As in most US high schools, Grandview High School's Technology and Computer Science Department used to focus on 2D drafting. However, unlike many schools, this suburban high school had educators who foresaw that designers and engineers—not drafters—will win the technology jobs of the 21st century and that their calling card will be 3D.

So after years of teaching drafting classes using AutoCAD® 2D software, the technical educators at Grandview High School decided to investigate 3D CAD technology. One of six high schools in the Cherry Creek School District south of Denver, Colorado, Grandview had its first brush with 3D with Autodesk Inventor® software during the 2003–2004 school year. But according to Department Coordinator Jay E. Moore, the faculty did not find that solution to be user-friendly or its curriculum to be flexible.

“I was attending the ITEEA (International Technology and Engineering Educators Association) Conference in Nashville, Tennessee, when I came across SolidWorks®,” Moore recalls. “It was my first real introduction to 3D. I found the software to be user-friendly and very intuitive. Within moments, I was using SolidWorks and realizing how beneficial it could be for our kids.”

His colleagues back at Grandview agreed, and the school implemented SolidWorks Education Edition software for the 2005–2006 academic year. Since then, the solution has had a positive impact at Grandview. Enrollment in technology classes has grown. Other high schools in the Cherry Creek school district have adopted SolidWorks software and the Grandview curriculum, and Grandview has enjoyed success at national design and engineering competitions, including the 2011 Technology Student Association (TSA) CAD Championship. By 2012, more than 1,500 SolidWorks licenses were active throughout the Cherry Creek school district, including some at its middle schools.

“The effectiveness and sophistication of our program took a big turn for the better when we standardized on SolidWorks,” Moore stresses. “Many students that come out of our program go on to excel at some of the most demanding engineering schools in the country. The decision to move to SolidWorks has improved our program tremendously.”
Creating a 3D curriculum
A major contributor to Grandview’s success was the ease and flexibility with which its technical educators could introduce SolidWorks software and create a vibrant curriculum. The school uses the software in its Technical Drawing; Engineering Design; Senior Design; Technical Education I, II, and III; and Robotics and Technology classes, combining engineering design, 3D design and woodworking, and introductory CNC machining.

“With SolidWorks, we can do more hands-on design with real-world projects, which keeps our students interested and learning,” Moore notes. “We continue to push the curriculum forward and have added simulation technology to the mix. Now, students can model a design in SolidWorks, then run stress analyses, aerodynamic flow simulations, and even use SolidWorks Sustainability software to estimate the carbon footprint of their designs.”

“SolidWorks really drives our curriculum,” adds Alan Ridlund, a teacher in the department. “I can’t imagine teaching the curriculum that we teach without SolidWorks.”

Certifying student CAD skills
The Certified SolidWorks Associate (CSWA) and Certified SolidWorks Professional (CSWP) programs are not just for teachers at Grandview. Over 100 Grandview students have earned CSWA certification and a handful has even passed the more difficult CSWP examination.

“We’ve added certification into our curriculum,” explains Rob Combs, a teacher in the department. “This has enabled us to add depth and support tie-ins to our manufacturing machinery resources. SolidWorks has advanced our program and empowered our students. We even had one student who obtained a teaching assistant position to teach SolidWorks during his first year at college.”

2011 TSA national CAD champion
SolidWorks knowledge also helped students pursue opportunities to compete in design competitions. Former Grandview student Brent Last, who went on to study at the Colorado School of Mines, was a freshman when he first learned SolidWorks software, a junior when he earned his CSWP certification, and a senior when he won the TSA National CAD Championship in 2011.

The competition required students to create a 3D CAD model of an object within a specified time. Last not only successfully created the model in SolidWorks CAD, he also ran a SolidWorks Motion study to determine torque in the main screw, conducted a stress analysis on the base of the part, and then created an animation of his results.

“I like SolidWorks because it’s easy to use and allows you to really visualize, simulate, and study your design,” Last says.