

Chairman's Award - Team 3476

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2021 - Team 3476

Team Number

3476

Team Nickname

Code Orange

Team Location

Irvine, 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.

Since 2018, 100% of our students graduated, 8 alumni continued volunteering/mentoring, & 18 received job/internship opportunities with our corporate partners. FIRST enables team participants to develop real-world skills (problem-solving, teamwork, leadership, etc.) & empowers women in male-dominated fields. Code Orange gives students an opportunity to discover a passion for robotics & STEM as well as opens doors to new career paths.

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

Being independent from a high school, we rely on corporate sponsorships & fundraising for financial stability, which encourages us to build strong ties with 23 SoCal businesses. Since 2012, our 1st sponsor, Applied Medical, has provided our students with 40 jobs/internships & 6 mentors, & houses our practice field. Our main facility is located in Lasergraphics, a film scanner company, where students are immersed in a professional engineering environment & can visualize futures in STEM.

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 measure our impact on the community by the growing number of students/schools/cities we represent. Since 2011, we grew from 8 homeschooled students to 50+ from 40 schools & 13 cities. Our recruitment methods include holding open houses, STEM summer camps, & sponsor demos. We also run an FLL qualifier to provide more teams with an opportunity to compete. We showcase our robot & inspire FLL students to later join an FRC team. Since 2018, 10+ members have joined us through this qualifier.

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

Sharing information inspires innovation as teams get a new technical outlook. We publish our prototypes, CAD, code, & tutorials each year, which inspire 10k+. We consistently provide 1-on-1 support to teams that reach out for help across the world. We also organize workshops at Beach Blitz, an offseason event we help run, that teach a wide variety of topics. As a partner of The Compass Alliance, we have acted as a call center that teams can reach out to & receive technical assistance from.

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

In 2021, we started & mentor FLL team 51365 ROBOMASTERS to give young students FIRST opportunities early on & exposure to 3476. We've mentored 5 FLL teams (16082, 44654, 32646, 46117, 26283) & 4 FTC teams (14823, 17436, 17816, 17437). We assisted 1 homeschool group & 1 school district, helping them build & sustain their FIRST programs. We provide our practice field to 20+ teams, raising competitiveness in our community. We assist rookie teams in our shop during their initial seasons.

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?

Code Orange's summer camp introduces students to FIRST & 80% of 2018-20 attendees joined our team. We invited 5 FTC/FLL teams to demonstrate at Beach Blitz, exposing them to an FRC competition environment & making younger students aware of advanced programs. Team members volunteer at our FLL qualifier & summer camp, inspiring youth to get involved & become leaders inside & outside of FIRST. Mentors & alumni taught a virtual 3D printing workshop in 2020 for 1k+ students in Ghana & Nigeria.

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 co-founded the Orange County Robotics Alliance, impacting the community through workshops, grants & scholarships, kick-offs, & the only off-season competition in OC. We met with the Irvine City Council in 2020 to initiate STEM efforts city-wide. We worked with the SoCal Makers Covid Response Team to supply essential workers with mask holders & frames in 2020. Our affiliation with CA FIRST allowed us to participate in a social media campaign to encourage teams to register for the 2021 season.

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

Since 2018, our program has reached students from 40+ schools across OC & brought in 13 homeschooled students, who intrinsically don't have access to school programs. We demoed at the 2019 Society of Women's Engineers conference for 50k+ girls, an effort to strive for gender parity in male-dominated fields. As we aim to become more inclusive, we are working on an initiative to have all students & mentors participate in FIRST's Equity, Diversity, & Inclusion training.

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

Our Ace/Grom Program ensures that knowledge & skills are passed down sustainably from experienced members to new members. Students teaching each other allows team members to ease into leadership positions for future seasons. Over the last 3 years, the number of women in leadership has increased at Code Orange, which inspires younger girls to gain confidence in STEM & visualize themselves in those positions. This results in the percentage of girls on Code Orange growing each year.

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

Our 23 corporate sponsors are crucial for the longevity of our team. We keep them updated through annual letters & by inviting them to our regionals/off-seasons events to experience FRC first-hand. We tour & demo our robot for Applied Medical's HQ as a thank-you for their continuous support & throw a yearly barbecue for Lasergraphics to show appreciation for their resources & workspace. We continuously reach out to local businesses & parents, seeking more potential partnerships.

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

Although we reach students all across OC, most of our members joined because they were already interested in STEM & attended our open house, FLL qualifier, or our STEM summer camp. To make our program more equitable & accessible, we plan to reach students outside of the STEM community. Our plan of action is to recruit at youth events unrelated to STEM & reach out to local schools that we currently don't represent.

