

## High School Students Use 3D Printing to Design for Local Businesses

*"We've been giving away our curriculum, and the projects which incorporate the Dimension 3D Printer, because we believe in the common goal of using 21st century technology in the classroom to best prepare our students for success in the field of engineering."*

— Mike Bruggeman, Instructor, Chico High School

Originally intended to keep his instructional workshop armed with the latest technologies, IT teacher Mike Bruggeman's Dimension 3D Printer now also serves as a design tool for local businesses. But he doesn't operate the printer himself. It's his 16- to 18-year old high school students.

This arrangement has been such a success for his students and local businesses that Bruggeman and a fellow Chico High School instructor have hosted informational sessions for teachers where they share the value 3D printing has added to their curriculum. "We've been giving away our curriculum, and the projects which incorporate the Dimension 3D Printer, because we believe in using 21st century technology in the classroom to best prepare students for success in the field of engineering," said Bruggeman. "With the addition of the Dimension printer and partnerships with local business, I think we're definitely on the right track."

### Kids Create For Kleen Kanteen

An opportunity that would forever change Bruggeman's programs came one day when two business partners who were once enrolled in Bruggeman's Regional Occupational Program course presented him with a design communication challenge their family's business was experiencing.

Jeff Cresswell and Chris Kalberer are part of the well-known Chico, California-based company, Kleen Kanteen, maker of eco-friendly stainless steel water bottles. Bruggeman kept in touch with these two former students as their business rapidly grew. The company's products were manufactured in China and the language barrier caused communication problems and subsequent design issues.

Bruggeman recommended first creating ABS plastic models with the Dimension 3D Printer. He then put his class to the task of designing and creating canteen lids. Two days and an assortment of design options later, Bruggeman and his class were in business. The lid designs were taken to China and served as prototypes for the final production pieces. Other designs have been created and printed for Kleen Kanteen as well, and have become part of their new product lines.

### 3D Printing Carries Product Design and Student's Skill Forward

Westside Research, another local Chico, California business that designs and manufactures soft-sided interior and exterior cargo management accessories for



Student Dillon Silverman and instructor Mike Bruggeman setting up their Dimension 3D printer



Silverman reverse engineered Briggs & Stratton small engine parts and printed physical models on their Dimension.



A prototype for a local manufacturer designed by Silverman.

automotive industries, caught wind of Bruggeman's design classes after discovering how they helped Kleen Kanteen. Now, Chico High School student Dillon Silverman spends around 12 hours a week helping invent and prototype parts for cargo, ski and bike racks for Westside using the Dimension 3D Printer.

"It's possible to get the job done without it, but having the Dimension 3D Printer saves us endless amounts of time and costs and I rely on it heavily. It allows me to do the work myself and make sure it's done right, which is pretty cool," said Silverman.

Silverman's boss at Westside seems to realize the benefits, as he plans to purchase his own Dimension 3D Printer in the near future. With this relevant work experience, Silverman plans to go to school for mechanical engineering and mathematics.

"The Dimension 3D Printer has offered legitimacy to my programs," says Bruggeman. "And the way I see it, it was well worth the money as far as motivation for the students. It encourages them to do higher quality work from the start, and has been the catalyst for teaching them how to communicate technology with our industry partners."

For more information about Dimension 3D Printers, call **888.480.3548** or visit [www.dimensionprinting.com](http://www.dimensionprinting.com)

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