FIRST Impact Award - Team 2637

2023 - Team 2637

Team Number

2637

Team Nickname

Phantom Catz

Team Location

Rolling Hills Estates, 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.

Our team has a 100% high school graduation rate for senior members. Last year, all 7 of our graduates chose to pursue STEM majors in four-year colleges. Team members have gone to colleges like USC, MIT, CMU, UCLA, Perdue and Umich. Nearly all team graduates regularly return to our campus to watch kickoff unfold with our team. Additionally, 3 alumni have returned this year to mentor our team.

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

Our own community's distinctive makeup has helped inspire a large focus for our team: bringing diversity and equity to those underrepresented within the field of STEM. This year, we received $4,000 from the FIRST Equity and Access grant, having been recognized for our work to increase equality in the STEM community. This grant enabled our team to start 2 FLL teams for a Native American school, buy a second robot for our all-girls FLL team and buy 1 car for our outreach project Go Baby Go.

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?

Our team ensures sustainability by reaching three different levels of education: elementary, middle, and high school. At STEM Development Courses, we teach fundamental engineering principles through a hands-on approach to elementary students. Our FLL teams act as feeder systems that ensure STEM is spread throughout our community. FLL team members regularly transition into Phantom Catz/FRC members.

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

Phantom Catz Presidents, Mason (2023) and Ben (2021), were both Dean's list finalists during their junior years. Mason acts as an AI Ambassador for Inspirit AI outside of his time on the team. Furthermore, 8 team members are FLL mentors for teams 52716, 54040, 30713, 30714, and 59876. 5 of these members mentor all-girls teams, acting as female role models for young women interested in

STEM. Additionally, our team members regularly participate in our school's internships with The Boeing Company.

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

We have started a total of 4 FLL teams that form our Phantom Catz FIRST Alliance (PCFA). PCFA began with our first team in 2021, the all-girls FLL team (54040) consisting of 10 elementary schoolers. Next year, we started a middle school FLL team (30714) with a 50-50 gender split, expanding our reach to the middle school level. Phantom Catz's team members mentor all 20 students at our own build room. This year, we started and fully funded 2 Holbrook FLL teams in Arizona, team 30713 and 59876.

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 order to spread STEM throughout our community we hosted our first STEM camp, now called STEM Development Courses, in 2017. Since then, we've hosted a total of 24 STEM courses with 50+ individual events. Our main focus is inspiring children to pursue STEM through fun and educational projects. We've reached over 716 students in total. We've run courses for special education students and internationally. Course participants have joined our FLL and FRC teams.

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

In 2022, The Phantom Catz partnered with Holbrook Indian School in Arizona. The school serves Native American children from surrounding reservations who are economically disadvantaged and/or have experienced trauma. The school had no robotics program/teacher prior to us. During the school year, we hold monthly classes covering topics like coding and physics. This year we started two FLL teams with the school. We've taught students from 2nd to 7th grade. On average we teach 30 students a month.

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

Our team realized that our STEM community lacked representation for underprivileged groups. We sought to resolve this by starting an all-girls FLL team that focused on empowering the voices of girls and women. We also host special education STEM camps in which we modify projects to ensure its accessibility for all students. Our team uplifts Native American voices with STEM courses and FLL teams by partnering with Holbrook Indian School.

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

With a large team of 79 members, team sustainability and transfer of knowledge are a priority. Our team is organized into 7 subteams with a lead overseeing each group. This allows for tasks to be evenly split up between members. For 4 months prior to build season, we hold training, where new members learn from senior members regarding different technical and operational skills. Leads perform regular check-ups/milestones to ensure new members are not falling behind. We host regular team bonding.

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

past 3 years

Every month, The Phantom Catz send out a newsletter detailing that month's major events and accomplishments. A subteam log where each subteam gives an overview of their progress is included. This provides sponsors with in-depth information on our projects and activities throughout each month. Additionally, our team invites sponsors to our facilities regularly so that they can observe our team meetings first-hand. Sponsors are also invited to the end-of-the-year banquet.

