

FIRST Impact Award - Team 2706

2025 - Team 2706
Team Number
2706
Team Nickname
Merge Robotics
Team Location
Ottawa, ON - Canada
Describe the impact of the <i>FIRST</i> program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in <i>FIRST</i> programs.
Team 2706: Merge Robotics boasts a 100% high-school graduation rate. Of the alumni who responded to our survey, all have gone to college or university, with 94% pursuing STEM programs. Furthermore, 76.7% of our alumni have also gotten scholarships for post-secondary school. Our teams' mentors are STEM professionals, who continue to encourage students to dive into STEM. In addition, 28% of our alumni have gone on to volunteer with FIRST, becoming judges and mentors for FIRST teams and events.
Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.
As a community-based team in Ottawa, we are surrounded by the government. We leverage this by working with politicians to bring STEM to our community. As our team is composed of students from bilingual school boards, we are able to organize bilingual outreach events. However, being a community-based team means we often lack a fixed location, and we work around this by building relationships in our community and with sponsors.
Describe the team's methods, with emphasis on the past 3 years, for spreading the <i>FIRST</i> Mission in ways that are effective, scalable, sustainable, and creative.
We consistently spread the FIRST mission to our community and beyond. We do this through our outreach, such as Spell STEM, programming workshops, presentations at elementary and high schools, and more. The materials we use at these events are recycled or digital, making them sustainable. We also often have a robot demo and a booth, promoting all levels of FIRST to underrepresented demographics such as girls, rural, and francophone students.
Describe your team's goals and the progress you have made towards them to fulfill <i>FIRST's</i> Vision.
Merge Robotics' primary goal is to advocate for STEM in untapped communities. In the past 3 years, we have reached a total of 344,267 people, and counting. We accomplish this by bringing our workshops to

1017 girls and 21,175 people from rural areas. Moreover, our team strives to increase the exposure of STEM to youth, leading to newer FIRST teams in Ottawa. We presented robot demos at two local high schools, as well as events such as the Ottawa Regional Science Fair, introducing STEM to youth.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?

Our team has seen firsthand impacts on our students and our community. At outreach events, we inspire younger students to join FLL teams. In fact, 47.4% of our students joined Merge Robotics as a result of attending our events. Numerous alumni have also returned to FIRST after graduating, staying involved in mentoring and judging events. Our team was even featured on CTV news during the "Myers Team of the Week" segment, seen by well over 100,000 people.

Please provide specific examples of how your team and team members act as role models within the *FIRST* community with emphasis on the past 3 years. How do you share these best practices with other teams?

Merge Robotics hosts annual mock-kickoffs for Ottawa FRC teams to help rookies prepare for the season. Our team also volunteers at many FIRST events, including the FLL challenge tournament where we provided judges, an MC, helped with the planning committee, and did an FRC robot demo, which we also did at the FLL Explorer Festival. Our team was even chosen to represent FIRST at the International Plowing Match where we brought two FTC teams and promoted FIRST to 10,000 people in rural regions.

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

Merge is committed to cultivating and maintaining both FIRST and FLL teams in Ottawa. We mentored Team 8729: Sparkling H2O in 2022 and continued to assist them until 2024. We have also assisted Teams 7476, 9127, and 9589, and helped 3534: C4 Robotics with software curriculum. We mentored Blythe Academy when it began and now aid its return to FRC. As we are committed to inspiring young kids in STEM, we also started and mentored two FLL teams: 64855 Emerging Bots and 64857 Merge Mini Bots.

What other initiatives have you created, grown, sustained, or participated in (*FIRST* or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?

We have expanded FIRST in the Ottawa region by supporting competitions such as the FTC District event at Earl of March High School, FLL Challenge event in Arnprior, and the FLL Explorer Festival in Kanata. In addition, we continue to do Spell STEM events in which we introduce FIRST and STEM to elementary school students through engaging activities. During outreach, we create interest in FIRST by demonstrating our robot to people of all ages.

Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.

Being a community-based team, our sponsors are essential. We are graciously given meeting space by the Ottawa Public Library. In return, we run coding workshops there, bringing a greater youth demographic to the library. General Dynamics, another sponsor, frequently features us on their social

media. Our team volunteers at their events like the Army Run and the Quinte International Air Show in Trenton.

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

Merge greatly advocates for equity, diversity, and inclusion. At competitions, we helped Team 1868: Space Cookies with the me.FIRST initiative by filling bathrooms with menstrual products. Our team also recognizes the significance of promoting STEM to smaller communities. We deliver our Spell STEM event to Girl Guides groups and promote STEM at events in rural areas. Additionally, our team completed an autism awareness training, to help include underrepresented groups.

Explain how you ensure your team and the initiatives you have created will be sustainable.

