

Budding electrical engineers study serpentronics

# Churchill kids getting a bit snaky

By Mark Hasiuk  
Staff writer

THE FLOOR OF THE technical studies lab at Sir Winston Churchill secondary is crawling with snakes. Fortunately, they're non-poisonous.

Grade 11 and 12 students in the electronics, robotics and career preparation program are learning the principles of electronic engineering by creating independently moving snake robots, also known as serpentronics.

Linda Zhang, a 17-year-old Grade 11 student, constructed a metre-long aluminum snake with six body parts. She controls the behaviour of her snake by commanding a microprocessor—the snake's brain—through a circuit board and a computer program. Two serpentronic body parts are motorized and move in opposite directions to propel the robot along the ground to mirror the movement of a real snake. The serpentronics are also equipped with infrared sensors to replicate the sensory perception of pit vipers like the Western rattlesnake.

Zhang said she learned to use tools such as scroll saws and soldering pencils and developed the ability to read manuals—a key component of engineering—to turn written and oral in-



**Churchill Grade 11 student Linda Zhang takes her robotic snake for a pretend slither on the grass. She hopes the serpentronic put together in class will be mobile soon.**

photo Dan Toulgoet

struction into hands-on construction.

"I actually made a lot of mistakes, and it took me about a year, so I've also learned how to be patient," she said, noting that three 80-minute robotics

classes were dedicated to the project each week.

Although Zhang has yet to launch her serpentronic's maiden slither, she's keeping her fingers

crossed. "I haven't completely assembled everything yet to see it move, but hopefully it will."

Trevor Gibbens, electronics and robotics teacher at Churchill, said the

goal is to generate interest in engineering.

"Students should have hands-on experience during their formative years," he said. "They also develop skills that will improve their quality of life and their independence."

Gibbens noted the country's pressing need for homegrown engineers and the constant call from university engineering professors for a greater emphasis on technical studies in high school.

Sixty students enrolled in Churchill's robotics and electronics program, including eight students who selected serpentronic as their year-long project.

"Some plan to enter the trades," Gibbens said, adding that other program participants are looking at engineering careers. "It's an excellent preparation for programs in engineering and applied science."

Zhang said the experience inspired her to consider a career in electrical engineering. She is interested in electronic gadgets that can aid people with disabilities.

Churchill students have created other robotic inventions, including Gnat—a part-wood, part-steel walking robot—and two hexopods, six-legged robots with ultrasound sensors.