

FIRST Impact Award - Team 226

2023 - Team 226
Team Number
226
Team Nickname
Hammerheads
Team Location
Troy, MI - 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.
FIRST Robotics fosters a holistic learning environment for our team and acts as a launching pad for many who discover their passions in the fields of STEM. In the past 3 years, over 95% of our team has graduated high school and gone on to attend college. Through our YouTube series Careers in STEM, we have interviewed many 226 alumni on their experiences working in companies such as GM, SpaceX, Amazon, NASA, and Microsoft. Multiple 226 alumni have also gone on to return as FRC mentors.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Troy is a city of 87,000 in SE Michigan. With Troy School District ranking near the top in the State of Michigan, demand for STEM and robotics is strong. We met that demand through outreach efforts and helping parents create more FIRST teams. We obtained grant funding from Troy Community Foundation to build two robots to support our youth outreach efforts. To give back to our community, we host events such as our biannual Adopt-A-Road clean up where we clean 2 mile long stretches of road.
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?
Attending a large number of outreach events plus hosting town halls and FIRST competition events are the key stables of what we do locally. To scale this up, we started leveraging the internet by producing a YouTube Career in STEM series where we interviewed 226 alumni, and providing resources for FLL, FTC, and FRC teams on our website. To measure results, we track statistics on outreach and competition events, team member event attendance, efforts, and their college plans.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
Through hosting the Sharkfest FLL Challenge qualifier and Explore festival, and Sharknado FTC qualifier and its off-season event, Team 226 has served as a role model team by engaging our local FIRST community. 226 members also mentored over 17 FIRST teams, providing assistance through in-person

meetings and online resources. We also actively participate in the Michigan Advocacy Conference and the National Advocacy Conference to expand interest and access to FIRST in schools across America.

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

Our team has actively mentored over 17 FLL and FTC teams this past season, assisted 6 FRC teams over the past 2 years, and our student members have helped start many individual teams in their own right. The Hammerheads have helped FRC Team Hammond with Impact Award resources, assisted the Lake Orion Dragons with hosting the 2021 FTC State Competition, and collaborated with local teams like the Argonauts in events.

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?

By introducing our interactive curriculum-based Shark Kits to students at the Boys and Girls Club of Detroit, we have actively engaged young students in STEAM activities and created a path for them to join FIRST Robotics. Donating our kits to underprivileged students, Team 226 provided them with resources that might not have been accessible to them. Through this initiative, we got young students excited about engineering and technology, increasing STEAM involvement in our community.

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

The Troy School District has remained one of our foremost supporters, providing us with our woodshop space and allowing us to use its facilities to host our outreach events and competitions including our Sharkfest (FLL) and Sharknado (FTC) qualifiers. This year, the district offered a portion of a \$555 million bond to our team, allowing us to set up a permanent competition field. Members of our team contributed to the advocacy of this bond which successfully passed this November

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

Emphasizing the core value of inclusivity, our team created our MakerSpace 4 All initiative, which seeks to bridge the gap in STEAM learning for students with learning disabilities. We have held events in collaboration with our schools and special needs centers where we interact with such students, bringing our robot and a variety of hands-on activities that allow them to foster their talents within FIRST

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

We place a large focus on ensuring the transfer of knowledge between our upper and lowerclassmen to allow us to sustain our team and its initiatives. To kick off our offseason, we hold a one-week intensive bootcamp where team leaders present and teach rookies the necessary skills for the build season. Furthermore, we use our intrateam challenges to grant our team members the opportunity to practice the skills they have learned in a low stakes competition and inspire their best work.

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

To facilitate the acquisition of sponsors for the support and maintenance of our team, we have established a sub-team within our main business team to promote continued growth. Our sponsorship sub-team has reached out to numerous local and international businesses with the aim of recruiting sponsorship. In the aim of retention, we send monthly sponsorship newsletters and a sponsorship video to our sponsors. We also engage our diamond-level sponsors such as GM by presenting our yearbook to them.

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

These past years, we've seen a communication gap between our business and engineering teams. To combat this, members can freely rotate through marketing, sponsorship, and awards in business and through design, programming, and fabrication for engineering to gain a general knowledge of each aspect of our team. Additionally, we provide our members the freedom to work in both business and engineering groups concurrently, so they can choose which are best interests them and further unify the team.

