FIRST Impact Award - Team 5166

2023 - Team 5166

Team Number

5166

Team Nickname

Fabricators

Team Location

Freeland, MI - USA

Describe the impact of the *FIRST* 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 *FIRST* programs as mentors/sponsors.

A 5th grade FLL rookie told our school board Robotics is his sport and means EVERYTHING to him; at a school valuing athletics, robotics is a purpose and lifeline. We compete at state and world championship venues and go pro in fields like computer/electrical engineering and skilled trades as well as nursing, law, and graphic design. All alumni take FIRST experience to the professional level and many continue their commitment to FIRST: two alumni started FRC8728 and one is a FIRST FTA.

Describe your community along with how your team addresses its unique opportunities and circumstances.

Freeland is a small community centered among the larger Midland, Saginaw, and Bay City. Our excellent schools and community spirit have caused growth from a rural farm town into a distinct suburb within the tri-city area. Our central location affords access to resources from surrounding communities (Dow, Nexteer, Consumers Energy) without tying team identity to the dominant industry of one city; it is also ideal for hosting FTC/FLL events, but FRC is typically a larger venue (we want one!).

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?

We expanded the pipeline of FLL and FTC students and mentors from 2nd-8th grade to ensure continued service to the next generation. We instituted yearlong systems with recruitment/development in the spring and competitions in the fall, supporting technically and financially. Student participation increased 67% and Mentors 57% vs. 2021. We bring robots to community events. Social media, publications, and TV coverage reach everyone in our community. Regular food drives are a key touchpoint.

Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.

Freeland is now the host for ALL FLL and FTC events in our region including official kickoff and offseason events. Our students logged 1200 FIRST volunteer hours in 2022, including FLL (250) and

FTC (700) hosted and/or run by Freeland as well as other events in Michigan (275). Students serve in key roles (referee, emcee, game announcer) at events. We mentor our 2 FTC teams and 4 FLL teams. We ran workshops (3D Print, Programming, Chassis) at FTC kickoff and directly assisted teams in many areas.

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

Started/mentored new FLL teams under Freeland Robotics umbrella (FLL30574, FLL56421, FLL56422, FLL56423): 21 rookie students, 7 rookie adult mentors, 4 student mentors. Started/mentored FTC21672: 14 rookie students, 1 rookie mentor, 1 experienced adult mentor, and 2 student mentors. Mentored FTC5386. Assisted FRC6020, FTC10615, FTC22881 and FTC10844 with programming. Assisted FRC8728 with safety manual. Assisted FTC17799 with CAD files. Assisted FRC1684 with calibration of shooting mechanism.

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?

Robot presentations in 3rd-6th grade STEM Classrooms and Freeland STEM Night (recruiting) resulting in skyrocketing growth (67% more students, 57% more mentors). Opened FTC Kickoff event to public: hosted STEM demonstrations for kids (cup stacking, penny boats, straw bridges) along with local STEM companies (Dow, Nexteer, Consumers Energy). We demo the robot at local events such as car shows, LPGA Golf tournament, FIRST events, and Walleye Festival. Student leadership/mentoring of FLL/FTC teams.

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

Freeland Lions Club provides significant sponsorship to the team, and we assist with manpower and visibility for their projects including food giveaways where students logged over 300 volunteer hours in 2022. Schauman Construction is a cherished local sponsor who believes in the team and in the mission of FIRST. As a non-school-sanctioned club, Freeland Schools has no obligation to us but has worked hard to provide increasing work space and assistance in obtaining MDE funding for the club.

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

We are excited to kick off the first phase of Autism Understanding Through Outreach (AUTO), which will create an awareness network and provide kits to students. The skills and needs of students with ASD such as digging deep into logic and visual/spatial reasoning often attract them to robotics; however, the fast paced hectic environment of a FRC team often presents challenges. These efforts will help our team and school understand how we can better serve these students.

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

FLL/FTC pipeline moved from weakness to strength. The year-round cycle will be a repeatable routine with recruiting in winter, development and practice in spring, and competition in fall. Skills and confidence build gradually as students and mentors move through the program. We will generally develop these

teams as cohorts, with FLL split by grade level, one FTC team for rookies, and one FTC team for veterans; this will cement the skills and team dynamic from 2nd-8th grade as they grow together.

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

Business team annually presents our sponsorship program to all area businesses. We seek mutual partnering opportunities (staffing Lions Club food drives, developing social media strategies with Blue Thumb). In Houston we offered Worlds Super Sponsorship packages with social media match dedications and other exposure. All sponsors receive a biweekly update newsletter; key sponsors are regularly invited to join us for personal updates. A dedicated sponsorship mentor helps keep efforts organized.

