FIRST Impact Award - Team 2429

2024 - Team 2429

Team Number

2429

Team Nickname

La Cañada Engineering Club

Team Location

La Canada Flintridge, CA - 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.

The LCEC encourages individuals to pursue community service while simultaneously exploring future STEM careers. Our alumni attend some of the best engineering schools in the country with 85% pursuing a higher education in STEM. Inspired by their experience with FIRST, they seek various robotics and race car building opportunities like Formula SAE and the SAE Supermileage Car Competition. Many alumni come back from college or their jobs to contribute as mentors for our program.

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

This year, LCEC is composed of 197 students with 114 members who actively participate in our 5 FLL teams, 3 FTC teams, and 2429's FRC team. Based in La Cañada High School and surrounded by the Rose Bowl, Caltech, and NASA JPL, we run our program with the support of community donors and sponsors. We hope to give back to our community by providing quality STEM outreach programs throughout the year and establishing LCEC as the hub of the STEM ecosystem in La Canada.

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?

2429 aims to improve the impact and quality of our programs. In the past three years, LCEC has increased from 6 to 9 FIRST teams. We have continued to expand outreach to local elementary schools, reaching hundreds of kids through our STEAM nights and robot events. Furthermore, LCEC recently met and advocated for stronger support from the school as a part of current district sustainability initiatives.

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

2429 members are also mentors for our 5 FLL and 3 FTC teams, coaching 150 4th-12th grade students these past two years. To improve the quality of our programs this season, LCEC organized our outreach efforts through new software, HelloClub, giving students a system to effectively communicate and mobilize members regarding the various volunteer opportunities available. Through this process, 2429

members encourage our younger students to volunteer and actively engage in our STEM outreach programs.

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

Producing quality STEM outreach for nearly two decades, the LCEC has since grown its program these past 2 years by starting 3 new FIRST teams. This season we hosted and ran a total of 2 FLL qualifiers, 2 FLL regionals (an addition from only 1 in 2022), 4 FTC league tournaments, and 1 FTC interleague tournament. Beyond providing a positive FIRST competition experience with our Program Delivery Partners, 2429 facilitated outreach efforts of FRC Team 589 in their engineering expo.

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?

2429 collaborates with other teams to provide various STEM activities and robotics events. We also partner with local elementaries to deliver free robotics specific camps throughout the year. Our FLL and FTC events are hosted simultaneously, inspiring FLL students to continue exploring FIRST. Since last year, our club membership has grown 13%. We also host and run STEM speaker events and fairs to encourage members to learn about local engineers and their professional work.

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

2429 has significant ongoing sponsorships from NASA JPL and the Gene Haas Foundation to support FRC registration and events, as well as software sponsorships from Mastercam Education. Our 501c3 non-profit Blockhead Boosters Inc., Donorbox, and HelloClub site have streamlined financial operations for our other sponsors like family members and local businesses. LCEC has developed strong relations with local elementary schools and city municipalities to grow STEM awareness and club sustainability.

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

Collaborating with a local student organization, Mission for Mobility, we created a podcast episode talking about the importance of disability representation and diversity in STEM. With consistent efforts to reach our goals, we created our Someone To You (STU) program to facilitate and connect new members with older, more experienced FRC members. As an Equal Opportunity Organization, the Blockhead Boosters Inc. also meets 100% of financial need for students who may be facing financial hardships.

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

2429 has created a sustainable pathway called the “Farming System.” By housing our FLL, FTC, and FRC teams all under one roof, we have created an intentional transition from one FIRST program to another. Incorporating the “Block System” this season, we encourage student involvement in running our club and tournaments to earn “blocks.” Recently, 2429 organized with school board members to advocate for district’s involvement in the STEM programs we have started.

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

past 3 years

Founding a non-profit 501c3 played a significant role in maintaining donors because it aided donations and tax documentation for sponsors. To recruit sponsors, we organized a student-team this season to focus on acquiring sponsorships from local and leading companies. Supporting elementary schools both grew our FLL teams and led to donations from businesses and families. 80% are satisfied with the LCEC's engagement, and 100% believe the LCEC acts as a role model within our community.

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

Although we have made extensive efforts over the past year to increase our amount of outreach and impact, we want to make sure our programs are sustainable and remain for the years to come. LCEC strives to become more integrated into the programming of our district with the goal of keeping our programs permanently alive for the years to come. We have addressed this by having active conversations with the school board through recent Local Control & Accountability Plan (LCAP) meetings.