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

We aim to make STEM education more equitable in our community. By holding demos & events in places that aren't STEM-centric, we can reach students who may be unaware of their passion. We've progressed towards this goal by holding a demo at the HB Baptist Calvary Church, initiating meetings with the Irvine City Council, & holding sponsor demos. These groups aren't actively exposed to STEM/FIRST, & by targeting these audiences, we have spread the program throughout our community.

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.

Due to our large presence within the online FIRST community, active discussions take place on our social media posts.

Students & mentors are frequently contacted for technical assistance, a vector for building relationships with other teams. Prior to competitions, we extensively assist other local FRC teams to help them become more competitive. These connections are an opportunity to learn from other teams & to help them through our technical & community outreach.

Essay

Our homeschooled team of 8 students working out of a garage never anticipated that we would grow to accommodate 50+ students, working out of a motion picture film scanner company. By fostering inclusivity and sustainability since 2011, we have broken down barriers for students in our community, inspiring youth to discover their interest in STEM through robotics.

Team Identity/Inclusivity

We strive for equity in STEM education programs. With no restrictions on student admission, we appeal to students from schools all over OC, many of which don't have sophisticated STEM extracurricular programs. In the past 3 years, we've recruited from 40+ schools, including 13 homeschooled students.

Sustainability

We prioritize sustainable growth through leadership, promoting STEM to the younger generation, and building community and corporate relationships.

The transfer of knowledge from experienced students to newer students is crucial. Veteran students take on the responsibility of teaching and training new students, familiarizing them with our team dynamic and FIRST.

We ensure sustainability within FIRST, not just at Code Orange. 8 of 2018-20 graduates continued their involvement in FIRST through mentorship or volunteering.

Our annual open house serves as an introduction to FIRST for prospective students and mentors. We open up our workspace to talk about FRC, give tours, and hold robot demonstrations.

FIRST Affiliations

Our affiliation with FIRST in CA enables us to impact a larger number of teams. The organization invited 10 California teams with significant social media presence to create a video targeted at encouraging teams to participate in the 2021 competition season. Our video received attention from headquarters, inspired FIRST Rio Grande Valley, Texas to do the same, and flooded the FIRST Game Changers webpage. In 24 hours, it garnered 600+ views and 30+ shares on FIRST Robotics California's Instagram page alone.

We co-founded the Orange County Robotics Alliance (OCRA) with Team 3309 in 2014. OCRA works to spread FIRST and its core values among students, mentors, and the general public through Beach Blitz, kick-off events, workshops, grant and scholarship programs, and scrimmages. Code Orange mentors and alumni serve as board members and Beach Blitz planning committee members.

Community Outreach

Beach Blitz is the only off-season competition in OC which we run with Teams 3309, 4276, and OCRA. Since 2016, the event has hosted 30+ teams annually. In 2020, the usual field setting was replaced by a virtual minibot competition, scouting hackathon, virtual workshops, and trivia night. This adaptation allowed us to offer a competitive environment for 50+ teams, even inspiring Kettering FIRST to hold their own version, Snow Blitz.

Along with 2 other FRC teams and 1 FTC team, Code Orange was invited by FIRST in CA to be an exhibitor at the Society of Women's Engineers (SWE) Invent It. Build It. Expo! in 2019. We exposed thousands of girls to FIRST through robot demos, sharing of experiences, and interactions with our robot and game pieces. As a team who prides ourselves on inclusivity, we are grateful for this opportunity to contribute to SWE's vision for gender parity as we strive to welcome minorities to the STEM field. While the population of women on our team grows, the number of girls holding leadership positions also increases. In 2011, there was only 1 girl on our team. Now, 20%+ of team members are girls, including our president and vice president.

To further STEM community outreach, we invited Irvine City Council members Farrah Khan and Anthony Kuo to tour our workspace to learn about FIRST and Code Orange. We demonstrated our competition robot and gave them opportunities to operate the robot. We are continuing to work with the city council and have received funding towards these efforts.

During the COVID-19 pandemic, we still prioritized giving back to the community. We 3D-printed 250+ face shields and ear savers for 4 local Kaiser hospitals (Downey, Bellflower, Arcadia, and Huntington Beach), counselors at the California Department of Rehabilitation (South LA/OC region), and social and home health workers at Exceptional Children's Foundation. Working with the SoCal Makers Covid-19 Response Team, a coalition of 150 volunteers across Southern California that assisted 125+ healthcare providers, we donated mask holders and frames.

