

Chairman's Award - Team 302

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2022 - Team 302

Team Number

302

Team Nickname

The Dragons

Team Location

Lake Orion, Michigan - 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.

302 has a powerful impact on our students' future by helping them to grow their technical expertise, problem solving skills, and leadership abilities. 60% of 302's graduating members earned scholarships last year and 97% of our alumni attend college pursuing STEM fields. Several alumni members have gone on to work at world-class companies, such as General Motors, Kostal, American Axle, and Harman. Many of our alumni stay involved mentoring and volunteering with FIRST.

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

Lake Orion has a strong automotive/manufacturing presence which provides access to exceptional mentoring. 302 has become a fixture in the community, being asked to participate in parades, summer camps, science expos, and our annual Dragon on the Lake festival. In the past 3 years, we have promoted STEM and FIRST awareness at 70 events, contributing 3300+ outreach hours. Responding to the needs in our area, 302 organized a PPE drive and built a custom wheelchair attachment for a local woman.

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?

A key to 302's sustainability is our transitional programs for K-12. We run summer camps for students moving between FLL-E and FLL-C to teach LEGO Mindstorms and from FLL-C to FTC to teach JAVA programming. From FTC to FRC, we run our Year One program, training them with the technical skills needed for an FRC season. We promote these programs at community/school events, such as parades and expos. By engaging students, Lake Orion participation in FIRST has increased by 200% from last year.

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

Team 302 shows a strong commitment to the FIRST community, by hosting 2 Lake Orion FLL-E Expos, co-hosting 6 FTC Qualifiers, and 3 FTC State Championships. This totaled 2550+ hours of volunteer work. We act as software beta testers for FRC; attend the National Advocacy Conference annually to lobby education spending; and share our practice field with other teams. We were nominated as a role model by another FRC team and won the Bob Nichols Cornerstone Award at Kettering Kickoff, last September.

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

302 has created a *FIRST* movement in Lake Orion. We started 16 FLL-E and 8 FLL-C teams, reaching 220 students over all levels. We post to social media, send flyers, hold info nights, host an annual RoboExpo, and train coaches. We assist our teams as needed, providing funds, sharing our workshop and expertise with all of our teams. We mentored our younger teams for 750+ hours this year. To help others compete at their best, we share our practice facility with FRC teams and host FTC scrimmages.

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?

302 inspires with hands-on experiences at science fairs and summer camps, where students line up to drive our Connect 4 robots. Our t-shirt cannon, Spitfire, thrills crowds and reaches a wider audience at football games, pep rallies, parades, and an FTC State Tournament. Our students initiate and lead off-season projects each year, like creating a wheelchair attachment, installing a waterjet, and training others in new skills. Through our efforts we've excited 3500+ people, showing STEM is fun.

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

When COVID began, 302 inspired a statewide PPE drive by FIM to deliver 250K masks from GM for future FIM events. For 2 years now, we unpack and sort meals monthly with Blessings in a Backpack, receiving a Community Service Award. 302 partnered with our school to buy a waterjet, and with GM to acquire new equipment, to benefit our engineering programs. Kettering University has donated t-shirts for our cannon; and we presented at their events. We co-hosted 7 FTC tournaments with other FRC teams.

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

Our team offers opportunities to all, providing scholarships for those who cannot afford fees. We highlight positive character traits, encouraging our students to be accepting and inclusive, through activities such as Wisdom Wednesdays. By recruiting for an annual Girls Competition, we have increased female membership to 34%. Female students make up 44% of our leadership positions. Our "One Team" initiative focuses on building bonds with activities like escape rooms.

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

Lake Orion Robotics has grown exponentially since we established our "FIRST Pipeline", by forming 28 teams across all levels. 302 runs summer camps, teaching students the necessary skills to ensure a smooth transition between levels. We run our unique Year One program, which mirrors the structure of an FRC season, every fall. Our pipeline sustains our programs with resources, reserving funds to ensure we continue each year, and by investing 10% of our budget into lower-level teams and outreach.

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

Our team has partnered with 40+ sponsors ranging from corporations to local businesses, and worked with a newspaper to build a larger network. Our reward system offers different benefits for each level of sponsorship. We engage with sponsors at their events, such as the Lion's Club Jubilee and Goddard Preschool Camp, and we recognize them at our RoboExpo. We held two fundraising competitions, arming students with the skills and materials needed to raise funds, earning \$16,000 each time.

