

Chairman's Award - Team 1622

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2021 - 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.

Spyders develop 21st century and workplace skills that prepare them to be STEM leaders. The ethos of FIRST, Gracious Professionalism and Coopertition, create a foundation for their professional careers. Spyders develop empathy by serving others and creating a culture of kindness. FIRST engages and keeps students interested in school so that 100% of Spyders graduate from high school and pursue college, STEM-related careers, or the Armed Forces.

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

As STEM pioneers in our school district, we were the first to develop a successful FIRST program. In recent years we were successful in creating FIRST teams at Title 1 schools within our district (Garden Road, Valley, Midland). We advocate for grants for Title 1 schools to create a sustainable STEM future for our community. Through our mentorship/assistance, outreach, and the tournaments, workshops, and scrimmages we host, almost every school in our district now participates in FIRST.

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?

We have advocated for a resolution with our board of education to declare a district-wide annual Robotics Day since 2014. Last year, we also started a Women in STEM Day. These proclamations are essential in advancing the FIRST message and measurable, as almost the entire school district participates in FIRST. Our strong presence on social media has allowed us to promote FIRST (#spydermentoring, #spreadthstem, #FIRSTConnected). We #MakeItLoud by engaging state politicians for political advocacy.

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

We are a force for change by having 100% of our team members mentoring/assisting other FIRST teams. We host Championship Conference Workshops in sustainable fundraising and safety. At regionals, we teach proper safety procedures. We are FIRST ambassadors as Global STEM CORP advisors of 5 FGC teams and traveled to 4 continents. Also, we were guest speakers in the FRC 5199 Summer Series and FRC 4087 Workshop Series. During the pandemic, we zoomed with 65 teams to stay #FIRSTconnected.

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

This year we started 6 teams, mentored 21 teams, and assisted 100+ teams. We have donated supplies and machine access to newly forming teams within our community to ensure their success. Everyone on our team mentors at least one FLL, FTC, or FGC team. The new members of the teams are able to shadow returning members, so in the future, they are prepared to mentor their own team. We also host FLL, VEX, and FTC tournaments which give students the opportunity to give advice on team projects.

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?

To spread STEM awareness, we host many outreach events for elementary and middle schoolers. In June of 2018 and 2019, we hosted a summer robotics camp for 3rd-8th graders. Last summer, we ran a 7 week Virtual STEM Career Series that reached 700+ attendees and a 5-week Girls STEM Camp series that impacted 150+ girls. We also zoom with Girl Scouts and Scouts to share our STEM journeys and inspire them. This year, we hosted a Global Engineering Challenge, which received 65 attendees.

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 continually grow our relationships with our sponsors through communication and press releases. Besides funding, our sponsors are active mentors/FIRST Volunteers, provide material and internships. In 2018, we created a partnership at Meadowbrook MS and a FIRST program at Wilson MS (Title 1 school). In their second year, participation increased 3x and females made up 1/3 of the team. As community partners for Girl Scouts and volunteers for TECH Trek, we advance/promote girls in STEM.

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

We promote Equity, Diversity, and Inclusion (EDI) by all Spyders taking FIRST EDI training, creating SWENext & NCWIT clubs to increase female representation, working with ASES, Special Ed, and clubs to recruit students from all backgrounds, and hosting bias literacy training at our Girls in STEM Inspiration Day & STEM series to dispel gender bias. We had a Bias Literacy Workshop scheduled for the FIRST Championship Houston 2020. One of our members serves on the FIRST EDI Youth Advisory Council.

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

In 2019, we changed our leadership structure to mimic a business. We created a 5-year plan, which lays out our mission, vision, and goals for the next 5 years. We set up a deputy system to train future leaders in roles that they could step into the following year which would allow firsthand experience. This year, the current leaders also created training topic videos and outlines of their job and each subteam's job, which can be used to train new members for the build season remotely.

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

Due to our active visibility on social media and publications, we retain sponsors through outreach events (TUV SUD \$6000) and competitions. By participating in Ewaste and the annual Poway Days Parade, we gain many sponsorships (Evolution Controls \$5000 x 10 yrs). We send press releases and participate in conferences (Navy Gold Coast & SWE), to retain and engage our sponsors. We display our sponsors' logos on our robot, shirt, pit, social media, website, television, and newspaper to promote them.

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

Due to COVID, team participation reduced by 25%, leaving the team in need of improving on recruitment and retention, with emphasis on diversity. At school, we promote the team through club rush to actively recruit peers and collaborate with other clubs. We also attend middle school career fairs to inspire future Spyder members to join the team. In order to improve the gender ratio on the team, we have started SWENext and NCWIT clubs, which promote female representation and inclusion on the team.

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

Team Spyder's goals are to strengthen inclusivity in STEM, evolve and grow STEM education, and advocate for global STEM access in efforts to create well-rounded STEM leaders and fulfill the mission of FIRST. We are influential in creating and mentoring local and global FIRST teams. By supporting our mentorship and resources, we've left a lasting impact that sets the base for further STEM growth/expansion. We also helped connect new FTC teams in Libya to veteran FTC teams in the US.

