

Chairman's Award - Team 1622

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2022 - Team 1622

Team Number

1622

Team Nickname

Team Spyder

Team Location

Poway, California - 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.

FIRST's impact is so influential that 100% of Spyders graduate from high school, and attend college pursuing STEM careers or the armed forces. Spyders develop leaders through technical and 21st Century skills training by mentors and Engineering Academy courses. Each year our seniors are accepted to multiple colleges and 95% receive scholarships. 50% complete STEM hands-on internships and are recruited for their leadership and FIRST learned skills. Four alumni returned as team mentors.

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

Our community is greater San Diego and specifically Poway Unified. Our urban STEM businesses range from defense contractors, to bio-tech, with 4.2% unemployment. We have reflected on the many challenges for teams to be sustainable and provided mentorship, assistance and support locally and globally. We have given technical, business and fundraising workshops, provided supplies/funding, and ran 8 competitions this year. We acquired \$12.5k robotics coaching stipends for each FRC team in Poway.

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?

Spyder spreads the FIRST message through running events, virtual series, outreach, community service, and advocacy. Since 2014, we have advocated Robotics Day and in 2019 Women in STEM Day in the City of Poway and school district. We also ran 24 FIRST competitions (FLL Championship), and ran/participated in 400+ outreach/community service. We measure results through increase, participation and growth. (e.g. Instagram 1500, #spreadthstem 1000, #firstconnected 500, Robot Camp 350, 70 members)

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

Our Spyders are role models for sustainability, inclusion and safety. For example, 100% of Team Spyder members mentored other FIRST teams as Brendan taught programming and safety skills mentoring 4 FGC teams. We grew from 32% to 40% girls (2019-2021) as Isabel shared FIRST to girls in K-6 Info Nights. Avery taught entrepreneurship/fundraising when asked to create and run a workshop at the FRC 5199 Summer Series. Reza wrote and ran technical workshops for FTC Libya teams when asked by Lybotics.

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

Our #Spydermentoring initiative provides sustainability for teams. We connect other teams through our #FIRSTconnected initiative for support. We run FLL and FTC tournaments assisting teams. This year we started the South America Project with FRC 1156 to grow FIRST teams, and partnered with Lybotics in Libya to sustain and grow FIRST Libya teams. We held FIRST info nights, STEM Series and technical workshops in Libya, Ecuador, Paraguay, and the USA. We raise money to sustain and start new teams.

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?

Through our #spreadthestem and Spyder leadership initiatives, our annual summer robotics camp for 3rd-8th graders, science nights, and virtual STEM Professional series (participants rose by 700%) have increased young people choosing STEM career pathways. Our 5-week Girls STEM Camp series impacted 150+ girls, and virtual Global Engineering Challenge 65 people. We had 1200 participants in our two Virtual STEM Career Series, from 2020 to 2021. 15+ innovations to improve society were developed.

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

We partner with the Universidad Nacional de Asunción starting/mentoring 12 mBot and 3 FTC teams, and Lybotics (Libya) helping them become a FIRST partner and mentoring/assisting 53 teams, sustaining FIRST in two countries. We partner with our school district to run the FLL Expo starting 77 teams together, and the San Diego Girl Scouts running badge workshops. We maintain relationships with 20 recurring sponsors such as the City of Poway, Evolution Controls, and PowayUSD to sustain FIRST teams.

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

All Spyders have completed FIRST ED&I training to focus on bringing FIRST to underrepresented populations. Spyders started SWENext and NCWIT clubs, supporting young women and LGBTQ+ students to become active leaders and members through monthly Women in STEM outreach/meetings, such as our Girls in STEM Inspiration Day and Women in STEM series. We received the FIRST Equity and Access Grant starting an all-girls FTC team 20422. We have raised \$47,000 for underserved teams locally and globally.

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

Using a business model, we develop future leaders as proteges, 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 their own outreach event, participates in workshops, and runs meetings, locally and globally. As teams become sustainable, and no longer need support, we continually look for opportunities to mentor and create new teams, just like we pursue new mentors and sponsors.

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

Spyder maintains over 20 sponsors as partners in the development of future leaders/employees. We retain our sponsors by becoming personal friends and keeping communication with them through press releases, awards, robot demos, and their mentorship. We advertise their logo on our robot, shirts, website, banner, and social media. We honor our sponsors through our media, newsletters, events, and award recognition; for example, our nomination of Evolution Controls receiving the CA Hero Award.

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

We understand that not everyone on our team is recognized because we are so large. We need to provide more opportunities so all students can be honored. The first step is to include more students on social media, highlighting a greater variety of accomplishments. Secondly, we are providing more opportunities so they feel more valued and easily seen, such as everyone mentoring a team and running an outreach. Lastly, we plan to recognize every individual at our end of the year celebration.