Our sustainability initiative focuses on strong sponsor relationships, like our 10-year partnership with General Dynamics. At our Spell STEM activities, we repurpose disposable resources like paper towel rolls which demonstrates our commitment to environmental sustainability as well as our commitment to help make STEM accessible. Additionally, our 5 year strategic plan is crucial for team sustainability as it outlines how we will continue to be successful and sustainable into the future.

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

Our team has been working towards better communication; it is vital as our sub-teams meet in various locations. To work around this issue, we have designed methods like online SCRUM to communicate effectively between our subteams. This is important so we can continue to work efficiently to meet our deadlines. We continue to use Slack, git, Google Drive, and Zoom as tools to connect our team over the internet. We aim to acquire our team's own building and meeting space, to improve communication.

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, particularly noteworthy, or had a large impact.

Our team stands out in several ways. We have planned and created a sustainable robotics program that has lasted 10 years and will continue to last for years to come. Additionally, Merge's branding strategies are key to recognition for our team. Our mascot Shep the Safety Sheep promotes the significance of safety, and he became famous in the Ontario FRC community and beyond. Furthermore, our team consists of students who speak many languages, promoting bilingualism and diversity.

Judge Feedback

While we have, from our perspective, an idea of our strengths and weaknesses, we would love for the judges to share their impression of our strengths, weaknesses and areas for improvement. Any feedback would be appreciated.

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

Team Overview Team 2706: Merge Robotics is Ottawa's first community-based FRC team. Since 2016, our team has been bringing STEM to youth in Ottawa, creating opportunities for all demographics to engage in FIRST. With students and mentors from over 1200 km², our 39 students come from 14 different schools across 4 school boards. Our 20 mentors are scientists, engineers, and post-secondary students, in teaching our team valuable practices and industry standards used in professional STEM practices.

Merge is composed of three sub-teams; hardware, software, and business. As our subteams work in various locations, we frequently meet online to do SCRUM over Zoom. SCRUM is an industry practice that allows us to track subteam progress towards our goals, which is crucial during build season. This is one of the many industry practices our team participates in. Essentially, our subteams work together to synergize and strive for team success.

Community As a community based team, we owe our success to our community. We partner with local businesses such as Grill Master, to cater their events like the Gatineau Airshow and the Canada Day Fair. Furthermore, as we do not have a school for our team to meet and build in, we continue to struggle with finding a meeting space. To break this barrier, we foster strong relationships with sponsors who lend us their spaces, such as Northern Lights Education Institution, Everline, Entrust, and MVS Remote Video Systems. In return, we assist them in their endeavours, such as a NLEI fundraiser for the earthquake in Turkey in 2023. We also provide them with chances to invest in future STEM leaders, as many of our students have worked internships for our sponsors. As a team, we strive to leave places cleaner than we found them, a motto that has allowed us to strengthen our relationships with those who lend us space.

Throughout our community, we bring forth our Spell STEM events to Girl Guides and Scouts, reaching 152 people in the past 3 years. Spell STEM is our longest standing outreach event, created 10 years ago to promote STEM through interactive activities. There are activities for science, technology, engineering, and math. We use repurposed materials to reduce production costs so students can participate for free.

In addition, our team publishes CAD drawings on our website and our code on GitHub for public access. We make an effort to consistently support the FIRST community.

FIRST Merge is proud to be a part of the me.FIRST initiative, created by Team 1868: Space Cookies, stocking free menstrual products at competitions. We also became an A.U.T.O Alliance partner, Understanding Autism/neurodiversity in STEM, by attending training from Team 5166: Freeland Fabricators. We were the first Canadian team to be part of this initiative.

Our team is fully committed to engaging and growing the FIRST community in Ottawa. We have mentored Team 8729: Sparkling H2O and Team 9589: Arcade Robotics. We also assisted 4 other FRC teams and started 2 FLL teams. Both FLL teams went on to compete at regional and provincial events, growing the next generation of FRC students. Additionally, Merge has supported the Ottawa FLL challenge tournament for years, providing MCs, field resetters, judges, and other positions. We also provided a bilingual demo at the Ottawa FLL Explore festival for the past 3 years, showing young members the future they can explore in FIRST.

Merge had the honour of representing FIRST Canada at the International Plowing Match in Kemptonville. During this event, we were able to reach over 1000 rural students, enabling us to introduce them to STEM fields they may not have had the chance to experience. Along with our team, we shared this

experience with two FTC teams and had a booth with an FLL demo to present multiple levels of FIRST to the public.

Impact Our team has seen a significant impact on our team members and our community. In fact, outreach often overlaps the team and community, introducing us to new team members or sponsors. Consequently, Merge members gain invaluable skills. Student Mel stated, "Before Merge, I struggled to express my ideas. I gained communication skills, confidence and life lessons that helped me succeed in school and land my first job."

