

Chairman's Award - Team 3341

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2021 - Team 3341

Team Number

3341

Team Nickname

Option 16

Team Location

San Diego, 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.

Option 16 prepares our members to be the next generation of STEAM leaders. Members are provided with industry-standard equipment and learn student-developed and taught, mentor-approved curriculum. They explore their passion for STEAM through outreach, engaging our community with workshops and student mentoring. Over the past 3 years, 100% of our alumni have graduated high school, 100% are attending college, and 98% are pursuing a STEM-related degree. 3 Option 16 alumni returned as mentors.

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

Option 16 is located in middle-class suburban San Diego. To make STEAM education accessible to all backgrounds, we partner with La Clase Mágica (LCM), an afterschool program providing opportunities to underserved children. To help our students adapt to a virtual environment, we created a monthly Lunch and Learn to sustain connectivity among peers. We teach CAD to high schoolers at New Directions, an independent study school in our district, to address the need for hands-on STEAM activities.

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?

With 4200+ outreach hours over the past 3 years, our team constantly spreads the *FIRST* message through targeted outreach. To engage our community, we host accessible events like our annual FLL Explore Expo, STEAM Workshop, and Girl Scouts Workshop. We streamlined the curriculum and delivery of these events, so we can sustainably host and expand them either physically or virtually. To measure our events' results, we track the number of participants and record their feedback.

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

Members of Option 16 act as role models within the *FIRST* community, striving to ignite a passion for STEAM amongst all ages. From mentoring 44 *FIRST* teams to hosting annual FLL Explore Expos attended by 93 teams, we find joy in paving the way for future innovators, engineers, and leaders. To continue to serve our community, we are transitioning all of our physical workshops and mentoring to a virtual setting. With an emphasis on #morethanrobots, we share our passion for *FIRST*'s Core Values.

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

Accumulating 390+ mentoring hours over the past 3 years, 48 Option 16 students have served as mentors for 44 FIRST teams, including 1 FTC, 7 FLL Challenge, and 36 FLL Explore teams. Every year, we also fully fund and mentor a FLL Explore team for La Clase Mágica. This year, Option 16 continues to mentor FIRST teams virtually. Our student mentors exemplify the FIRST ideals of Gracious Professionalism and foster an inclusive learning environment for these 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?

To inspire the next generation of STEAM leaders, we hosted our first annual Girl Scouts Robotics Workshop last year. During the workshop, 140 girls from grades K-12 participated in various curricula, earning 3 robotics badges. Our workshop reached girls from 27 schools and 35 troops. We were able to provide engaging and hands-on activities with \$17,000 worth of quality educational equipment. We continue to support these troops this year by adapting our workshop for a virtual environment.

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 sponsors are BAE Systems, PUSD Career Technical Education (CTE), Qualcomm, NASA, Caterpillar-Solar Turbines, and AutoDesk. Their sponsorships allow us to afford CNC mills, teaching facilities, and robot supplies, providing our students with hands-on industry-level experiences. They also fund various competition costs, such as registration fees, allowing us to sustain our team effort. We partnered with our sponsor CTE to bring STEAM activities to New Directions, an independent study school.

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

Every year, we create and distribute 1000 VIP (Very Included Person) passes to reach out to our community's diverse population. In the spirit of #FIRSTLikeAGirl, we foster gender diversity in our team, resulting in 51% of our leadership being female. Our team took part in FIRST's Equity Diversity & Inclusion training. To serve our community, including the socioeconomically disadvantaged, we make STEAM education free and accessible through open outreach such as by assisting La Clase Mágica.

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

We encourage sustainability by embracing inclusive leadership. Every year after competition season, students participate in leadership development to learn team management skills. Leadership is open to all students, with 68% of our students holding a leadership position. Anyone, even new students, is welcome to join leadership meetings, reflecting our continual development of future leaders. Guided by veterans, new leaders continue our initiatives, allowing the team to run sustainably.

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

Our team applies for sponsors by demonstrating how our Gracious Professionalism aligns with their values. To retain and engage our sponsors, we include them in our outreach, such as by inviting our sponsors' employees to judge at our FLL Explore Expos. We regularly attend the Annual Poway Unified School District Career Technical Education Expo and BAE Systems Bring Your Daughters and Sons to Work Day. We work with mentors from three of our sponsors: BAE Systems, Qualcomm, and Solar Turbines.

