While others dream of building rocket ships in the future, the members of the Elm City Robo Squad, FRC team 558 from Hill Regional Career High School ("HRCHS") in New Haven, CT, are building “ships” right now: leadership, partnership, fellowship and citizenship.

**Leadership**

Whether on the field, in the classroom or tinkering in the robotics room, the members of the Robo Squad are leaders in every way.

In an inner-city community where science and engineering might as well be foreign words, the Robo Squad strives to shine the light on STEM. A business and technology oriented magnet school, one of HRCHS’s main tools for recruitment is the Robo Squad. Students who join the team – boys and girls of such diverse ethnicities as African American, Hispanic, Indian and Middle Eastern – come bright-eyed, motivated and ready to jump into a world of innovation. We share ideas and strategizes, each of us bringing something different to the robot and the team. Together, we encourage not only each other but all the young people we come in contact with in our school and community to explore STEM careers.

Besides leading as group, Robo Squad students also lead as individuals. Virtually all of our members finish high school with over 90 percent going on to higher education, an extraordinary feat in a district where almost a third of students drop out before graduation. Robo Squad alumni have attended WPI, Quinnipiac, UCONN, Wesleyan, University of California Berkley and Washington University, among others. One senior was awarded a FIRST scholarship to WPI; another was a Dean’s List finalist. Our seniors constantly remind us of the importance of looking to future and aspiring to do our best.

The Robo Squad also aims to be a leader in the FIRST community. The team has been recognized for its gracious professionalism by FIRST with the Johnson & Johnson Gracious Professionalism Award at the CT Regional and by fellow teams with their own awards at events like the FIRST Championship and the Bash at the Beach. Being acknowledged by our cohorts for embodying the spirit of FIRST is not only any honor but reminds us we can be competitive and still serve as a model for other teams.
Our student-led safety team, too, seeks to guide by example. Last year, the Robo Squad was runner-up for the Safety Award at two regional events. At WPI, we were recognized by the judges for keeping a safe and clean pit area, and our safety captain was named safety star of the day. The team is proud of the fact that it makes safety a priority, whether by handing out hair ties or donating first aid kits and safety manuals to rookie teams.

Robo Squad members are also leaders in our community at large. We’ve been chosen to take part in specialized science programs at Yale and the Peabody Museum like SCHOLARS, where many of us spent three weeks during the summer at the university, studying and living in the dorms. We volunteer at hospitals, nursing homes, animal shelters and boys and girls clubs. Despite our differences, we work together, not just in FIRST but around our school, homes and towns, to inspire by example.

**Partnership**

One key to the Robo Squad’s success is the partnerships we’ve built with our school and sponsors. It began with founding sponsors United Illuminating and Yale University. UI provided the manpower in the form of two mentors; Yale provided the needed funding. Today, both organizations supply the team with mentors and money. Two new UI engineers work with the team, and each year at least one Yale student volunteers. Yale machine shop instructor Dave Johnson also allows the Robo Squad to use his facility and even does some welding and machining for the team.

We’ve worked hard to make our partnerships with Yale, UI and our other major corporate sponsors, Covidien and Comcast, a year-round endeavor. The Robo Squad played host when the Yale Engineering Association and FIRST announced their ground-breaking partnership, and team members were special guests when Dean Kamen spoke at the university last year. For the past two years, Robo Squad members volunteered alongside their Comcast mentor on Comcast Cares Day. We’ve visited UI’s headquarters several times, most recently as part of the company’s celebration of Engineering Week.
And we’ve had mentors from Covidien, done demonstrations at their corporate offices, and been their guests at a luncheon for women in engineering as well.

Our school has also been a major player in our history. In 2006, HRCHS gave us our slogan, literally taking us “from the basement to beyond” when it gave the team, which had been working in a storage room in the school’s basement, a large, windowed room on the first floor. Each year, the school supports us financially by paying our initial registration fee. We return the favor by doing projects like wiring new computers in the library, repairing school furniture and building lids for recycling bins. When our school’s IT specialist left, Robo Squad students filled the gap while a replacement was sought, setting up computers, coordinating audio-visual equipment for school events and helping teachers with technical classroom needs.

