

***FIRST* Impact Award - Team 3598**

2025 - Team 3598

Team Number

3598

Team Nickname

SEStematic Eliminators

Team Location

Sacramento, CA - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in *FIRST* programs.

Team 3598 has a 100% graduation rate compared to 86% in California. All of our members go on to post-secondary institutions with a 100% college acceptance rate. Of these institutions, alumni have been accepted into prestigious engineering programs such as Colorado School of Mines, USC, UC Davis, & Cal Poly SLO. 91% of our members are interested in STEM careers, 77.2% are confident in the skills that they learned in our team, & our alumni work with NASA, Intel, & Aerojet.

Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.

Coming from Sacramento, our team reflects the demographics of our community. 63% of our students are socioeconomically disadvantaged. 22% of children live below the poverty line, & 30% benefit from public assistance, compared to the 15.3% of kids in the nation. 90.3% of our team are students of color, & 57.2% are multilingual. To address the needs of our community, we provide FIRST education cost-free in order to ensure all students can explore STEM.

Describe the team's methods, with emphasis on the past 3 years, for spreading the *FIRST* Mission in ways that are effective, scalable, sustainable, and creative.

Our team supports the FIRST mission to recognize the crucial need for STEM programs for youth coming from marginalized backgrounds. At every workshop, we get feedback forms from the coordinators to get the overall feedback. However, all of our students come away with a personal experience & connection from different kids. Every workshop is simple enough to where every student can learn how to run them easily. Managing these workshops, we figured out innovative ways to engage kids in STEM.

Describe your team's goals and the progress you have made towards them to fulfill *FIRST's* Vision.

Our team is motivated by a world where STEM is not bound by circumstances. Through FIRST, we are nurturing these goals: to promote accessibility, confidence, and to engage underrepresented communities. Within our team, 89% are interested in pursuing careers in STEM, and 77.2% are confident in their skills. For progress, we've reached 4,171 youth, hosted 28 workshops, and made partnerships with 8 organizations in the past 3 years to promote STEM, and we are inspired to reach many more.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?
We've seen growing attendance at our Saturday workshops and increased interest during school tours and recruitment. While we measure impact through smiles, we also track participation with sign-in sheets and gather feedback from afterschool program leads, who report that students enjoy and find our workshops meaningful. Our efforts have earned recognition from organizations, leading to valuable partnerships and sponsorships that help expand our reach.
Please provide specific examples of how your team and team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years. How do you share these best practices with other teams?
We mentor FTC team 4943 by assisting with lab tools and funding through a shared non-profit, SES-Robotics Inc. We've provided aid in programming, hardware, wiring, assembly, CAD, and competition prep. At the NorCal East League FTC tournament, we assist other teams with CAD services, robot issues, & pit setup to demonstrate Gracious Professionalism. Our alumni have also returned to mentor, volunteer at regional events, & assist other teams with programming at regionals & through Chief Delphi.
Describe your team's initiatives to Assist, Mentor, and/or Start other <i>FIRST</i> teams with emphasis on activities within the past 3 years.
We helped start the FRC Wolverines 5274 & assist FTC Albert Einstein 6949 & JFK's FTC team 23393. To strengthen the bonds of our community, we have started the Sacramento City Unified School District "RoboAlliance" which helps us collaborate with the other teams in our district. This promotes the sustainability of FRC teams operating within our district & allows us to support them with materials & by advocating for them to receive funding from SCUSD.
What other initiatives have you created, grown, sustained, or participated in (<i>FIRST</i> or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?
We run STEM Workshops through after-school programs for elementary school students. Ran a booth at a College & Career Fair to expose FIRST & CTE programs. Host STEM workshops through the SMUD Museum of Science & Curiosity, Sacramento Public Library, 21 Reasons, Sisters of Nia, & Kappa Alpha Psi. Brought 24 students to various universities to promote college & career exploration & student opportunities. Results include, an increase in campus tours and have doubled the size of our team.
Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.
Sponsored by the CTE Department of the Sacramento School District & The Intuitive Foundation to spread the FIRST message amongst elementary schools & to guarantee support to retain our team as cost-free. Partnered with Sacramento Public Library, SMUD Museum of Science & Curiosity, 21 Reasons, the Sacramento Space Society, The Center, the Youth Development Support Services & JP Aerospace to host & run STEM workshops rooted in bringing accessibility to historically marginalized groups in STEM.
Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, <i>FIRST</i>, and your communities.
We've hosted 8 workshops with 21 Reasons, a non-profit that brings underrepresented youth together, Sisters of Nia, an organization that empowers adolescent girls, Kappa Alpha Psi, a historically Black Fraternity, and provide after-school workshops to 16 Title 1 schools within SCUSD. We support our 63% of socioeconomically disadvantaged members by providing meals, enhancing educational opportunities, & being accessible/cost-free. 90% of our members are POC, & 49% are first-generation students.

