immeasurable value of helping those who are often marginalized. As Krafchin explains, “These may not be the large public health kinds of issues that attract a lot of research dollars, but for those who need it, [the innovations] mean everything.”

The collaboration between RPI and the Center combats the notion that social services agencies sometimes take from, rather than give to, the community. Inspired by the solutions already developed by RPI faculty and students, Center providers continue to identify numerous needs demanding engineering solutions. And RPI faculty, and their work with Center consumers, have impressed upon students that, after leaving RPI, a valid and valuable outlet for their talents may be in improving the lives of people with disabilities.

Donna Lamkin, Chief Program Officer for the Center for Disability Services emphasizes, “This isn’t just a design or a project. The students can see and feel the people they’re helping. They have the opportunity to network with professionals. The project is making a positive impact on Tech Valley’s innovation economy and the people who live here.” This collaboration is truly leadership development and sustainable innovation at its best.

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