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

An area our team needs improvement in is time management. Over the last few years, with a large time, we have struggled to stay productive and keep every single member engaged. However, with the use of our leadership system and delegation of tasks, we have improved vastly with time management. We utilize the platform Trello. This functions as both a place to document tasks for future reference and as a way for subteams to understand the progress of other groups.

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

The Phantom Catz' ability to accomplish our goals, maintain productivity, and work towards our pursuit of spreading STEM are all integrally linked to our team's close knit nature. Many of our members have close relationships with each other and get together outside of our team. This has allowed for a strong foundation that helps us retain members. Our alumni regularly come back to help us during the start of our season. The Phantoms Catz creates an environment like home.

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.

Go Baby Go is a program that provides modified ride-on cars for children with disabilities, allowing them the chance to move around independently. During Nov, our team built 4 cars for 4 families. In Dec. 2022, we hosted an event on our school's campus for the kids and their families. The children tried out their new cars by driving through a fun course set up by our team. We were honored to be a part of this emotional moment for the families.

Essay

Our Team

The Phantom Catz was founded in 2008 with five team members and has now grown to 79 members.

Our team has a 35:65 female:male ratio, which is reflected in the makeup of our leadership team, with 5 of 13 leads being women. We are composed of seven subteams: Mechanical Design, Programming, Electronics and Pneumatics, Manufacturing, Strategy and Systems Design, Business and Marketing, and Outreach and Awards. In addition to our team President and 20 mentors who provide guidance, each subteam has a director/lead to oversee and train its members. Through routine meetings and task tracking using Trello, we maintain sound communication and productivity.

Our team culture emphasizes cooperation and teamwork within and across subteams by collaborating on key projects such as Go Baby Go (which is described below). Through our numerous outreach events, we aim to create a sustainable path to STEM in our community and abroad

STEM Development Courses

Local Impact Our team has impacted every elementary school in the PVPUSD through our STEM Development Courses. In 2017, we hosted the first STEM camp for one elementary school. This has been expanded to STEM Development Courses, which have a greater focus on STEM education. STEM Development Course participants have regularly transitioned into Phantom Catz team members. A member of our current leadership team, Jihoon, first encountered engineering at one of these courses, which he describes as fostering his love for STEM. This year he began volunteering to teach at a STEM course, bringing his love for FIRST to the future generation of engineering.

Our team has reached 11 elementary schools locally, including one school out of the district. Overall the team has reached 431 students in our local community. During the height of COVID, we held 10 online STEM courses, helping more than 180 students. One of our main focuses in these courses shifted to socialization skills. In light of the circumstances of the pandemic, The Phantom Catz eliminated all financial costs for attending STEM courses. From then on, all courses became free of charge to every student interested.

In 2021, we hosted the first ever STEM course for special education students in our school district. The event has run every year since, hosting three events in total. The team works with a Ph.D. licensed therapist to come up with projects and design lesson plans to make sure the students are successful and accommodated. At the end of the camp, a mother of a participant emailed that her son thoroughly enjoyed the experience and was teaching the project to his siblings. This course has become a point of pride for our team and has been recognized by school board members of our district. International Impact Our team has reached more than 150 international students in three different countries: Korea, Mexico, and Uganda. Our first international STEM Development Course was in Korea. Partnering with the Seoul YangJin Elementary School in 2018, we taught 30 students. In 2019, we held a STEM course in Guasave, Sinaloa, Mexico. At the event, 80 economically disadvantaged students attended a free biweekly camp. The event had a lasting impact on the community, as shown by emails sent to the former outreach lead asking when the camp would run again and how to become more involved with STEM. This event was held again in 2020, online due to COVID. This year, our team worked with a school in Uganda, New Partners Africa, sending our STEM Development Course curriculum and projects free of charge. Guiding the school on how to teach the course, we aimed to create self-sufficiency for the school's engineering program.

Holbrook Indian School

In 2022, our team started a partnership with Holbrook Indian School located in Arizona. Holbrook serves Native American students who are economically disadvantaged and/or have suffered trauma. We began by hosting four monthly camps, teaching the fundamentals of STEM to 30 students. Before our team, the school had no robotics program or teacher. We provided all materials free of charge, shipping STEM kits made by Phantom Catz team members to the school. Our team would meet over Zoom with the school to teach different STEM-related concepts and projects. In 2023, our team wanted to expand the STEM community and bring new opportunities for Holbrook. Thus, we started two FLL teams at the school, 30713 and 59876, paying for all materials and registration costs, as well as mentoring the teams over Zoom weekly. Each week, Phantom Catz members teach lessons focused on different subjects like coding, mechanisms, and strategy. Every lesson plan is worked on collaboratively with teachers from Holbrook to best meet the student's academic needs.

