

Robo Hawk from page A1

robot-driving skills for a regional school-engineering competition set for March 19-21 at Eastern Michigan University. Shwayder said there wasn't enough time last year to have adequate practice for the tourney. "If everything goes as we planned it, we'll win or at least come close."

"We need a lot of practice time," said Harrison teacher Ron Shortt, one of seven faculty members involved with the project. "The kids are going to have to be very good at driving, maneuvering and getting so used to it that you can do it in your sleep, or you're not going to panic or feel rushed."

Robo Hawk is one of 40 Great Lakes entries and 200 across the United States competing in FIRST ... For Inspiration and Recognition of Science and Technology's seventh annual competition. It's also the second collaboration in two years between Harrison students, teachers and engineers from TRW Automotive in Farmington Hills.

Shwayder's enthusiasm about Robo Hawk builds upon last year's experience in the FIRST competition. He was part of the 1997 Harrison-TRW Automotive robot team, which captured rookie of the year honors. Now he's back for the second attempt, one of 28 Harrison students who teamed up with working engineers. For more than a month, the students and engineers have met after school, with the specific task of brainstorming, designing, constructing and testing their "champion" robot.

Not like school

The project, Shwayder said, provides students a change to not only work with professionals, but to stay with a project from rough draft to reality.

"In school, you learn a formula, you do a worksheet, you find out how much torque something would take," he explained during a recent work session at TRW. "But here, you have to figure it out and then, if you figured it out wrong, you have to recalculate the whole thing."

Engineers are also benefiting from the project, said Mary Raber, TRW's director of engineering operations.

"From TRW's perspective," Raber said, "it's a wonderful pro-

ject to get involved in. Not only in the aspect of helping students to learn about engineering as a possible career opportunity, but it revitalizes our engineering staff.

"The comments I hear from engineers is this project reminds them of why they got into engineering in the first place."

She wouldn't get any argument from veteran engineer Ed Van Elaland, coaching students Jared Ankawi, Tim Kennedy and Seth Stollman in assembling the robot's elevator arms.

Dirty work

"You got to work with young people," Van Elaland said. "People say disparaging things about them, but these kids are great."

Van Elaland said he hopes the students come away from the Robo Hawk endeavor "with a realization of how products are created and produced. A lot of kids don't know ... how do you get a toaster or a TV?"

And, they learn engineering isn't just math and science.

"It's also getting your hands dirty and building things," he said. "If they have a hankering to be tinkers and old-time inventors, this is how it comes about."

For the FIRST competition, it all starts with a box of parts and a final objective. How they use the former to attain the latter is completely up to the teams.

Each team takes those parts and begins working toward the ultimate goal - to design and build a robot that can pick up balls that are 2 feet in diameter and drop them through an opening 8 feet off the ground and 3 feet in diameter. Points also can be scored by successfully placing balls on a ramp that adjoins the cylinder.

One student will use remote control to steer the robot, another



Team talk: Engineer Dave Purola works on the project with Harrison students Carrie Cox, Alan Yee and Jason Link.

or will move the arms, with the help of a joystick. Much like a basketball game, robots will have to work their way past ball-blocking opponents in order to reach the cylinder.

Visionaries

"You wind up with 200 completely different looking robots," Raber said. "They have no instructions, no pictures. All they are told is what the robot is supposed to do."

Students, teachers and engineers are divided into four squads - electrical design, mechanical design, animation (to create a 90-second computerized "commercial" about the robot) and public relations. Robo Hawk must be ready to ship to the regional competition as of Feb. 24; the animation team has an additional week to complete its portion of the project.

In a different building from where Van Elaland and students were working on the actual robot, the animation team huddled at computer screens to continue sharpening its visual presentation - complete with pictures of Robo Hawk and the arena where the FIRST competition will take place.

"It's exciting to build something in 3-D on the computer, said senior Trevor Roth. "It's almost like building it in real life."

But one of his teammates wasn't in complete agreement.

"Personally, I don't feel connected to the robot," said senior Meredith McLellan. "But I really like working with the software, exploring this as a career."

FIRST gets kids thinking about careers

Engineer Dean Kamen wanted to do something that would inspire students to think about careers in science, technology and engineering instead of aspiring to pursue glamorous, but unattainable, careers such as professional athletics.

So in 1992, Kamen spearheaded FIRST ... For Inspiration and Recognition of Science and Technology.

Secondly, he came up with the idea for annual competitions that would pit student-engineer teams against each other.

"He (Kamen) thought the students of today view

the Michael Jordans of the world as role models," said TRW's Mary Raber. "When in fact, they should be looking up to technologists and engineers. So he came up with this idea, which is almost a sporting competition."

According to Raber, TRW found out about the FIRST competition through the Chrysler Corporation. "They called a bunch of their key suppliers to let them know that this was a project they fully endorsed and were interested in seeing more companies get involved."

- Tim Smith

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