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Case study

The Norwich Technical High School Carpentry Program uses ALPHACAM and CABINET VISION to prepare students for careers in woodworking

Norwich Technical High School

The next generation of woodworkers is building skills and bright futures at Norwich Technical High School, where learning CNC technologies ensures that they'll be in high demand after graduation. Based in Norwich, Connecticut, the high school serves about 645 students and offers 12 career programs that run the gamut from plumbing, electrical and health technologies to culinary arts, hairdressing and cosmetology.

"In a lot of cases, the kids don't know exactly what they want to do when they start out as freshmen," says Carpentry Department Head John Kelly. "We tailor our curriculum to meet general life skills, which are important no matter what they choose."

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Learning general life skills, such as reading directions, listening, researching products, interviewing for jobs, and others, are those designed to help graduates secure positions for which their training makes them ideally suited — and to keep those jobs once they have them. To make informed decisions regarding career training, students are exposed to each of the school's disciplines in the first few months of freshman year, during which they select three technologies to explore for extended periods of time. "This culminates in the students choosing the program they want to remain in halfway through freshman year," Kelly explains.

With 15 years of instruction experience at Norwich under his belt, Kelly can see firsthand the difference that the carpentry program makes in the lives of his students, as well as within the surrounding community. For instance, local manufacturers acquire the same type of equipment used to train students at Norwich to pave the way for easy transitioning. "We're providing workers for the construction companies of the area, and we're also training the business owners of tomorrow," he says. "From the beginning of the year to the end of the year, there's so much growth that I get to witness — and I get to help out and be part of that growth."

For the past nine years, Norwich has used CNC machinery and software to teach the methods of modern woodworking. To program the school's CNC router, carpentry students use the Alpahcam computer-aided-manufacturing (CAM) system and the CABINET VISION design-to-manufacturing solution. "We definitely attract the kids who want to work with their hands or use power tools, the kids who want to build things," Kelly says. "We also get kids who are interested in the design aspect of ALPHACAM and CABINET VISION, and running the CNC."

Kelly notes that familiarity with CNC technologies ensures that his students will be better equipped to take on any type of manufacturing job. "The skills they learn while running the machine and operating the software are applicable to other areas of manufacturing, whether it's a plastic part, metal part or wood part. The training is advantageous to them in terms of competing with other candidates for jobs who haven't had the experience with ALPHACAM and CABINET VISION."

Norwich limits classes to a maximum of 18 students, which ensures that each student receives one-on-one instruction as needed. Once students choose their disciplines, they alternate between two weeks of trade instruction and two weeks in a standard academic environment. Kelly estimates that between 20 and 30 percent of his students, or roughly about four in every 18 students, are female.

Prior to Norwich implementing CNC technology in 2009, Kelly, a longtime woodworker, had never used CAM software. "I made a commitment to myself to learn it and to train as many students as I can with it," Kelly says of the school's commitment to CNC training. "Machines are already getting smaller and more diverse in their applications, and it's just going to keep evolving. It's important to stay on top of things because the technologies we use now will eventually go the way of the VCR."

Robert is a 15-year-old sophomore and carpentry student who initially planned to enroll in the school's electrical program. After four days of his rotation through carpentry, Robert had made a step stool and discovered a love for woodworking. "I joined carpentry because I enjoyed it and knew it was what I wanted to do," he says. "I used my carpentry program at school to go out and get a job for a construction company. I ended up learning flooring, tiling, drywall, everything. I realized that you can learn so much on every job."

Juniors and seniors at Norwich are eligible for work-based learning as part of their education and can devote a portion of the school day to internships arranged by the school. As he won't qualify until his junior year, Robert works about four hours each day after school, foregoing sports and other extracurricular activities.

"I think carpentry builds up a better work ethic than some of the other trades," he says. "It demands a lot more hours and it can be more physically demanding. It's 'work 'til it's done,' and that's just how it has to go."

Kelly values CABINET VISION as a teaching tool for his students, as the system helps him illustrate project details. "When I'm teaching the parts of a cabinet, CABINET VISION is just an ideal resource because I can render it and the kids visualize it. I can explode it and students can see how all of the parts fit together," he says. "Kids today are comfortable in front of computers, which makes it easy to sit them down in front of computers with ALPHACAM and CABINET VISION in front of them."

Norwich uses the solutions when competing in SkillsUSA, a non-profit, national partnership of students, teachers and industry representatives working together to ensure that the U.S. has a skilled workforce. CABINET VISION and ALPHACAM Software Consultant Paul Corey has been a volunteer judge for SkillsUSA for several years and devotes time to promoting skill development.

"For the cabinetmaking competition, we cut all of the materials that are used in the competition for the state of Connecticut in our shop with CABINET VISION," Kelly says. "The kids are all a part of the process of creating the programs, cutting the parts, and helping set up the competition at the host site. CABINET VISION has been an invaluable resource in streamlining that process for us by reducing waste and applying the technology to the project."

Kelly, who has been involved with SkillsUSA for 15 years, explains that the competition is a valuable opportunity for students to receive recognition. "SkillsUSA is an opportunity for students to get recognized in their trade — which they really don't often get. I love seeing the kids compete and get recognized for trade ability and talent."

Robert, who plans to compete in SkillsUSA for the first time during his junior year, says that he has learned a great deal about the realities of woodworking from Kelly's anecdotal experience. "One of our favorite times is story time with Mr. Kelly because he teaches us lessons about being a woodworker in his own life," he says. "We realized we were learning from his stories as he was telling them — which makes it a lot more interesting."

About the company

Name: Norwich Technical High School Carpentry Program

Website: www.cwgc.orgnorwich.cttech.org

Business: Education

Benefits achieved:

- Helps students learn how to plan and execute projects
- Visualization tools in CABINET VISION assist in teaching project construction
- High demand for graduates with CNC programming experience

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John Kelly,,
Carpentry department head

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