

***FIRST* Impact Award - Team 1622**

2024 - Team 1622
Team Number
1622
Team Nickname
Team Spyder
Team Location
Poway, CA - 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.
In the past 3 years 100% of Spyders graduated from high school attending college or the armed forces, compared to the graduation rate of San Diego County students at 81.9%. 98% pursued STEM technical careers with 50% completing STEM internships graduating from the Engineering Academy, and many receiving scholarships. 6 of our alumni have returned to mentor and assist the team. All team members learned technical and life skills related to teamwork, communication and project management.
Describe your community along with how your team addresses its unique opportunities and circumstances.
We live in the City of Poway with 5% unemployment, 6% poverty, with an average individual income of \$58K per year. Our team is 25% Free/Reduced Lunch, 13% economically disadvantaged, with 56% BIPOC compared to our city at 37%. Because of our economic circumstances, we run robotics camps for \$20 just to break even, while training, and mentoring is free so students can access FIRST. We also provide scholarships to pay for student dues and travel expenses that cannot afford them.
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?
We support the mission of FIRST in our community by providing STEM opportunities to youth through 450 outreach events in the past 3 years. We spread FIRST by giving 175 training robots (Spike Prime, mBot, XRP) locally, and to schools in Libya, Ecuador and Paraguay reaching 1,000 students. Our social media reached 2.4K followers and 3.5K posts on #spreadtheSTEM and #firstconnected. Working with the California Assembly, our ACR40 FIRST STEAM Robotics Bill Resolution passed for 39M Californians.
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.
Our members ran 9 robotics events, including 4 official FLL, 4 offseason at all FIRST levels, a FTC scrimmage in Paraguay; plus volunteering at FIRST Global. We mentored over 200 FIRST students regularly, including FLL locally, and across 6 countries virtually as STEM Corps Advisors, and with XRP

Robots in Libya. Teaching STEM in our community through our many initiatives like Elementary Science Nights, led to a stronger community relationship, training 40 students with FLL robots every Tuesday.

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

In 3 years we started 19 teams and mentored 99. We currently mentor 22 teams, including 14 FLL Challenge, 5 FLL Explore, 2 FTC, and 1 FRC, equal to over 400 mentoring hours, and assisting over 200 teams with robot and non-robot support. We are also STEM Corps Advisors for 6 FIRST GLOBAL teams to grow FIRST abroad. In the last three years we gave 20 FLL robots to underserved teams and just received \$20K to mitigate homelessness by starting teams, and we assist teams like FRC 3749 to make parts.

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?

In the past 3 years to inspire future leaders and innovators, we showcased STEM professionals in our annual virtual international STEM Career Series with over 3,100 in attendance. We created a Girl Scout Robotics badge workshop that inspired almost 500 girls in STEM, along with our STEM/Robotics Summer Camps reaching 575 students. We advocated for the approval of Honors Engineering in our Academy which produced 43 Engineering Academy Graduates and 20 seniors in Robotics going into STEM fields.

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

Our partner Poway Unified, provided \$75K guarantee funding for coaches stipends. We also ran the ASES FLL STEM Expo and Women in STEM celebration as partners. We partner with the San Diego Girl Scouts as SoCal Robotics badge trainers, and SonTek for Industry tours. With Lybotics we mentored 53 FTC and assisted 85 FTC teams; plus 10 Libyan schools with XRP robots. With Workskills bringing robotics to 60 schools in Ecuador. We support teams with grants from our partner the County of San Diego.

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

For 3 years we are 100% FIRST EDI trained and raised \$125K to promote EDI by starting multiple teams for underrepresented groups. We also annually bring in women professional speakers as role models at our Women in STEM Forums for the FIRST community, while passing our Poway/PUSD Women in STEM Day resolutions. We run PHS SWENext and partner with affiliate programs like NCWIT supporting the underrepresented, and incentivize EDI equity grants at our 2023 FIRST Championship fundraising session.

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

To ensure that our initiatives in the community continue in the future, we train each student in our programs while maintaining teachers as coaches. We develop future leaders as protegees, modeling each student in their leadership role as co-leaders, so they can step into a new leadership role the

following year. Every student on the team creates and runs an outreach event, volunteers, and mentors a team. Finally, we ensure that we retain and bring in new mentors and sponsors annually.

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

We foster relationships with our active sponsors through student internships and robot demonstrations. Encouraging our sponsors to volunteer at FIRST events and providing team counsel as mentors retains their commitment to the team, and most importantly we feed them! For their support, we promote their company on our robot and media. To recruit sponsors we attend a variety of events like the West Conference to learn about companies and share our program goals for their support.

