



moezilla





# Mozilla Grabs Cheerleader

Robotics Competition Sweeps U.S. High Schools

BY ROBERT STRAUSS

The photograph is taped up on a metal cabinet, tucked away in the corner of an office in a building on the vast DuPont Corporation campus. The photograph seems an afterthought, especially as the teenagers in the photo fly by it with all sorts of electronic and mechanical paraphernalia flowing from their arms.

The couple dozen teens in the photograph have fluorescent green T-shirts typical of any sports team which has just won some championship or other. In the center is a smiling gent known around the world – President George W. Bush. The kids in the green T-shirts are the MOE 365 robotics team, the winners of the 2007 FIRST Robotics Competition, the sort-of high school Super Bowl for techno-philes. And while President Bush glories in greeting college basketball Final Four winners and World Series champs, he didn't hesitate to have the savvy robot-builders from Wilmington come down to the White House grand foyer for a meet-and-greet, too.

But that was a month before and now the MOE 365 team members were on to another challenge. They had to fix up Mozilla, the robot that got them that White House visit, and glorying over the photo of them with the

President had its place, albeit an obscure one.

"We almost broke the chandelier when we put Mozilla up to its full height, so I don't know whether he would invite us back," said Matthew Grusenmeyer, one of the MOE 365 mechanical engineers. "Yeah, it was fun being there, but the real fun is doing this," he said as he started tinkering with what seemed like an endless amount of little wires inside the 8-foot-high robot. "It's a great thing to be part of a team that can do something like this."

The MOE 365 team is one of about 1,300 around the country that have become part of the FIRST annual competitions. Dean Kamen, the inventor of the Segway Human Transporter and many medical devices, started FIRST, which stands for For Inspiration and Recognition of Science and Technology, in 1989 to promote awareness of what he saw as an abandonment of mechanical and

Photo: John Wilkens



engineering education in secondary and elementary school in the United States.

"Dean was concerned that in this country we have a high standard of living based on inventions and technology leadership, yet as a culture we are sending the wrong messages to young people," said Paul Gudonis, the current president of FIRST. "We say they ought to be spending time bouncing a ball to get into the NBA instead of solving the world's problems. Clean water and improved medical care – they are going to be solved by technology. He set out to change the culture of U.S. youth."

He went around to corporate executives he knew in corporations like Baxter Labs, General Motors, Johnson & Johnson, Motorola and Hewlett-Packard, trying to interest them in supporting some type of business based programs, but watching Michael Jordan and seeing how kids idolized him, he came up with the idea of a competition for teams of brainiacs.

Well, actually Kamen did not want it to be merely brainiacs. He wanted people like Shannon Smith, too.

"I got a phone call one day and somebody asked me if

I wanted to be involved with a robotics team," said Smith, a perky junior who has been a cheerleader at Hodgson Vocational-Technical High School in Newark, Delaware. "I almost said no, because, well, you know, I was a cheerleader. But now that I'm here and I've worked with all of this, I know there can be college in the future and careers in mechanical engineering for someone like me."

The rudiments of the FIRST competitions are simple. In January, each team that signs up pays for the basic parts toward making a robot, which FIRST sends from its headquarters in Manchester, New Hampshire. Each team then has to construct a robot that will do a specific challenge in a regional competition, usually held six weeks later in early-to-mid-March.

"We have our own version of March Madness," said Gudonis. "This year we had 37 regional high school tournaments across the United States, mostly on college campuses. More than 1,300 teams and a whole lot of good robots, I have to say."

"We started out with 28 teams in a high school gym in Manchester in 1992 and this past year it was 10,000 kids all-told, with 350 teams in the finals at the Georgia Dome in Atlanta," Gudonis said. "I think that should prove that kids are not turned off to engineering and technology here, so long as we make it fun and challenging for them."

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They have certainly made it fun for Rai Hannaford, one of the website masters for the MOE 365 team, otherwise she would clearly not schlep to meetings from Newark, about 45 minutes away. Though her parents are science teachers, Rai is a junior communications major at the Cab Calloway School of the Arts. Her body movements are more theatrical than the rest of the MOE 365 crew, but her mindset is focused on the goal.

"We come from 18 different schools, from inner city to prep schools to where I go," she said. "I'm the only



person who comes from an arts school, and when my classmates there hear I am doing robots, they look at me a little funny. But here I am."

While the engineering kids are fixing Moezilla, Rai and Eric Enslen, a senior from the Charter School of Wilmington, go to work on the extensive Web site ([www.moe365.org](http://www.moe365.org)) in a cramped computer room in the DuPont complex.