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

To identify areas of improvement, we engage in a team-wide analysis, and survey members in team interviews. Based on feedback, we are focusing on inclusion, following the motto, "One Team". To improve communication, we continue to use Microsoft Teams, ensuring everyone is aware of activities and able to participate, even virtually. We made daily kickoff more focused, and our Program Management team facilitates connecting subteams. Leadership meets weekly to ensure everyone is on the same page.

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

302 advocates STEM education for younger students, raising awareness and grabbing their interest early to ensure our pipeline is full of students. In 2019, we reached the first part of a standing goal to create a team at every level of *FIRST*. This year, we achieved our next milestone by establishing teams at every school in our district, totaling at 28 teams. 302 also participates in the National Advocacy Conference annually, lobbying our Senators for STEM funding, for the benefit of all.

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 meet 750+ hours year round, focusing on growth, learning, and giving back. Student-led off-season projects are

encouraged, allowing skill development. When our school was faced with canceling engineering classes due to a teacher shortage, they came to 302. A mentor stepped up to teach, giving 120 students a chance to learn. Our student leads take on the roles mentors held prior, such as coaching others and planning events. Our unique Year One program trains new students with necessary skills.

Essay

Introduction

Team 302 has become a fixture within and beyond our community, spreading FIRST and stepping up to assist other teams, our schools, our sponsors, and individuals. For 23 seasons, Dragon Robotics has set forth goals and a vision that builds an environment based on inclusion, perseverance, creating innovators, and forming lasting relationships. It is clear to all that our passion for STEM burns as hot as dragon's fire.

Broader Impacts/Spreading FIRST

This year, 302 has achieved another milestone in our goal to spread FIRST by establishing a team at every school in our district. After many of our younger teams were paused last year, we came back blazing, stronger than ever, going from 5 teams to 28—16 FLL-E, 8 FLL-C, 3 FTC, and 1 FRC, with 220 students involved. We continue to make sure all can join by hosting FLL information nights to organize teams and prepare mentors. We promote STEM by showing off our robots at school events, such as 8th Grade Orientation, Freshman First Day, and many elementary science fairs.

302 branches out to build relationships with both FRC and FTC teams, giving us the connections to make a larger impact. This starts by ensuring younger teams have access to the full FIRST experience. We partnered with our own 3 FTC teams (11691, 12862, 8580) to host two FLL-E expos. We've worked with three fellow FRC teams to co-host seven FTC tournaments. We were thrilled to host our first ever Lake Orion FTC Qualifier this year—run entirely by our teams. By including middle school teams in our activities, we show them how hosting events allows us not only to give back to our community but reinforces their interest to continue in FIRST. Overall, 67% of 302 students volunteered this year at our hosted competitions—they spent a total of 1340+ hours.

To ensure that our teams are able to compete year over year, we offer financial support to our FTC teams as needed, pay expo fees for our FLL-E teams, and provide seed money to our rookie teams. We assist our younger teams as needed, supplying them with mentors, materials, and workshops. For example, our students engaged with middle school teams, teaching them new skills—such as how to use CAD, a 3D printer, and a CNC router. With our influence and support, we were proud to see each of our FTC teams compete at the State Championship. We were also happy to share in the excitement of our FLL teams, cheering on 3 FLL-C teams at states and our FLL-E teams at our Dragon Display Expo.

Outreach

A community is only as strong as those who engage in it. That is why, in 3 years, 302 has given 1500+ hours to better our home. Our team promotes STEM with small hands-on connections, large audience displays, and community service. To leave a lasting impression, 302 created "Connect 4" robots for all to play in a friendly, interactive game, while learning about the benefits of STEM programs. For the first time, we partnered with the Oakland County 4H Fair, where students from many school districts lined up to drive the robots. We also have a standing invite to run a booth at our community's largest annual festival, Dragon on the Lake. We include our younger teams in these events—specifically during our Homecoming parade, where our large presence shows that robotics is for students of any age.

One of the things 302 is best known for in our immediate community is our custom-made t-shirt cannon, Spitfire, which we take to football games, FTC tournaments, and various outreach events. Spitfire has become a fan favorite, elevating robotics from a little known activity to having the student section at home football games chant 3-0-2 when they see us coming.

302 students overwhelmingly accepted the challenge to help our community's children by preparing meals monthly through Blessings in a Backpack, starting in COVID and continuing today. Our efforts were recognized by our state senators when we were honored with a local Community Service Award. We also continue to bi-annually clean our adopted portion of a local trail.

