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***FIRST* Impact Award - Team 1868**

2023 - Team 1868

Team Number

1868

Team Nickname

Space Cookies

Team Location

Mountain View, 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.

FIRST prepares us for success by teaching leadership, technical, and business skills. In the last 3 years, 100% of Space Cookies have gone to college with 90% majoring in STEM. Our alumni include Air Force pilots, scientists, researchers, physicians, and NASA engineers. Many stay engaged with FIRST by organizing competitions & workshops, mentoring, and volunteering. 6 alums have returned to mentor us, citing the sustained impact of FIRST on their career paths and priorities.

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

While we are thankful to live at the heart of the tech world, we are also aware that only 11% of Silicon Valley tech company executives are women. While this statistic is daunting, we have the opportunity as an all-girls team to challenge the status quo as the next generation of STEM leaders. Internally, we remove barriers to STEM education. Externally, we address the gender gap by bringing sophisticated robots and creative STEM activities to numerous community and sponsor events.

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?

The Girl Scout network of 1.7 million+ and the power of the global FIRST community let us offer creative, impactful programs at tremendous scale. Our STEM Pledge Kit (SPK) provides everything FRC teams need to help local Girl Scouts earn robotics badges while "m.e. FIRST" reaches all FRC teams and is expanding to FTC. We measure impact by the # of teams using the SPK, teams reached by m.e. FIRST, # of events we run/attend, attendance at events, and ongoing evaluation of actual vs. planned goals.

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

6 years ago, we launched the Cookie Helpline and Cookie Jar. The Helpline assists international rookie teams & the Cookie Jar provides tools, batteries, and equipment for traveling teams. We share knowledge and experience through Impact Exchanges, enabling FIRST's signature philosophy of Coopertition. Speaking at conferences, panels, & workshops provides a platform to share both expertise & commitment to FIRST values. We support numerous community initiatives as volunteers & contributors.

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

This year, we started Team 9284, Pakistan's first FRC team, providing funding and setting them up to build a robot in 5 days. We started Churrobots Team 8048 & continue to mentor them. We have started & mentored 19 FLL teams and assisted 140 at competitions. Through our Cookie Helpline & Cookie Jar, we have assisted 65+ FRC teams in the last 3 years, providing expertise, tools, and materials. We volunteer at numerous FRC events and have provided \$18,000 in funding to FLL & FRC 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?

Through 20+ annual events, we engage our community in the excitement of STEM. Even one afternoon can be inspirational! We optimized our demo robot for kids; it tosses & catches balls, lights up on command, and spins; a simplified driver station allows kids to drive and operate. Putting them in control sparks their interest and hands-on activities keep it going. Through signups and raffles at events, we've referred more than 40 families to Playing at Learning, Northern CA's FLL partner.

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

We partnered with Team 4400 (Mexico) & Team 1156 (Brazil) to host the FRC Warmup. This 3-day virtual conference included sessions on mechanical, programming & business skills; 300+ international attendees were better prepared for build season. We are a long-term partner with Stanford University's Seeds of Change program, focused on leadership skills for young women interested in STEM careers. We support our sponsors via appearances & robot demos at corporate events and welcome them in our lab.

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

Our m.e. FIRST menstrual equity program, started as our 2021 Innovation Challenge, provides free period products at competitions. We have partnered with Aunt Flow, a company dedicated to ending period poverty & stigma, to offer discounts to all FIRST teams. Last year, 58 ambassador teams provided pads and tampons to 1124 teams at 89 competitions, including championships; we are on track for 134 events in 2023. This work ensures that no one is excluded because they are menstruating.

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

Our business plan outlines goals for Membership, Mentorship, Marketing, and Money. We structure team leadership with succession in mind, ensuring seamless transitions. Low mentor turnover provides

stability; many are parents who continue long after their daughters have graduated. We cultivate long-term relationships with sponsors, providing them with frequent updates and supporting their events. We enable consistency through detailed documentation for all technical and outreach initiatives.

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

We are one of few resident NASA house teams, acknowledgement of our long-term relationship with NASA's Robotics Alliance Project. Many sponsors are part of FIRST's network; we welcome them to tour our lab at NASA ARC and attend competitions. We leverage our parent network for new sponsorships and volunteer matching hours. We attain visibility through demos, workshops, & events and speak on topics related to girls in STEM. Every sponsor receives a yearbook signed by each girl.