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

We only have a few short years to impact our team. Our next goal in team sustainability is to institutionalize succession planning for key roles in the team, recognizing key subteam captains (and mentors), and charging each of them with recruiting and preparing others to assume their roles. As our team matures in more discipline areas such as social media/video production, publications, and awards, our recruiting needs to target the diverse range of talent needed to keep us viable in the future.

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

The three key missions for the past year directly align to the mission of FIRST. Team sustainability is a prerequisite for ensuring that all Freeland students from 2nd-12th grade will have access to quality mentor based programs well into the future. Role modeling within FIRST ensures we are visible and engaging with students and mentors on other teams, maximizing sharing and inspiring each other. Engagement of the community at-large works toward building a world that celebrates STEM heroes.

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.

We are extremely proud of our Impact Award submission, which tells a story of hard work Freeland Robotics has done to meet the true challenge FIRST issues to us: to move beyond just building robots and toward changing the culture in our schools, in FIRST, and in the broader community. We truly admire many FIRST teams who we consider World Class; they are role models for us, and we are hungry and inspired for our Small Town Team to join their ranks. Nothing will stop us from chasing that vision.

Essay

Freeland sits in the heart of Michigan's Great Lakes Bay Region (GLBR) among larger cities Saginaw, Midland, and Bay City. Our strengths lie in tight connections to our vibrant business community and local pride. Freeland believes in its youth and supports local teams including Robotics with everything they have. Sponsors are families, friends, and neighbors vested in our success. Led by 5166, Freeland Robotics strives to live up to our vision: "World Class Performance from a Small Town Team." In Michigan we are fortunate to compete with the world's most admired FIRST teams; we understand the challenge. Recent missions on our journey focus on three key areas: organizational sustainability, role modeling FIRST in the GLBR, and engaging the community at-large.

In 2021 a weak FTC/FLL succession pipeline threatened our sustainability. FLL subsisted under various community mentors, not under the club umbrella. FTC5386 remained strong but tied to key mentors, and our second FTC team was not consistently supported. We addressed this by taking ownership of complete, inclusive programs for engaging elementary/middle grades. Securing next generations of Fabricators and mentors resulted in skyrocketing club growth.

For 2022 we instituted a yearlong recruiting/development/competition cycle for FTC and FLL. This included presentations in STEM classes and Freeland STEM Night, social media posts, school announcements, targeted parent emails, and informational meetings. With 26 FTC recruits, we ran a spring season to build a new robot and competed at Freeland's "GEAR-UP!" offseason event with two teams of rookie students and mentors. We started a second FTC team (21672) and four FLL teams; FTC participation increased 79% from 2021 to 2022 and FLL added 21 students and seven adult mentors. Overall, students in Freeland Robotics programs increased 67% and mentors 57% vs. 2021.

Going forward we will maintain the all-year cycle of recruiting/development in winter/spring and competition in fall. FTC21672 will be the Rookie/JV team and FTC5386 the Veteran/Varsity. FLL teams will similarly split by grade level to foster long term mentor/student relationships. This allows a healthy flow of student and mentor cohorts through these programs.

Sustainability requires strong financial resources enabling team success. Over the past two years, we achieved sustained growth in finances to match our growing teams. Fundraising has TRIPLED for the 2021/22 and 2022/23 seasons vs. our 2017-2020 run rate of $27K-$32K, reaching over $100,000/year club-wide.

Fundraising is synergistic with team growth. Some sources scale directly, such as grants from FIRST GLBR, Michigan Department of Education, and FIRST Portal, as well as membership dues. However, multiplying networks of influence and support through new members and families has made the most impact. One example is when a fifth grade FLL student led a team to request materials to build tables from an established local sponsor who is a builder. The owner was so impressed, not only did he donate materials for tables, but also opened an unlimited account at a local supplier for ANY building materials needed by the club!

Innovative and tenacious resource capture is also important. Outreach activities such as Lions Club food giveaways are rewarded with Dow Gives grants. In-kind donations of materials and shop time are accepted. Families take advantage of matching donations or compensation of volunteer time from employers. For the Houston FRC Championship, Worlds Super Sponsor packages included match dedications, camera time, and special signage for the robot. The school district has rewarded the club

with increasing workspace over the years. Students participate in candy bar sales not just for the dollar, but to inspire the community through conversations about STEM and generating energy that is reflected throughout our town.

The work has led to outstanding results. FLL30574 won the Robot Performance Award at FLL State Championship with the highest score in the state. FTC21672 was a semifinalist at FTC State Championship and won several awards. FTC5386 won the Inspire Award at FTC State Championship and is one of five FTC teams representing Michigan at Worlds! Finally, our sustainability efforts earned FRC5166 the MI State Entrepreneurship award, our first ever State level award.

