

Chairman's Award - Team 2481

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2018 - Team 2481

Team Number

2481

Team Name, Corporate/University Sponsors

Caterpillar, Inc./Boeing/Precision Planting/The Monsanto Fund&Tremont High School

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years

Skills: *Hard work and collaboration *STEM expertise *Learn to thrive in a team structure reflective of future jobs
Opportunities: *Acquire internships; 32 since 2014 *Receive FIRST scholarships: \$123,000 Results: *Students gain unrivaled confidence *35% of students have returned as mentors *86% of university grads employed in STEM *90% alumni studying STEM *67% of seniors pursuing STEM *Alumnus uses skills learned from Robotics for Robot in 3 days

Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years

Create Positive Contributors for Society: *Host summer camps for 1st-8th graders *2,329 volunteer hours invested in 2018 season *62% alumni returned to local careers *Worked with 2 churches to show a robot at their Vacation Bible School *Partner with nonprofits/businesses Success in FIRST Leads To: *Fulfillment of a STEM education void *Local awareness *Community camaraderie Results: *36% of the team is out-of-district in 2018 (19% in 2014) *STEM development is supported locally

Team's innovative or creative method to spread the *FIRST* message

Partner with Area Teams: *Presented to city council to rename streets for CIR *Robo Rumble *Introduce a Girl to Engineering Day Individually: *Created interactive STEM lessons *Carry out street demos *Working with Veteran to redesign wheelchair *Collaborated with GEMS to challenge the girls *International Manufacturing Expo and Caterpillar Manufacturing Day Results: *Increased interest of STEM in community: average increase of team members from 20 to 30 *27% of the team has been female

Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Every Member... *Comes up with innovative ideas using traditional manufacturing methods *Becomes confident to share their ideas on an equal playing field with mentors *Joins the Roboteer family through team dinners, events, etc. *Targets new audiences to uniquely promote STEM Results: *Design methods featured in FIRST's "Behind the Design" book *Winning Einstein in 2016 is an inspiration to small/local teams *Small Town Team on a worldwide stage

Describe the team's initiatives to help start or form other FRC teams

Our goal is to create a FRC community by assisting in the startup and sustaining of local teams. Provide framework:
 *Shared resources: handbooks, sponsor packet, business plan *Sustainable model for starting/managing teams Provide support:
 *Follow-up with teams throughout season *Assist teams in solving robot issues Results: *Network of 9 local teams *Resource for local teams/rookies *Communication between teams established

Describe the team's initiatives to help start or form other FIRST teams (including Jr.FLL, FLL, & FTC)

ur recent success has created an environment eager to engage in STEM. FLL: *Worked with neighboring district to introduce FIRST initially through FLL *Hosted FLL based summer camp with students from other school districts to form a foundation for the start of future teams *Mentor two FLL teams Results: *By creating relationships with the FLL teams we draw more students to FIRST and pave a way to the creation of sustainable FRC teams

Describe the team's initiatives on assisting other FIRST teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the FIRST program

FLL: *Teach students troubleshooting skills *Inspire success/encourage FIRST continuation FRC: *Focus on alliance partners' strengths *Lend tools, parts, and guidance *Provide advanced software resource to teams *We offer easy and effective solutions for mechanical issues to other teams Results: *23 FLL students have progressed into FRC *Our experience allows us to assistance numerous teams *Teams seek us out because we offer simple solutions to complex problems

Describe how your team works with other FIRST teams to serve as mentors to younger or less experienced FIRST teams (includes Jr.FLL, FLL, FTC, & FRC teams)

FLL: *FRC students are the lead mentors for multiple teams *Challenge the students to have a problem solving mindset towards STEM concepts *Sustain relationships to inspire innovative thinking FRC: *Alumnus mentored rookie team in Canada *Are resource for teams who are looking to build swerve drive *Provided support to about 30 teams for ideas on design, scouting, etc. Results: *Impacted thousands of teams *Relationships with FLL students carry out after the season providing a path into FRC

Describe your Corporate/University Sponsors

Businesses: Caterpillar Inc, Boeing, Monsanto Fund, Precision Planting, IL Corn Processing, Deuce Development, 360 Yield Center, Tremont Lumber, Xtra Light Organizations: Tremont School District, Tremont Betterment Assn, Tremont Commerce Assn. Donations: Mentors, financial support, parts/tools, drivetrain, Lexan, wood, light fixtures, shop space, practice area, venue, laptops Results: *Sustainable team *87% working mentors are employed by sponsors, well-rounded mentors

Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years

Our Contribution: *Give recognition to sponsors: World Champs in 2016 *Provide source for skilled employees *Presentations for sponsors *Provide night security guards for town festival *Hold Open Houses: shop tours, sub-team demos, robot displays, etc. Their Support: *Provide media coverage *Donate mentor time *Give tours *Hire alumni *Monetary donations Results: *CAT sponsored local regional *65% of Mentors employed by sponsors *Work together for common goals beyond robot building

Describe how your team would explain what FIRST is to someone who has never heard of it

FIRST uses robots as a catalyst to create leaders for the future. The challenges presented in FIRST create excitement for science, technology, engineering, and math within our students and the community. FIRST Team 2481 aims to be more than robots by inspiring students at a young age and teaching them as they progress through the FIRST program. Students graduate high school bursting with confidence and passion from the technical, communication, and leadership skills gained.

Briefly describe other matters of interest to the FIRST judges, if any

Central IL Regional *Crucial role in starting/continuing *45% of volunteers affiliated with team *Mentors, Parents, and Alumni fill over 49 key roles Innovative: *Creative use of shop tools: ex. custom swerve drive modules *Creative use of components: T-Shirt Shooter, combined robots to create frisbee game for street demo, shooting/catching basketballs at fundraiser Companies *Alumnus started and leads CAT Young Alumni group *Employers hiring our students are pleased with the impact they make

Team Captain/Student Representative that has double-checked this submission.

Sophie Snow

Essay

FIRST Team 2481 Roboteers are pirates sailing the seas on a mission for a unique type of treasure. As a result of a strong, sustainable crew, we have a ship that is very successful. Take a tour with us as we show you the components that make us outstanding in FIRST.

FIGUREHEAD-A symbol used to represent the crew

Our journey began in 2007 when 4 students and 1 teacher from a school of 320 students learned the ropes with a local team. In 2008, we set sail on our own expedition. When the teacher retired in 2011, one of the original students became the lead mentor, and he continues to chart our course. Alumni fulfilling key roles on our team is an integral part of who we are.

The Roboteers' figurehead is a Pirate, and it symbolizes the team's core principles: overcoming "stormy seas" by seeing each challenge as a unique opportunity, reaching beyond our perceived boundaries, and allowing resource limitations to push us to think outside the box in our designs. Our creative machines have led us to win multiple awards, which culminated in winning Einstein 2016.

Winning Einstein was an experience that will forever impact our crew. It gave us the opportunity to reach out to more teams than ever before. Like Pirates, our team is constantly striving to explore new horizons that may have seemed impossible to attain as we reach further, try harder, and impact those we encounter along the way.

OUTER FRAME-The structure or backbone of a ship

The Roboteers aim to be a sustainable ship. We accomplish this goal with the use of student, mentor, and sponsor handbooks as well as a business plan and company partnerships.

Our team takes pride in producing well-rounded students who thrive as a cohesive unit. Cross-training sessions are offered year-round to prepare for the season. We align Team 2481's crew with educational standards to graduate college and career ready.

The mentor handbook is our tool for guiding our crew through rough seas. We insure stability by having core roles fulfilled by mentors and returning alumni. 20% of our mentors have been part of our crew since the start of our team and 50% have worked with us for 6+ years.

Our mentors model the importance of Coopertition and, as a result, our crew members learn to practice Gracious Professionalism in their interactions with other crews. At competitions, for example, they encourage us to help other crews with technical repairs regardless of our robot's state. Through these interactions, a community atmosphere is developed between our crew and other FRC crews.

The Roboteers became a 501c3 this year to gain more independence, giving our sponsors simpler ways to donate resulting in the team having financial flexibility. The 9 Peoria area FRC teams are primarily sponsored by Caterpillar Inc.; therefore, we seek additional funding to achieve financial stability. Presentations and our sponsor packet have helped us gain 8 additional local sponsors. When considering the start up of FIRST teams, we examine the financial stability of local corporations to ensure all local crews' ships are watertight.

Team 2481 seeks to build partnerships with our sponsors, students, and community. Companies seek out our crew because they see the benefits in our students as a result of being a Roboteer. 32 students have received internships and 65% of our mentors are employed by our sponsors. Additionally, one of our alumnus received an internship from AndyMark and participates in "Robot in 3 Days." Networking businesses via our alumni is a way the Roboteers have used FIRST to build partnerships within the community. We have an active relationship with our sponsors that inspires mutual innovation.

GUNPORT-An opening used to deploy a ship's defenses

Though from a small town, the Roboteers know how to deploy our ship's cannons to fire off the message of FIRST. In the last several years we have found an abundance of opportunities to explode FIRST in the community:

We presented to government officials and the IL School Board in order to promote FIRST in Illinois.

