

FIRST Impact Award - Team 2481

2023 - Team 2481
Team Number
2481
Team Nickname
Roboteers
Team Location
Tremont, IL - USA
Describe the impact of the <i>FIRST</i> program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in <i>FIRST</i> programs as mentors/sponsors.
Since our inception, 100% of our members graduated high school. Of our graduates, 18 students received a combined total of \$167,000 in FIRST scholarships and 81% of our graduating team are employed in STEM careers. Over the last 3 years, 94% of our students attended college and 86% have chosen to study a STEM field. Additionally, 49% of our alumni are employed locally and 20% of those employments are with our sponsors. FIRST has also inspired 23% of our alumni to return as mentors.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Supportive, rural, farming community Opportunities Notable relationship with district: students experience rare opportunities (i.e. actively helped build new shop) Diverse Perspective: Draw on students' farming backgrounds for robot designs Team Growth: Build outside connections via open houses, presentations, intentional contact Circumstances Small Student Base (319 students, 25 school activities): Emphasize local relationships Minimal Sponsor Base: Leverage social networking beyond our town
Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?
-Host Off-Season Events: Registered teams increased by 78% for 2nd year, increased local engagement -Science Camps: Trained & created excitement for future team members, 31% of campers joined team - Participate in local events (i.e. Caterpillar Family Day, local parades) & demonstrate to nearby schools: 48% of team is out-of-district -Host fun events for prospective students: 90% yearly student retainment - Built Robotics Center, designed t-shirt shooter for school events: Supportive community
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
Gracious Professionalism: Assisted 75+ teams in game strategy analysis, design/drivetrain support, team development Helped Turkish Team 7465 build/store crate Use Resources Well so Can Be Effective: Small town team on world stage (play-off matches at worlds for 8 consecutive years, ranked #19 going

into 2023 by www.statbotics.io/teams) Built Robotics Center through donations, no debt Inspire Affiliates to Volunteer: 65+ built Robotics Center 79 ran off-season Fill key regional volunteer roles

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

-Assisted 4 FLL, 2 FTC, 75+ FRC teams -Mentored 3 FLL teams: Over 10 years, 26 mentor roles filled by our students, 53 FLL students joined FRC -Remotely mentored FRC 225: Had mentor on the Board of Directors -7 Alumni mentored other teams -Mentors judged FLL scrimmages/qualifiers, assist local teams in building CAT sponsored practice field -Mentors assist teams with advanced software and effective mechanical solutions -Model to others for starting/managing teams: Share handbooks/building plans

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

-Students work with mentors to set personal goals & work together to achieve them. After competition season, we have performance reviews giving students accountability for their growth; enhancing students' technical/soft skills -Introduce unique career options (ie. toured Houston Space Center, alumni share experiences); alumni work at 59 different companies -Taught real world applications of STEM through constructing Robotics Center; led to more excitement about STEM

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

-Since we outgrew the shop & the school wanted it for a new industrial tech class, we partnered to build a Robotics Center: Both thrive -Join with town festival working the food line: gives them needed volunteers & us exposure -Present to town leaders (Betterment & Commerce Associations, Lions Club): they present themselves to the youth & influential groups hear us -Hold open houses: shows community who we are -Work with FIRST & school for off-season event: training opportunity for 35+ teams

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

We hope to continue sharing our pride for robotics by creating a safe space for everyone. We have found that students from other local communities and backgrounds desire to join our organization because they recognize us as a welcoming yet competitive team. To strengthen inclusivity we hold social events, team meals 5 times a week that family members also join in, and end of year/pre-season activities as a way to have times where we gather together and discuss our own unique perspectives.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

Mentors By networking, mentor base grew 60% in 2022 Develop mentor relationships that go beyond robots Handbooks outline team structure Mentor meetings: weekly & quarterly Students Competitive success draws students Fluid subgroups (not limited to one area) Required number of hours vs set meeting times Funding \$10,000 contingency fund 501(c)3 in 2020 Maintained 75% of sponsors 8+ years Building Catalyst for attracting students & mentors Safer working environment Secured space for team growth

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

Symbiotic Relationships Train students in advanced technologies that our sponsors use: Vision identification for crop spraying (ReFire, Precision), Advancement of autonomous technologies (CAT, Precision, Boeing) Brings sponsors recognition/media coverage Competition success attracts sponsors Small Town Networking Hold shop tours, presentations, robot displays, etc. Sponsors bring back alumni for internships/jobs Close community allows personal communication/relationship with sponsors

