

FIRST Impact Award - Team 166

2023 - Team 166
Team Number
166
Team Nickname
Chop Shop
Team Location
Merrimack, NH - 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.
Over the past 3 years, Chop Shop has awarded \$6k in scholarships to graduating seniors. We have also won the NH Governor's Cup Award twice, giving seniors a semester free tuition at any public NH college. This year over $\frac{3}{5}$ of graduating seniors have utilized the free semester's tuition from the award at any NH state school of their choosing. Since 2020, 17 students have graduated from the team with 95% pursuing higher education and 65% into STEAM careers.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Merrimack is a suburban town with about 27,000 people. The town is a mix of businesses and residential property, while being community-oriented with many family owned businesses. There is a new administration in the school district that we have worked hard to create a good relationship with. This year our school has given us \$12,000, which is double the amount we were given last year. We have also received travel for events, and we are in the process of acquiring more workspace.
Describe the team's methods, with emphasis on the past 3 years, for spreading the <i>FIRST</i> message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?
We spread FIRST's message through unique STEAM youth education events. In 2022, we started our new "Elementary STEAM Days" event where small groups of 4th graders built LEGO solutions to problems on a desert island. Our team worked with and impacted every 4th grader in the district and all schools asked for us to return the following year. Future events will include more than just 4th graders. How many people we impact and their eagerness to learn more is how we measure results.
Please provide specific examples of how your team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years.
Our team acts as role models in FIRST through volunteering. In the 2022 season, 6 team members volunteered at District Champs and World Champs. In the 2023 pre-season, 6 members volunteered at the NHFLL State Champs. Volunteering shapes our members into role models by prompting them to go

the extra mile to make FIRST a good experience. We aspire to make every team member a role model to others. All team members volunteer for our hosted events such as our FLL Qualifier and Mayhem in Merrimack.

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

In 2022 we restarted our LEGO Summer Camp, where we had a group of 8 students from 1st grade to 5th grade participate in racing, jousting, and maze-running challenges. Here we taught the kids skills in engineering, cooperation, and the FIRST Core Values. This was an opportunity to foster teamwork and problem solving skills. In 2020 and 2021, we mentored 14 Girl Scouts to help them receive their Programming Badge. We are currently planning another Girl Scout event for this spring.

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?

We mentor two FTC teams, Team 18151 (since 2021) and Team 12789 (since 2019). In 2021, we monetarily assisted in the creation of Team 18151. In 2022, we assisted Team 131 in creating their sustainability business plan. Our mentorship initiatives allow many FTC and FRC teams in our area to gain valuable skills and experience. Our 5 Year Plan includes working more with FLL Teams that we mentored before COVID-19 and creating new FLL teams at our elementary schools.

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

In 2021 Saint Gobain, a local corporation, gave us an opportunity to use swerve modules as a passion project. We have used swerve drives since then, with our speed and maneuvering being a defining aspect of our 2022 robot. In 2020 Elbit Systems of America gave us space to practice our robot, along with machining services, and part donations. That same season, Workplace Modular Systems provided us new quality workstations for our shop valued at \$10,000.

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

This year we have a 5:8 female to male ratio in our team members, which is a 333% increase from last year. This shows that our recruitment efforts were very effective at increasing female membership. To promote inclusion, one of our mentors hosted an inclusion training meeting encouraging kids to not be ashamed about their identity and promote diversity. We also ensure that no team activity is out of reach for team members, with financial aid granted to any student in need.

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

In 2021 we created our 5 year plan. This plan is designed to steadily increase STEAM participation in our area through outreach. It also served a second purpose as a sustainability plan, adding accountability checks to ensure we are on track to complete goals. Last year, we completed four Year 1 and two Year 2 goals. Our current goals for the 2nd year involve expanding our current youth education programs in our community and forming partnerships with more STEAM companies and organizations.

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

Our sponsor strategy focuses on creating long-lasting partnerships with corporations. To recruit new sponsors, we created a spreadsheet of local businesses, along with a call script to follow up on letters. To retain and engage, we provide a list of benefits in our sponsorship table, including their logo on our robot, shirt, and website, along with thank you letters and invitations to our End of the Year Banquet. We also perform demos for sponsoring corporations such as Saint Gobain and Elbit.

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

An area of improvement for our team is outreach event participation. Currently, outreach events are mainly supported by the same group every time. This leads to events being understaffed and other members not being involved beyond the meetings. In 2022, we began integrating new members into outreach events and volunteering. This has led to an increase in members volunteering for our outreach events, hosted/ran events, and other FIRST events near us.

