

# Students Gain First-Hand Engineering Exposure in Robotics Club

A team of Hatboro-Horsham and Upper Moreland students apply their science-driven skills.

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Unlike the famed "Battle Bots" television series that entertained viewers with metallic wars, the 708 robotics team - Hardwired Fusion - focuses on career-ready goals using the learned applications of motion, expert mentors, and group work exercises to win competitions.

Hatboro-Horsham and Upper Moreland school districts started working together as Team 708 in 2005 and have since attracted a variety of science-motivated students to engage with competitive robot production.

Eric Cunningham, a Hatboro-Horsham senior, is working on his second year on the team. The after school robotics club far exceeds the mere social value of some other after school activities, he said.

"It's a pretty unique experience," said Cunningham, who added that his participation is serving as his graduation project for Hatboro-Horsham.

"Last season, I had 230 hours logged with the team," he said. "It's a time commitment, but I've learned a lot."

Team 708 functions as part of a larger nationwide organization called [FIRST](#) (For Inspiration and Recognition of Science and Technology). Since its inception in 1992, FIRST has integrated technology, science, and expert exposure into high school students' learning experiences.

At the start of every year, FIRST releases a series of requirements for robots and goals they should be able to achieve for competitions. Teams consider FIRST's provisions while brainstorming and have a short six-week production period to complete their robot designs.

This year, teams' robots have to pick up triangle, circle and diamond shaped inner tubes and place them on designated pegs. Each properly placed tube earns the team a point and extra points are awarded for placing the tubes in the order of FIRST's logo.

"The intention's not to destroy the other teams' robots," said Eric Zygmunt, Hatboro-Horsham's advisor. "The competitive objective is to score points."

"Even if you don't win, it's still fun," said Justin Brown, an Upper Moreland High School junior.

Competitions take place in large arenas where teams can gather, meet their assigned alliances, and showcase their robots on the designated playing field.

Joe Gallagher, one of the team's mentors and a long-time FIRST participant, said, "it's like a college basketball game, everyone gets involved."

Team 708 participates in two regional events a year. This year, the team traveled to Baltimore for the Chesapeake Regional and will travel again to the Philadelphia Regional held at Temple University April 7-9.

"To attend Philadelphia's Regional competition is to compete against the teams around here," said Gallagher, "It's the pride of the area."

Winning competitions, even at the local level, is not the driving force behind the team, however. Zygmunt explained how even at competitions, "It's less about how you do and more about working with engineers and real-world problems."

Such real-world predicaments include team work, quick-thinking, problem solving and job delegation.

Since teams are combined into three team alliances for competitions, individual participants must master the knowledge of their robot, acknowledge the skills of other teams, and efficiently establish successful plans with those teams.

"Teamwork is the key," said Gallagher. "No matter how good you are, you have to compete and succeed with other teams."

Brown is a team 708 veteran. During the three years he's participated, he said his fellow robotics enthusiasts helped his growth as a high school student and are preparing him for post-graduation's higher education plan.

"Overall, it's been a very good experience. It's definitely

good to see the different ways people can do things," Brown said.

And, like the various ways of accomplishing science-related goals, Zygmunt said students comprising Team 708 come from vast backgrounds and have differing interests. The commonality for all is their dedication to the team.

"Some are predisposed to engineering through their parents, some through the tech school," Zygmunt said. "Some just have an interest in science."

Whether students participate for a fondness of robots, understanding of science, grasp of technology, or the awe of working with professional engineers, as Brown said, "there's really nothing like this."

As a former finalist at the Philadelphia Regional, recipient of the Xerox Creativity Award in 2009, Team 708 looks forward to another successful season.