

Chairman's Award - Team 1622

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2019 - Team 1622

Team Number

1622

Team Name, Corporate/University Sponsors

GitLab/TUV SUD America/Evolution Controls Inc./ViaSat/BAE Systems/Qualcomm/General Atomics Aeronautical Systems Inc./General Atomics Sciences Education Foundation/Northrop Grumman/Palomar Technologies/Leidos/SES Secure E-Waste Solutions/Lockheed Martin/City of Poway/Booz | Allen | Hamilton/WestAir Gases & Equipment Inc./PTC/Raytheon Integrated Defense Systems/INCOSE/Teradata&Poway High

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

Being on Team Spyder is a life-changing experience. Students are able to learn directly from professionals and develop relationships among peers with STEM interests. Students learn time management, cooperation, public speaking, leadership, and engineering skills. Over the past five years, students have learned exactly how powerful outreach can be. Students are given the opportunity to travel to foreign countries to promote STEM and change lives. We are engineering the future of our world.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

Team Spyder has become an influential force in the Poway Unified School District, just as impactful as band or football. Team Spyder holds workshops at local elementary and middle schools teaching mentors and students how to create FLL Jr., FLL, and FRC teams, and supporting an enhanced STEM education. We have partnered with the Boy Scouts of America to hold STEM Explorer nights to get our community excited about STEM. We are the ones called on when the city, school, or community needs help.

Team's innovative or creative method to spread the *FIRST* message

We start and mentor teams in our local community, conduct outreach at city wide events, go to trade shows as exhibitors, run workshops in safety, entrepreneurship, and fundraising. We participate in community service events, engineering shadow days, open houses, and we travel to foreign countries to promote STEM. We teach that *FIRST* is not just robots, it's helping others, especially those in need: the underserved, inner city schools, and homeless youths.

Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Team Spyder's mentorship training system encourages and inspires its students to motivate others. Nearly 30% of our team members mentor a local *FIRST* team, and we are looking to double that number next year. Our team is leading other *FIRST* team to integrate safety into the *FIRST* experience; we prove this through training our students in CPR, AED, and First Aid, and holding safety activities at regionals to get other teams excited about safety. We are known as the safety team!

Describe the team's initiatives to help start or form other FRC teams

Spyder has helped create many accomplished FRC teams by making other schools in our district aware of FIRST. In fact, over the past five years, we have focused on underserved students by mentoring FIRST teams in inner-cities and Title 1 schools. We've achieved this by facilitating an environment in which members mentor teams. We have also donated many supplies to local teams. We've traveled to Mexico six times and started TJ Robotics 7753 and RobyBam 7752, and continue to mentor them.

Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)

Team Spyder has spoken at local elementary and middle schools, teaching the practice of starting FIRST teams. We give aid to Meadowbrook Middle School's Engineering classes, assist FRC teams at local high schools to become self-sustaining. We hold entrepreneurship and safety workshops, helping teams to raise money for their team. Our student leads specifically each took on the task of mentoring a FIRST team in the district, creating two new FLL teams in the process.

Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program

Team 1622 has hosted FLL and VEX tournaments annually for 6 years. These tournaments, hosted at Poway High School, inspire students throughout the community. We hold shadow days for younger FIRST students to encourage them to continue into high school. Nearly 30% of our members mentor FIRST teams at local schools. We have assisted over 800 teams by fundraising for teams in Mexico, purchasing equipment for teams, providing teams with mechanical parts, build FLL tables and even giving them robots.

Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)

Team 1622 believes that mentorship is the best way to spark inspiration for STEM. This year we started a mentorship program where 23 of our students mentored a FIRST team. Within our mentorships, our members teach software and mechanical engineering to expand the minds of the youth. We give fundraising to local teams and run workshops teaching self-sufficiency. We are the Global STEM Corps Adviser for Team Paraguay and we co-advise Team Benin with FTC Team Inspiration 11128.

Describe your Corporate/University Sponsors

We have 19 sponsors including Northrop Grumman, PTC, Qualcomm, Lockheed Martin, and more. To keep strong relationships with our sponsors, we holds demos at company events and advertise their internships. Through our Engineering Academy we have partnerships with 76 colleges and universities. Our students can earn college credit through RIT, and UCSD actively looks for our members to recruit. Teachers in our Engineering Academy receive training directly from Cal Poly Pomona, SDSU, and UT Tyler.

Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years

Our great sponsors who make very generous donations to the team contribute materials, offer internships, and give expertise. With their help, we have raised \$94,000 so far this year. We maintain great relationships by staying in touch with our sponsors and demonstrating our work at company events. Our mentors come from companies including General Atomics, BAE Systems, and more. As students we look to our mentors for guidance and to create great relationships that will benefit us in the future.