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

FIRST's mission is to inspire kids to be science and technology leaders and innovators. We achieve this by allowing students to design and build every aspect of the robot. A student-led team allows our members to gain leadership and independence skills along with fostering a love for STEAM. This has proven effective in inspiring students to be in STEAM, with 11/13 graduated members in college studying a STEAM major since 2020 and all current seniors planning to study STEAM after high school.

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.

Part of our mission is to build a team based on trust, respect, and friendship. We accomplish this through team hangouts and activities. Due to COVID-19, we started to engage in outdoor activities at parks and hosted barbecues. Hangouts outside robotics foster friendships between members that persist after graduation. We continued this tradition of team activities outside meetings for the following seasons with a yearly bowling night, team dinners, and dodgeball games.

Essay

Racers, Ready Your Engines As Chop Shop rolls up to the starting line of our 2023 season, our mission remains the same. We aspire to build a fun team environment and work together to spread the ideals of

STEAM. Much like a Formula One (F1) team, we work hard during competitions and the off-season to do our best and accomplish our goals. We charge our battery by contributing to our community and participating in public events.

Pit Crew and Home Track Compared to a F1 team's 300-1.2k members, Chop Shop's 30 students pales in comparison, but that does not mean we cannot do big things. From our recruitment strategy this year, 19 of our members are new, 26% of them having been in a FIRST® program before. We also have 5 veteran seniors. 10 members this year are female, a 333% increase from last season, and all female captains. We realigned our team this year to have 5 subteams: Software, Mechanical, CAD, Marketing, and our newest, Outreach. We have 2 captains and 5 leads, one lead per subteam, that work to inspire our newer members and teach them the importance of teamwork and Gracious Professionalism®. Leads help guide the team in the right direction but do not control all of the robot/outreach process. We have 14 mentors, up from 9 last year, who guide our students like F1 managers. Our new mentors bring skills in marketing, CAD, and leadership, while the rest continue to foster engineering, business, and software skills. 8 of our mentors are FIRST® alumni, with 4 being previous 166 members. Our recruitment strategy starts in spring with 8th Grade Move Up Night, where students come to our high school and browse clubs. In September, we continue recruitment with posters, in-school TV ads, announcements, and homeroom visits. Recruitment ends with our Open House, but students can still join later in the season. We targeted business students in our strategy this year by recruiting in business classes and highlighting the non-technical aspects of our team. Our home track is Merrimack High School (MHS). They are an important provider for Chop Shop. They provide 4,512sq ft of space and arrange our transportation. During the school year, they allow us to demo the robot at pep rallies. They even recognized our accomplishments at a school board event in 2022. Last year, the district doubled our funding to \$12k from our team's success. We are working to secure varsity status with our school to give our team more recognition. Family is an integral part of our team. Many parents contribute generously to the team by: comprising our booster group, organizing our fundraisers, hotels, and handling the majority of our financial legal work. Parents outside the booster group help by making food for the team and volunteering at events. Last holiday season we participated in a Giving Tree event and raised \$700 in gift cards given to a local family in need. Since 2020, the team has taken Sundays off even during build season for our students to maintain connection with their families. We form relationships with our sponsors by demoing at their company events, inviting them to team events, and giving them brand visibility. F1 teams advertise their sponsors via their car and racing outfits. Our sponsors also enjoy brand visibility via our team shirts, team banner, and robot. Last fall we brought our robot to Saint Gobain during an employee workshop day and answered questions from engineers about our robot and team. Companies that donate ≥\$500 get an invitation to our End of the Year Banquet, where we celebrate the team's accomplishments. We mainly fundraise in our community through two events: our car wash and calendar raffle. The car wash involves students washing cars at a local gas station with donations encouraged, raising over \$1k this year. For our calendar raffle, students reach out to local businesses to donate gift cards as prizes. People buy calendars to enter our raffle. This fundraiser brings together 30+ local businesses, Merrimack residents, and the team to raise ~\$5k each year.

Fueling Our Engine Fuel is needed to accelerate our outreach, and our 5-Year Plan was created to be that fuel. The 5-Year plan was made in 2021 to increase STEAM participation in our community through sustainable growth of outreach events. Currently, we are in Year 2 and are on track to complete all Year 2 goals. In Year 1, we completed all goals like running STEAM events in our elementary schools and high-traffic areas like parks, in-school demos, and overhauling our medias. We even completed two Year 2 goals by restarting our LEGO Summer Camp. This year, we are working towards a partnership with

University of Massachusetts, Lowell, restarting our Girl Scout Event, and assisting FIRST LEGO League Challenge® (FLLC®) teams at our upper elementary school.

