

Chairman's Award - Team 3749

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2022 - Team 3749

Team Number

3749

Team Nickname

Team Optix

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.

Our FIRST program has strongly encouraged its participants into partaking in many STEM activities in high school through integrated peer mentoring. 100% of Team Optix have thusly graduated and 96% have pursued a STEM career in the past three years. All of our members have taken or plan to take an AP math course. Among them, 85% are also planning to take an AP science. Our former founder Austin Derbique, Viasat Inc. Cloud engineer, returns monthly to mentor the members of our team.

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

Since 2017, Optix has devoted 2000+ hours to encourage fellow community members to participate in peer mentoring programs. We partner with Link Crew and NHS, serving those less fortunate and uplifting 900+ students; we also work with EIA tutoring (Education in Action) to mentor 500+ kids at nearby schools. Since our community is uniquely mostly minority-class children, we've fostered collaboration and guidance through these long-term tutoring partnerships to uplift the under-privileged.

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?

Since 2018, we have spread FIRST's message to over 9000 people through Instagram, various outreach events, camps, and international STEM mentoring. We partner with diverse groups like Girls in Computer Science, CyberPatriot, and our corporate sponsors to promote FIRST values to ensure our message in various disciplines. We are proud of the effort we have put into our 5000+ hours of volunteering to reach people of all ages, in-person and digitally.

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 take every opportunity to showcase FIRST Core Values, emphasizing Gracious Professionalism to FIRST teams in our community. Our team members visit FIRST teams based at the nearby schools Design 39 and Oak Valley monthly to showcase our robot and teach FIRST values to the students. We hosted an annual mock competition for 45+ FLL teams, and gave feedback to 350+ students, pushing life-long work habits in robotics, teamwork, Coopertition, and other soft skills.

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

Since 2019, Team Optix has started 34 FLL teams and mentored 40+ FIRST teams annually. For 11 of these FLL teams, plus 2 FRC-started in India, Optix went to help guide them to their goals and create connections. In 2018, we founded Oak Valley Middle School's robotics club and continue to mentor our 4 sister teams there. We mentored FTC Team 15171, helping them earn the Judge's Award and League Champion Award (2020), and FLL Explore team 25162, helping them qualify for World Championships (2022).

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?

In the past year, we have reached over 1200 students across grades K-12 in over 4 continents, 5 countries, 26 cities, and 76 schools through our virtual workshops, teaching students robotics, cybersecurity and web development. Providing over 100 hours of instruction and utilizing \$20,000 educational equipment, our members have run these 4-week long workshops, while presenting annually at the MCC Science Fair, Highland Ranch/Sundance STEAM Fair, Maker Faire, and Navy Fleet Week.

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

Since 2018, we have devoted 800+ hours to partner with 11 school organizations (ex. Girls in CS, Women in STEM, and Dear Global Girls) and encourage female involvement in STEM with our efforts reaching 950+ young women. We work closely with the nonprofit organizations Interfaith Community Services, Corazón de Vida Foundation, Love Without Boundaries, and Paper Bridges, providing resources, education opportunities, and assistance to 1000+ orphans.

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

In the spirit of #FIRSTLikeAGirl, we champion female participation in STEM. 80% of the leadership team and 40% of the team are female and/or non-binary. Members lead programs, like Girls Play Global, leading the effort to educate and empower girls in rural India. Also, Minority ethnic groups have a strong presence in our club, and since 2020, we have been lead speakers at the Superintendent's Student Advisory Council and helped plan the Ethnic Studies curriculum currently taught at our school.

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

In 2018, we altered our leadership structure to mimic the self-managing and cross-functional Scrum framework used at Qualcomm. For each task, a Scrum team is constructed, consisting of a Scrum master and development team which includes technical leads along with developers and testers. Members rotate being the Scrum master, allowing for all students to have firsthand leadership and conflict-resolution experience, allowing for a smooth transition between leadership teams yearly.

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

We retain and engage with our 15 sponsors by sending them monthly press releases and video compilations and competing in their challenges, such as the Regeneron Fair (Intel) and HIP internship (Northrop Grumman). We schedule "monthly mentorship days," inviting sponsor employees from Qualcomm, ViaSat, and BAE Systems to enhance the bond between industry leaders and the club. 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.

High school students are susceptible to mental overexertion, a result of the stresses in our academic life and extracurriculars, like robotics. To prioritize robotics and mental health in our daily lives, we developed a professional calendar system: OptixBalance, where we increase meeting hours while leaving ample time for personal academics. This unanimously voted scheduling pattern has put more accountability on all our members to balance free and extracurricular time.