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

As girls, we are a group underrepresented in STEM fields, but many members are from well-resourced families. To promote equity within our team, we offer generous scholarships so that no girl is unable to participate due to financial circumstances. This summer, we are supporting a summer robotics research program at Stanford for high school students under-represented in STEM; our goal is to encourage participants interested in joining both our team and Team 8048.

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

FIRST's mission to inspire & prepare young people to be STEM leaders has guided us for 17 years. It's easy to measure a robot's success, but quantifying impact is much harder. We can count people at events or the number of FIRST teams we've started, but lasting impact happens when we challenge perceptions of girls in STEM, inspire a child to start a STEM journey, enable inclusion, or open doors for students interested in FIRST. Our outreach programs are informed by these goals.

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 FIRST Alliance Partner, Girl Scouts USA collaborates to advance initiatives that promote science and technology for young people while sharing a vision of equity, diversity, and inclusion. These shared values inform our priorities. One such area is Gold Awards, the highest honor in Girl Scouting. 31 Space Cookies have earned the Gold Award at a rate 4x the national average, completing major STEM-based projects with lasting impact in our nearby communities and around the world.

Essay

Fueled by the high-powered coalition of NASA and Girl Scouts and ignited by FIRST, the Space Cookies blasted off in 2006. Our mission to inspire and prepare the next generation of technology leaders is grounded in the belief that every girl has the potential to change our world. While we are known for our accomplishments in robotics competitions, we are even prouder of our lasting impact off the playing field. Viewed through a NASA lens, our approach reflects the four major systems of any rocket: structural, payload, guidance, and propulsion as well as a launchpad to initiate successful missions. The Launchpad: Our Team Structural stability during launch is essential for liftoff. Our team is our launchpad, with opportunities to develop technical expertise, confidence, and leadership skills. 4 team captains & 14 directors develop and teach 34 fall workshops, covering programming, mechanical, business, and outreach topics, ensuring that all girls are fully prepared. New members come on board through our Rookie-Cookie pairing program. Rookies look to their Veteran Cookie as a resource to answer questions and provide guidance. Our team leaders participate in Stanford University's Seeds of Change leadership development program, designed to advance women's participation in STEM. The heart of our launchpad is our all-girls learning environment; studies show that all-girls programs yield students 6 times more likely than girls in coed programs to choose STEM fields. Our alumnae personify successful missions: 150 former Space Cookies have rocketed into careers that include all aspects of science, technology, engineering, and math. The Structural System: FIRST Pathways As a rocket's frame enables smooth flight while escaping gravity, FIRST programs frame a pathway into STEM fields. We have developed an FLL to FRC pathway in East Palo Alto (EPA), our neighboring community where 90% of students qualify for free or reduced lunch. Most FLL teams exist for just one season, but lasting impact requires programs that students and families can rely on. 15 years ago, we started Golden Surfers FLL for elementary students and 6 years ago we started the Silver Surfers to enable progression through middle school. Our teams have become an essential part of EPA's after school enrichment programs; we cover all costs from registration & equipment to t-shirts & meals. Over 100 students have participated in our EPA FLL programs. We were thrilled to be back at full strength this year after the pandemic, with Space Cookies traveling to EPA 2X per week to mentor both teams. A half-built frame won't get us to space. In 2019, we started EPA's first FRC Team, the Churrobots Team 8048, for high schoolers to continue their FIRST journey. Some EPA students commute up to 4 hours a day, making a school team infeasible; a neighborhood team addresses this issue while offering an important sense of community. We continue to mentor and provide resources to Team 8048 and to celebrate their achievements. Last year, we "adopted" their team captain, whose FRC career was cut short by the pandemic. Cristina became a Space Cookie for championships and later wrote: "I am officially a Churrobot alum and I will be attending the University of Michigan! I wanted to thank the Space Cookies for all of your help and support to me and the Churrobots the past four years. And thank you again for allowing me to join you and experience a FIRST championship!" Building a structure is important to a rocket's success, but maintaining it is paramount. By creating and supporting a secure pathway in a historically underserved community, we have established sustainable diversity within FIRST. The Guidance System: Girl Scouts Guidance systems provide stability and control to define a trajectory. We are guided by Girl Scout values that develop girls with courage, confidence, and character, leveraging a network of more than 1.7 million to introduce girls to STEM. We have represented FIRST at more than 50 major Bay Area GS events and helped hundreds of girls earn STEM badges. During the pandemic, girls from across the country attended virtual robotics badge workshops we developed, using hands-on kits mailed to them; we have now made them available to all troops, enabling lasting impact. Other FIRST teams asked to get involved, so we created the STEM Pledge Kit with detailed information about how to help Girl Scouts earn robotics badges. Attending a robotics competition is a required step, so we provide everything teams need, from contacting their local GS council to a tour agenda, which includes watching matches,