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.

While schools and teams shut down during the peak of the pandemic, our team continued to meet and reach out to other teams. We saw the importance of staying in touch and created #FIRSTConnected to promote mental health through social media. To help our local community, we started a 7 week-long Career Zoom Series where STEM professionals talked about their jobs and gave advice to 700+ attendees. We also helped local health professionals by creating/providing masks and face shields.

Essay

For Team Spyder, it's about focusing on diversity and inclusion, specifically to the underserved and disadvantaged. Dr. Mary Isaac, Society of Women Engineers (SWE) fellow and FIRST volunteer, says "to me, Team Spyder is the epitome of resilience in the face of adversity; they put together a plan for virtual STEM outreach and reached ten times more people than they would have otherwise." Our team has set out to create leaders who will inspire local and global change through STEM education.

Pandemic

COVID created challenges, like our school lockdown, but we persevered and found ways to innovate and promote STEM. We consistently met via Zoom. We realized the importance of maintaining mental health and reached out to other teams. From March to June, we connected with 68 teams to maintain mental health and created #FIRSTConnected to promote team connectedness. Our members used engineering skills to create masks, design face shields and sneeze guards. By making our STEM Career Series virtual, we impacted 700+ people globally, and SWE recognized it as an outstanding event.

FIRST Growth & Support

Team Spyder has been mentoring, assisting, and starting teams since 2005. This year we started 6 teams (2 FTC, 4 FLL) and mentored 21 teams (17 FLL, 3 FTC, 1 FGC). Since 2018 we have hosted 16 competitions (MBOT Maze/Fishing Frenzy, FTC Meets, VEX Robot Rodeo/Poway QT, FLL Jr Expo, FLL Poway QT, Global Challenge & ASES), started 76, mentored 82, and assisted 1000+ teams through workshops, safety training, and team support. We focus on starting FIRST teams and promoting FIRST locally/globally. This year we hosted/participated in 100+ outreaches and 400 within 3 years.

To help the underserved and disadvantaged, we have focused on Title 1 schools since 2010. We started 3 teams at Wilson MS in 2018, started and mentored FLL 51780 in 2020, and currently mentor FLL 38538. We also started and mentored FLL 40122 and FLL 38898. We secured 3 \$1000 FLL ViaSat grants for Title 1 schools in 2018 and 8 \$500 Qualcomm grants during COVID to assist in registration, built their FLL tables, and hosted scrimmages and workshops. We fundraise for STEM equipment for the Monarch Charter School for the Homeless.

In 2018 we created a STEM curriculum for outreach events (SD STEM Summer Camp, SD Maker Faire, Fleet Week, SDSA STEM Expo). Since 2016, we have inspired 1000+ students yearly by hosting science/info nights at schools (e.g. Midland, Shoal Creek) and our STEM/Robotics Summer Camp. This year we virtually exhibited at the NDIA (since 2013) conference, Fleet Week (since 2018), and Girl Scout (GS) Conference.

Global Outreach

In 2020 we continued to work with and mentor teams globally. We mentored FGC Team Paraguay who won the outstanding mentor award and ranked 30th out of all countries in Connecting Communities, and the President of the Republic of Paraguay honored the students. In 2019 we traveled to Dubai to mentor 4 FGC teams (Benin, Togo, Bolivia, Peru with FTC 11128/16884). This year we started and mentored FTC 18587 in Paraguay with Yan Bajac and helped them register at the FTC New Hampshire Regional. In Libya we connected veteran US FTC teams with 20 FTC rookie teams to be sustainable. We are working with Ellie White (FIRST) and Mohammed Zaid (Lybotics) to become an affiliate partner and develop their business plan to create an official FTC regional. We wish for Paraguay and Libya to become affiliate partners.

We want every school in Paraguay to have FIRST. In 2020 we ran a Global Engineering Challenge with 70 teams, and Paraguay won. Before COVID, we partnered with Chancellor Molinas from the Universidad Nacional Asunción to provide STEM education across Paraguay. We contacted Project Lead the Way's VP Jessica Hooper to provide curriculum to all Paraguayan and Benin schools. We traveled to Paraguay 3 times to promote FIRST/STEM for schools through workshops to start FIRST teams using mBots. MBot teams are converting to FTC teams (ex. FTC 18587 in 2020) and our first FTC Scrimmage in Asunción was hosted in Nov 2019. We also ran mBot Maze (Nov 2018) and Fishing Frenzy (Nov 2019) competitions and donated 20 mBots (\$3,600) to Coach Bajac, starting 12 mBot teams. We helped start Paraguay's first National Robotics competition, showcasing 42 teams sponsored by the Minister of Education and a \$1500 donation by Team Spyder. We also visited and mentored FLL Mbaretobot and created a partnership to increase FLL in Paraguay.