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

We are working to offer easier access to STEM opportunities and programs to kids. We are reengineering our training program for family and student needs at optimal times, locations and embedded within local community programs within walking distance by: 1) Meeting and surveying our STEM community to provide us with data to create a detailed plan that will be a better fit. 2) Improving the quality of our mentoring training by creating lesson plan training materials for student mentors.

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

Our mission is to build the next generation of leaders inspiring youth through STEM education locally and globally through the FIRST mission, with a goal to advocate and grow STEM access in every Poway school and abroad. Our programs were created towards this goal through engaging outreach, personal mentoring, team funding, travel and breaking barriers. So far FIRST is in every Poway school except a few elementary schools, and our support has expanded to Libya, Ecuador, Paraguay and more.

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.

As SASA in California, our team is one of the California Advocacy Leadership Conference founders advocating for greater STEM access and funding in California. As part of SASA, we secured a \$180M increase in ESSA Title IV, Part A funding. Spyder assists FIRST teams with technical and non-technical workshops around the world, including its proven entrepreneurship and fundraising curriculum to increase FIRST access and sustain teams as provided in a talk at 2023 FIRST Championship Conference.

Judge Feedback

Who/When

Feedback

Mar 02,
2024
09:37:38
PM EST

Please let us know how we can improve on our essay and presentation?

An area the team has an opportunity to improve.

Something that really impressed the judges.

Essay

Our greatest desire is for everyone in our community that is interested to have access to STEM, without barriers.

BACKGROUND: In 2004 Team Spyder started as a rookie robotics club with 9 teams in San Diego County as Team San Diego. As a team, we worked with the school district creating the first after school robotics course receiving credit on our transcripts. We then negotiated with the school so robotics students can letter in robotics like a sport. This increased our team's presence on campus. We continued our marketing at the Poway Parade and rapidly gained annual sponsors that still support us today. Then in 2009, we partnered with the school district to grow robotics through the After School Safety Program and created an all-inclusive 14 course PLTW Engineering Academy. In 2013 the Academy opened its doors with tracks in Mechanical and Civil Engineering. Leading by example, our school district adopted and implemented our successes into the other high schools.

We quickly learned that the teams we started could not maintain their coaches without pay. In 2015, we advocated for all Poway school robotics coaches to receive stipends equivalent to a band director. 6 months later, the school board and teacher's union signed and approved these stipends. As we grew quickly, we began hosting official FLL Qualifying Tournaments in 2013 and FTC robotics events in 2019. We increased to over 100 annual outreach events, started and mentored over 200 teams since we were a rookie, all to provide access to FIRST and develop future leaders, impacting thousands of lives in our community along the way.

LOCAL CHANGE: On Team Spyder, access to robotics is a life-changing event where our team members grow in confidence and resilience. Within the last 20 years our team has worked closely with our community to embrace robotics as a catalyst for change by bringing robotics to almost every school in our school district. Yet since the 2020 pandemic, STEM became inaccessible to many of the youth in our own community. Since then, we are a resource and service to bring access and sustain teams all over the world. This keeps our mission and message consistent: Everyone interested in STEM should have access without barriers.

To make robotics and STEM more accessible, we started with what we know and how to improve it. Our academy can be completed in 3 years instead of 4. To be more approachable, we simplified the Engineering and Architecture tracks with the support of our school and started a Robotics 1-2 Capstone course with University of California's approval. Immediately we had interest as it allows students that could not participate in after school robotics. Following our lead, the district also adopted this course to all the other high schools.

We then set out to improve our STEM/Robotics Summer Camp by having more featured STEAM-related stations that were cool, like laser and waterjet cutting. The participants immersed themselves in programming concepts, fabrication, engineering, and applying their mechanical knowledge to build a mousetrap-powered car. Interest increased, more learning was obtained and the summer camp became a recruiting opportunity where we expose future members to Team Spyder. 5 of our current members are success stories from when they attended summer camp.

We have also learned that coaches in the robotics community are often overlooked as a critical part of a sustainable and functioning team. We worked with our school district to continue to approve our annual \$75K guarantee for robotics coaching stipends, and advocated for robotics coaches to be equivalent to

Football coaches which is currently underway in negotiations. In the short term, the coaches can be expected to open the team facilities, supervise the operation of equipment and provide in-person expertise. In the long term, the funded coaching positions create continuity from year to year, so coach expertise doesn't rotate out with graduating students.

We realize that we have room to grow, so we have created an alumni expectation for those that live in our area to come back to mentor the team to "pay it forward." In the last few years, six of our alumni returned as mentors with STEM degrees, which are the evidence that Team Spyder's academic strategies build the minds of tomorrow.

