

FIRST Impact Award - Team 2601

2025 - Team 2601

Team Number

2601

Team Nickname

Steel Hawks

Team Location

Flushing, NY - USA

Describe the impact of the *FIRST* 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 *FIRST* programs.

Our team fosters an empowering environment, preparing our members for lifelong success. With 100% graduating high school and 95% pursuing STEM majors, many take on leadership roles in college robotics, motorsports, and research teams, inspired by experiences they had on the Steel Hawks. Alumni have interned and worked at tech powerhouses like Roblox, Tesla, National Grid, and MTA. Their connection to our team remains strong, with 20 returning this season to mentor and inspire future engineers

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.

Our Humanities-focused school is in one of the most impoverished districts in Queens, where many students are low-income. To promote STEM accessibility, we keep our team affordable, offering candy sales to offset competition costs. With limited in-class STEM resources, we are a no-cut team, welcoming all who want to learn. Our impact has ranked our school among the top 300 STEM high schools nationwide. By providing lab access beyond build hours, we ensure every member maximizes their experience.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.

In 2023, we introduced STEM crafts to our team through a visit to QHC Summer Camp. Through making BrushBots and Lightsicles, we've provided students an engaging way to get involved in STEM. And we've extended our crafts to competitions through STEM Stands, reaching students in other communities. Our stands have become part of our signature outreach initiatives. They've found their way into the curriculum of Project SHIFT, and we've added to our catalog of crafts for each new event we attend.

Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.

Based in Queens District 25, 80% of our members hail from low-income households. The Steel Hawks aim to provide even more disadvantaged students a chance to change the trajectory of their lives through STEM. Our team has kept a long-standing policy of maintaining participation fees for all our programs next to none. Our Project SHIFT mentors are fluent in Spanish and Chinese, two of the largest minority groups in our area—ensuring accessibility and instilling confidence in immigrant children.

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

Project SHIFT students continue to engage in STEM even after the conclusion of our program. Our Scratch feed is flooded with creations from our former students. A majority of our students return for a second year of SHIFT, eager to continue learning. For many incoming freshmen participating in our robotics immersion program, Steel the Summer, it is their first time working in a hands-on STEM project. Hungry for more, 80% of those students go on to join the Steel Hawks during the school year.

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?

The Steel Hawks value Coopertition® and embody this by hosting our free, annual open forum: Hawk Talks. Through student-led lectures, we discuss fabrication, design, scouting, outreach, and leadership. Other teams are welcomed to present and come share their insights into FRC, as well. Over the past three years we've hosted over 300 attendees across 15 different FRC teams in 20 different topics. Our school has become a hub for collaborative learning and skill exchange within the FIRST community.

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

Since 2015, we've hosted Open Field, inviting New York FRC teams to refine their robots and inviting FLL teams to inspire them with the magic of FIRST. Embracing this same spirit, we launched S.O.S. (Solving Ordeals with Steel), offering hands-on pit assistance at competitions. Beyond the field, we mentor FRC teams in Turkey and Brazil, providing virtual support across continents. We have also launched and funded Guyana's first FLL teams, ensuring STEM education reaches those who need it most.

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?

In February 2023, we launched Project Guyana, bringing STEM to a school with no extracurriculars. A teammate led programming lessons for 500 students, and we raised \$3,000 and donated laptops, fueling their newfound passions for STEM. That same summer, Project India 2.0 introduced K-10 students to mechanical, electrical, and programming skills, culminating in them building a chassis which was donated for future learning. These initiatives sparked lasting STEM engagement in communities worldwide

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.

Our sponsors have been instrumental in our success, providing financial support and invaluable opportunities. Partnerships with Haas, Tiffany & Co., and Bloomberg have led to personalized facility visits and career mentorship. Google invited us to present on AI in education to teachers from Brazil. Project India 2.0 gained government attention, inspiring efforts to expand STEM education, and Guyanese officials are now exploring funding for FTC teams after our successful launch of FLL programs.

