

Starting early: This teacher is turning kids on to CNC production

By degree, Gary Norwalt is an engineer. When he finished college, though, and found engineering jobs in short supply, he fell into teaching and discovered he loved it. He teaches computer science to students in grades 6, 7 and 8 at Colina Middle School in Thousand Oaks, California. Sixth graders take an entry level class, and seventh and eighth graders can take an advanced class.

A couple years ago, Gary and his brother-in-law, Harry Rivera, who is also an engineer, were talking about a project they could do together for the school. They decided to build a CNC machine. They got hardware donations from a few technical companies, including a PMAC motion controller from Delta Tau Data Systems, and put it together.

"It will cut a 14-by-48-in. panel," says Gary. "That's good for what we do, though sometimes it would be nice if it were a little longer. It will handle material up to about three inches thick.

"So I had the software to drive the machine, but no design software. I looked online and found ArtCAM [www.artcam.com]. I called them up and told them what I was doing—and that I was looking for partners. That's how I see all the companies that helped make this happen.

"The folks at ArtCAM listened and said they thought it was awesome. They asked me what I needed. I was surprised when they said they would outfit the whole lab so that all the kids could use ArtCAM. It was terrific, and they've really been supportive."

At first, Gary took a traditional teaching approach to learning CNC machining, developing a curriculum and lesson plans. He included it in the class during the next year, but things went slow. The kids didn't show much interest in the CNC machine over in the corner.

The next year, he had a couple of students in his advanced computer science class who were curious about it early in the year. He started to work through the lessons with them, then abandoned that. He decided to show them just the basics of the software, then let them run with it. When they got stuck, he helped them through it.

"In no time they were designing and cutting incredible stuff," Gary says. "including a sign for the concession stand at a local Little League ballfield. Kids don't want to be taught about using design software and CNC machines step-by-step. They want to play with it and see what it can do. They can teach themselves how to use ArtCAM faster than I can teach them. It's just that kind of software. I'm there if they need help—more of a technical consultant than a teacher."

He has them start by designing and cutting their name first. After that, they usually want to do something more complex—like animals, signs, logos or emblems. Most are cut from hardwood scraps donated by local cabinet shops. (Scraps are always welcome. You can reach him at the school at 805-495-7429 if you'd like to help.)

"The CNC work is a great motivator," Gary says. "When they know that once they get through

this Microsoft Word assignment they can get to work on ArtCAM, they're motivated. Not that I would ever do that, right?" [Laughing.]

There's a great video clip about this at www.delcam.tv/colinamiddleschool where you can see the students at work and hear their comments. —Editors



Roberto Franco setting up the CNC machine for a project



Gary gets a project ready for cutting.



Chandler Hageman and Shaylyn Jaffe with their TOLL Cafe sign for the Little League concession stand.



Enrique Salazar with his USMC project;