Explain how you ensure your team and the initiatives you have created will be sustainable.	
We use simple, student-led initiatives to ensure that everyone can run outreach events. Through SMUD’s Solar Regatta & FTC team 4943, students are inspired to join FRC & continue pursuing STEM interests. Our team’s junior captains learn from people on our team so they can be effective leaders for future generations. Additionally, our lead mentor is the lead engineering teacher on our school’s campus, recruiting through his everyday classroom.	
Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.	
We are challenged with a disproportionate boy-to-girl ratio that goes along with the imbalance of girls attending our school. On our team, 26% are girls & at our school, 35% are girls. We’ve connected with girls on FTC team 4943 to introduce them to our lab and gain confidence. Within our team, mentors step up to promote a safe space and promote female leadership through team captains. 3 of our captains are girls, and 86% of the girls on our team have gained confidence within our team.	
Briefly describe other matters of interest to the <i>FIRST</i> 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, particularly noteworthy, or had a large impact.	
In 2019, Team 3598 began hosting STEM workshops for underrepresented groups in our community, but the pandemic hit hard. Despite challenges, we persevered, going from 1 workshop in 20’-22’ to 5 in 23’. In 2024, we hosted 27 workshops & have 23 planned for the first half of 25’. We host school tours for interested families which highlight the FIRST program in our school, hosting 24 since 20’. Though limited, we adapted to ensure that STEM was within reach to every student in our community.	
Judge Feedback	
	Is there something more that we can do to improve our presentation? An area the team has an opportunity to improve. Something that really impressed the judges.
Essay	
Team 3598 is based in Sacramento, California, at the School of Engineering & Sciences (SES). Our team comprises 10 juniors & 39 seniors & we established ourselves in 2010. From the beginning, we've been following our mission to educate the world around us through low-cost, student-led initiatives. We started with 17 students & with recruitment, we have grown to a team of 49. We use the Engineering Design Process (EDP) daily. The EDP is the method that engineers use to find solutions to problems. You define a problem, research the issue, brainstorm solutions, analyze results, & finally repeat the process until you are satisfied. We have utilized the process as a team to create beneficial change within our community. Define the Problem: Over the past few years, our team has identified three major problems within our team & community. First, we identified the lack of accessibility to FIRST programs. When Team 3598 was founded, many students were forced to leave because they couldn't afford the cost of entry. With this, we noticed a pattern. Many of these students were from marginalized backgrounds. Given the diversity of our community, this lack of accessibility was unacceptable. As we addressed these financial barriers, we focused on another critical issue. The gender disparity in STEM education. Not only were students on our team unable to join, but we also noticed a significant imbalance in the number of boys & girls on our team. This disparity mirrors a more significant issue in STEM, where women still face issues around representation & opportunity. Finally, we identified the need for sustainable workshops. Before COVID-19, our team was hosting multiple workshops a month. However, the workshops were physically demanding. Only a select few members knew how to run the workshops, & eventually, we couldn't sustain it. Additionally, coming from the background of a smaller school, running workshops	