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

To help sustain FIRST programs we focus on providing STEM to the underserved. To do that we have created a STEM academy with 400+ students annually, a STEM leadership program, and a student mentoring program locally and globally. With PowayUSD we created a flourishing robotics culture, where robotics is celebrated and sustained districtwide. We have partnered with Lybotics to bring FIRST to all Libyan youth through mentoring. We developed sustainable fundraising resources for all FIRST teams.

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.

This year we took on the challenge of #DeansHomework, honoring 30 teachers in our school district with the Christa McAuliffe coin. Through #FIRSTcelebratesTeachers, we presented 30 teachers with a coin and certificate to honor them for inspiring our school district and Spyders to pursue STEM careers. To provide sustainability for robotics in our district, we were instrumental in developing a MOU for all high school head coaches to receive paid stipends and students able to letter in robotics.

Essay

The past three years have posed challenges for the entire world. Team Spyder used this opportunity to review and improve our programs. We viewed everything differently to find new ways to learn as students and teach as mentors. We partnered with FIRST to create the next generation of innovators and leaders. Our innovations have made a local and global impact.

A SUSTAINABLE MODEL

Team Spyder seeks sustainability via three stakeholders: students and their parents, the school and its faculty, the community and its businesses. Each year, we renew approval for students to receive academic credit for Robotics. Through our efforts, students now earn academic letters for team participation and receive UC honors credit for Principles of Engineering (2020). Team Spyder was instrumental in building our engineering academy (2016) and introducing AP Computer Science Principles (2019). Alumni team members often volunteer their time as mentors and help with the current team.

In 2016, we established a Memorandum of Understanding (MOU) with Poway Unified School District (PUSD) to staff the six high-school robotics head coaches in the district. This funding directly supports five FRC teams and one FTC team. We renew the MOU annually, ensuring nearly \$75k of funds across the district. This funding provides self-reliance for these teams and allows continuity and stability as students graduate and as volunteers come and go.

Our local community is invested in Team Spyder. With our social media and community outreach presence, @Spyder1622 is a means for local partners to promote their businesses. We actively maintain 20 recurring sponsors, such as Evolution Controls. The partnerships allow for the robotics team to thrive and grow. With the influence of our partnerships, every high school and middle school in PUSD maintains a FIRST team where robotics is an active part of our school and district culture.

We switched to virtual training out of necessity but found new opportunities in the format. Currently, our FRC STEM curriculum supports FLL and FTC and can be taught in-person or virtually. The online delivery strategy extended our reach and increased attendance by 700%. In our STEM series, we hosted 15 sessions with 1200 attendees from 2020-21. Our virtual sessions allowed us to continue operations locally, but also supported and trained teams in Libya, Paraguay, Ecuador, Togo, and Benin. The online platforms allowed us to continue our annual training and improved recruitment and retention.

We updated our curriculum to include technical workshops in organization, marketing, electrical, programming, fabrication, media, fundraising, and entrepreneurship curricula. The curriculum was used in the Girls Scout Badge Workshop (2021), 5199 FRC Summer Workshops (2021-22), and Career Technical Education (CTE) STEM Expo (2019-22), STEM summer camp (2019-21), science/info nights, and STEM Workshops. With this strategy, local and international teams can be self-reliant and sustainable in the future.

AN INCLUSIVE, DIVERSE FAMILY

Team Spyder believes that STEM is for everyone. We ensure that anyone interested in STEM can join the FIRST family. Our team of 75 diverse students has grown to 40% girls, and 55% BIPOC this year. Our leadership also reflects this diversity. We've been changing so all will feel welcome and included, as 100% of our students are FIRST EDI trained. Team Spyder was represented on the 2021 FIRST ED&I Youth Advisory Committee and on the 2022 PUSD EDI Board. For 6 years, we have supported Lockheed Martin's Women in Engineering Day, and in 2018 we created SWENext and NCWIT chapters to inspire girls on our team to pursue STEM careers. Our young women have received many local and national awards, including the Global Innovator in 2020-21. Since 2018, we have hosted 5 girls' STEM Camps with Girl Scout troops. We won the National Design Lab challenge in 2019 and the \$1000 grant at WELocal in 2019/20. This season, we were awarded the FIRST Equity and SWE grant.

PARTNERSHIPS

Partnering with PUSD and CTE, Spyders stepped up with a 100% increase of 350+ students at our virtual STEM/Robotics annual summer camp and made 250 students aware of STEM through CTE Expos in 2021-22. We partnered with PUSD's After-School Education and Safety (ASES) to build safe and educational alternatives for children during non-school hours. Since 2009, we started 72 ASES Robotics teams and 5 new FLL ASES teams in 2022 for our annual Robotics Expo. We also reached out through STEM teaching and Robotics demos at PUSD schools, the San Diego Children's Discovery Museum monthly, Poway Parade since 2009, and tradeshows like Gold Coast 2021 growing FIRST. We are official partners with the Girl Scouts.