"We have a few news updates every meeting," said Eric. "And doing a Web site is part of the FIRST competition. The purpose is to get across what we are doing with the robot, but also how we are contributing to the community. We have a further mission, too."

That "contributing to the community" means that MOE 365 intends to get a team in every high school in Delaware if it can. The team members often go to other schools, both high schools and lower grades, with the robots to show students how cool working with science and technology can be.

While that may seem incongruous – creating its own competition – that is also part of the FIRST ethos. For each contest in the FIRST competitions, schools are randomly paired. Thus, your team may be good at the wiring, but the other team may be better at steering the robot toward its task (This past year it was loading tires

on various places around a tiered structure).

There is offense and defense, too. Though one team can't destroy the other team's robot, it can try to block it from the goal though cagey maneuverings and non-destructive interference.

"It is one of the most exciting things I have ever seen," said Jeff Richlin, who runs Omni-Turn, a computerized lathe manufacturer in Farmingdale, New York. Richlin went to a FIRST competition near his business on Long Island at a friend's suggestion. "I'm a Rube Goldberg tinkerer and have made it into a profession. That is what is good here. It is great to see kids work together. It is more than just a simple goal. It is how the world works."

"There they are in a pit, like in a NASCAR race, with one kid being good at wiring and another at mechanics and learning that cooperation skill," he said. "It just inspires you to get involved."

That is how it worked for Carol Kauffman, who is now the FIRST regional director for the Mid-Atlantic states around Philadelphia. Her husband, a federal judge, was asked to help judge a regional competition ten years ago at Rutgers University in New Brunswick, New Jersey, by a friend.

"I was standing around and watching and saw these two girls working on one of the robots," said



Photo: John Wilkens

Kauffman. "They were interacting with adults, explaining things like electrical systems. It turns out they were twin daughters of a firefighter from Connecticut who had never dreamed about going to college before getting involved in a robotics team.

"I thought that if something like this could inspire regular girls like this to read about electronics on their own and learn all of this, then it should be encouraged everywhere," said Kauffman. Though she had recently retired, having sold her public relations and advertising agency, and was looking forward to a life of golf and tennis, she found Kaman and signed on to find schools and sponsors and put on regional competitions. It was Kauffman who originally got DuPont and MOE 365 together nine years ago. "Now these kids have been to the White House. What more can you ask from a program."

FIRST makes no secret that its competitions aren't inexpensive. John A. Larock, a staffing coordinator for DuPont in the daytime in addition to what seems like his fulltime job as team coordinator for MOE 365, said it takes about \$15,000 a year between paying for materials and going to competitions and its community outreach. Some of that money comes from DuPont, but the rest is the usual fund-raisers that parents and boosters may do for other sports teams, including car washes.

The corporate sponsorships, though, are also part of the FIRST deal. Gudonis said it is vital that robotics teams have mentors who are teachers and people in business, so they know what real life in technology and engineering is.

That is what inspired Rich Kressley to get involved. He was an English teacher in semi-rural upper Bucks County, Pennsylvania, more or less midway between New York and Philadelphia, but unlike either in its exurban feel. He was a big jock growing up and was hired to coach JV basketball and teach English at Palisades High School in 2000. There was a married duo of art teachers there who ran the robotics team who asked him if he would help their kids write their newsletter.

"They were just reeling me in," said Kressley with a laugh. "By the time I saw my first competition, I was hooked. These kids were getting advice from CEOs and high-level engineers. Suddenly, basketball seemed like nothing."

Kressley eventually moved to Lower Merion High

School, perhaps the most prestigious public high school in eastern Pennsylvania, where there was already an engineering and technology club. When he asked to start a robotics team, half the kids were ready to sign on. He recruited several local businesses to donate money or equipment and he has engineering students from nearby St. Joseph's University as mentors. He said the robotics team concept has inspired the school board to start a course at the high school called "Innovation and Invention."

"I may still be an English teacher, but I know what I do with the team is important as well," Kressley said.

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"There should be inspiration and opportunities in all fields."

For Simon Dekleva, for instance, the MOE 365 team is becoming a life-long commitment. He was on the team early on, well before its national championship, having graduated from high school in 2002. He graduated from Rutgers University with a marketing degree in 2006 and comes back to Wilmington for many monthly meetings, just to turn screws and bend wires with the current team.

"I know I wouldn't have been so successful if someone hadn't gotten me to get involved with the robots back then," said Dekleva. He said he is going into marketing, not engineering, but he will grow up appreciating that world, which is all FIRST asks. "It's just fun to invent things and do this. Each year, you make something new. Each year, you have to be thinking. It's what improves our way of life, and I like to just hang out with kids who will make those things happen."