Describe how your team would explain what *FIRST* is to someone who has never heard of it

FIRST is a robotics program for everyone and every interest. There are many other revolving pieces that are key parts of a FIRST team, including leadership, entrepreneurship, management, teamwork, and many others. FIRST teaches our future engineers, CEOs, and entrepreneurs. FIRST is a program that teaches the future generation. It is an investment in education to teach students how to be successful. But most of all, FIRST is fun!

Briefly describe other matters of interest to the *FIRST* judges, if any

Team Spyder, like FIRST, does more than robots. We are a leader in community service by volunteering for: Project Mercy, building homes and donating furniture, helping Syrian refugees settle, Fight Against Hunger by packaging food, Include Autism by giving autistic kids STEM opportunities, and Chelsea's Run. Two of our members have been Ms. Poway. We raised funds to purchase STEM equipment for Monarch School for Homeless Youths and creating/implementing STEM programs for sustainability.

Team Captain/Student Representative that has double-checked this submission.

Sarah Chittle

Essay

Jane Goodall, a STEM pioneer, says "Every individual matters. Every individual has a role to play. Every individual makes a difference." Just like Jane Goodall, Team Spyder individuals are making a difference by becoming a vehicle of change, affecting our community and the world abroad. Earl Sciem, physics department chair at West Virginia University explains that Team Spyder is known for "their work in STEM outreach in San Diego, Southern California, and even internationally." We have already traveled over 7,500 miles beyond Poway High School (PHS), growing STEM programs around the world. But we're not stopping there. We strive to improve our impact and innovate everywhere we go, to transform our community, and to transform the world.

FIRST Growth & Support

This season, we started 42 teams (9 FLL Jr., 12 MBOT, 6 ASES, 13 FLL, and 2 FRC) and mentored 23 teams (5 FLL Jr., 13 FLL, 3 FTC, and 2 FRC); hosted 20 competitions (MBOT Maze, VEX Robot Rodeo, FLL Jr. Expo, FLL Poway QT, VEX Poway QT, and ASES Competition) and assisted over 800 teams in five years (through our fundraising and entrepreneurship workshops, Personal Protective Equipment and Fire Extinguisher training, funding teams), and we participated/hosted over 400 outreach events to help start FIRST teams and generate interest in robotics within the last five years locally and globally.

We went directly to inner city schools focusing on the underserved and Title 1 throughout San Diego County. At the Monarch School for the Homeless, a K-12 program, we taught them how to build and EV3 Mindstorms, assisted in building their field, and fundraised for their robots. We also participate in monthly Include Autism outreach to help autistic children get excited about STEM. We started and mentored Wilson Middle School (Celestial 38538), Valley Elementary (40122 Vallaxy Robotics-Blackholes), and Garden Road Elementary (RoboHawks 33898), and we supported each with a ViaSat \$1000 grant. We also run an annual FLL tournament, and this year administered grants for three diverse, underserved teams. Within the last two years, we have developed a traveling interactive STEM curriculum where kids line-up to learn creativity and innovation through STEM. For instance, we have presented this inspiring interactive message to youth at the San Diego Maker Faire, Fleet Week, SDSA STEM Expo trade shows, to name a few. We served over 1000 students by hosting the Midland and Garden Road Elementary science nights, and the STEM/Robotics Summer Camp. We also exhibited at the PLTW, WEST, NDIA, and Mega Arts conference to name a few.

Global Outreach

We extended our outreach and mentorship to Poland, Mexico, Paraguay and Benin in Africa. In Mexico, we created and mentored two new FRC teams; TJ Robotics 7753, and RobyBam 7752 with Xiaver Aisek. We also mentored FIRST Global Challenge team, Team Benin in Africa with FTC Team Inspiration, and Team Paraguay in South America. With our efforts, Rachael Orumor, the head coach of Team Benin was honored with the mentor award and Team Paraguay the Safety award at the FIRST Global Challenge. We met with Rachael in person to support her starting an Engineering/STEM academy in Benin. We shipped her 10 MBOT robots and created 6 MBOT teams in Benin. Our efforts were supported by the US Embassy in Benin by awarding her with a grant to write the MBOT and Spyder game instructions in French. We traveled 16 hours to Asunción, Paraguay and held workshops teaching students how to start and run FIRST teams, and hosted an MBOT Maze competition starting 6 MBOT teams from the 10 MBOTS we donated. The workshops taught students how to build and program robots, entrepreneurship, how to compete, how to set up their team, fundraising, team spirit and mentorship. We also met with the head coach of Team Paraguay, Ian Bajac, the administration from Centro Educativo Los Laureles and the dean of the College of Aeronautical Engineering at Universidad Nacional de Asunción to form a partnership aimed at providing a STEM education. We have connected Project Lead the Way's (PLTW) Vice President Jessica Hooper to provide PLTW curriculum to all Paraguayan and Benin high schools. We have also traveled to Poland to support FRC 5883 Spice Gears and ran an informational FLL meeting to inspire students to get involved with FIRST. As part of that initiative we were featured on the Polish national morning show with FRC Spice Gears. In San Diego, we gave a facility tour to Spice Gears and FRC Team 7277 Mandela United Squadron from Canada.