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

Being a small community the school is limited in funding & space for STEM integrated programs that funnel into our FIRST programs. Steps Taking to Fill this Void: -Students develop learning goals; mentors actively teach to those goals -Structuring our fall training program to improve it -Held science camps & school presentations to excite younger generations -Supported the school's initiative for starting an Industrial Tech program -Trained our students through the construction of the building

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

Our goal is to create a path towards future careers for students in a small town interested in STEM related fields. We do this by building strong relationships with our mentors who are actively invested in developing our next generation. We also focus on being a results oriented program which is critical for students to be successful. We progress on our goal by establishing personal and professional goals for each one, thus teaching personal responsibility and driving a positive impact.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

2 of our mentors founded the FIRST Capital Robot in 3 Days (Ri3D) team in 2020/21 & Redux team in 2023. 52 total alumni/mentors (10 Roboteers) joined together from 11 states to build robots in 3 days after kickoff. These teams impact FIRST by showing prototypes, game piece/field interaction, & creating informational videos. We showcased our building with the 2023 robots. First Updates Now streamed both Ri3D builds with 600,000+ views on YouTube & Twitch. The Instagram page has 1200 followers.

Essay

FIRST Team 2481 Roboteers strives to develop team members that are responsible, positive contributors to every community. By developing our team, building a BRAND NEW STATE OF THE ART

ROBOTICS CENTER, hosting FIRST FRC off-season events, and designing innovative robots, we have CHARGED UP our community for STEM.

WHO WE ARE Tremont, Illinois is a small rural village consisting of 2,277 residents with an average graduating class size of 69 students.

Our journey began in 2007 when 4 students and 1 teacher from our school joined a local FRC team. The next year they were CHARGED UP to bring robotics to our community, leading them to seek sponsors and mentors to start their own team. When the teacher retired in 2011, one of the original students became the lead mentor and still is to this day.

Being from a small town, student recruitment, funding, and attracting new mentors are obstacles that we face. By overcoming these hurdles we are a stronger team and family.

We make deliberate strides to retain students and manage turnover. Since we are based in a rural community, reaching out to local school districts through presentations, parades, and networking is important to finding future students. We have pulled from 11 communities and currently have students from 6 school districts. We also grow our team by mentoring 3 FLL teams. Our efforts resulted in us recruiting 10 new students (48% of our team) after 6 students graduated last year (30% of our team). This season's team consists of 48% out-of-district students and is 33% female.

To overcome the funding barrier, we create an active relationship with our sponsors that inspires mutual innovation. By bringing national attention to our sponsors (meeting/competing virtually during COVID-19 and creating innovative robots that capture social media interest), they seek out our members for internships and jobs. This year 58% of our mentors are employed by our sponsors. We intentionally communicate with our sponsors to maintain their continued support and reach out to sponsors beyond our local community. Additionally in 2020 we became a 501(c)(3) non-profit organization to help us be more sustainable. We ensure stability by having core roles fulfilled by mentors and returning alumni. 58% of our current mentors have worked with us for 7+ years, and 51% of our total mentor base are alumni who returned to mentor the team. From 2022-2023, we grew our mentors by reaching out to team alumni and bringing on 8 apprentice mentors. Our mentors model the importance of Coopertition by aiding other teams at competitions and off-season events. As a result, our members learn to practice Gracious Professionalism.

WHAT WE'VE DONE TO CHARGE UP The Roboteers know how to CHARGE UP our students and community. We seek opportunities to inspire STEM around us, such as building a Robotics Center, holding off-season events, and constructing unique robots.

To sustain success, continue team growth, and provide cutting edge technology to our students, our team built a new Robotics Center at our high school. The center is a separate building by the school that is 6,240 sq ft (4x bigger than previous space). It houses a practice field, shop area, classroom, and mezzanine. This space introduced new opportunities for growth, community involvement, and has CHARGED UP our community for FIRST.

In the spring of 2021 we approached the school about the possibilities of building a Robotics Center on the school grounds. Once build season started the idea was put on the back burner due to the estimated cost and the season starting. In April of 2022 the school approached us on our commitment of building

the Robotics Center because they wanted our previous space for an industrial tech program. This request got the project started. We knew there were limitations such as time and money. Contracting the project out was going to be upwards of \$750,000; however, we decided our budget was \$250,000. To offset this difference the mentors took on the responsibility to develop a plan of designing and constructing the building with student help.