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 is committed to making STEM accessible, regardless of location, background, or socioeconomic status through initiatives like Code Tiers. Code Tiers, a 6-week virtual camp, now in its 4th year, has reached students from 120 schools nationwide, with 20% joining internationally. We also mentor an all-girls FTC team virtually, empowering women in STEM. Our team takes pride in embracing our members' backgrounds, celebrating this by having team meals featuring cuisine from all over the world

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

For incoming freshmen, we host Steel the Summer. Growing from a 3-day to 3-week robotics immersion program, we introduced students to FRC and give them a taste of build season, ensuring a healthy teamsize. Our largest outreach initiative, Project SHIFT has allowed us to reach over 1000 students in low income communities through our 12-week curriculums in STEM. By keeping our curriculum fresh, we ensure that students will be able to get the most out of our work.

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

Our team has grown from 7 members in its founding year to 148 this year, making communication more challenging. With a team of such magnitude, ensuring everyone is kept informed is difficult. We have made significant strides to improve this by holding daily debriefs at the start and end of each meeting to reflect on the day's work and plan next steps. We also maintain an active Discord server for announcements, documentation, and sub-team updates, ensuring clear and consistent 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 prides itself in working with our community to provide solutions for challenges not related to STEM. Through our in-house manufacturing team, we've provided new air grills for our school, allowing them to allocate more funding to support the education of over 1500 students. Through our design team, we've designed, produced, and donated interactive 3D-printed toys to patients at the Children's Hospital at Montefiore (CHAM), brightening the day of those whose world may seem hopeless.

Judge Feedback

What more can we do to improve our presentation?

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

What happens when a group of students comes together, not just to compete and build robots, but to inspire changes in STEM education around the world?

From a small team of students in 2008 to an international force for STEM education, the Townsend Harris Steel Hawks have transformed themselves and the communities they serve. This team does more than build robots, we build futures—empowering students from all backgrounds to innovate, lead, and give back. From local classrooms to international STEM camps, our mission is clear: Assist, Teach, and Provide, transforming lives through robotics.

At the heart of our team is a passion for education and innovation. During the summer, we hold Steel the Summer, an immersive program that gives incoming students a view into the beauty of robotics. During this two week-long program, we hold workshops designed to teach students how to use different power tools, wire an electrical board, use CAD software, operate various CNC machines, and code in Java. Through our efforts, more than 80% of participants end up becoming active members of our team, despite our school being primarily humanities-based, developing the skills necessary to be a crucial part of the team.

Although we take pride in our hands-on programs, limitations, such as the lack of transportation or building space,

quickly became clear to us. With the goal of creating a more equitable learning environment, we created Code Tiers, a virtual, summer-long, initiative where students can take courses on coding, chemistry, biology and other STEAM subjects. Since 2021, we've grown to reach over 300 students from 90 different high schools and 30 middle schools. By providing free access to STEM education, we give many students an opportunity they deserve, bridging the gap for those without STEM opportunities in their communities or schools.

Beyond our goals of enriching STEM education for the underprivileged and underserved, we aim to foster a deep connection with the teams around us, growing in tandem and improving together. As a result, during the Pre-Season, we hold Hawk Talks, an annual event where we and other local teams give presentations on robotics. Some of the presentations given include a look into the code used in our Scouting App, the physics behind FRC 1155's shooter, and different strategies for programming. Hawk Talks provides a platform for FRC teams to exchange ideas, share innovations, and foster collaboration. On the same note, during the build season, our team hosts Open Field, an event where local FRC teams can come together to practice on our replica competition field. This gives teams the opportunity to test their skills, plan out strategies, and build alliances with the other teams attending. Realizing our school district has the fourth highest poverty rate in Queens, at an abnormally high 25%, we launched one of our most influential initiatives: Project SHIFT (Steel Hawks Inspiring FIRST Teams). Created in 2023, we've worked to bring equitable STEM education to all, regardless of background, offering over 1000+ students a comprehensive 12-week curriculum that teaches coding, physics, chemistry, design, and mechanical engineering. We prove that STEM is not just about technology, it's about opening doors to new possibilities. Beyond the school year, we hold SHIFT summer camps at Grace Faith Church and Cunningham Tennis Center, taking the opportunity to expose students to diverse facets of STEM education through free hands-on learning opportunities.

