

## **Eric and Amanda's story drives a research team**

Fort Hays State University is about people, passion, and dreams. I love discovering the unique stories of students, faculty and staff. Like me, each has a unique reason why our university fuels their energy to make a difference in the lives of others. Eric Deneault is one of those stories.

Eric is a typical, extraordinary Fort Hays State University professor. He not only knows his students by name, he knows their personal stories. And, like most of us at FHSU, Eric also has his own story, and part of that story is driving a current research project he and his students are building together – designing a speech-activated mechanical glove to help people with hand mobility challenges.

His story: In 2015 his wife, Amanda, at the age of 31, had a massive stroke induced by a vertebral artery injury. The brain damage caused by the stroke inhibits the communication of signals to her extremities on the right side of her body, affecting all her fine motor movement. This has been the main contributor to his motivation in developing an assistive mechanical glove that will help increase her hand strength and mobility, specifically targeting her opening, closing, and gripping functions.

Simply put, necessity and inspiration led Eric to combine his passion for teaching with his vision of creating a solution for his wife and many other victims of strokes and cerebrovascular accidents, who have minimal to no movement in their extremities.

From an academic standpoint, this project required collaboration, bringing students and faculty together to form a research team with backgrounds in engineering design, robotics, programming and art. Departments represented include Applied Technology, Art and Design, and Informatics.

“Our students and the faculty are working together utilizing both traditional technology like foundry work and blacksmithing and the newest of 3D printing and CNC operated equipment,” said Toby Flores, associate professor of sculpture. CNC is “Computer Numerical Control,” a kind of software that makes it possible to automate machine tools.

“For my sculpture students, this expands what it means to get a sculpture degree at FHSU,” Toby said. “I am very thankful for the opportunity to work with students and my new friends in Applied Technology.”

Deep learning comes from a position of overcoming challenges. The students and faculty involved in this research project have had to confront the design obstacles that come when researchers who have working hands try to understand the mechanics of having a hand that does not work.

FHSU student Liberty Tegethoff, a Newton freshman, said, “My favorite part of the class is that there were a lot of hardships and issues to overcome, but everyone's different ideas came together to create something that could potentially change someone's life.”

Comfort and functionality are essential to the project's success – the research team has to ensure that each and every small piece of the device is placed deliberately to maximize these features. In addition, the device must be easy to put on, like a glove, because Amanda has to be able to put it on with only her non-dominant hand.

Amanda, the inspiration for the project, said, “When my husband stated that his research class was going to be making a robotic glove for my hand that was affected by the stroke, I was kind of skeptical. However, I have been involved in some of the process, and I have to say that I am impressed with the enthusiasm the students have shown. This project is fascinating, and I am so excited to see it come to fruition.”

This is precisely why Fort Hays State is such a special place. Thank you, Eric and team, for your passion and purpose. You are why I start each day with enthusiasm and hope.