



Rewing up University Design Programs

3D PRINTING ENGAGES ENGINEERING STUDENTS THROUGH RACECAR DESIGN DERBY COMPETITION

“The interaction among students and the confidence they gain in their skills help present engineering as an exciting and viable degree option for these kids. And none of this would be possible without our Dimension 3D Printer.”

– David Manning, Professor

CASE STUDY



CAD rendering of a student's racecar design.

A little friendly competition can go a long way – especially when it comes to getting kids excited about gaining some real-life engineering experience. David Manning, professor at Utah Valley University's (UVU) Engineering Graphics & Design Technology (EGDT), has found great success engaging his students with an annual 3D Design Derby.

The 3D Discovery

While competing at the Skills USA Championships – a showcase for the best career and technical students in the nation – a “cool looking printer” caught the attention of Manning and his students. Upon a closer look, they discovered Dimension 3D Printing.

"I had been teaching design and drafting for 15 years and seeing the Dimension 3D Printer made me curious: A tool that could turn my students' designs into plastic models in my classroom?" says Manning. "I immediately began thinking about how great it would be if we could fit this into our department's budget."

Manning went back to UVU and within a year, EGDT received a grant to purchase their very own Dimension 3D Printer from High Country Technology Consultants, who specialize in supporting educational institutions in Colorado, Montana, Utah and Wyoming by providing local representation and support for select manufacturers.

"We had no idea how much the Dimension 3D Printer would add to our curriculum until it arrived in the classroom," says Manning. "Evidence of this is the 3D Design Derby; the Dimension 3D Printer laid the foundation for the establishment of this contest."

Racing Toward Better Design

The 3D Design Derby – Manning's brainchild – became a reality in 2008. Sponsored by UVU, the Derby challenges high school students from across the state to design and manufacture a working 3D computer model of a "pinewood derby" style racecar, according to engineering constraints imposed by race conditions.

This year, the 3rd annual Derby attracted nearly 200 high school participants – a jump of more than 30 percent from the previous contest. The competition is designed to test students' ability to conceptualize a model car design; produce a virtual 3D model using constraint-based modeling software; configure each design to accommodate standard parts, meet size, weight and track dimension specifications; manufacture a car using the Dimension 3D Printer and then race it against others. Points are awarded for marketing illustrations, detail drawings, appearance, features and speed. Winners are awarded prizes based on performance.

Oh, and the prizes? They are trophies printed using the Dimension 3D Printer. "The 3D Design Derby allows high school students from around the state to engage with UVU in learning and applying engineering, design, 3D modeling and prototyping skills in a fun and competitive setting," says Manning. "The interaction among students and the confidence they gain in their skills help promote engineering as an exciting and viable degree option for these kids. And frankly, none of that would be possible without the cars produced through the Dimension 3D Printer."



Students gather for the big race.



Derby racecar designs displayed.



CAD rendering of the first place trophy that was printed with a Dimension 3D Printer.

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