

Researcher launches successful tech start-up to help the blind

April 17 2014, by Jon Reidel



Engineers and faculty members Mike Coleman, Michael Rosen and alumnus Joshua Coffee (L-R) founded E.A.S.Y, LLC, in 2012 with the help of funding from the National Federation of the Blind and from the UVM Ventures Innovation Fund. Credit: Sally McCay

Michael Rosen has produced research related to people with disabilities for the past four decades, the last ten as an associate professor in the School of Engineering. It wasn't until he co-founded Engineering to

Assist and Support You (E.A.S.Y), LLC, with a colleague and a former student, however, that he felt like his research truly impacted lives.

"This company represents the first time that something I have been involved with as an academic engineer will end up in use by people who actually need it," says Rosen. "My research has resulted in refereed papers, conference presentations, and about eight patents, none of which led to things actually being in the hands of people with disabilities. It's a kind of closure towards the end of my career, but also represents a new beginning."

Since the launch of E.A.S.Y in 2012, Rosen, Michael Coleman, a senior lecturer in the School of Engineering, and SoE alumnus Joshua Coffee '11 have developed highly innovative tactile graphics products that are expected to dramatically improve the way the blind and visually impaired (BVI) learn and communicate. BVI engineers, scientists, mathematicians, programmers and artists are expected to be able to draw, edit, digitize, teach, distribute and reproduce their creations, while students can use E.A.S.Y products to learn geometry concepts, develop skills in science, [engineering design](#), creative art and other subjects.

The inTACT Eraser is expected to fundamentally change the way students approach schoolwork by giving them the ability—for the very first time—to change, correct and update tactile graphics as they sketch. This handheld device allows users to flatten raised lines as they drawn on the inTACT Sketchpad and eliminate tactile lines to the touch, similar to erasing pencil lines by a sighted user. The sketchpad, recently put into production by Progressive Plastics in Williamstown, Vt., allows users to make freehand tactile drawings by producing easy-to-feel raised lines by with a stylus on a thin plastic drawing sheet.

Pencil and paper for the blind

"There are a lot of high tech solutions that people are trying to come up with this in the blindness realm, but they're almost irrelevant to our idea, which is that we need pencil and paper for [blind people](#)," says Coleman, who is an artist and sees applications beyond the blind community.

"Very little attention has been paid to meeting the needs of blind consumers because it's not a market-driven business, so people aren't necessarily driven by stiff competition to develop a really good product. You are only driven by your own quality standards and desire to improve the ways that people who are blind can learn and contribute. In the world of arts and crafts, various techniques are always of interest to artists like embossing raised-line images on various media—a lot of which has to be done in reverse, unlike with our sketchpad—and print making. I think it could generate a lot of revenue for keeping us alive to help people who are blind."



The inTACT Sketchpad allows blind and visually impaired users — for the very first time — to change, correct and update tactile graphics as they sketch. Credit:

Sally McCay

The inTACT Raised-line Printer will allow teachers and other users to print tactile drawings from computer files and share with others on the same plastic drawing sheets used in the sketchpad, making tactile drawing interactive for the first time. Another groundbreaking advance is a digitizing circuit board built into the base of the sketchpad, so drawings can be saved in standard digital graphics format and transferred to a computer.

"I would say that without the eraser, raised-line drawing has been more analogous to crayons or a pen," says Coffee, who is working with Pearson, producer of K-12 educational content, to create interactive tactile graphical exercises and graphics similar to existing K-12 school text books for the sighted. "A sighted student would never do their math in pen in seventh grade, so the eraser should give BVI kids the confidence to work without the fear of making a mistake that can't be corrected."

Raising standards

The idea for E.A.S.Y grew out of a project in "Senior Experience in Engineering Design" (SEED) capstone course taught by Rosen, based on a conversation with a blind mathematician in Baltimore, who emphasized the need for new learning products for the blind and put Rosen in touch with the National Federation of the Blind. Rosen, Coleman and Coffee regularly attend NFB's annual convention and state conventions to identify potential customers, which includes more than 250 million blind people worldwide and approximately 10 million people in the U.S. who have "low vision," in addition to the one million legally blind people in America.

"Part of the mission of the National Federation of the Blind is to make the standards of what blind people can expect rise," says Rosen. "We know that as long as we stay in touch we will never design something that no one will use, and that is the most important thing for engineers who do product design. You need to understand your user."

Initial capital was secured from NFB, which led to UVM's Office of Technology Commercialization providing a low interest loan from the UVM Ventures Innovation Fund, and residency at the Vermont center for Emerging Technologies. Other funding followed from the National Institutes of Health in the form of a Phase-I small business grant with the potential for a much larger Phase-II grant.

"We often hear things like, 'I could have been an architect', or 'where were you when I was in high school,' and that's when we understand the significance of what we're trying to accomplish," says Coffee.

Provided by University of Vermont

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