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

Our team actively works to create new leadership opportunities for our members in accordance with FIRST's mission. This past season, we attended a record 3 girls' competitions, creating leadership opportunities for the women on our team to showcase the skills they've learned in a competitive environment. Furthermore, we proactively create new leadership opportunities for all our members with new subgroups like data analytics and strategy.

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.

With a strong drive to help other FIRST teams, our students have built applications such as our customizable cross-platform Scouting app that allows rookie teams to track competition metrics and create strong alliances. In addition, we've designed applications like our Isocean project which aims to gamify and promote mental health learning. These projects allow our students to apply their programming knowledge and spread their work in a scalable fashion.

Essay

Intro Team 226 has emerged as a beacon, advocating, teaching, and creating STEAM opportunities for everyone we can reach. As Hammerheads, we ACT to embrace the values of FIRST Robotics in every way possible.

Advocate We understand the importance of advocating for voices that are unheard. Through our work, we have been able to engage an increasing number of young women, underprivileged students, and special needs children in FIRST Robotics and the STEAM community.

As one of Michigan's larger teams, we have long focused on creating STEAM opportunities for girls. This season, we participated in our all-time record of three off-season girls competitions: Bloomfield Hills Girls Competition, Grand Rapids Girls Competition, and the Goonettes Girls Competition. At these events, we've been able to showcase the extensive talents of 226's female leaders, with female members having been awarded \$3250 in scholarships and interviewed by media such as ESPN. By hosting events such as International Day of the Girl and releasing a Women in Science informational video, we further promote opportunities for women in FIRST. Our team's efforts have led to a significant increase in female membership from 10% a decade ago to 33% this past season.

Being a part of FIRST has greatly impacted the lives of our members and inspired us to start our MakerSpace4All initiative, hosting large-scale outreach events with a focus on those with special needs. In two years, we have hosted eight events across Troy, showcasing our robot and engaging students in hands-on STEAM activities such as circuitry and block coding. This year, we've also introduced Lego Mindstorm to spark interest in FLL and hopefully create a team for unified robotics in the near future. Additionally, we plan to increase the scope of our outreach to more schools and special needs centers. In addition to directly working with disadvantaged groups, we've also used our voices to fight for systemic change from the top-down. Team 226 has attended the Michigan Advocacy Conference and National Advocacy Conference, working with other teams to increase awareness and funding for robotics programs in schools. We've also met with US Senator Haley Stevens, Michigan Representative Padma Kuppa, and Michigan Senator Mallory McMarrow to secure support for the Elementary and Secondary Education Act of 1965. This act institutes grants for robotics programs, greater internet access in schools, and provides scholarships for underprivileged students. Due in part to our team's efforts, several of these representatives are now active champions of FIRST robotics, consistently attending FIRST competitions events we host. We've also worked with local officials including Mayor Ethan Baker, District Superintendent Dr. Richard Machesky, and Board Trustee Ms. Vital Anne, fostering invaluable relationships to better the community.

Through our efforts to expand FIRST teams in the City of Troy, we now have 50 FIRST teams (18 FLL Explore, 7 FLL Challenge, 22 FTC, and 3 FRC) in 12 elementary schools, 4 middle schools, and 3 high schools. This growth highlighted a lack of adequate STEM spaces for many robotic teams. As our relationship developed closer with our school district, we participated in our school district's Facility Review Committee and proposed a \$555 million bond in the November 2022 midterm elections for school building renovation including more dedicated space for STEM and Robotics at each school building. This bond proposal passed successfully and supports a key foundational need as we continue to advocate for STEM and robotics. For 226, this bond will provide a much-needed expansion to construct a full practice field at Troy High School allowing for sharing with FTC/FLL teams.

When the community needs our help, we are there to aid and advocate. In 2020, at the peak of the pandemic, the city of Midland was devastated by a massive flood. Within days, our team pulled together a donation drive, collecting necessities such as paper towels, canned food, and blankets directly to people affected. Similarly, the Hammerheads have worked to better our community through cleanup events at Lake St. Clair Metropark Beach and our biannual Adopt-A-Road initiative where we clean up

two one-mile roads in Troy. When cancer patients in our community needed hope, we teamed up with Making Strides Against Breast Cancer and decorated rocks with hopeful messages to display our allegiance to the cause.

