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The Unexpected Fun of Engineering Academy

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Every year, Engineering Academy (EA, formerly known as Manufacturing Technology Academy) seniors like Madison Brown (Grand Traverse Academy), Ryan Novak (Traverse City West), and Will Finnegan (Traverse City Central), attend the National Robotics Competition (NRC) in Marion, OH. This competition hosts students aged from elementary school all the way to college and puts their math, science, technology, and engineering skills to the test. Three events EA students participate in are: work cell, hockey, and ball rescue. Though Engineering Academy seems grueling with its many required math, science, and technology classes, there is an element of fun to the program.

In the work cell competition, students have to make a bot that performs a task that's both useful and marketable. "It's a box. You put a lump of coal in it. It does something, and a bunch of Goldfish [crackers] come out of the other side, or something like that," said Finnegan. EA's physics instructor, Tim Wheatley, recalled a competition in which a team of his students were tasked with building a robot that sharpened a pencil. Instead of catching the blunt pencil that was given to it, however, the bot bounced the pencil right onto the floor. "They opened the door, went to put it back in, and that just shut everything down," Wheatley commented, explaining the students had installed safety sensors at the door and inside of the robot in case someone had accidentally gotten their hand stuck inside. The sensors would see the hand or body part inside the machine and would shut down the bot so that the body part wouldn't be hurt or crushed. The students were able to reboot their work cell robot on the fly and ended up placing at the competition.

In the hockey competition, each team has to create two robots that will play hockey against another team. "For a couple of years we were actually banned from hockey," said Brown. "We just kept on improving an old design and eventually we couldn't be beaten." The seniors said that repurposing old parts and tweaking the bot's functions every single year wasn't sufficiently exercising their creativity, so instructors decided that they wouldn't be allowed to compete with the smoothed out robot. In addition, the bot was so good that other robots submitted by other teams weren't able to beat it, demonstrating its unfair advantage. Now, students create a new and original design every year so that they are able to participate in the competition.

Wheatley shared a story about ball rescue, which requires robots to work inside of a limited space. The robot must retrieve a ping pong ball from a container and bring it back to the start. Usually, the robot operates on the ground, but the EA students wanted to try out something new:

a drone. According to Wheatley, the other team's robot wasn't even able to wheel itself out of the start, leaving EA's team to go next. Right after the drone took off, it crashed. "A piece of metal actually flew out and hit an observer," said Wheatley. "Both of us were eliminated and they made a whole new rule banning drones from the competition." So: next time you see an EA student messing with a drone, you might want to watch out!