Leadership and Alumni

We're constantly working to build strong student leaders emulating the FIRST values throughout our community. Team Spyder models a democratic government in which students run and lead the team fostering Gracious Professionalism and Coopertition. The team is designed to develop student leaders through hands-on experiences and public speaking where protégés are trained to follow. For example, Madalyn Nguyen mentored 8 teams on her own and spent over 200 hours of STEM/Robotics community outreach earning the President Volunteer Service Award. Through this process, students develop strong relationships with community members and their peers, becoming our future leaders, project managers, entrepreneurs, and alumni return to our team as seen by Dusty Fisk and Matt Howard returning as mentors.

Media & Impact

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In five years, we have worked tirelessly to inspire youth in STEM fields. We have transformed Robotics from a club to be seen as a sport within the Poway Unified School District's (PUSD) 17,000 students. We changed the culture to STEM by constantly being featured in the PHS newspaper; participate in Back to School nights, Engineering/Robotics Info nights, Pep Rallies, Open Houses, and ASB. This year we were featured in a four page spread in the 92064 magazine. We are frequently in the local Poway Chieftain, Pomerado News, San Diego Union, and FM 96.1 and AM 1170 radio. We have participated in the Poway Parade for 5 years, presented at the Rotary, Kiwanis and the Chamber of Commerce educating our 50,000 local community members about FIRST. To broaden our message to 3.3 million San Diegans', we have been aired on KUSI, ABC10, CW6, ABC7, FOX 5, and KPBS morning and evening news regularly within the last five years. We use social media to promote FIRST by embracing the ethos of FIRST -gracious professionalism and coopertition. We have increase our followers by 600+ in one year.

Education

We created an Engineering Academy/Pathway at PHS with PLTW curriculum to train students in STEM skills to transfer to FIRST. We developed 12 Engineering classes that are UC 'a-g' approved including AP Computer Science where students can earn college transferable credits through Palomar College and Rochester Institute of Technology. With over 400 students enrolled, we serve as our district's largest engineering-oriented program. We ran a STEM/Robotics summer camp for elementary and middle school students which consisted of engineering activities, partnered with the Boy Scouts ITECH Exploring to inspire students to go into STEM, and hosted five years of engineering shadow days to promote STEM/FIRST.

Stability for Teams

In order to help teams transform into sustainable teams, we developed a replicable system for fundraising and entrepreneurship supporting 167 countries in Global STEM Corps. We have conducted fundraising workshops for the last five years proving our system. A large focus is incorporating sales concepts, proven rules, and a focus on relationships in our curriculum. Our goal is to inspire teams to develop new and lifelong relationships focusing on equal efforts between students, parents, and community members. By dividing the workload, fundraising is more sustainable. Our philosophy is that the entire community is part of our fundraising team. We constantly raise over \$100K annually as we will be attending five regional competitions this year. Through this process, we have developed sustainable relationships with our business partner, Northrop Grumman, which provides mentors and internships for our students. We currently have sustainable mentors from Northrop Grumman, BAE Systems, and General Atomics.

Community Service

Aside from STEM, we volunteer in Fight Against Hunger food Packaging for the needy, Project Mercy building homes in Mexico for the homeless, and supporting Syrian refugee families, to name a few.

Advocacy

We make it loud by reaching out to our city council, school board, and local politicians. We have been instrumental in creating a Robotics resolution for Robotics Day through the PUSD, City of Poway, and San Diego. We helped create a memorandum of understanding providing robotics coaches' stipends, robotics credit on students' transcripts districtwide., and students lettering in Robotics. To promote STEM at a state level, we correspond with our school board members, the mayor of Poway, Senator Joel Anderson, Assemblymember Brian Maienschein and the Governor of California. Through their support we helped create bill AB624 for California Robotics team sponsor contributions to be matched by the state as a tax credit.

Gender Diversity

The future is our young women as they have created a SWE and NCWIT Chapter to promote girls in STEM. They are very active with guest lectures, field trips, mentoring, starting teams, and outreach, all to promote girls in STEM. They have currently submitted for SWE WOW inspirational outreach and established Team Spyder as an official partner with the Girl Scouts. Our current leadership is primarily young women constantly championing their efforts with Lockheed Martin supporting their Women in Engineering Days for five years, where we have inspired and changed the perception of STEM for many young women to come.

We are a vehicle of change as we have transformed our community locally, in the inner cities, beyond our borders and globally in other continents.