

***FIRST* Impact Award - Team 7166**

2024 - Team 7166
Team Number
7166
Team Nickname
Red Thunder Robotics
Team Location
Laingsburg, 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 has significantly impacted our team and students within our community to pursue STEAM careers. 94% of our alumni have pursued higher education, with most of them majoring in a STEAM field. Our alumni have received \$30,500 in FIRST Robotics related Scholarships in the past three years. 50% of our mentors are FIRST alumni. 54% of current members plan to pursue a career in a STEAM field, while the remaining are undecided.
Describe your community along with how your team addresses its unique opportunities and circumstances.
We are located in a small rural town where there is a lack of STEAM options. Prior to 2021, there were no K-8 STEAM extracurriculars or classes in Laingsburg, which gave us an opportunity to expand robotics into a sustainable K-12 program. To help gain access to STEAM, we host events that involve our community such as summer camp and Family STEAM Night. Through our outreach, we engaged parents and community members to become FLL coaches and reviewers. We also offer scholarships for team dues.
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?
7166 uses several methods to spread the FIRST message. We maintain an active social media presence and promote FIRST programs and Core Values. We advertise events like STEAM Night, summer camp, and local appearances such as parades and festivals. Through parade participation, we reached thousands. These efforts resulted in an increase of teams by 110% from the 2022 season, and 6% of our K-12 participation rate is students outside of Laingsburg school.
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.
We are passionate about making a difference. Our team mentors 8 FLL and FTC teams, assists 15 more, while also volunteering for events such as meets and competitions, including FTC and FLL State

Championships. We hosted an FLL Explore festival, an FTC league meet, and an offseason programming workshop. We also help by assisting teams in need. When 8300 needed help building their climbing arm, we sent helpers to their pit. We also helped 5641 and 5084 write and troubleshoot their swerve codes.

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

A cohesive FIRST program is crucial to our sustainability. In the past three years, we started 19 FLL and 4 FTC teams. Many of our members assist these teams, amounting to 1590 hours of volunteering time. We provide experiences that expand STEAM education in young learners, such as our Family STEAM Night and summer camp. We are actively working with a local school to start their own Explore program.

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?

Our mission is to Inspire the Next Generation of STEAM Leaders. We inspire our youngest students with Robotics Read Aloud. Our most impactful event is Family STEAM Night. Through hands-on stations, robot demos, and spirited displays, we generated enough excitement to grow our teams by 250%. To inspire girls in STEAM, each year we host Girls Who Code with local Girl Scouts, resulting in a 12% increase in female FIRST participation K-12. Further, we have established all-girl teams at each level.

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

7166 values its partnerships with others. This summer, we worked alongside Pro-MEC employees to build our new super pit. We partner with area teams in Capital Area Robotics League, focusing on building a sustainable base for robotics in Mid-Michigan. The strongest relationship we have built is with our Lions Club. We donate our time to staff their fundraisers and community events. We, along with 8 area FRC teams, are actively pursuing Baker College Owosso to become a host site for our county.

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

Diversity is important to our team's success. We are 36% female, 12% non-binary, and 52% male. Our female membership is so large we fielded 2 drive teams at an all-girls event. To encourage women in STEAM fields, we host seminars with the Society of Women Engineers. To show solidarity for our LGBTQ members, we participated in Rainbow Rumble. We train our team on how to work with neurodivergent individuals. Our work tables are ADA compliant. We offer fee waivers for our team dues.

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

Creating a pipeline by starting members in early elementary ensures our team sustainability, along with established sponsorships. Over 50% of sponsors have partnered with us for a year or more. Internally, we use a badge system to pass knowledge from our subject matter experts to our novice members. Our best indicator of success is our 8th grade apprenticeship program. Following in FRC footsteps, our FTC students also volunteer their time with younger teams and outreach events.

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

Our sponsorship team aims to secure at least one new sponsor each season. Many of these sponsors come from parents, mentors, and our community. We create a list of potential sponsors and write introductions and follow up scripts. To engage sponsors, we email newsletters to keep them updated on progress and accomplishments. We also tag them in social media posts. To retain sponsors, we also demo our robot during sponsor visits. We also invite them to our season ceremony and to our competitions.