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From 2020-22, Spyders connected 53 FTC teams in Libya with mentors from the USA and Brazil through Lybotics. We helped Lybotics write their International business plan last year to become a FIRST affiliate partner, changing the lives of 1000+ students across 15+ cities. In 2021, we started the South America Project with team FRC 1156 to unite FIRST Robotics Teams in South America. We partnered with Workplaceskills (WPS), and the Ecuador Minister of Education in Quito to start 6 school teams and one FTC team with Schlumberger (Oil & Gas) as a sponsor. In 2019, we partnered with the Universidad Nacional de Asunción and the Ministry of Education/Technology to provide STEM and robotics education across Paraguay. We traveled to Paraguay three times to open the inaugural Paraguay National Open Robotic. The competition featured 42 teams and upgraded our initial 12 mBot teams (started in 2018-19) to three FTC teams in 2020-21 (18587, 20393, 20411). In 2019, we flew to Benin to help run the first National Benin BeninBot Challenge partnered with Femcoders Robotics, FTC 11128, the Ministry of Education/Technology, and the US Embassy of Benin creating 14 mBot teams.

LOCAL AND GLOBAL IMPACT

Each Spyder mentors a local or global team. This year, we mentored 56 teams (10 FLL, 40 FTC, 2 FRC, 4 FGC) and started 18 teams (4 FTC, 3 FLL, 6 WPS, 5 ASES) in Brazil, Libya, Ecuador, Paraguay, Benin, Togo, and at home from our 6 local information nights and our virtual outreach meetings. Since 2019, we have seen growth through mentoring 112 teams, starting another 44, and assisting 1000+ more. From 2018-22, we ran 24 competitions, and 8 this year (SoCal Championship and support for the two Libya Qualifiers and Libya Championship). From 2018-21 we have been instrumental in fundraising \$36,000 supporting global teams, including the donation of 50 mBots.

A FOCUS ON EQUITY

We ensure that the underserved in our community have the tools they need to be successful in STEM. This year we started FLL Explore teams at Title 1 schools in Garden Road, Pomerado, and Hoover HS (FRC 8870); and in the last three years, we started teams in Wilson MS (FLL 38538, 51780) and Valley ES (FLL 40122). We secured three \$1000 FLL ViaSat grants for title 1 schools (2018), eight \$500 Qualcomm grants (2020-21), and five \$600 PUSD (ASES) FLL kits (2022).

MEDIA IMPACT

This year we awarded 30 Christa McAuliffe coins to teachers and posted videos of each receiving the coin to our Instagram with #FIRSTcelebratesTeachers. By honoring our teachers who inspired us to go into STEM fields, we show our appreciation to those who have dedicated their lives to teaching us.

We have reached 3.3 million San Diegans by appearing on KUSI, CW6, Channel 10, and FOX5 news regularly from 2010-21. Both Team Spyder (2018) and SWE Chapter (2019) were on the cover of 92064 magazines and featured in the Poway Chieftain, RB Journal, and Union-Tribune from 2019-21. We have been on FTCLibya and Lybotics Facebook Live, and Instagram through 2020-21. In 2021, we were featured on the FIRST Global podcast (S1E3). We were aired on Paraguay and Benin National TV in 2019 in advertising their national competitions Open Robotics and BeninBot Challenge, and Polish National TV in 2018 promoting FIRST with FRC 5883.

COMMUNITY SERVICE

Each Spyder creates their own community outreach events. Since 2017, we volunteer at Fight Against Hunger events. In 2020, we sent thank you letters to the military, taught students with autism about robotics, and ran a clothing drive from homeless and foster kids to support My Girlfriend's Closet. In 2021, we participated in a Drinking and Driving Prevention Rally and video on how to dispose of prescription drugs, and sent thank you letters to health care workers. In 2022, Spyder members continue to clean up trails, beaches, parks, and waterways in our Clean Web initiative.

We have collected over one million tons of E-waste through 20 e-waste events, preserving an estimated 4,480,000 trees annually. At the height of the pandemic, our team made masks and face shields to promote #safetyFIRST. For 12 years, we have collected recycling for special ed students. We hosted or participated in over 150 outreach events to serve our local and global communities in this season, and 400 total events from 2019.

ADVOCACY

To #makeitloud, Spyder advocates for the growth of STEM, Robotics, and inclusion of women in STEM in our community. We started a Robotics Day in our city (2009-22), PUSD (2017-22), and City of San Diego (2019), and in progress with the California Assembly and County of San Diego Robotics Day. Our Women in STEM Day was approved in PUSD (2021), and the City of Poway (2022). In 2021, Spyders met with California Senators Padilla and Feinstein, and Representatives Jones and Peters to advocate for an increase in \$85 billion for STEM through ESSA Title IV-A. The support of Anderson and Maienschein allowed us to create AB624 (2018), a tax credit for California Robotics team sponsors. Our California STEAM observance day is also in progress this year through Senator Brian Jones and Assemblymember Brian Maienschein.

We have made an impact by creating a sustainable FIRST model supporting teams locally and globally.