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

With 70+ students, coordinating internal communication is difficult. We are overcoming this through industry-level practices. We adopted Slack, a professional communication tool, and a central accountability document to communicate necessary deliverables and deadlines. Students often take the initiative to share information. In biweekly leadership meetings, student leaders develop plans, which are then communicated to the rest of the team through weekly subteam meetings and discussions.

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

We strive to fulfill the mission of FIRST to create the next generation of STEAM leaders through our extensive outreach. From robot demos at elementary schools to accessible STEAM workshops, we inspire young people, regardless of background, to be science and technology leaders. Adapting to our current situation, we converted our STEAM workshops to a weekly virtual format to continue inspiring students. Our workshops have reached 230+ students over the past three years, including 32 this year.

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 a result of welcoming everyone regardless of background, Option 16 stands out with its large and diverse set of

students. To maintain a large team while also encouraging closer bonds, we divide our students into sub-teams called color teams. Within color teams, veteran leaders engage newer students and create an inclusive environment, where every student shares their voice. Through our smaller color teams and diverse overall team, Option 16 promotes a spirit of equity and inclusivity.

Essay

Exploring. Innovating. Inspiring. Option 16 is constantly evolving. Through industry-level curriculum and experiences, our members constantly learn and grow, becoming ambassadors of FIRST. Our team's initiatives are student-led, sustained by a persistent team culture of inclusive leadership. We serve our diverse local community, both within FIRST and beyond, through accessible workshops and targeted initiatives. Empowered by the perseverance of mentors and students, we inspire future generations by sharing our love for FIRST and STEAM.

SUSTAINING OUR TEAM

Every year, Option 16 members begin their FIRST journey by going through 8 weeks of student-created and taught pre-season curriculum. To pursue our learning in a virtual environment, we designed a new project-based system where students, assisted by 17 mentors, find their passion by exploring a variety of learning areas. Mentors distributed equipment, from computers for Adobe programs to Arduino electrical kits, to provide hands-on learning at home. Students take part in weekly team-bonding events within smaller sub-teams to sustain a close team culture amidst virtual learning. Each team is composed of a diverse set of members with a variety of perspectives and technical experiences.

Our learning does not stop there: in the weeks leading up to Kickoff, teams apply their new skills during our "mock season." 6 new students are chosen to lead mock teams with the help of veteran students and mentors. As each team tackles a diverse set of assigned challenges to simulate competition season, every member can thrive in the culture of Option 16. Students unite to bring out their best ideas and skills, both technical and non-technical. Not only do teams engage in the spirit of Coopertition and Gracious Professionalism in their endeavors from redesigning the robot to drafting branding items, but they also reveal their enthusiasm through a race for team spirit points.

After the hardest fun ever in competition season, post-competition season provides a time to reflect on the challenges and successes that defined the year. Our experiences drive discussions to continually improve our program and brainstorm new, innovative ways to spread our vision with the community. During our postseason leadership curriculum, students master the soft skills necessary to be future leaders. These student leads work passionately to adapt our pre-season curriculum based on our past experiences so that future students have the learning resources necessary to sustainably create, innovate, and transform our community.

Outside of solely technical offerings, Option 16 embodies #morethanrobots through our project-based curricula. Students can learn about graphic design, awards and grants, videography, event planning, and professional communication. Using these skills, students create branding items to share the FIRST message with our community. To spread STEAM in a virtual environment, we redesigned our website as a digital showcase for our accomplishments. With hours of work put into each branding item, anyone that picks up our Very Included Person (VIP) pass or visits our website becomes part of our team's experience. Moreover, this year we've been connecting to our community through social media broadcasts to highlight our team's weekly achievements.

To foster an inclusive environment, we accept all students regardless of background. We have a diverse team of 70+ students. Our team is 39% female, and our leadership is 51% female, up from 38% last year. As a student-led team, we invite anyone, even rookie members, to join our leadership meetings. With 68% of our members involved in leadership, we promote a sustainable culture of learning, teaching, and doing. New leaders learn and thrive in Option 16, assisted by veteran students, alumni, and mentors. Together, we create an inclusive culture of diversity.

INSPIRING THE FUTURE

Throughout the year, Option 16 strives to spread the spirit of FIRST in our community through accessible outreach events. We've held free bi-annual STEAM workshops since 2015. We continue our workshops this year by delivering them weekly in a virtual environment. With new student-developed virtual curricula ranging from programming Raspberry Pi emulators to learning about circuits in TinkerCAD, our workshops continue to inspire the next generation of STEAM leaders. We've been able to reach 230+ students in the past 3 years.