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

An area where we strive for continuous improvement is connecting with area FRC teams. One of the most impactful events we organized was a programming workshop that several area FRC teams attended. A fun outreach that all 9 FRC area teams participated in was the Curwood Children's Parade. Finally, we are connecting with team 5641 to help them write their swerve code for the 2024 competition. We also work closely with teams 3655, 7226, and 6078 to spread awareness to the greater Lansing community.

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

We believe we are The Closest Thing to Real Life While in High School, and operate our team as a business to provide our students an authentic experience. Our operations team manages the team's projects, and students are encouraged to take leadership positions and become subject matter experts. Students also serve on the Student Leadership Team which organizes team outreach events and reviews documents like the Team Handbook. These students participate in interviews to gain valuable experience.

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.

7166 strives to embody Dean Kamen's philosophy of being student-driven, mentor-guided. To accomplish this we implemented a Student Leadership Team, which is responsible for organizing outreach events, seeing projects through, and developing the FIRST talent pipeline. Each summer, we host Leadership Seminar, which is open to anyone interested in improving their leadership skills. Through this experience, we have empowered members to find their voice and be leaders in all aspects of their lives.

Judge Feedback

Who/When

Feedback

Apr 04, 2024
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If you could change one thing about our presentation, what would it be?

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

For the past seven years, we have used robots to build kids. What started as a small group of students has expanded into a vibrant K-12 program that provides FIRST robotics education to 10% of students in our greater community. Through our tenacity, we have cultivated friendships and developed partnerships within our community. Laingsburg is a close-knit community that supports one another. As our community supports us, we strive to give back, make an Impact, and Build our Legacy.

To us, FIRST is more than “a thing to do after school”. It is where we found friends and a larger community with similar interests. Giving back to the FIRST community is built into the ethos of our team and our members have spent almost 1,600 hours volunteering. Five of our members serve as either junior mentors or permanent assistants for our Explore, Challenge, and FTC teams. For the past two years, one of these students mentored both an Explore and FTC team in the same season. Three of our members serve as Challenge and FTC referees, even refereeing at both State Championships. We have innovated a system of high school volunteers to help with the K-8 teams. Our 25 members take turns volunteering at each meeting, supervising team activities and providing one-on-one help. This greatly alleviates coach/mentor burnout. This also allows our members to build their leadership and child management skills. This serves as a stepping stone for seniors who want to continue with coaching FIRST teams after graduation. Soph H., Programmer, FTC and FLE coach shares, “Being an FTC and FLE coach has benefited me in a plethora of ways. Some of the more profound ones were learning problem solving skills, teaching skills, and learning how to be a good leader. It also benefited me mentally as well. The feel[ing] of getting to spread a program that has given me so much joy is an amazing feeling and I wouldn’t give up coaching for anything.” To us, giving back extends beyond FIRST opportunities. It also means supporting the community which supports us. Our team, and in turn our K-12 program, has the unique benefit of being supported by a close-knit community. To show our appreciation and return our community’s kindness, we volunteer for several events each year. Our favorite community service activity is volunteering with our local Lions Club. We annually assist the Lions Club with their Chicken Dinner Fundraiser, which generates around \$5,000 in proceeds. Additionally, we have donated time to stuffing and hiding Easter eggs for our community’s annual Easter egg hunt which provided fun to hundreds of children and volunteered to serve Thanksgiving Dinner to those in need within our community. We make every attempt to be visible within the greater Laingsburg community. We participate in parades, host a Rock Painting booth during Summerfest and hold robot exhibitions during area festivals, fairs, and gatherings. Through these events, we have reached thousands while affording us the opportunity to detail the skills we learn and excite future Red Thunder and Wolfpack Robotics members.

We engage with our school district each March by visiting our kindergarten classes to do Robotics Read Aloud. An event designed by our members, in which we read STEAM books and guide the students through a physics lesson called Bunny Helicopters. We further excite the students by bringing our FTC and FRC robots to each classroom. 17 of our 58 current Explore members were first graders who participated in this event during March 2023. Encouraging girls to become STEM thinkers and innovators is important to us, as almost 50% of our team is female or non-binary. One way we engage girls is by partnering with our local Girl Scouts. Beginning as early as Kindergarten, we host events where Scouts can earn their robotics patches. Using SPIKE LEGO kits, we guide each troop through an age-appropriate lesson to build a model, code that model, and then iterate and improve their model and code. It is through this process of iteration that the girls are exposed to STEM principles while encouraging one another’s ideas. This partnership with the Girl Scouts has led to the establishment of all-girls teams within our K-12 program.