Working with FTC 11128 in June 2018 led us to travel to Benin, Africa in 2019 to start FIRST/STEM in Cotonou and Parakou schools with Rachael Orumor, head coach of FGC Team Benin. Through a partnership grant from the US Embassy and Minister of Technology and Education, we translated the game instructions to French. We also donated 30 mBots: creating 14 mBot teams in Benin, 1 in Togo, and 1 in Nigeria.

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We helped organize the Tijuana Mexico Showcase (2018-19), which started FRC 7752 & 7753 in 2018 and FRC 8383 with Xiaver Aisek in 2019. In 2020 we mentored and lodged FRC 7459 from Brazil to attend the Del Mar Regional.

Leadership & Alumni

We create STEM leaders who live by the FIRST Core Values. Our team mirrors a business model, with a president and 3 VP's who manage different subteams. All Spyders practice 21st Century skills with hands on problem solving and mentoring a FIRST team. Our students create and maintain relationships with peers to become future innovators, entrepreneurs, and leaders. Our alumni become STEM professionals, like Dusty Fisk at D&K Engineering and Tracy Van Houten at JPL Mars 2020 who returned as mentors.

Media & Impact

At the SDCEC Engineers Week 2021, our 2020 Dean's List Winner was featured in a FIRST promotional video to recruit FIRST mentors. We featured in KUSI News in 2020-21. We were featured on Paraguay and in Benin National TV in 2019 and Polish National TV in 2018 with FRC 5883 to promote FIRST. Team Spyder (2018) and our SWE Chapter (2019) were on the cover of the 92064 magazine. From 2018-21 we featured in the Poway Chieftain, Ramona Sentinel, RB Journal, and Union-Tribune. For the past 9 years (except 2020), we participated in the Poway Parade. In 2018-19 we presented at the Kiwanis and Chamber of Commerce. By promoting FIRST through info nights and open houses, robotics and engineering became part of our school and district culture. We have expanded our message to all 3.3 million San Diegans by appearing on KUSI, CW6, and FOX5 news. We're active on social media with 1300+ Instagram followers.

Education

In 2015 we started the Engineering Academy. In the last 3 years, 8 of the 12 UC A-G approved courses including Computer Science (CS) earn college credit. We are our district's largest engineering program with 400+ students enrolled. Each year, we host info nights and shadow days to introduce students to STEM/FIRST. In 2019, CS Principles was approved by UC for the academy.

Team Stability

Our veterans work with rookies to pass on knowledge each year. In 2019, Team Spyder created a sustainable fundraising and entrepreneurship curriculum to help countries in the Global STEM Corps, as Team Palestine won gold at FGC Dubai 2019 using our curriculum. We presented our fundraising curriculum at the 2019 FIRST Champ Conference and were set to present in 2020. We actively recruit mentors, by creating ongoing relationships with our business partners, like Northrop Grumman and Palomar Technologies, who provide mentorship, sponsorship and internships for our students.

Community Service

We have volunteered at Fight Against Hunger food packaging events since 2017. Last year we sent thank you letters to the military, learned about robotics with students with autism, and ran a clothing drive for homeless and foster kids to support My Girlfriend's Closet. This year we participated in a Drinking & Driving Prevention Rally and sent thank you letters to health care workers.

Advocacy

During the pandemic our Memorandum of Understanding (2016-21) was approved, guaranteeing robotics head coach stipends, robotics credit on student transcripts districtwide, and academic lettering in Robotics. Last year, Engineering Academy students were able to wear the official stole and medal at graduation after 5 years of advocating. Last year we advocated for Principles of Engineering to become an Honors class which was approved. We #makeitloud by collaborating with our city council, school board, and politicians. We started and organized a resolution for Robotics Day in PUSD (2014-21), City of Poway (2018-21), City of San Diego (2018-20), and San Diego County (2020). The school board, Mayor of Poway, Senator Joel Anderson, State Senator Brian Jones, Assemblymember Brian Maienschein, and the Governor of California now promote STEM at the district, city, and state level. The support of Anderson and Maienschein helped us create AB624 to match California Robotics team sponsor contributions with state tax credit. We met with Jones and Maienschein at the Capitol to discuss promoting FIRST robotics in all CA schools. Our district approved our Women in STEM Day resolution last year.

Gender Diversity

Currently, our student executive board is 100% female. We have supported Lockheed Martin's Women in Engineering Days program for 6 years. In 2018 we created SWE and NCWIT chapters to inspire girls on our team to pursue STEM careers with members being nationally recognized. In 2019-20, we won the Design Lab \$1000 grant at WELocal to promote STEM. We have been STEM Partners with GS since 2018 and hosted 5 GIRLS STEM Camps.

In alignment with FIRST's mission, Sarah Rodriguez, FLL Partner for SoCal, says "Team Spyder inspires the younger generation by being role models and introducing them to FIRST by assisting with the formation of teams and supplying student mentorship." We are fulfilling our mission of transforming our community locally and globally by promoting STEM diversity especially for the underserved and disadvantaged.