Without the help of our school and sponsors, we would be nowhere. With them, we’ve been able to build not only a sound financial base from year to year but, more importantly, relationships that will last well past build season.

Fellowship

The impact FIRST has had on each and every one of us individually is immeasurable. That’s why we give back to FIRST whenever and however we can. In this process, we’ve proven ourselves as reliable and beneficial fellows for both FLL and FRC teams.

The Robo Squad has been an active participant in FLL since 2008. We began by mentoring FLL teams in New Haven and Meriden and volunteering at FLL events held by our friends in Shelton, New Britain and Agawam, MA. Whether mentoring or volunteering, Robo Squad students are always willing to give up their weekends and dedicate their time and energy to supporting FLL teams.

In the past two years, we’ve taken on the added responsibility of hosting our own FLL event, the Elm City Robo Fest. This competition stands as one of the most loved events by our team. Students are involved in every aspect, from assembling the playing fields, to judging, to providing technical support.
We also use the event as an opportunity to introduce FLL students to FRC, demonstrating our robot and encouraging them to continue in the FIRST program.

The Robo Squad also values its relationships with other FRC teams. Of course, we’re always thrilled to win competitions and awards, but this love for winning never hinders us from helping other teams and sharing whatever expertise or equipment we can. We’ve mentored teams in Bridgeport, Stamford and Hamden, and this year we’re helping a rookie team from West Haven. Not only do we donate parts and equipment to these teams, we’re constantly in touch with them, helping them troubleshoot and giving them advice. In addition, for the past four years we’ve been assisting rookie teams during quick build at the Farmington kickoff.

In the spirit of FIRST, we don’t forget the importance of working together with other teams even during competitions. For years, we’ve scouted with teams like the Shelton Gaelhawks, FRC team 230, and Apple Pi, FRC team 2067 from Guilford. We always bring a large stash of spare parts and equipment, not just for ourselves but so we can lend them to teams in need. We’ve stayed late on Thursday to make sure a rookie team passed inspection, lent our programmer to work out computer glitches and helped a team in Atlanta rebuild its entire robot when it arrived in pieces. In short, the Robo Squad never steps back when asked for help. If we can’t give a team what it needs, we’ll find someone who can.

**Citizenship**

Robo Squad members are more than future engineers on a robotics team. We’re actively engaged citizens who give back to the community.

To promote STEM and encourage new members to join, we’ve hosted many activities publicizing our team and FIRST. At the New Haven Magnet School Fair, we showcased our robot and talked to parents and students about the Robo Squad. We’ve also given countless demonstrations to local middle and elementary schools like the Mauro-Sheridan Interdistrict Magnet School, Edgewood Magnet School, Engineering and Science University Magnet School and many more. We’ve held lunch expos at HRCHS.
where we displayed the robot and allowed students to drive it. Over 50 excited students signed up for our e-mail list this year alone.

We recognize the hardships faced by the homeless, so we served dinner and washed dishes at the Columbus House shelter. We brought together our families and friends to improve our community by painting and cleaning elementary schools in New Haven at Comcast Cares Day.

We become inspired to inspire others. We participated in the Westport Mini Maker Faire, showing a seven-year-old how to load Frisbees in the robot, explaining to a 13-year-old about the programming languages we use and informing parents where the closest FRC, FTC or FLL team is to them. Sure, we give demonstrations at places you’d expect, like local museums and schools. But we also reach out to people at more diverse locations like the Shady Knoll Health Center, a nursing home in Seymour, the Oakdale Theatre in Wallingford and the Moroso Performance Products car show with our friends from team 2067 in Guilford. We choose to volunteer at unique, different places to spread the FIRST message to as many people as possible.

Whether wearing slap bracelets and neon leg warmers for the Run Back to the 80s 5K or our team shirts, designed by one of our students, at the International Festival of Arts and Ideas, we serve our community and spread the FIRST message with smiles on our faces.

Leadership. Partnership. Fellowship. Citizenship. We work together to build these “ships” today so that we – and others – have the resources to become the shipbuilders of tomorrow.