Our mentors are important to the success of our team. They are motivated by their love for STEM and teaching to help our team provide the best opportunities. Moreover, our mentors learn new skills on our team. For example, mentor Kevin says he learned about the vital skill of project management from Merge. Moreover, mentors learn new skills on our team with Kevin saying that he learned vital skills of project management on Merge.

Merge Alumni often say how being on the team gave them an advantage in life. "Merge was single-handedly the most impactful club of my entire high school career. It helped me land my first job out of high school, make lifelong friends even after high school, and it helped me decide that STEM was the right field for me," said alumni Ishan. Another alumni Dana expressed, "My time on Team 2706: Merge Robotics has been integral in shaping who I am today. From technical skills, like learning to code, to people skills, like public speaking, the team met me where I was and lifted me higher than school alone ever could."

Outreach Merge aims to inspire youth and promote STEM in our community. We continuously look for opportunities to reach different demographics, particularly those in underrepresented regions. In the past 3 years, we have reached over 344,267 people at our 116 outreach events. At the Gatineau Air Show and the Quinte Air Show, we promoted FIRST and held a booth for a robot demo. Here, we were able to reach a bilingual demographic and introduce FIRST to an untapped community, reaching over 78,500 people. On an international level, we assisted with outreach in Taiwan, where we provided materials and created videos teaching children about simple circuits while making a brush bot.

Our team also has a goal to expand STEM outreach to rural communities. During the COVID-19 pandemic, we realized that our members who lived in rural areas struggled with internet connection. We discovered that rural students lack access to STEM opportunities, leading us to focus on rural engagement. We increased STEM exposure in those areas through outreach like Spell STEM, Concert in the Park series, the International Plowing Match, and presenting at elementary schools.

While these events seem small, they create a great impact. One boy who went to our Spell STEM event loved the engineering activity, a ball rolling down paper towel tubes. His mom said, "He really enjoyed the STEM outreach. The paper towel activity was his favourite; at home, he took all our paper towel rolls to do it again, but there weren't enough, so he asked for more for Christmas." The boy later joined one of our FLL teams to continue fostering his new love for STEM. Similarly, a Girl Guide who participated in one of our Spell STEM events was thrilled by our demonstration of electric circuits. Years later, she still has her brush bot, and her ability to make circuits with lightbulbs and Arduinos has expanded. These are just a few of many who we inspired.

We partnered with Grill Master for the Airshows and prepared food for the community while showing our

robot. At our events with Concerts in the Park, we have been able to set up booths, fundraise, and serve food alongside local concerts. We also had an outreach event at the Children's Hospital of Eastern Ontario (CHEO), where young kids enjoyed playing catch with our robot Mergius. Additionally, earlier this year, we modified our Spell STEM workshop to Spell "STIM" for francophone students at Maurice Lapointe Elementary and High School. We were able to introduce STEM to over 100 francophone students, who make up an underrepresented community in STEM. Through all our events, we impact the youth of our community by creating opportunities for them to further explore STEM, and promote FIRST at all levels.

Sustainability Sustainability is a key factor in running and maintaining our team. We create strategic 5 year growth plans, which entail multiple concerns expected in the future, risk analysis, and a goal tracker for all our achievements. This year we are thrilled to have started our new plan entitled: ROBOT.

One of our team's principles is to keep relationships with the environment and the community, by focusing on sustainable outreach events and activities. This year, we adopted Beaverbrook Park which we have promised to maintain. Additionally, one of our students, Ryan, made a Sandbag app to assist with natural disaster relief. We were able to provide our app to those interested, including the West Carleton Disaster Relief. We then contacted the City of Ottawa who made our app available citywide, and let Team Rubicon use our app, expanding it nationally.

We organized a food drive at our Ottawa kickoff event. In its 2nd year, FRC teams across Ottawa brought in 124 of the most needed items. We continue to run this annually and grow it to encourage all Ottawa FRC teams to support and sustain our local food banks.

Merge also did a bottle drive, ensuring bottles get recycled correctly and doubling as a fundraiser for our team. With our sorting center outside a local grocery store, we were able to reach even more people as we talked to local shoppers on a busy Saturday.

Additional Merge has a mascot named Shep the Safety Sheep, and he is known for his safety glasses and enthusiasm for safety. We bring Shep to all of our meetings, outreaches, and events, connecting with youth.

Merge Robotics is well known in Ottawa and the FIRST community. Our team works towards helping, learning, and following the spirit of FIRST. In addition to competitions, we create a positive legacy where people understand that robotics is not just about building robots, but collaborating to build communities. ;

