

'Shop Class' and So Much More

Columbia's industrial tech classes offer students a world of career possibilities

By Jeanie Senior

In teacher Chris Hipkind's industrial technology classes at Columbia High School in White Salmon, students learn the basics and more: welding, sheet metal work, and the safe use of hand and power tools.

They build sheet metal tool boxes, jack stands, trivets, napkin holders and stools.

But they also venture into new realms. In introductory robotics classes, they design, build and operate several varieties of robots, including radio-controlled racing, hill-climbing and autonomous.

Class members also design, build and operate pneumatic catapults and trebuchets. A trebuchet is a medieval "siege engine" that was used to either smash masonry walls or hurl projectiles over walls.

A \$6,200 donation last year from the White Salmon Educational Foundation helped pay for robotics class supplies and equipment.

The projects students undertake are aimed at getting them excited about the possibilities of careers in engineering, math and science.

It is a national trend. The Wall Street Journal recently reported on schools' efforts to emphasize math and science. Corporate America, the story said, "has a business interest in creating more homegrown engineers ... amid growing evidence of an impending shortage."

That's also true locally, with technology-based companies such as Insitu expanding the employment base, says Chris, who gets input on his curriculum from an advisory committee that includes engineers,



Above, Jessi Kellogg and Russell Bucher work on their robot. Below, students at work on a car in metal shop.



an automotive technician, fabricators/machinists, an electrician, teachers and entrepreneurs. The advisory group meets quarterly.

Both Insitu and SDS Lumber Co. have hired interns from the industrial technology classes, Chris says.

"The high school's job is to start to prepare them, also to get them excited to continued learning in an area of their choice," says Chris.

"If my student leaves here to go right to work, that's great. However, to move up the career ladder, they need to go to a community college, university or a trade school and learn more advanced stuff."

Former students have studied at Columbia Basin, Clark and Portland community colleges, as well as the University of Washington.

"I love this class," says Jessi Kellogg, a freshman from Appleton. "It's my favorite class. I love doing technology."

In March, Jessi and ninth-grader Russell Bucher put the radio-controlled robot they designed and built to the test, running it on a winding speed course set up in the shop building.

Chris provided NASCAR-influenced commentary.

"Boy, that was the biggest upset," he said, as one robot zoomed past the other. He offered a bit of extra time when two cars, set to compete against one another, stalled and refused to move off the start line.

Students cheered or groaned as the robots made their way, or not,

around the course. Some careened into one another. Others refused to start. A couple lurched to a halt just over the start line. The robot Jessi and Russell built zoomed into a welding booth.

The robotic cars, some with three wheels, some with four, reflected a variety of design concepts.

The point, according to Chris, is what students learned as they designed, built and operated them. That included lessons on electronics, electrical safety, gearing for power and speed, gravity and traction control, computer programming, use of sensors and fabrication techniques.

Building trebuchets and catapults meant learning how to read blueprints and schematics, learning about levers, calibration, assembly techniques, pneumatics, hydraulics, machine efficiencies and torque, and linear and rotary motion.

Chris, a teacher for 15 years, says shop teachers regularly share ideas, programs and information. He communicates regularly with teachers in Glenwood and Trout Lake, Goldendale, Arlington, The Dalles and Hood River.

Reshaping his classes eight years ago, Chris and his advisers put together a list of the most important things to teach.

“They said the most important thing is attitude,” he says.

