Carving out futures

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HUME – Emory Luth hopes his sleek elliptical Art Deco desk will someday sit in an executive office – and he'll be sitting behind it.

For now, Luth just wants to put the finishing touches on the complicated project that occupied most of his senior year at Shiloh High School.

"There were some frustrating parts, but giving up was never an option," said Luth, who's on the home stretch with the woodworking and manufacturing project that required all the technology Shiloh's industrial technology program had to offer – and some that it didn't – to complete.

"It's the most challenging project we've done to date," said Mark Smith, Luth's instructor, who built up a program that started with a few hand tools when he joined the faculty eight years ago and now includes sophisticated computer-driven equipment like a Thermwood CNC Router, a shaping machine that sells commercially for about $60,000.

"Every day we felt like we were on the verge of failure," Smith said. "We hadn't done anything like this before, so every step was brand new. I learned as much as Emory did. And it's an inspiration to other students. It encourages them to try something new."

Smith feels very strongly about the value of offering industrial technology classes to a wide range of students. About 60 of the 200 students at Shiloh are enrolled in his programs and their interests range from those of students like Luth, who was class valedictorian and will study mechanical engineering at the University of Illinois this fall, to those of students who want to go straight into the work world.

"From the beginning, we wanted our program to be valuable to the school and relevant to the school board and to parents," he said. "This kind of work is leaving the United States in every sector, not just woodworking.

"The program's relevance is related to what the students are doing and to what industry wants. College isn't for everyone, so we must also educate for the work world."

To show school officials the value of the program and earn money for equipment, Smith put his students to work making desks and cabinetry for the school, finishing options that had been cut from the school's final construction plans when the budget got tight.

The students are still working on that project, finishing two to four classrooms a year. The school pays for materials and Smith estimates that cost is about half what commercial cabinets cost.

Students also make custom-built kitchen cabinets for customers who know about the program and place orders. They measure, construct and install the cabinets. There's a waiting list for their services.

The cost: materials plus $2,000 for the program's equipment fund.

Last year, Luth made an expandable headboard with mahogany veneer and a center star design that was a finalist in an Association of Woodworking and Furnishing Suppliers' contest. The challenge was to construct a system that keeps the star in the center when the headboard expands from double to king size.

This year, he decided to ramp it up, aiming to win a national student design contest – which was canceled early in the school year.

"I've seen lots of beautiful furniture and fine woodworking, and I thought making the top oval was a good idea because it would maximize my use of computer technology and the CNC Router," he said. "That's what sets us apart. Very few high schools have that kind of equipment and I wanted to call attention to the quality of the program."

Luth used computer aided drawing and manufacturing programs to draft his.

Luth thought about making the desk from solid cherry wood but quickly realized he didn't have the equipment to bend it, so he decided to use bendable plywood and layers of veneer to form the half-oval bases. That's when the trouble started.

"There were a lot of problems," he said. "We had to build a jig to mold it, and we didn't have a vacuum bag. It takes a lot of pressure to get it stuck together. It's amazing how much pressure it takes. You have to have steel to lock it down."

Ed Cler of Paul's Machine and Welding, Villa Grove, donated and cut 1/16th-inch steel to line the jig but the shop's vacuum bag wasn't powerful enough to bond the plywood, veneer and glue. Smith located a commercial one, but the jig collapsed, so they had to rebuild it.

Making the top was a little easier, "but it was challenging too," Luth said. "We created an octagonal shape by cutting two pieces and flipping them to make the perimeter."

The outer oval ring is cherry, just inside it is a band of lighter maple, and the inside of the oval is four quadrants of madrone veneer laid in opposing directions.

Luth's finishing up his work now by redesigning the fronts of ready-made maple drawers so they'll fit into the curved base, and he still has to attach hardware.

"I'm glad I did it," he said. "I used our resources. I talked to people all over the country about problems. We used conventional parts in nonconventional ways. Crazy, but I learned a lot."

Luth's not taking the desk to college next year. "It would just get ruined," he said.

This summer, he's working on the family farm, working at Menards and looking for woodworking jobs. He's also going this month with four other Smith students to a summer camp at North Carolina State University sponsored by a wood products industry organization.

Smith promotes his students' accomplishments in industry circles because he wants to form partnerships and elevate the profile of the program.

Industry publications have also featured other Shiloh projects, including a coffee table decorated with CNC-carved vines made by Joe Harbaugh and a prize-winning table made by Paul Wilson. Both Harbaugh and Wilson are going to the North Carolina camp along with Ryan Downey and Adam Carrington.

"The way you promote the program is to get industry in here saying what you're doing is wonderful," Smith said

Luth, who's from a farming family, said he's going to think about career options while he finishes his engineering degree and likely graduate school.

"'I'd like to do an internship with John Deere next year," he said. "I'd love to design better, more efficient engines. Or maybe do something with a lights-out factory where everything's totally robotic. That would be something interesting to get involved with."

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