

# 'Cooperation'

Robotics contest at Hofstra next weekend teaches key values and valuable skills

## THE SUNDAY SPECIAL

BY ROBERT P. CREASE

American values will be on display this coming Friday and Saturday, from 9 to 4, at Hofstra University's Mack Arena. No, it's not a political event. It's the Long Island regional FIRST Robotics Competition. The work that goes into designing, building and operating those devices embodies American values far more than what you can find on the campaign trail these days.

FIRST — For Inspiration and Recognition of Science and Technology — is a national organization that stages these competitions each spring. In January, it issues a challenge for school teams to build, in six weeks, 120-pound, radio-controlled robots able to carry out certain tasks: stacking pyramids, shooting goals or climbing posts. In March, the teams and their robots compete and collaborate in regional playoffs, including next weekend's at Hofstra.

FIRST was founded by super-inventor Dean Kamen, creator of the insulin pump and Segway transportation vehicle. In the late 1980s, Kamen was appalled by a gaping hole in American science and technology education. Hands-on learning was becoming passé. Schools were junking their machine shops for computer screens. Youth culture was mostly engaged by celebrity sports and entertainment — neither of which, Kamen thought, offered serious career prospects for students, or could help to provide solutions for 21st century problems.

Kamen decided to do something. "In America," he told me, "you get what you celebrate. So I decided to celebrate ingenuity." He created FIRST to develop competitions in which students would

have to design robots starting from a basic components kit, program them, then get them to play high-tech, weird versions of games like soccer and basketball alongside the robots of other teams — celebrating it with all the gusto that Americans celebrate other sports events.

In these competitions, students learn that having a good idea is not enough; they need a set of good ideas that work together. And even that's not enough; they need a system they can build and operate reliably. They learn the need to divide the problem among themselves and collaborate. Finally, at the competition level, students learn respect for their competitors, because FIRST structures these

events so that teams circulate in and out of alliances — "cooperation," they call it.

I've watched my son and his teammates acquire these American values as members of the robotics team at the Bronx High School of Science. This year, the FIRST competition requires the robots to shoot baskets, but also to carry out other maneuvers, including balancing on a teeter-totter platform. It's a design challenge that requires design compromises, and that each team approaches in its own way. My son's team has had to learn how to make mistakes and confront reality — a humbling experience.

FIRST structures the experience so it is social, absorbing and skill-building in an awesome futuristic yet practical way. As a parent, it's thrilling to overhear your child talking with friends not about the antics of some brainless celebrity bimbo, but about torque and traction. America owes you, Dean Kamen! But it's not so thrilling to have to plead with school administrators, faced with budget cuts and

liability concerns, to provide more instruction in milling and engineering, and lots more shop time.

FIRST, now in its 23rd year, offers three programs: FIRST Robotics at the high school level, a Lego League program in junior high schools, and a Junior Lego League in elementary schools. Currently, there are 69 regional robotics competitions across the United States.

The independent, not-for-profit organization that provides FIRST programs on Long Island is School Business Partnerships of Long Island Inc. Long Island has 43 high school robotics team and over 100 Lego League teams, with over 2,000 students participating each year. This year, the program offers more than 600 scholarships worth over \$14 million to Long Island students. The biggest regional sponsors are Motorola Solutions and the Festo Corporation, which provide funding, engineers who advise the teams and volunteers at the events.

Scott Schuler, a 1991 Stony Brook graduate with a degree in mechanical engineering and a board member of School Business Partnerships of Long Island, is the founder and president of Industrial Products Reports, a consumer reports for industrial products. In 1999, he began mentoring a team from Hauppauge High School, and was immediately impressed by FIRST's impact on students. "I saw them learn how to work with and rely on each other — to fail, succeed, and grow as a team," he told me.

Schuler reeled off one story after another of FIRST's impact on individuals and groups in the area, and of the remarkable culture of cooperation and service it fosters. In Brentwood, an autistic student transformed from a recluse to a team leader thanks to the robotics team. In Patchogue-Medford, the robotics team got involved building water filtration systems in Haiti after the 2010 earthquake.

The spirit at the competition

is like no other. A few years ago at the Hofstra regional, the Hauppauge team built a robot that was working very well — looked like a winner! But in the Thursday night practice round, a mechanical weld broke. It was a catastrophic failure — it seemed that the team was finished. But students from several other teams — some we didn't even know — came over to help. They gave the Hauppauge team parts and helped mechanically fasten and brace the broken piece. The Hauppauge robot went on to lead their alliance to victory."

Schuler continued, "Do you think an opposing football team would ever show you their playbook? In FIRST, you learn that it's not about winning at the expense of others, it's about helping everyone to be their best, and competing at a higher level. When you compete and win at that level, students know they have really accomplished something worthwhile."

FIRST has detractors. I've heard officials in some government agencies knock the organization because the pressure can lead students to engage in as much fundraising and publicity as they do in engineering. Also, richer schools can afford more equipment for their teams and can enlist sponsors to build portions of the robots for the students. Still, having to compete on an uneven playing field is part of life.

FIRST inculcates discipline from the inside, growing it from the students' own enthusiasm rather than through external pressure. It teaches genuinely American values that politicians never dare mention any more, that "We're No. 1" is not a God-given precondition, campaign slogan or article of faith, but a continuous achievement. It's the product of hard work, compromise, confronting reality and cooperation.



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