became inaccessible to us. Many of our students had no resources to run online workshops safely. To address this, our team made it a mission to create meaningful, sustainable projects. Research: After identifying these problems, we gathered more information to approach a solution. According to DataUSA, Sacramento, California, is the 2nd most diverse city in the U.S. It has a 73.3% diversity index, which is the measure of ethnic diversity within a population. We calculated our team's diversity index using Simpson's Diversity Index. We found that our team currently has a diversity index of 79%. Furthermore, 26% of our team are girls, which generates a more significant than 3:1 male-to-female ratio. According to the National Science Foundation, women comprise only a third of the Engineering workforce. This, in part, is due to the lack of girls being encouraged in STEM. We also found that as children, girls lack the encouragement needed to build an interest in STEM. Historically, toys have been marketed to target specific gender roles. Girls have been pushed towards toys that are designed for specific stereotypes. Walking down a toy aisle, there are fewer building blocks & mechanical toys that are marketed toward girls. Because of this, girls are not exposed to elements of spatial awareness, a skill deeply rooted in engineering. Title 1 schools are schools where more than 50% of the population is socioeconomically disadvantaged. In Sacramento City Unified School District (SCUSD), 51 of the 60 elementary & high schools are Title 1. 63% of students at SES are socioeconomically disadvantaged. Furthermore, 49% of our team members are first-generation students. Lack of diversity has historically been an issue in STEM. According to the ethnic makeup of the STEM workforce from the Pew Research Center, we calculated the diversity index of the field to be 49%. Therefore, having access to STEM education in our diverse community is important. Brainstorm: Based on these statistics & problems, we came up with ideas to help combat these issues based on our vision: a world where circumstances no longer bind opportunity in STEM. To help the students who could not afford the cost of entry, our mentors & parents brainstormed the idea of having a cost-free team. Cost-free ensures that everyone who wants to be on the team can be on the team regardless of their circumstances. To create a cost-free team, the mentors brainstormed SES Robotics Inc. & district support to help fund the team. Initially, we came up with the idea of catering to younger girls to encourage & help build their confidence in pursuing careers in STEM. We then envisioned implementing STEM-based workshops to support 3,598 younger girls. With workshops paused due to COVID & a new idea to close the gap of gender disparity in STEM education, we aimed to create workshops that would be sustainable. Every workshop needed to be simplistic enough for every member of the team to be able to learn how to host them easily. Prototype: Diversity provides different perspectives; these perspectives have given us the gift of being able to work with diverse organizations. We've hosted workshops with the Society of the Blind, Sacramento County Youth Probation Department, Homeless Youth, & the National Society of Black Engineers. From here, we went further by starting Project 3598. Project 3598 began by hosting monthly workshops in our lab that consisted of two main activities: our wooden-based projects & our PongSAT activity. Both activities are simple yet effective in developing STEM learning within a young audience. Our wooden projects are puzzles we designed. Then, we work with JP Aerospace to host the PongSAT activity. Kids explore the scientific process by choosing between candies & objects to put inside a ping pong ball. These ping pong balls are then sent to JP Aerospace, where they send the ping pong balls to space. So far, we plan to send 362 PongSATS to JP Aerospace this spring, with a number system to ensure each kid gets their PongSAT back. Through Project 3598, we are making a difference by inspiring young girls in STEM & evening the boy-to-girl ratio. We have earned recognition & support from our community, contributing to our efforts of FIRST accessibility, STEM education, & sustainability. Analysis: After multiple iterations of Project 3598, we weren't making as much impact as possible. Within 6 months, we had reached 80 students. We wanted something more out of Project 3598, so we decided to work closer with our community. After analyzing our resources, we contacted our school district to try to bring Project 3598 to afterschool programs within the SCUSD district. With this, we created the Thursday Series. Furthermore, our team is integrating FIRST education into SES school tours & off-site recruitment efforts by touring our lab, demonstrating our robot, & advertising Project 3598. In the past 3 years, we have hosted 24 school tours & have reached 57 schools. In the past 8 school tours, we have noticed a significant increase in participants interested in our program. After analyzing, we saw a further increase in interest in STEM education from future generations, & have incorporated it as a resource for recruitment. Finalize: By making our team cost-free; we have supported 351 students through our program. We invest in future STEM generations while honoring past generations. Many of our team alumni have pursued careers with companies such as NASA, Intel, Boeing, & many more. Alumni have also come back to mentor & volunteer at regionals. To ensure our alumni's continued support, we host alumni dinners for alumni to visit the lab, enjoy dinner, & see our robot in action every

season. Alumni dinners are an important part of Team 3598, connecting a bridge between the past & current members of FIRST. In consideration of the feedback we received & the problems identified through our analysis, we decided to contact the SMUD Museum of Science & Curiosity (MOSAC), Sisters of Nia, the Sac Public Library, & Kappa Alpha Psi to involve Project 3598 within our community further. With district support & partnering with multiple organizations, we have reached the future generation of STEM learners, each leaving with a smile. In the 2024-25 school year, we have contributed 1,500 hours of community service & traveled over 352 miles, impacting 340 children at the 28 workshops we have hosted. Improve: To improve the connection to FIRST teams in our community, we created the SCUSD RoboAlliance. We got into contact with FRC team 5274, FTC team 6949 & 23393 to be able to mentor & assist the FIRST teams in our area. Through this alliance, we began to advocate for support for FIRST Robotics from SCUSD. We are always looking for ways to evolve with our community. We have gained sponsorships from 11 different organizations, which allows our team to remain sustainable and to continue to evolve & grow with our community for years to come. Additionally, we plan to continue Project through the summer, allowing future interested members to learn how to host workshops while learning the importance of representation. Continuing through summer will allow us to seamlessly transition into the next school year, making Project significantly more efficient. We don't intend for Project 3598 ever to stop growing & evolving. Through continuous iteration, we have reached over 700 youth through STEM workshops & have reached 3,470 additional through school recruitment. With each improvement to our methods, Project 3598 exponentially expands its ability to reach youth & make a real, visible impact on STEM. By embracing diverse student demographics, we are transforming our community's perception of STEM and making the field more inclusive. Our vision is a world where all youth aspire to be innovative leaders. By ensuring equity in STEM education through accessibility, we are creating lasting changes, starting with the members of our team, and ending with our community.