Phantom Catz FIRST Alliance

In 2023, our team started the Phantom Catz FIRST Alliance (PCFA), a collaborative group of four FLL teams. The group spans two different states, four teams, and 40 students. Alongside the two Holbrook FLL teams, 30713 and 59876, we mentor two local teams: a middle school team (30714) and an all-girls team (54040). These local teams are run solely by Phantom Catz students and meet at our team facilities. This year, team 30714 qualified for the California State Championship.

Before the PCFA, we mentored 30714 and 30713. The two teams were originally started by our team to be run at a local middle school. During this period, almost 100% of graduates from these FLL teams joined the Phantom Catz, with previous FLL members becoming Team President, Electronic Lead, Pit Lead, and more. Unfortunately, due to COVID, the two teams became inactive for the 2020 and 2021 seasons. This year, our team unretired the numbers and moved 30714 to run on our home campus and 30713 to become an FLL team for Holbrook.

A secondary goal of the PCFA is to increase gender diversity within STEM, which motivated us to start/mentor our all-girls elementary FLL team. It was a priority that they were mentored by women leaders from The Phantom Catz. The effects were clear, as 9/10 of the team members returned for a second season this year, with many moving to the middle school FLL team. Further, it was important the coed team, 30714, also have an emphasis on gender diversity. When looking for team members, The Phantom Catz purposely created a 50/50 gender split.

Community Events

The Phantom Catz participates in a variety of community outreach events. Every year, our team takes part in the PVPHS open house, where we show off our team and robots to prospective students and their families. Through open house, our team has reached thousands of members in the PVPUSD community. Continuing to connect to our community, we have marched in the Palos Verdes Holiday Parade of Lights for the last three years it was held. The event is viewed by thousands of members of Palos Verdes in person and shown on local television stations. Our team was recognized, winning best rookie entry and mayor's award for best local entry. In addition, our team holds a new donation drive every year. We have worked with Covenant House, Long Beach Rescue Mission, and New Partners Africa. Over three years, we have collected over 1200 items for homeless shelters and schools.

Team Support

We always seek to aid other robotics teams. This year, our team used our CNC machine to cut 40 parts for our school's VEX team, 3050, helping with five requests from the team. We also shared videos and knowledge of how the machine worked to help the transfer of knowledge between our two teams. Furthermore, we assisted the other FRC team in our district, Sea King Robotics Team 5285, who came to our build room and utilized our game pieces to help prepare for their upcoming competition. Last year, our team met with the local Boys and Girls Club who are interested in starting an FRC team. They toured our building room and learned about the necessary tools and machines to get started. The Boys and Girls Club also met with operational leaders from our team to learn about the financial and business side of running an FRC team. Our team's Business and Marketing Director and Outreach and Awards Director met with FRC Team 3065, located in Israel. Over Zoom, we shared how to run a successful operational program, discussing everything from team member organization to effective communication.

Go Baby Go

Last fall, we partnered with Go Baby Go, a program that provides modified ride-on cars to children with disabilities. The program is dedicated to giving autonomy and providing joy to children who have significant mobility impairment. Our team prepared for this event from November to December. All subteams collaborated to modify the toy cars to fit each child's specific needs, working with an occupational therapist to make sure each car met the mobility requirements of the children. We built four cars at no cost to the families. In December, the four children came to our campus to receive their cars, take them for a test drive, and play with their families. Our team plans to make this an annual event, hoping to help even more families next year.

Our Impact

The Phantom Catz aims to make STEM accessible for everyone. Through our outreach program, we increased diversity in our STEM community and have expanded to reach out globally. At each meeting, the team strives to fulfill our mission statement: "To develop a sustainable and diverse FRC team that educates and inspires all generations to learn about Science, Technology, Math, Engineering, and innovation." ;