



# Making Product Development Child's Play

HIGH SCHOOL STUDENTS USE 3D PRINTING TO DESIGN FOR LOCAL BUSINESSES

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*– Mike Bruggeman, Instructor,  
Chico High School*

## CASE STUDY



Student Dillon Silverman and instructor Mike Bruggeman setting up their classroom's Stratasys 3D printer.

Originally intended to keep his instructional workshop armed with the latest technologies, IT teacher Mike Bruggeman's Stratasys® Dimension® 3D Printer now also serves as a design tool for local businesses. But he doesn't operate the printer himself: that job falls to 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 Stratasys 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 Stratasys 3D Printer printer and partnerships with local businesses, I think we’re definitely on the right track.”

## Making the Dimension Decision

The school purchased its Stratasys SST 768 3D Printer from California-based Paton Group. Paton is a Stratasys-authorized reseller specializing in delivering industry-grade products for CAD, CAM, CNC, RP and lasers to technology education, vocational and training programs in California, Nevada and Hawaii.

“Mike was primarily looking for a way to cost-effectively expose students to the most current machine available capable of producing custom prototypes,” said Chris Miller of Paton Group. “We recommended the Stratasys SST 768 because it has the ability to deliver quality models at an affordable price.”

## Kids Create for Klean Kanteen

An opportunity that would forever change Bruggeman’s programs came one day when two business partners who were once enrolled in Bruggeman’s Region 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, Klean 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 Stratasys 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 sent to China and served as prototypes for the final production pieces. Other designs have been created and printed for Klean 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 automotive industries, caught wind of Bruggeman’s design classes after discovering how they helped Klean 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 Stratasys 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 Stratasys 3D Printer in the near future. With this relevant work experience, Silverman plans to go to school for mechanical engineering and mathematics.



Silverman reverse engineered Briggs & Stratton small engine parts and printed physical models on their Stratasys 3D Printer.



A prototype for a local manufacturer designed by Silverman.

“The Stratasys 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.”



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