Pit Stop Even with COVID-19 stepping on our brakes, we did not stop working hard to spread the ideas of FIRST® and be involved in our community. We printed 1k no-touch tools for our community so they could have minimal contact with high-touch surfaces. We also made 3k ear protectors to hold mask strings and make wearing masks easier. We donated these products to our schools, library, and local state representatives for distribution.

Our Grand Prix Formula One is committed to giving back to the communities they visit by inspiring local children with STEAM education. Similarly, our racetrack is filled with outreach events at every bend and curve to connect and inspire our community to pursue STEAM. In August 2022 we participated for the first time at BrazilFest in Nashua, a festival for Brazilian culture. 3 members and 1 mentor attended and demonstrated our robot to ~2k people during the event. We even participated in the cultural festivities. The "Robo Expo" is an event organized by FRC team 1058 to promote FIRST® in and around Nashua. They invited us to demo our robot at Pheasant Lane Mall where 6 members and 2 mentors attended, reaching ~4,000 people. We demonstrated our robot at one of our elementary school's Family Fun Night reaching ~1k people. Kids got an interactive experience with robotics by playing with the robot/watching how it moved and shot cargo. Our Elementary STEAM Days are an event we started in 2022 for local 4th graders. The event begins with a presentation about our team, robotics, and STEAM. Each group of 4 students was given an island and 3 prompts in which they had to build solutions out of LEGOs. The kids practiced problem-solving, creativity, teamwork, and STEAM application. We went to all 3 of our elementary schools and reached ~275 kids. National Night Out raises awareness for the police and other local organizations in town. 5 members volunteered to represent our team and demonstrate our robot to the community. Our local FIRST Tech Challenge® (FTC®) team also came to demo their robots. We reached ~300 people at this event, which helped the town connect with our team. At the town Halloween Party, we had a booth to showcase our robot and awards along with a carnival game to entertain younger kids. At our booth, we answered questions from families and got them interested in FLLC®. To support the town Rotary Club's 4th of July Parade our team participated with a float featuring the 2022 robot. At the pancake breakfast, we held an interactive demonstration with our robot to interest kids in robotics. The parade was attended by ~1k people with ~200 attending the breakfast. In 2021 we helped Jr. Girl Scout Troop 10731 obtain their Programming Badge; 4 members directly worked with 6 Girl Scouts. We taught them how to program EV3 robots and explained how robots are used in everyday life. Our team is currently working with the Girl Scouts of the Green and White Mountains to help more troops obtain badges. Last year, we restarted our LEGO Camp to teach kids programming with EV3 robots. 8 kids signed up to attend the camp with 3 students and 1 mentor volunteering. The camp included challenges such as racing, jousting, and a maze to engage kids in STEAM. Kids learned how to program with Scratch and engineer LEGOs in a competitive environment like FLLC.

Racing At Home We host and run races on our home track to keep the racing spirit alive. Since 2006 our team has hosted the off-season event "Mayhem in Merrimack". Last year we switched the date of the event from spring to fall. Mayhem is hosted in our highschool and 17 teams attended in 2022. We raised \$5k from this event for our team. Hosting in the early fall let many freshmen on FIRST® teams experience a competition for the first time. Members of our team worked hard to host the FLLC® Qualifier at MHS this year where 16 teams competed. 30 team members, 8 mentors, and many parents volunteered. Team members alone gained a combined 390 volunteer hours from this event. In January 2022 our team hosted an FTC® Qualifier at MHS and 16 teams attended. Members volunteered during

set-up, competition, and takedown, while parents aided in concessions. Not only were we able to host this event during the height of our build season, this event occurred during the middle of a meeting. In 2022 students volunteered at events we competed in. At the NE District Championship, 4 members gave their time as queuers and field reseters. Recently, 5 students and a mentor volunteered at the NH FLLC® Championship held at Windham High School. They collectively accrued a total of 55 volunteer hours during this event.

Crossing the Lap Line As we rev up to compete in the 2023 season, we adjust our mirrors to focus on both our past and our future. Starting from COVID-19 with our PPE and mask-holders, to community events like National Night Out and Brazilfest, to our 5-Year plan and promoting STEAM through Elementary STEAM Days and LEGO Summer Camp, the race has only just begun. Our gears are shifting higher to expand our reach towards everyone in our community and inspire our team, our town, and all of NH to pursue STEAM and better our world. ;