We have raised \$17,000 worth of education equipment over the past 6 years through student fundraising to create mobile STEAM workshops. Using these supplies, we developed and held our first annual Girl Scout Robotics Workshop last year to introduce young women to the world of STEAM. We reached 140 Girl Scouts from 11 elementary, 11 middle, and 5 high schools. From learning block coding to building miniature robots, each girl gained hands-on experience and learned how to apply robotics to their future. Our student leads are creating new activities based on our previous curricula and badge requirements to continue our workshop virtually. This year, we also loaned out equipment and computers originally designated for our workshop to support disadvantaged high school students during virtual learning.

SPREADING FIRST

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Option 16 has dedicated itself to giving back to the FIRST community. Our team has hosted 9 annual student-led FLL Explore Expos, where 93 local teams over the past 3 years have had the opportunity to present their LEGO® models and Show Me Posters to school district leaders, teachers, and industry professionals. As FLL Explore teams practice the spirit of Coopertition, they can see our FRC robots and engage in demos. The contagious energy in the air is reflected in the children's excited squeals at driving a 100-pound robot for the first time. We are adapting our 10th Annual Expo to a virtual environment. As students look to Option 16 members as role models of STEAM, our Expo celebrates what they have accomplished, what they have learned, and who they can become.

Along with our Expos, our extensive mentoring program over the past 3 years has given 48 students the opportunity to mentor FIRST teams. Starting with just 4 teams in our rookie year, we have mentored over 44 teams, including 1 FTC, 7 FLL Challenge, and 36 FLL Explore teams. Even with the challenges of virtual mentoring, our students continue to mentor teams and have participated as judges in a local mock FLL tournament. As student mentors share their knowledge regarding robot designing, building, and programming, they instill the FIRST Core Values into future engineers, thinkers, and innovators.

EMPOWERING OUR COMMUNITY

Option 16 strives to empower our local community beyond just FIRST. Due to our continued involvement in our community, one of our sponsors, Poway Unified School District Career Technical Education (CTE), reached out to us for our assistance at New Directions, an independent study school. Since the New Direction students were unable to apply their knowledge of physics through hands-on activities, a group of Option 16 members volunteered every Wednesday morning to expose New Directions students to the practical applications of physics in CAD. Our members were pushed outside of their comfort zone, going from being mentored to teaching others, while the students at New Directions gain insight on potential careers as future engineers and scientists. To continue our initiative with New Directions, we are converting our curriculum to a virtual format.

Inspiration is at the heart and core of Option 16's values. We bring STEAM demos to our feeder middle schools and immerse them in our robotics family. Each year, we attend our school's 8th Grade Parent Night to share more about the opportunities for potential recruits. During our high school's registration week, we demonstrate our robots, share our experiences, and encourage prospective members to come to our annual open house to get a taste of Option 16's vibrant culture. We also developed a virtual Monthly Lunch and Learn series for our school, focused on connecting students through accessible STEAM-based discussions and activities.

To reach out to more diverse communities, we collaborate with La Clase Mágica (LCM), an afterschool program designed to provide educational opportunities to underserved children in Solana Beach. We annually mentor and sponsor LCM's FLL Explore team through fundraising. Option 16 members also regularly volunteer at LCM through biweekly STEAM activities. In the wake of the pandemic, our student leads redesigned our STEAM activities for the LCM students to engage in weekly over Zoom, and we raised \$925 to help LCM students. Through this, we share practical applications of technology to children who do not have the opportunity to experience the wonders of STEAM. Despite the distance that separates us, our hearts are tied together by a shared love for FIRST.

Each year, Option 16 represents FIRST at various events throughout the San Diego area. At the UCSD Comienza Con un Sueño and STEMgineering Day, we introduced over 1000 students from underrepresented and first-generation backgrounds to our FRC robots and FIRST as a whole. Also, in the past 3 years, we have participated in the Maker Faire and the San Diego County Fair, earning multiple Best in Show, Best in Class, and first place ribbons for submissions ranging from a giant robotic cow to FRC robots, CADs, award videos, brochures, 3D printed branding items, and VIP passes. These submissions increase our community visibility, sharing our love for STEAM.

OUR MISSION

And yet, we are still evolving. Despite the obstacles of the present, we sustain the initiatives of the past to build the future. From our student-led programs in underserved communities to the virtual workshops filled with excitement, we persevere and learn together. We take the opportunity to grow and evolve, regardless of the challenges that we face.

We are Game Changers.