Newfield High students hoping to lend a 3-D helping hand

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Senior Kyle Wappaus, 17, left, demonstrates use of a 3-D-printed prosthetic hand by handing a soda bottle to classmate Joe Ponzio, 18, at Newfield High School in Selden Tuesday, June 21, 2016. (Credit: Barry Sloan)

Students from two Newfield High School science classes, with the help of a 3-D printer, will one day lend a helping hand — literally — to those in need.

They spent Tuesday morning at the Selden school demonstrating a prosthetic green hand made from the printer. The students plan to send the finished product to e-Nable, an organization that helps bring 3-D printed hands to people without full use of real ones.

The company will test the hand to determine if there are any problems, students and teachers said.

“It’s definitely a cool experience and helping people out,” said Joe Muller, 17 a senior, who wants to become a physician assistant. “The medical field is all about helping people out, so I know that’s definitely something that I want to do.”

As he adjusted the plastic prosthetic’s elastic bands, Muller said the process of assembling the hand with his classmates was stressful but ultimately rewarding.

Muller was one of about 35 Newfield High School students who contributed to the collaborative effort to create the 3-D-printed hand.

Students from the technology class printed the prosthetic hand’s parts in about 20 hours before sending the segments to the medical profession science class to assemble.

They used a printer the school has had for about two years. During that time, students and teachers worked on smaller objects but never constructed a hand until now.
Technology class teacher Katie Lewkowicz said she was inspired to start the project after finding out about high school students elsewhere who had incorporated 3-D printing into their studies.

Lewkowicz got permission from Newfield’s principal for students to use the school's 3-D printer to print a prosthetic hand.

This type of printing allows anyone to create objects out of materials such as plastic, based on a digital design, which can be downloaded for free from the web.

The design and materials are inserted into the printer, which creates the object by printing the materials layer by layer just as someone might build a multilayered sandwich.

It’s increasingly being used as a cheaper alternative in medicine, assisting families who cannot afford prosthetics built from material such as titanium.

Although the prosthetics are not as strong as titanium, the repairs and alterations of 3-D printed hands are less expensive, Lewkowicz said.

A professionally constructed hand could cost around $6,000 to $10,000, according to e-Nable, the company the school is working with to assist someone in need.

Newfield’s printer cost about $3,000, but the materials used to print the hand only cost around $60, Lewkowicz said. The school still has enough leftover material to print about 100 hands, she said.

The hand students showcased Tuesday was printed to help someone without fingers grip objects such as a bike’s handle bars. One student illustrated how the hand with constructed plastic fingers could grip a Diet Pepsi.

Lewkowicz said learning how to print the materials was easy for her and her students.

The other class that assembled the printed parts watched an extensive video explaining how to build the hand. It took the students two to three hours.

“I think this was a big eye-opening experience for the kids,” said medical profession science teacher Keith Hassett. “We can be custom fitting people for braces and prosthetics in a matter of hours and days instead of months.”