Our crew contributed to a district-wide presentation given by NASA, and we fixed the wheel on the Mars Rover prototype for the presentation. This unique event allowed us to spread FIRST with our entire district.

Our team was contacted by a retired Army Chemical Weapons Destruction Supervisor who was injured during service in Iraq and desired to rework his wheelchair to keep an active lifestyle. He stated: "I truly believe this project would benefit the entire handicapped world and would be a truly great asset to society. In short this would solve a real world problem that plagues all power chair users" (Army Contact). Our team members have collaborated with him during a STEM class to redesign his wheelchair's components, and we look forward to what this project will lead to in the near future.

FIRST headquarters invited us to demonstrate alongside founder Dean Kamen at the International Manufacturing and Technology Show. We also represented FIRST in a presentation given by FIRST President Don Bossi at the Caterpillar Inc. Tech Center.

We have supported our local regional for 4 years now by having over 45% of the volunteers affiliated with our team. 16 of those affiliates fulfilled key roles such as Regional Chairman, Volunteer Coordinator, FTAA, CSA, etc.

Students from our crew mentor two FLL teams, and we volunteer at local regionals. Our FLL involvement and the relationships we build are essential for developing youth interest in STEM, which inspires students to become future Roboteers and STEM leaders.

We collaborate with local crews to reach all of Central Illinois. Some joint activities include presenting to the Pekin City Council, FLL events, Robo-Rumble, the Discover Manufacturing Expo, and Introduce a Girl to Engineering Day.

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We expand our community outreach with interactive events at 4-H fairs, the Community Center, Senior Socialites, and athletic events. In addition, our team supports the town throughout the annual festival via our street demonstration, merchant's tent booth, parade float, food line operation, trash clean up, and night security. Over the past 5 years our crew has impacted the surrounding area which resulted in the doubling of our out-of-district students.

GEMS, Girls Excelling in Math and Science, focuses on inspiring girls to think deeper and branch into STEM fields. An all girl group went to the local chapter, and our success excited and empowered them. A mini-challenge was issued, and our team helped emulate a smaller version of build season.

We have hosted four science camps and impacted about 100 kids. We taught big STEM concepts to kids through fun activities. Some lessons taught during the 1st - 4th grade camp were prototyping, design skills, and chemical reactions.

We developed a challenge for the 5th-8th grade campers where we introduced them to robotics concepts via building a remote-control car.

During the summer, two local churches and three libraries had STEM programs. In order to enhance their STEM themes, we communicated with the leaders to find the best way to make what we were doing relate to the students. We were able to showcase STEM concepts through our robot to further inspire the next generation.

We volunteered to install the security system for a local church that allows us to use their facilities. This experience gave our students an opportunity to represent FIRST to those in our community.

Because of the impact the Roboteers have had on the community, we have gained their support. The town welcomes us back from competitions by giving town-wide recognition via open houses, signs, newspaper articles, etc. Our mayor and village trustees declared May 12 as Roboteer Day. Additionally local businesses recognized FIRST and our team by purchasing a slot on a billboard that was shown throughout Peoria, IL.

RUDDER-A tool used to guide the ship and keep it on track

As a crew, we allow Gracious Professionalism to guide us on our quest. We embody Gracious Professionalism as one of our crew's core principles and seek to find treasure in every crew by offering our expertise to capitalize on their strengths: "You guys were very very good, and very professional. Unlike a lot of the 'good' teams, you guys were still very respectful to our ideas when it came to game strategy. You all had a drive to win, yet kept having a good time throughout the event" (FRC Team 3397). The Roboteers encourage our alliance partners to strive for their best in every match, which helps build their confidence and inspire future success.

We've assisted other crews through game strategy analysis, design support, team development, drivetrain guidance, and student trainings. One example of when we offered assistance was when our drive team arrived early to a competition to find that most volunteers had been snowed in. The drive team used the knowledge gained from making field elements for local crews to build the competition field.

It's difficult to compare crews based on Gracious Professionalism—and perhaps harder to demonstrate—but other crews' responses to our actions are undeniable.

FO'C'SLE-The gathering place where the crew trains to become captains

For the Roboteers, finding treasure is much more than building a successful robot—the impact on our students is the real prize. Students not only expect to gain technical skills but also walk away as experienced presenters, communicators, and leaders. These entrepreneurial and problem-solving skills provide students many opportunities. Our successful "ship" helps students acquire internships and careers with our local sponsors and beyond. We have created a strong network of relationships that continues to support our students and helps them navigate their own journey.

Our crew will always strive to be a sustainable ship that never sinks. As Roboteers, our quest for treasure never ends; we will continue to find gold in each of our students and every team we meet.