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

2429 strives to show kids interested in robotics that they are capable of thriving in STEM environments. We aim to help foster confidence for kids to explore STEM. We hope young people learn that anyone can program or use CAD, as long as they put effort into it. Our programs strive to fulfill the goal of creating sustainable STEM pathways for youth and young adults. LCEC's progress is apparent with Blockhead alumni who come back to share their successes in STEM with some even becoming mentors.

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.

Once upon a time, there was a young engineer-to-be. They fiddled and tinkered with structures and tools, sometimes even motorizing furniture or building contraptions no one else thought of. Everyone, including the club advisor, called them a "blockhead" due to their constant passion for building, and the name caught on quickly. Using CAD to draw a cartoon blockhead, the team adopted it as a logo, reminding us to always "Think Outside the Block."

Judge Feedback

Who/When	Feedback
Apr 05, 2024 06:23:41 PM EST	**A Glow and Grow – the Blockheads of 2429 are committed to reflection. After meeting and learning more about us, what was one part of our program that glowed and one area for us to grow?** **An area the team has an opportunity to improve.** **Something that really impressed the judges.**

Essay

Building Blocks by Blockheads Founded in 2007, Team 2429, the La Cañada Engineering Club, inspires long-term interest in STEAM. As a well-established partner of FIRST, we are devoted to growing

engagement within FIRST programs throughout our community and the world, one block at a time.

Block 1 - Commitment to FIRST As a leading host for FLL and FTC tournaments, Team 2429's partnership with FIRST extends beyond FRC. 2429 has hosted 55 FLL tournaments over the last 11 years. In the past three years alone, we have held 24 combined FLL and FTC competitions on our home site at La Cañada High School. The competitions we produce are exciting and memorable experiences for attending teams. We aim to set an example for growing FIRST tournament partners to follow and aspire to host FRC competitions one day. All Blockhead events are heavily student-run by multitudes of high school students who participate as judges, referees, announcers, and many other roles. Blockheads typically work back-to-back 12-hour days on multiple weekends to ensure that events run smoothly and efficiently. This year, with our new HelloClub software, we introduced the "Block System" to engage members and encourage them to volunteer in the various outreach activities we have each season. Students earn a "block" for each community event attended, and 16 blocks are necessary to attend future FRC competitions. This ensures that LCEC members give back to the club and make events like these possible. However, the club cannot support the more robust events without our community. Therefore, many LCEC family members and blockhead friends are also volunteers. For example, this season, we hosted our largest robotics event by managing 3 FIRST competitions and 1 fair on the same day, requiring over 100 volunteers. The event consisted of a regional FLL challenge, a local area FTC league meet, an FLL Explorer competition, and a STEM Fair. There were 71 FIRST teams: 16 from FLL Explorer, 40 from FLL Challenge, and 15 FTC teams. We have recently begun a tradition of hosting FTC competitions. Team 2429 has hosted and run 15 league meets in the past three years. Our commitment to making these events the best they can be is apparent in our recent investment to buy a large truss and lighting system. The 12' x 12' FTC playing field is now bordered by an exciting array of moving lights, clear amplified audio, and a large screen scoreboard. Teams and families love the new experience.

Block 2 - Commitment to Our Community With consistent outreach for over a decade, the LCEC has established itself as a leading STEAM organization in our community. We continually showcase our robots at events like assemblies, parades, community shows, and other functions. For the past 2 years 2429 has set up a booth at La Canada's largest summer event series "Music in the Park." Across a series of Saturdays, we drove our FLL, FTC, & FRC bot through thousands of people, sold our newly branded gear, and provided concession sales to festive crowds. Over the summer and beginning of the school year, students and mentors met to prototype a go-kart robot called Chairbot. As a part of the winter assembly this year, LCEC presented a student-teacher Chairbot competition, challenging participants to obstacle course in the shortest amount of time. But the Blockheads don't just make robots, we help recycle them. Team 2429 has hosted E-Waste drives for more than a decade, providing a reliable venue for the community to dispose of unwanted electronics in an environmentally safe manner. This year's E-Waste drive recycled more than 40 tons of electronics. Coming back from the pandemic, LCEC wanted to focus on expanding our outreach programs as well as develop quality partnerships within our community. In 2022, we noticed a lack of STEAM application in the local elementaries and began working to bring programs like our "science nights" to engage K-6 students in various STEAM activities. We visited all the local K-6 schools during school hours to show our suite of robots in action. Putting in hours of volunteering and mentorship, we revived the elementary robotics programs by finding their unused EV3 kits, partnering with their STEAM coordinators, and delivering 4 weeks of after-school robotics training to over 50 K-6th graders. Since then we have continued our work in creating a space of belonging for young students in STEAM. For some teams, robotics ends along with the school year. However, with Team 2429, the summer is an amazing time to mentor young students and engage them in the endless possibilities created by STEAM. For the past 6 years, we have offered 2 weeks of robotics training to