Our community has come to realize that 302 takes on any challenges that come our way. This past summer, we were approached by a local woman needing a custom attachment for her wheelchair. Our students used their engineering knowledge to create several iterations, testing them out with her every couple of weeks. These meetings were led by students who, taught by mentors, utilized industry practices such as empathy interviews to both spread the effect of FIRST in the community, and prepare them for engineering careers beyond FIRST. By the end of the summer, they had created two rotating table attachments, and in doing so helped a member of the community and further developed their own technical skillset. The team plans to reach out to the senior center in Lake Orion for more projects such as this.

Partnerships and Sponsorships

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Maintaining a strong partnership with our school is always a top priority and this year was no different. When approached, our members volunteered to tutor students struggling in programming. With a shortage of engineering teachers jeopardizing classes, one of our long-time mentors stepped up to teach, giving ~120 students the chance to learn. We also partnered with the Lake Orion High School Marching Band to help with prop build, lending our shop, motors, and expertise. 302 students presented a business plan to our school's engineering department to support a joint purchase of a waterjet that is now benefiting both groups, and creating learning opportunities for all engineering students. As a result of our continued partnership with the school, we have been provided with spaces to work and build a practice field, giving us the chance to host FRC and FTC teams.

Long-term sponsorship is the key to our financial stability and we build relationships with our 40+ sponsors, creating lasting bonds. When local businesses were struggling during COVID lockdowns, we focused on supporting them, by driving customers towards them. At the Lions' Club Jubilee, we added robot racing to the day's excitement. We partnered with Kettering University to promote their STEM program by firing their donated shirts from our t-shirt cannon at a football game. We also saw additional needs during the pandemic; we reached out to our sponsor, General Motors, to obtain 250K masks for FIRST in Michigan in-person events this year.

Opportunity For All

On Team 302, student passion drives our success. We ensure that anyone can participate by offering reduced team fees and scholarships. To foster further diversity, we compete in a girls only competition, attend women in STEM events, and invite female alumni to share their experiences. Students advocated to take on greater leadership roles. This inspired the development of business plans to explore swerve drive and acquire a waterjet, keeping students engaged year-round. Student leads meet regularly to discuss issues and plan projects in order to keep the team focused on our goals. Our commitment to student leadership is based on training, diversity and inclusion. Everyone is given chances to speak, present, and grow, encouraging students to find their voices. As they gain experience, our members are empowered to mentor younger students, to guide 302's future. "Wisdom Wednesdays" were added in 2019 to share short lessons based on historical figures, current events, or mentor experiences, providing a focus on how to address challenges with positive actions and enriching a students' ability to grow.

We are constantly looking for ways to keep students involved and when faced with the challenges of COVID, we adopted Microsoft Teams in order to meet and collaborate virtually. To promote unity, we continue to use this platform when students need to meet in alternate locations or cannot make it to in-person meetings due to snow or quarantines.

Sustainability

302 recognizes that the future of our team relies on many factors including: developing technical skills, embracing improvement, financial stability, and recruiting students and mentors. To ensure our continuous sustainability, we implemented a year-round model.

In the spring we recruit and retain students in FLL and FTC to establish our "FIRST Pipeline"; this ensures a constant flow of students, parents, mentors, and funds throughout the Lake Orion Robotics Program. To make jumps between levels easier, we host transitional camps each summer between FLL-E and FLL-C to teach block programming, and again between FLL-C and FTC to teach JAVA programming. In the fall, we run our unique Year One program, designed to help transition students into Team 302. It mirrors an FRC competition season, aligning students into chosen sub-teams, and helping them learn to build a robot to play a custom game versus the varsity team. The Year One program sees students joining Team 302 with the necessary skills to contribute during the official competition season. As a result of this program being introduced, our retention rate has nearly doubled.

Since we've established it, our year-round program has been used as a model for other teams. We have presented our Year One program and our team's sustainability plan at Kettering Mentor Workshops to inspire newer teams to develop their own models to spread FIRST in their communities all year long.

A Brighter Future

Team 302 instills the values of teamwork, innovation, and leadership in the next generation. Our students develop the skills and confidence to continue to make an impact in the world, rapidly reacting to our changing environment. 302's legacy of promoting STEM, creating connections, and engaging others has been ablaze for 23 years, and we plan to keep it burning, long into the future. In FIRST, we may all be on separate teams, but we share a passion to deliver a brighter future for our world. United together, we make a team.

ONE TEAM.