It is gratifying to see these students progress and become more fluent and passionate in subjects that were not available in their schools before SHIFT. Every week, we return eager to provide unforgettable experiences and form deeper bonds with them. Through our efforts, we hope to continue increasing STEM equity and accessibility in high-poverty areas, culminating in new robotics teams.

When we aren't breaking socioeconomic boundaries within our local community, we are breaking borders physically as we travel across the globe, starting groundbreaking STEM initiatives that aim to change the way STEM is taught and perceived.

In one of our key initiatives, Project Guyana 1.0, a member of our team traveled to Meten Meer Zorg Primary School in Guyana, introducing students to programming using Scratch. With four donated laptops and \$3,000 in funding raised through GoFundMe, she enabled students to explore STEM in ways never before possible.

Some of our projects have even influenced changes within the mindsets of educators. In 2023, a member of the Steel Hawks traveled to Goa, India to host Project India 2.0: an engineering workshop focused on teaching the fundamentals of mechanical/electrical engineering and programming in Java. She taught a classroom of students from grades 5-7 at the Regina Martyrum High School, explaining how to use power tools and the various functions of electrical equipment. During these 2 weeks, using the knowledge they had developed through these workshops, the students built a functional drivetrain robot that was donated to the school for future robotics projects. This project was recognized by 2 Goan newspapers and the school officials implemented a STEM curriculum.

Expanding on our previous successes, another member of the Steel Hawks piloted Project Guyana 2.0 in Georgetown, Guyana. In collaboration with the Scouts Association of Guyana, they hosted a 5 day "Summer of STEM" camp for 40 students, across grades 3-6, teaching key concepts of experimentation and self-exploration through the use of maker bots and scratch. The combined effort and passion of the community eventually culminated in. The camp taught students to use Maker Bots, to program with Scratch and introduced the basics of FLL, culminating in starting Guyana's first FLL teams, the CyberCubs (FLL Team #67076) and Cub Scout Coders (FLL Team #67077). These students are now preparing for their first FLL competition, marking a significant step toward STEM accessibility in Guyana. A hospital room can feel isolating for a child. In 2023, a Steel Hawk member founded

the CHAM toy-drive program to bring comfort and joy to hospitalized children at Children's Hospital of Montefiore through the power of STEM. We have 3D-printed and donated over 100 personalized toys to the hospital and extended our reach to children in South Africa. Beyond toys, the CHAM initiative creates lithophane mementos—imprinted pictures designed to honor lost loved ones, providing emotional support to grieving families. By harnessing technology for healing, CHAM illustrates the profound impact of STEM beyond the classroom. In addition, we travel to the hospital, participating in their monthly event, Respite Fridays, where children and their families connect and create in honor of national holidays. We provide the children of Montefiore Hospital with crafts that are fun and customizable, providing them with the creative outlet needed to get through such a hard time. Coming from one of the most impoverished communities in the city, we understand what it feels like to be stranded without help. This is why we started the Solving Ordeals with Steel (SOS) initiative. During competition, members of our team are assigned to attend requests or an “SOS” to assist in mechanical, electrical, and programming. Whether it's troubleshooting code, providing spare parts, or offering guidance, we ensure that no team faces challenges alone. This initiative reinforces the values of cooperation and kindness at the heart of FIRST. Whether it's troubleshooting code, providing spare parts, or offering guidance, we ensure that no team faces challenges alone. This initiative reinforces the values of cooperation and kindness at the heart of FIRST. From seven students to 208, from a single classroom to international STEM initiatives, our journey is one of growth, resilience, and impact. Through Project SHIFT, Project Guyana, Code Tiers, and our countless other programs, we've transformed lives and inspired the next generation of STEM leaders. We don't just build robots—we build futures. As we continue to Assist, Teach, and Provide, we remain dedicated to empowering students, strengthening our community, and ensuring that STEM is accessible to all. The Steel Hawks are not just shaping the future—we're igniting it. The Steel Hawks leave a lasting impact, not just on our team, but on communities worldwide. In our sea of black and crimson, we ensure that a simple spark of inspiration can illuminate the path for generations to come. ;