dozens of 7-10th grade students each summer, teaching elementary students skills in coding and CAD without charge. As students leave and graduate from our program, we want to make sure members feel prepared to pursue higher education or future careers. Since 2022, we have hosted 9 speakers as a part of our Speaker Series. Scientists from the ground breaking James Webb and Mars mission projects come to share their experiences and answer questions from live and streaming audiences. This year, we started our first STEAM fair to provide students with a platform to walk around and learn more about the different careers in STEAM. The Blockheads are proud of the work we have accomplished in efforts to become the hub of the STEAM ecosystem in La Canada.

Block 3 - Commitment to Sustainability The LCEC continues to make strides towards building an evermore sustainable program by enhancing communications capacity, providing early robotics engineering to youth, and developing lasting and secure partnerships with our community. Over the past year, students and parents collaborated in dozens of meetings. We planned out and improved the structure and function of our club. As a result, we have developed and started using new communication tools. We use lacanadaengineeringclub.org as a landing page and administrative site and HelloClub for communications. The “Blockhead update” newsletter was started and has been regularly issued by LCEC outreach to our growing email list. Everyone uses the same Google Classroom and cloud Drive for essential instructions and materials. Team 2429 does not receive funding from the school district. Our revolving forty thousand dollar budget is funded through donations, sponsorships, and merchandise sales. These past two years we formed a non-profit 501c3, “Blockhead Boosters Inc.,” and our club CRM software, HelloClub. Both streamline the donation process for sponsors and create a better purchasing workflow for materials and game registrations, making our club more accessible to donate to. This year donations are up seven thousand dollars from last year. Our team also made thousands of dollars selling merchandise at a variety of our activities. This year we also sold: LEGOs by the bag, food concessions, booster tickets, Blockhead branded clothing, and even participated in “dine out” fundraisers with four different restaurants. Team 2429 has hustled to be in the black with our budget. The Blockheads at 2429 offer younger members a glimpse into a future with STEM. We have created a “Farming System” where young Blockheads are exposed to engineering concepts, compete in robotics competitions, and build lasting friendships. Our team supports and mentors seven separate FIRST teams with full rosters. By housing our FLL, FTC, and FRC teams under one roof, we intentionally transition young members from one FIRST program to another. Over the years, we have mentored 9 FTC and 58 FLL teams. 4 of 5 FLL teams qualified for regionals this year with 1 team advancing to SoCal championships. We also founded FTC team 23838 this season, providing a place for 7th and 8th grade students to begin their FIRST robotics journey. Lastly, we have taken strides to improve our members' sense of belonging. The LCEC created our “Someone To You” program this year to build long, lasting connections between our members across the three programs. Every mentor and member is addressed on a first-name basis to create an equal and inclusive environment for everyone regardless of age or experience. Aside from communication, funding, and membership, our club has built and strengthened community relationships. Last year, we articulated with local elementary schools, presented to the many different community organizations, marketed FIRST and LCEC at events with thousands in attendance, collaborated with elementary principals to take K-6th students to a FRC competition field trip, built stronger partnerships with our neighbor schools, and rebranded ourselves to become more visible than ever. This year, we wanted to make sure the work that we do stays alive as a permanent part of our community. Talking to district officials to aid in their Local Control and Accountability Plan (LCAP), club members advocated for a stronger school presence and involvement in making our club an integral part of creating a gateway STEAM curriculum.

Our Aspiration Our vision is to be the hub of the STEM ecosystem in La Canada. Through 2429's seventeen years of perseverance and dedication, we have created a sustainable and growing organization of robotics competition teams. Our participation in FIRST positively impacts STEM engagement and awareness within our communities. Over the years, we have learned that FRC is not only about the robots we build, but that First Robotics Competition is also about forming lasting relationships and leaving legacies behind for those still to come. As members continue to join and graduate from La Cañada Engineering Club, all Blockheads remain a part of one team and one family. We are the blockheads. Together, we continue to develop and perpetuate a stem-focused culture throughout our community, one block at a time.;