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

Optix strives to fulfill the mission of FIRST by prioritizing our community and doing everything in our power to better it, as well as to assist and inspire the younger generation. Every member has led at least 1 outreach program. From heading to our local ESS to share STEAM knowledge to educating students worldwide on cybersecurity and engineering, we strongly encourage the youth of tomorrow to lead the future of STEAM. In the past 3 years, we've reached 2000+ students through our programs.

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.

Optix has partnered with nonprofits UNICEF and Akshay Patra on the Diya Project and the Sapling Drive to provide

continuous meals to children in rural India. We made heartfelt cards for healthcare workers and sent them to local professionals and front-line workers at SHARP. Optix has followed strict social-distancing guidelines and none of our members have been infected with COVID-19. This year more than ever, we sought to be a family and provide much-needed emotional support for each other.

Essay

OUR MISSION

To Team Optix, FIRST is more than just robots. We strive to be proactive members in the FIRST community by integrating our members, other clubs, and sponsors into our Optix family. Through our sustainable initiatives, we bring out the leaders in us all to provide access to STEM opportunities around the world.

FIRST GROWTH & SUPPORT

We were appointed FRC Qualcomm Ambassadors in 2021, directly working with Qualcomm and FIRST to promote STEAM and FIRST Robotics programs to the Greater San Diego region, reaching 3100+ people.

In 2019, Optix members traveled to Ranchi, India to organize 9 FLL, 7 FTC, and 2 FRC teams in low-income communities, presenting at 10 different government-run schools. Since then, 50% of our team members have remotely mentored the FIRST teams at least once.

Since 2017, we've mentored 41 FIRST teams and assisted dozens more. All Optix members have mentored at least one team, joining in on weekly team meetings to provide resources, advice, and feedback for our fellow FIRST teams.

In 2021-2022, 9 of the FLL teams we mentored qualified for the SoCal Regional Championships in December, during which 5 of the teams were further recognized. The FLL Explore team we mentored qualified for World Championships in April.

Since 2016, Optix has hosted annual FLL scrimmages, volunteered at local FTC events, and presented our original engineering design curriculum. Keeping contact with our previous coordinates since 2017, we continue to travel across California to different STEM events such as SD Maker Faire, Navy Fleet Week to spread the message and goals of FIRST to over 20,000 young, aspiring engineers. We have impacted over 50,000 students in southern California through our annual science/info events at multiple K-8 schools (D39, Oak Valley, Highland Ranch, Stone Ranch, Monterey Ridge).

SUSTAINABILITY

In 2016, Optix created a sustainable curriculum for entrepreneurship and engineering design, presenting it beyond our community, to countries including Ghana, Australia, Kuwait, Rwanda, Malaysia, Jamaica, and India. We consistently raise over \$4k annually to fund local and global FLL, FTC, and FRC teams. We create lasting relationships with our business partners, many of whom provide mentorship, sponsorship, and internship opportunities for our members.

LOCAL UPLIFT

We uplift others by using our platform to boost local initiatives. Optix members have helped 50+ local businesses stay afloat during the COVID-19 pandemic by creating and designing their own websites. The support for this initiative comes from the US Department of State, Google, the American Councils for International Education, the Future Leaders Exchange Program, and multiple Chambers of Commerce.

Since 2019, Optix annually brought scouting and robotics together through Eagle Projects with Boy Scout Troop 654 Poway, integrating FIRST Core Values with Scout Law to assemble work tables under proper safety protocol.

EDUCATION

In 2020, Optix raised \$10k to buy 500+ students in Lalitpur, Nepal at Shree Shringey Community Secondary School their first cell phones and Chromebooks to give them access to virtual learning during COVID-19.

Since 2017, Optix members have mentored seven Special Education classrooms from Transitional Kindergarten to 2nd grade, teaching the students how to code with "Code and Go, Robot Bee," Tynker, and Scratch. We share the engineering design process through lessons on basic circuitry with "Snap Circuits" and help students create their own mini circuit models, sparking a continuous interest and exposure to STEM for 600+ special education students.

Since 2019, we have hosted annual Java and math workshops, providing personal tutoring to 420+ students at our local K-8 schools. We've also participated in the Student Research Society's interdistrict conference since 2020, teaching computer science fundamentals to 200+ K-8 students.

Since 2020, our annual computer science fundamentals workshop has reached 1200+ students across 100+ schools, 8 countries, and 32 states. Our workshop is funded by Apply, Google, Northrop Grumman, Amazon, Walmart, the Televisa Foundation, the Cognizant USA Foundation, and the Department of Defense.

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In 2021, Optix worked with the Girls in CS club to host outreach events in two local community centers, teaching 100+ K-8 students how to code in Java and C++.