Youth Inspiration

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Bots at the Beach is an FLL Qualifier that Code Orange runs with FRC Team 5199. In 2012, we established the event to offer more chances for 20-30 FLL teams in the area to compete each year. We encourage graduating FLL students to continue their journey in FIRST by demoing our robot and giving FRC gift bags to the 8th graders. 30% of our current members joined our team as a result of exposure to FRC while competing at Bots at the Beach. In March of 2021, we are continuing to provide FLL students this experience by running Bots at the Beach entirely online.

Since 2014, Code Orange has run a week-long summer camp each year to introduce students ages 11-16 to competitive robotics. The camp provides young students with the opportunity to gain hands-on experience and technical skills in CAD, 3D printing, and electronics. In 2020, we ran our first virtual summer camp. We provided the students with hands-on learning kits and build materials to use remotely. With 80%+ of summer camp participants joining the team in the 2019-21 seasons, the camp acts as an effective segue to Code Orange. Team members mentor attendees, enabling them to become more well-versed in the technical aspects of robotics and empowering them with leadership skills.

In partnership with Coderina, we taught a 3D printing workshop for FLL teams in Ghana and Nigeria in 2020 for an audience of 1k+.

In 2019, we demonstrated our competition robot for 60 1st-6th graders at the Huntington Beach Baptist Calvary Church. We had the students drive and operate the robot and introduced FLL materials to spark their interest in a program targeted towards their age range. We held a similar demonstration at the Orange County Academy of Sciences and Arts for 300+ K-9 students the same year.

Sponsor Relationships

As a community team, sponsorships from corporations are crucial for our financial stability. We mail thank you letters to sponsors annually, as well as invite them to Beach Blitz and regionals. We are immensely grateful for our 23 corporate sponsors that provide monetary and in-kind support, 7 of whom became contributors in the past 3 years.

In 2014, Lasergraphics Inc. donated a new build space, much larger than our original garage. Since then, 9 students have interned or started full time jobs with the company. Each summer, our team hosts thank-you barbecues for Lasergraphics Inc. employees.

In 2012, our lead technical mentor brought his engineering expertise and a new partnership with Applied Medical. In addition to financial support, the company donates space for our practice field. Each November, we demonstrate our robot and present at Applied Medical headquarters. Students also tour their facility and experience a professional engineering setting. 6 Applied Medical employees have mentored our team. Since 2012, 40 Code Orange alumni have interned with the company and 5 were hired full-time.

Technical Outreach

Since 2014, we've opened up our practice field to FRC teams across Southern California, including 20+ during the 2018-20 seasons. When teams practice at our field, they also have access to 1-on-1 technical support from our students and mentors. This resource allows us to be more competitive and build long standing relationships, while teams throughout our region become more successful throughout the competition and offseasons.

Beach Blitz hosts a series of workshops covering a variety of topics (fundraising, mental health, prototyping, etc.) for the community to share ideas and extend resources to each other. Since 2019, we manage social media and workshops for the event, inviting students, mentors, and professionals from 30+ teams to teach workshops and panels. From 2017-19, 7 Code Orange mentors and students have participated on panels and led workshops. Additionally in 2020, we presented at 9 virtual workshops and panels on FRC topics like scouting, programming, and mentoring at different events in California.

Across Instagram, Facebook, YouTube, and Chief Delphi, where we have 4k+ followers, we share our activities, promote events, and connect with teams globally. We also create YouTube videos explaining the design process and prototypes of our mechanisms. To appeal to a younger audience, we made similarly styled videos discussing different FLL subjects, making it easier for new FLL students to get started with robot building. These videos have been viewed 1k+ times.

To encourage accessibility and collaboration within the FRC community, we openly share ideas and provide feedback to teams. Annually since 2016, we publicly post our robot CAD files, robot software, and scouting code. We publish an in-depth technical and prototyping write up with our yearly robot reveal video. Our 2020 technical write up has 9k+ views and our 2019 robot CAD has been viewed 150+ times. On our 2020 prototyping documentation, a mentor on Team 78 commented, "I think there is a lot of value in seeing some of the processes and learning the 'why' behind decisions you made. Really impressed with the different prototypes built and your ability to integrate each of them together. Thank you for sharing all of this."

Code Orange strives to make STEM programs more equitable by providing students across Southern California with opportunities to explore STEM and increasing their interest in robotics. Our inclusivity and sustainability inspire our team, the FIRST community, and students throughout Southern California to pursue STEM as future leaders and innovators.