We reached out to our alumni, sponsors, and community and CHARGED them UP to help fund, construct, and support this new building. Fundraising started in April and the community was so excited about this project that within 4 months we had the majority of our center fully funded. During the summer we also worked with the Regional Office of Education, the school board, architects, Tremont Village Board, Village Zoning Committee, and an attorney to get an approved plan which was signed on August 11, 2022. We broke ground on August 13. Throughout the building process we had around 65 volunteers as well as equipment donations from over 10 different sources, such as a scissor lift, bulldozer, semi to transport materials, etc. Less than 5 months after breaking ground we received our occupancy permit and 2 days later celebrated with the FRC 2023 kickoff. The visibility that our center gives aids in capturing the curiosity of our community. We are thrilled to see how this building will continue to inspire for years to come.

Another way we have CHARGED UP our community and the FIRST community is by hosting FRC off-season competitions (Roboteer Rumbles). In 2021, as a means to fill the void of competitions due to COVID-19, we hosted our first Roboteer Rumble with 18 teams. We received great feedback about our event, despite having a smaller competition space. This feedback led us to increase our 2nd Roboteer Rumble to 32 robots from 5 different states. During the 2nd Rumble, teams expressed their interest in our new Robotics Center, which led us to giving tours of the building site and encouraging them to pursue their own goals. By taking on the challenge of hosting FRC off-season competitions, we have opened new doors for our community to see what FIRST has to offer and to connect with other teams in our area and beyond.

Our school, because of what they see their graduates and our students doing, has been incredibly supportive of any ideas our team presents to them—including a building project on school grounds, the use of the entire school for the Roboteer Rumble, and the use of school space for our past shop. Local government organizations have joined us in our efforts to bring STEM to our community because of our ongoing communications with them. By having the school's and community's support we have been able to bring the mission of FIRST to Central Illinois.

Our innovative designs have been another way we are CHARGING UP those around us for STEM. Due to several of our students having a unique background in agriculture, we have been able to bring a different perspective to our robot designs and builds. We make an effort to build robots that draw people's attention, while still accomplishing the game's objectives. For example, last year's robot was designed to drive up the truss and had five swerve modules. We were able to conquer the challenge of a triple traversal climb, as discussed on Chief Delphi, because of our robot's unique climb. This accomplishment resulted in us being spotlighted in a video of a man eating his shoe, in which the forum thread received 16,700 views and is the most-liked post in Chief Delphi history. Additionally, we were featured on First Updates Now Behind the Bumpers and were the second most watched video with 11,000 views for the 2022 season and our 2022 reveal video received 25,000 views. In past seasons we have also utilized our creative ideas into making innovative designs, such as using a bike wheel for our 2020 robot. This reveal video received 21,000 views. As compared to other well known teams, these

numbers of views are very high, showing that we are drawing people in with our robots and designs and inspiring other FIRST teams.

Building the Robotics Center, holding off season events, and constructing unique robots have all been catalysts to ignite our community as evidenced by our mayor declaring May 12 Roboteer Day. Our team is constantly striving to explore new horizons that have previously seemed impossible to attain as we reach further, try harder, and impact those we encounter along the way.

INSPIRING THE FUTURE For the Roboteers, FIRST is more than building a successful robot—the influence on our students is the real prize. Students not only gain technical skills but also walk away as experienced presenters, communicators, and leaders. These entrepreneurial and problem-solving skills provide students with many opportunities to go out and make their own impact, becoming the next generation of leaders.

Our alumni are making real world impacts on people around the world via the careers they are choosing and the successes they are having. For example, we have an alumnus working for J&J creating surgical robots, Boeing developing software for autonomous aircraft, Odyssey Space Research writing flight software for the Dream Chaser Spaceplane, the Navy as a Nuclear electronic technician, AutonomouStuff, LLC prototyping autonomous vehicles, CAT on Advanced Driver Assist functions to make operating equipment safer, and 360 Yield Center engineering the software/mechanical systems for autonomous irrigation robots. Our team has been a proven pipeline with students using the manufacturing and advanced technology skills they are learning on our team in their careers.

One alumni in particular, who was inspired by FIRST, joined the United States Marine Corps and was successful during his service because of his time on the team. He was part of the KC-130J Crewmaster team when he was killed in a training accident. Our team dedicated the 2020 season to him because he embodied attributes we strive for our students to have and made a huge impact on our community.

Team 2481 is paving a path of advanced technology to better our world by CHARGING UP, inspiring, and impacting our students, community, and alumni! ;