Hosting an FTC meet and an Explore festival were two additional opportunities to bring FIRST to our community and make an impact by demonstrating what we do and that we are more than robots. Many people in the community have difficulty visualizing how competitiveness and Gracious Professionalism can coexist. By bringing these two vastly different experiences to our community, we were able to offer a first-hand experience as opposed to a live stream or needing to travel a significant distance to an event. One of the benefits of hosting these events was that two of our school board members served as reviewers for the Explore festival. Although we present to our school board twice a year about the skills we learn and the success of our K-12 program, having our school board participate in the event provided a greater impact because they had the opportunity to meet each student, learn about the Core Values of FIRST, and see models in action. During the festival, our Challenge and FTC teams were present, demonstrating their robots. These demonstrations excited students to continue with our program, thereby ensuring our pipeline of students would continue. Sophia B., Lead Designer, served as a referee for both FTC and LEGO Challenge and expressed that her favorite part "was being able to work with the kids and then see how happy they were when they were on the field...I feel like this [event] has connected me to other portions of the FIRST community."

An outreach event that consistently captures the attention and participation of our community is our highly anticipated annual Family STEM Night. This engaging event serves as a vibrant platform for fostering enthusiasm and curiosity about STEM and FIRST. At our most recent STEM Night, there was an exceptional turnout of 250 enthusiastic community members. Additionally, many girl scouts participated as part of their Earth Day celebration. Throughout the event, various interactive stations were strategically set up, each crafted to captivate and challenge young minds. From activities designed to enhance spatial reasoning to those refining fine motor skills and stimulating logical thinking, every station offered a unique opportunity for hands-on exploration and learning. As a direct result of the event's impact, numerous new members signed up to join our teams. Because of these efforts, we have seen a 1,050% increase in the number of teams in our K-12 program since the 2021-22 season. This includes 14 new LEGO Explore teams, 4 LEGO Challenge teams, and 5 FTC teams.

An area in which we have shown great growth is using our experiences to assist other teams. We are unique in being a member of two different robot coalitions- ShiaRobots of Shiawassee County and CARs (Capital Area Robotics). Through these affiliations, we have cultivated friendships and partnerships, allowing us many firsts. For example, this season we hosted a design, programming, and business review, inviting all eight ShiaRobots teams and eight greater Lansing area teams. We collaborated with Waverly, Mason, and Holt FRC teams to have the rare opportunity to share innovative ideas, support one another, and brainstorm together. The business teams talked about how to bolster student attendance, the logistics of traveling to worlds, and how to manage a large team size. Emiliano, Business and HR captain for Team 6078 expressed, "I think it was nice to hear how different teams run their business teams, there was a lot that I learned and I definitely will use some of the tools that everyone shared."

As our own team becomes larger in both size and reputation, we make sure to include smaller and less established teams. Team 5234, for instance, took a significant hit to its membership after COVID, compounded by the departure of their head mentor during week 3 of the 2024 season. Recognizing their challenges, we reached out to them and have since taken on the role of mentors, assisting them as they strive to regain stability. We have opened our workspace for their team and have cut parts for their robot on our CNC. Additionally, our software designers are currently working with their students to teach Java and VS Studio. Using our team's expertise, we are in the midst of assisting Team 5234 bring their robot from a design to a reality.

Software development is another area in which we have used our experience to assist other teams. We hosted and ran a summer programming workshop with FTA Soren as the presenter, and had attendees from six FRC teams. From there, we have developed relationships with several other FRC teams including 5641, 5084, 5234, and East Grand Rapids FRC to help write, review, debug, and troubleshoot their drivetrain codes.

As seniors graduate, we ensure that their knowledge is passed down. Once Subject Matter Experts become seniors, they select a successor with the help of mentors. This successor closely shadows the SME throughout the season. To maintain team structure, a leadership and operations subteam was formed. These subteams act as liaisons between members and mentors. These members assist with project management, administrative duties, and event organization. Following the establishment of our FTC program, we have implemented an 8th grade apprentice program. Apprentices are selected based on their work-ethic, passion for STEM, and their ability to work with others. Apprenticeship isn't a watered-down experience. They go to the same workshops, are given the same responsibilities, and are held to the same standard as first-year FRC members. This program has had a 100% retainment rate into high school, with one of the apprentices even becoming an SME in social media.

Essay created by Team 7166 and revised by ChatGPT. ;