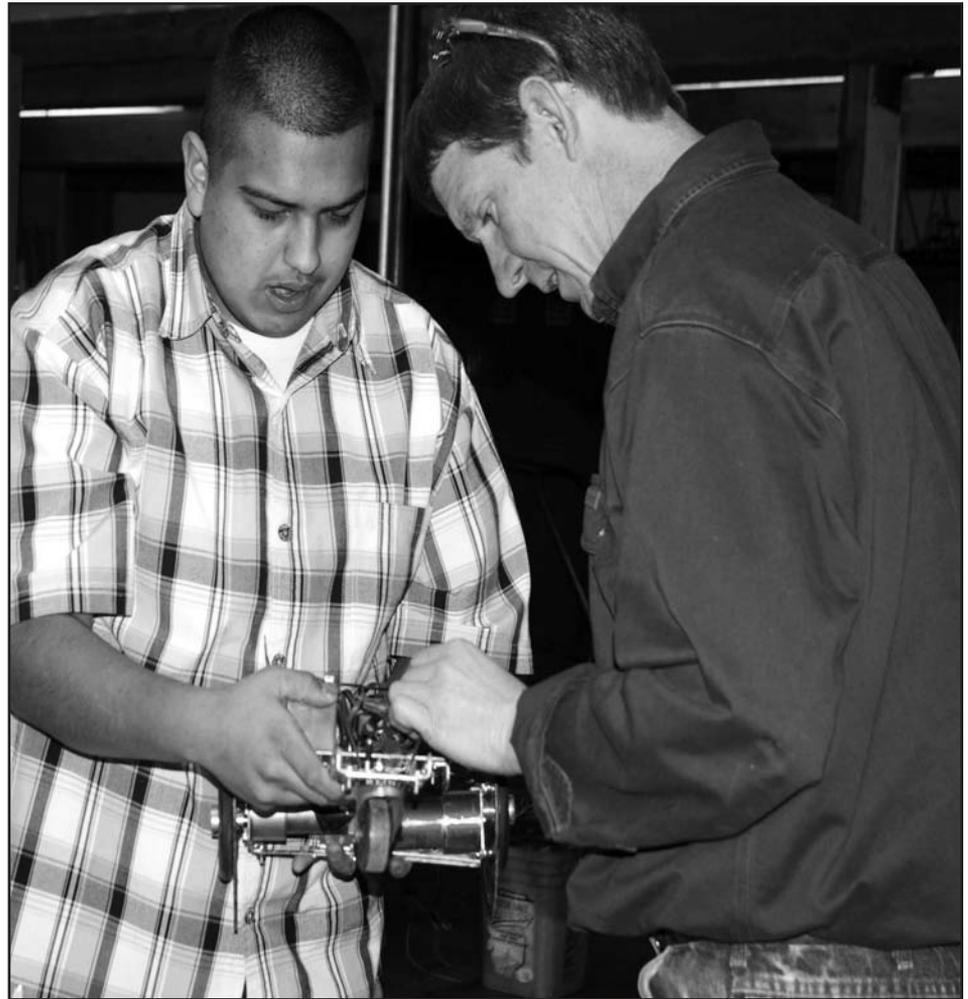
The challenge is finding projects that are interesting, but don’t take forever to complete.

“We are always on the lookout for good projects,” Chris says.

When he decided to teach robotics, Chris turned to a national online network of shop teachers to find what he considered the best programs.

Eventually, he flew to high schools in California, New Hampshire and Michigan to get a first hand look at their curriculum.

An almost-completed sandrail, or dune buggy, sits in Chris’ classroom. Students and members of the community are working on the project at Skills USA, an after-school ses-



Above, Alexis Castaneda gets help from Columbia High School teacher Chris Hipkind. Below, Nick Mosbrucker adjusts his robot.

sion Tuesdays from 3 p.m. to 7 p.m.

“There are three or four things going on,” Chris says. Besides the sandrail, “the kids show up to do blacksmithing and some work on their regular school projects.”

Others have built skis and snowboards.

Several adults are involved, offering their expertise in areas from mechanics and blacksmithing to working with composites.

Chris, who grew up in Indiana, didn’t take shop and technology classes when he was in high school.

After graduating, he moved to the West Coast to work in construction. He got his undergraduate degree at the University of Wisconsin-Stout, a polytechnic university known for the number of shop and home economics teachers it graduates. ■



Photos and information about the dune buggy project are posted at <http://www.bonkernet.net/columbiasandrailproject/>