Create Since our inception in 1997, the Hammerheads have worked hard to spread FIRST, becoming our city's largest student-run club in the process with over 90 members. We've built a foundation that allows all members of the team to learn and grow with 4 subteams: programming, fabrication, design, and business along with 30+ student leaders and a system of dedicated mentors and parents. Our team allocates new opportunities for people of all interests with a dedicated digital media team for video production and promotional design, an online presence team which maintains our website and grows our social media accounts, and our data analytics team which uses cutting edge technology to analyze scouting and competition metrics. Since our founding, the Hammerheads have grown the number of FIRST teams in our city to 63 prior to the pandemic and now stabilizing at 50 post pandemic. We host annual town halls plus Saturday FTC drop-in sessions, and mentor FIRST teams. To continue supporting teams, our members made resources available online through our 6 FRC manuals on topics ranging from CAD designing to fabrication to programming. 8 of our team's student members also serve as mentors for 17 FTC and FLL teams. Our team also hosts FLL/FTC events annually: Sharkfest FLL Challenge qualifier with FLL Explore festival, Sharknado FTC qualifier, and FTC Mayhem as an off-season competition. Our team even runs the Troy Science Festival during these events to showcase the role of STEAM in the real world and foster an interest in our community. Our outreach efforts have helped many of our FTC and FLL teams advance to the Michigan State Championship and even the FIRST World Championship in the last 3 years. For FRC events, we assist with the setup and teardown of the Troy district event at Troy Athens HS each year.

Team 226 has also created relationships with other FRC teams, in methods ranging from inviting Detroit rookie teams 6381 and 6382 to our workshop to help them program in LabView and build their first drivetrain, to working with the Bionic Blackhawks to create a FIRST Awards presentation, to assisting the Lake Orion Dragons in hosting the 2021 Michigan FTC State Championship.

Our team has also established strong relationships with businesses such as General Motors and the FCA Foundation, who have been crucial sponsors in our success. We have received grants from the Troy Community Foundation, Michigan Department of Education, and the National Defense Industrial Association. To supplement our funding, we held fundraisers, including working with national chains such as Chipotle and Krispy Kremes, as well as selling discount cards at local events to support both our team and local businesses during the pandemic.

Teach Members of Team 226 see teaching and engaging others not only as an responsibility, but an opportunity to progress FIRST and STEAM.

Last season, our team hosted and attended over 20 outreach events to educate others about the importance of FIRST robotics, including local events like Troy Daze, the Michigan State Fair, Oakland County Fair, and Selfridge Airshow. At these events, we showcase our robot and STEM instruments like our Van de Graaff generator, reaching hundreds of people. We also took advantage of the Troy Traffic Jam, an event for car enthusiasts, to educate families with young children about FIRST.

Team 226 also engages our school community in these activities. Every year, our student leaders visit the computer science and engineering classes in our school for National Computer Science Week to

showcase our robot and garner interest for the club. In addition, we participate in our school homecoming parades, football games, and club fairs to increase interest for technology among the student body and work with other organizations in our school.

Over the course of the off-season, students from our team coached elementary and middle schoolers at the Boys and Girls Club in Detroit in STEAM skills such as building circuits and block coding. We began by sending SharKits containing all the required materials for the course and then started an online class, sparking an interest for them to possibly join FIRST teams in their community.

We also value informing the general public of our progress. Our student leaders are responsible for website creation and maintain a strong online presence through weekly social media updates that provide documentation for other FTC and FRC teams and update viewers on our robot progress. We have also created a Careers in STEM Youtube series where our students interview alumni about their careers and how FIRST has impacted their lives. With 14 episodes across 3 seasons, the series has received hundreds of views and support from students in the STEAM community.

Conclusion This season, we have attended the most off-season events, 8, in our team's 26 year history and hosted competitions for all levels of FIRST. Our team has expanded, increased female involvement, and advocated for the largest bond in the history of the Troy School District to expand STEAM and FIRST robotics. We have also advocated for FIRST at the state and national level, worked with politicians, and taught students at 20+ STEAM and FIRST events, all while having fun and connecting those around us. As Hammerheads, we'll continue to fulfill our mission and send waves of impact throughout our community because individually we're drops, but together we're an ocean. ;

