

# Vernonia Robotics Programs *continued from front page*

participants in the 7th to 12th grades. Volunteer Jeff Ely has served as the lead mentor for this program for several years and has a handful of parents helping as mentors as well. This program is very similar to the FRC, just on a smaller scale. They too compete with other public and private schools and organizations. The competition area is roughly the size of half a basketball court and the robots can fit on a table top in size. Other than size, this program is very similar to FRC.

Both programs require the robots to operate autonomously through computer programs generated by students as an initial challenge during the competition. The robots are then operated by remote control by students for the duration of the competition, who move the robots around the playing surface while attempting to complete tasks and accumulate points.

There are programs through FIRST for grade school aged students, but currently those are not options in Vernonia. There is a new program, mentored by new first and second grade teacher Debbie Taylor and her husband, which is offering an after school science club that helps teach many aspects that the robotics teams work on, plus more. This is an exciting addition for the school's STEM programing. (See Schools Update article on page 13 for more on this program.)

Vernonia's FTC teams just completed their first competition at the end of January at Oregon State University. The two teams, Squirrel?! and Red Shirts, finished 8th and 11th in the competition out of 26 teams.

"This is another strong showing, and Oregon is known for having some very strong teams nationally," said mentor Ely.

The Red Shirts ended up

qualifying for the Super Regional Tournament on the weekend of February 12th. The Squirrel?! team just missed the cut-off.



*Carly Bergren working on programming the FTC robot.*

Other volunteer mentors with the team include Josh and Kat Leach, Jake and Chrissy Bergren and Susan Ely.

Between both teams there are eight student members and six adult mentors. This year's challenge is called Velocity Vortex and involves both autonomous and operator directed components. In this challenge, robots work in teams of two against another team as they collect and shoot whiffle balls, change beacon colors to their teams' color, and the greatest challenge, grasping and lifting a 24 inch diameter yoga ball five feet in the air and place it on a rotating pedestal.

The only limitation for the robot is that it fit within an 18 inch cube prior to starting the game. Once the game is underway it can expand to any size. "This starting limitation forces the team to think of creative ways to compress motors, servos, sensors, drive systems and electronics into a sturdy design that can score points and handle the abuse of a robot collision," says Ely.

Vernonia has had two FTC

teams for the last three years. Each year the challenge is unique and the Vernonia teams work side by side in coordination and cooperation in design and construction, thus allowing for a greater opportunity to learn and share. "The flexibility of multiple teams and months to build result in unique designs for the competition," explains Ely. "This year, the teams both chose to drive on treads (vs. wheels), but one team chose to focus on sensors and shooting a whiffle ball, while the other solely focused on grasping and lifting the yoga ball. Both strategies can be successful if done effectively and efficiently."

Aubrey Leach is a sophomore student competitor with Vernonia's FTC team and explained that the team keeps a required engineering notebook to document their project. The notebook explains the team's design concept and includes team and mentors bios, a log that reflects student's thoughts, successes, and strategies for improvements, along with how they contributed to the project from each day, photographs of their



*Aubrey Leach and Devon Bergren working on the FTC robot.*

progress, a list of the materials they used and their costs, and blueprint drawings of their robot.

Leach says the team has made

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