Our second mission is to become role models in the FIRST GLBR: to be visible, show up for work, exemplify FIRST Core Values and Gracious Professionalism, and inspire/bring others along for the ride. We do this by hosting and running events, volunteering, and reaching out to other FIRST programs in our area and beyond.

The Fabricators are founding members of FIRST-GLBR with two permanent board seats; this 501c(3) nonprofit provides financial/technical support to teams as well as sponsoring and supporting two district FRC events and the offseason FRC “Bot Bash.” FIRST GLBR also supports the region’s FTC Qualifier and offseason “GEAR-UP!” events as well as the FLL Qualifier–ALL hosted by Freeland Robotics.

In the last year our students logged 1200 volunteer hours in direct support of FIRST events and teams. Freeland has hosted FLL with Nexteer for many years; this year five FRC students mentored teams, while many other students assisted in event roles. We hosted FLL Referee training for this event at our facility. Freeland has hosted and run the FTC Kickoff for several years; in 2022 we added a STEM Event/Trade Show featuring FIRST vendors such as Andymark and local STEM companies such as Dow, Nexteer, and Consumers Energy. Students ran 3D printing, Blocks programming, and FTC robot chassis workshops as well as fun STEM games such as cup stacking and penny boats. We seized the opportunity to host and run our first ever FTC tournament–the Freeland “GEAR-UP!” offseason event–in May. This event was unique in that all volunteer roles except Judges were filled by students, resulting in a wholesome atmosphere. We then jumped at a chance to host our first in-season FTC qualifier on Week One, November 2022.

When we became aware the North Branch FTC Qualifier Event Director was seriously in need of volunteers in their first time hosting, our FRC students assisted in significant roles of emcee, game announcer, DJ, and three referees on short notice. We also assisted the FTC Howell qualifier and FTC State Championship (emcee/referees). We volunteer at FRC events as well when we are not busy competing, such as the Bay Bot Bash and Midland FRC Qualifier.

FRC5166 Alumni continue to volunteer after graduation: two students helped start the Troy Argonauts, FRC8728, and a recent graduate attending Michigan State is a leading Field Technical Advisor for FTC logging over 400 hours per year by herself!

We advocated with Congressman Dan Kildee at the FRC State Championship, sharing personal impacts of FIRST on team members and asking for continued support of FIRST. We assisted FRC6020 with Labview programming as well as FTC10844 and FTC22881 with Blocks. We assisted FTC5386 to create a YouTube Shop Safety video listed as a resource on the FIRST in MI website. FTC17799 Newgen Leaders of Petrolina, Brazil, contacted us via YouTube and we shared CAD files with them; we continue

to communicate via social media and Zoom. We sent our safety manual to FRC8728 to use as a guide.

Our third mission is to connect with and energize the community at-large. The vision of FIRST is to transform our culture, and this cannot happen without reaching beyond the boundaries of FIRST to use our profile and resources to inspire the community.

We are excited for the first phase of our team's newest project, "Autism Understanding Through Outreach (AUTO): Just The Beginning", which will reach out to teachers and students in our school district to provide kits for students and spread awareness. There are synergies between robotics and the skills of students with ASD such as the opportunity to dig deep into logic and visual/spatial reasoning; however, the fast paced hectic environment around a FIRST team often presents challenges. Recent team experiences inspired us to begin this effort to understand how we can better serve this student population.

We partner with the Freeland Lions Club, who provide significant sponsorship to our team. We help them distribute hundreds of thousands of pounds of food to families in our area at monthly food giveaways, allowing us to reach thousands of people with simple gestures of kindness. Our students have logged over 300 volunteer hours at these food giveaways this year. We are also refurbishing a bingo board for the Lions to use at their Freeland Walleye Festival fundraiser.

We bring robots to numerous events including the Garber Car Show, Freeland STEM Night, and Great Lakes Bay Invitational LPGA tournament. Our students logged over 100 hours at such events.

Social and print media efforts over the past two years have raised our profile. Articles in Freeland Living magazine reach most area homes (~4000). Coverage of our events by WNEM-TV5 reaches hundreds of thousands throughout the region.

Our teams advocated with the Freeland School Board including testimonials from students. One of our messages to them (borrowed from Dean Kamen) was that robotics is Freeland's only sport that everyone can go pro in, and that their continued support is critical to growing our influence.

Though we have done much, we are not near finished. Next steps in sustainability include recruiting more and diverse talent to all teams with an eye toward succession planning for key roles. We have a large organization to support, and our team needs even more diverse talent: artists, writers, public relations, project managers, etc. FIRST role modeling will expand to include more FRC teams to lend experience in technical and organizational areas. Further, we will define the next phases of AUTO as well as a plan for growing our YouTube channel. ;