We are currently working with our school board to hold a district-wide conference to lobby for more STEAM elective courses like data science, robotics, and business law.

COMMUNITY SERVICE

Optix has actively led 2 local hunger-relief initiatives to mitigate the effects of COVID-19 on the homeless and low-income families since 2020. We raised \$1600+ for the Feed America foundation, providing the homeless with 3000+ meals, and partnered with the Hindu American Food Pantry to host monthly food drives, donating 150-200 pounds of non-perishable food to food banks per month (~2200 pounds annually). Our members raised \$2.5k for the nonprofit program Akshay Patra, working to feed millions of children in India.

With orphans being a vulnerable population due to decreased economic resources, Optix organized several sustainable outreach initiatives to support the education and growth of orphans around the world. In 2021, we organized and hosted our 2nd annual supply drive, collecting 300+ donations of household items for 10 orphanages in Baja, Mexico. Supplies were distributed to 15 orphanages (each housing 500+ children) via non-profit Corazón de Vida. Since 2020, all Optix members write monthly letters that are sent to local orphanages in Orange County to support the mental and emotional health and development of orphans.

ADVOCACY

Optix members have been elected onto the Superintendent's Student Advisory Council and actively promote resolutions to bring diversity and inclusivity to our school district. We work directly with our school's Anti-Racism & Equity task force to amplify the voices of all students on campus.

Since 2020, Optix members have made and sold 600+ masks, 100% of the profits being matched by the HP Global Network Foundation (\$2600 total) and donated to the Black Lives Matter Global Network Foundation.

GENDER DIVERSITY

Since 2019, we've hosted monthly guest lectures to expose girls to opportunities in STEM and summits to advocate for female involvement in STEM.

50% of our officers, 80% of our leadership, and 40% of our club are female and/or non-binary.

Since 2017, 20+ Optix women have won the National Center for Women & Information Technology (NCWIT) award, revolutionizing the face of technology.

Since 2019, Optix women have been leaders in the Girls Play Global Initiative to educate and empower girls in rural India and bridge the gender gap around the world.

INNOVATION

In 2020, Optix programmers created several platforms and algorithms from scratch to help our team become more productive and efficient. All of these programs are organized on a mobile app called OptixToolkit which is available for download for free on both Android and iOS. These programs are all open-sourced, free to use, including OptixTools, OptixParts, and OptixBalance.

OptixTools is a queue and reservation system to allocate tools for team members to help with social distancing as well as to prevent confusion with tool availability.

OptixParts is a centralized dashboard to track ordered robot parts that automatically checks shipping sites to trace tracking statuses.

OptixBalance is a personalized calendar system used to keep accountability among team members during the season.

Optix is also proud to have created multiple apps to ease our community into the technologically savvy world of the future. Our platforms have won 10 hackathon awards, most notably, Best Social Good Award, Work & Economy Track Winner, Best UI Design, and Best Design Award, and have impacted hundreds of users. Our most notable platforms are:

AlzheimersAI: a website to monitor patients and family members with Alzheimer's disease using an original Artificial Intelligence algorithm to detect Alzheimer's disease using brain scans.

Spark: a platform made for students to help with distance learning, combining several online student resources onto one site: Calendar, Tasks, Team Administration, Project Tracking, Messages, Meetings and Zoom Integration, and Discussion Boards.

Fabric: a shared online whiteboard for teachers, allowing teachers to send links to their whiteboard directly to students, eliminating potential problems with video streaming and lag.

Voluntix: a platform to share volunteer opportunities and help connect organizations to volunteers and vice versa.

LEADERSHIP/ALUMNI

We build strong student leaders in our community who emulate the FIRST Core Values. Our team follows a professional and effective business model consisting of an executive board, president, and four VP's who each preside over each of the different sub-departments, and scrum masters leading smaller Scrum teams. Our leaders train all of our members to become the forerunners of the next season while embracing Gracious Professionalism and Coopertition. Through first-hand experiences and memories, we are training our members with essential life-skills so they can become the aspirant leaders of STEM needed in the future.

SUMMARY

Team Optix inspires the next wave of leaders by transforming our local and global communities by changing lives. Now in our 12th year of FIRST, we seek to catalyze and embody FIRST founder Dean Kamen's statement: FIRST is more than robots. Optix isn't just a robotics team. We are dynamic leaders in our community. We are hard workers who will always strive for progress.

Since 2018 we have:

Volunteered for 8900+ hours

Changed the lives of 102,620+ students

Assisted & mentored 95+ FIRST teams

Raised & donated \$76,700 to uplift STEAM education

We aren't reactive. We are proactive. We aren't Rapid Reactors. We are Rapid Proactors.