For additional exposure we expanded on the "cool factor" by building a t-shirt cannon for events driving it down the parade route and at pep rallies shooting t-shirts into the crowds. "The Green Machine" as we call it, has proven to be quite popular at outreach events. Not only can the robot launch Spyder merchandise across the street, to students and spectators, it also showcases what Spyder does. In 2022, two 7th graders in attendance were so inspired by the event, they joined Spyder as 8th graders and chose to return to their freshman year in 2023.

To have a future impact, we have been focusing on early STEM access for kids. For this, Team Spyder members are required to serve as mentors for local FLL, FTC and FRC teams. This allows our members to share their experiences and serve as positive influences to kids in our community. We believe one of the best strategies for learning STEM is to teach STEM. This is one of the reasons why Team Spyder is so active in mentoring other teams. As a result, we mentored 99 FIRST teams in the last three years.

Making access easier, we partnered with the school district to provide an after school robotics course for youth ages 4-12, which fosters STEM interest with Spike Prime kits. Our 8 week session introduced 40 students to working with moving mechanical parts, developing 3D objects with Computer Aided Design (CAD) software, and programming. We had so much interest that we had to create a waiting list and will be creating advanced classes coming soon.

We also set out to support the underserved by receiving a San Diego County grant for \$20K to start and mentor teams to reduce homelessness and Apple grants over \$100K to support underrepresented women in STEM fields. Part of our goal is to make STEM and FIRST more approachable for women and girls. We partnered with our school district to run a Women in STEM Forum and Women in STEM Day resolution to celebrate the achievements of women who have contributed immensely to STEM. Team representatives spoke in front of our school board calling for the elimination of barriers that hinder women's participation in STEM. Through our grants, we are excited to announce the development of 21 FIRST teams.

To provide an outlet for learning Team Spyder ran 8 FIRST events in San Diego County in 2023. This included 4 official FLL and 4 offseason events at all FIRST levels; impacting 118 teams via two qualifying tournaments and a regional. Spyders volunteer for FIRST as judges, announcers and provide expertise in the pits and testing area. While our members are integral in the operation of these events, they are also role models to younger FIRST team members.

To improve awareness of the value and impact of FIRST programs, we set out to legitimize and normalize FIRST to the general public. With support from the California Legislature we championed what eventually became known as California's Assembly Concurrent Resolution Bill (ACR) 40, declaring our

2023 FIRST California STEAM Robotics Day for 39M Californians to celebrate.

GLOBAL CHANGE: Through our use of virtual meetings, we realized that we could bring more STEM access to youth. We jump-started our in-class STEM Series to a full fledged online STEM Career Series with 8 sessions annually, showcasing professionals to inspire youth toward STEM careers. We had 3,100 attendees in the last 3 years but most importantly is the international participation being able to reach over our borders without barriers.

When asked to help FTC in Libya, we partnered for the last 3 years with Lybotics so students could learn to mentor, assist and run events virtually. Through the process, we mentored 53 FTC teams, assisted 85 FTC teams and ran Dean's List, Compass and Promote Award judging. Now that Libya FTC is established, we fundraised for 60 Experiential Robotics Platform (XRP) kits for our partner teams in Paraguay and Libya with FTC teams providing training workshops to support the continuity of teams.

We made the decision that there would be greater access and learning if we would provide training, mentoring and support for FIRST in-person. To support our global mission, we became STEM Corps Advisors for 6 FIRST GLOBAL teams such as Eswatini and Haiti. Some of our members traveled to Switzerland in 2022 and Singapore in 2023 for the FIRST Global Challenge. We met with our STEM Corps partner teams and assisted in the competitions by volunteering as robot doctors, scorekeepers, queuers and media assistants.

In 2022 and 2023, our team delegates traveled to Paraguay teaching at the American School of Asunción (ASA). Over this period, we have seen profound growth in their local FTC teams, STEM programs, and the number of students participating. More importantly, we've seen their team leaders grow and while working with ASA running FTC scrimmages at their school. In Ecuador we gave 100 mBot training robots for 60 Ecuador schools, then taught STEM at UDLA, including having Quito leadership be part of a robot competition to inspire them to embrace FIRST. We learned that we created opportunities for students to learn and grow, both in terms of their robots, teamwork and public speaking.

As we look to the future, we plan to increase STEM access to youth through our After School Safety Program partnership and internationally in Paraguay, Ecuador and Libya, as we are on a mission to grow FIRST through creating a structure and culture that will sustain FIRST teams.

In terms of Spyder's impact, the greatest lesson we have learned is that FIRST's impact is reciprocal. As much as we may inspire, we are also inspired. ;

