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DSHS STUDENTS "LEND A HAND" BY BUILDING PROSTHETIC DEVICES

Dripping Springs High School students have developed a reputation for exceptional community service and consistent success in engineering-related competitions. As freshmen last spring, a group of girls found a way to merge those two strengths in a unique way with an effort they call "Lend a Hand." Working with an international non-profit organization, this team of students is using 3-D printers to build mechanical hands that can be used by individuals with disabilities.

The group, which originally consisted of Gabrielle Avena, Natalie Chavez, Melissa Richardson, Sierra Stevens and Riordan Tiller – worked with engineering teacher Jad Jadeja to make the initial connection to the international non-profit organization e-NABLE.

Interestingly enough, when Mr. Jadeja first presented the idea as an engineering opportunity, he did not get an immediate response from these students. "When I turned the question around and explained that this project would directly help others, this prompted their interest," he explained. "Bringing in that human element grabbed their attention and appealed to their sense of service."

The e-NABLE community reaches all over the world to create 3D-printable, open-source prosthetics for those in need. Individuals from everywhere can help improve designs for hands or arms for those who were born missing fingers or who have lost them due to war, disease or natural disaster. Or, as is the case with the Dripping Springs students, they can use "kits" that provide a model of a mechanical hand and build it. This process also involves applying custom measurements – through a process called "scaling" – so that the device will correctly fit the individual who will benefit from it.

When the group formed last spring, they first had to complete a test run building a model called the “Raptor” hand. Once that process was successfully completed, the team received “badges” that indicated they are qualified to size, print, and assemble a hand.

This school year the team picked up a few new members – Royce Heflin and Anya Thomas – and prepared to build a hand for an actual client. The client, who is from Central Texas, found the DSHS students through the e-NABLE organization. His exact measurements were used to scale the model, then the team went to work on printing and assembling the pieces, which is an intricate and time-consuming process. The team expects to finish the device in the next few months and will present it to the recipient, at which time adjustments will be made if needed.

In 2018, the girls got creative to figure out how to fund the material that is needed for the assembly kits. They prepared a Student Leadership Grant through the Dripping Springs Education Foundation helped cover the cost of some materials for assembly kits. This year, the group applied for a second grant to cover 3D printer recycling for excess pieces.

On April 6, they were able to meet the recipient of the device they have built. Mike Larson from Cedar Park visited with the students and tried out the hand. The students measured the fit and noted various adjustments they will make.

“I was doing research on 3D printing and came across this and thought what a great idea to print something I could actually use,” said Larson. “But having high school students make it happen was the last thing I expected. I know these students are very busy and this project is beyond their other activities. The fact they decided to take this on is impressive. I am grateful for their time, effort, and perseverance.”

The personal motivation of the “Lend a Hand” members varies. Some have an interest in engineering and technology ... some wanted to learn to use a 3D printers ... some liked the social aspect of working together. All the team members were drawn to the community service element of the activity and are excited to give of their time for a bigger cause.

“Originally I wanted to be a programmer and that was how I got involved,” explained Sierra. “But once I started working on this I realized my interests were kind of shifting into the medical field ... now I want to be a surgeon. I also really like volunteering in this way; it’s a more active form of community service than other things I have done.”

When the group started their work, they were all freshmen. As they become upperclassmen, they hope to actively recruit younger members to “carry the torch.” Recently they set up displays at eighth-grade orientation activities and hope to identify incoming freshmen who want to be involved.

“For me this is a four-year commitment, said Gabrielle. “As we get better at this and learn more about the process, it should go faster. We would like to pass the torch to younger students so when we graduate this can continue.”