scouting, and a scavenger hunt through the pits to learn about mechanisms and strategies. This hands-on approach has inspired 240+ girls with the possibilities of a future in FIRST. We also train adult volunteers; our most recent “Discoveree” FLL workshop for Girl Scout leaders was oversubscribed and four attendees started FLL teams within their troops. The Propulsion System: FIRST Fuel powers the engine to propel a rocket. With FIRST providing fuel through tireless commitment to STEM programs, we are empowered to impact teams at home and around the world. In our own community, we host other teams in our lab and on our field, providing access to specialized equipment, drive practices, and scrimmages. This fall, we collaborated with Cerbotics Team 4400 in Mexico and Under Control Team 1156 in Brazil to produce the annual FRC Warmup. More than 300 students from across the globe attended this 3-day online conference covering topics from robot design to advanced programming to managing stress at competitions. In 2021, we launched the most ambitious program in team history as our Innovation Challenge. The heart of our “m.e. FIRST” menstrual equity project is the ambassador strategy that recruits other teams to provide free and accessible period products at FRC events. As an all-girls team, we are a resource for students experiencing period accidents. Our project was sparked by a panicked student from another country who found that product dispensers require payment in a currency she didn’t have. Our goal is to ensure that no one in FIRST feels excluded because they are menstruating. Now in its 3rd year, m.e. FIRST has provided thousands of pads & tampons at competitions across the globe. As importantly, we are normalizing the conversation about periods. Ambassadors receive a comprehensive toolkit with talking points, tips for estimating product needs, flyer templates, and free giveaways. We have partnered with Aunt Flow, a company dedicated to ending period poverty and stigma, to provide discounted product bundles for FIRST teams. Last season, m.e. FIRST provided free products at over 60% of FRC competitions; this year, we are on track for 80%. We fuel FIRST teams all over the world. We have started, mentored, and assisted 400+ teams, focusing on powering under-resourced and rookie teams. In the last 3 years, we have provided five \$1000 grants to help FRC teams in communities under-represented in STEM. We support our 3 FLL teams in rural India, funding them with new EV3 kits and mentoring them virtually; several Space Cookies have visited India to provide hands-on support. Our Cookie Jar matches traveling FRC teams unable to bring tools and equipment with local teams. The Cookie Helpline provides programming, mechanical, and business support to teams globally via video meetings and email exchange; we have assisted 35+ rookie teams in the last 3 years. This year, Team 9284, Pakistan’s first FRC team, asked for assistance via our Helpline; we are working closely with them to start their team and make their first season a reality. We are covering the cost of their registration and helping with all aspects of preparing to compete—no small feat considering they will arrive in the US without a robot. We are working with Team 233 to prepare a workspace, get all necessary parts and equipment, arrange for transportation and accommodations, and plan activities. Most of the students have never been out of their small town before and we want their introduction to FIRST to be unforgettable. The Payload: Our Community A rocket’s payload depends on its mission; ours focuses on inspiring future technology leaders by showing them the opportunities within STEM. Future leaders are all around us and we are committed to reaching as many as possible. We do this by conducting 20+ events annually, including robot demos, hands on workshops, and engaging STEM activities for children. We can be found at festivals, libraries, classrooms, and companies. When the pandemic brought in-person outreach to a halt, we pivoted to virtual formats and created innovative kits to engage young STEM enthusiasts via remote workshops. Another pandemic-era project was building a FarmBot—a precision agriculture CNC robot—in a highly utilized community center through a partnership with the City of Palo Alto. The FarmBot demonstrates the intersection of imagination and practicality by automated planting, irrigation, and weeding. We adapted these innovations as we returned to in-person outreach. At Robots on Ice, we used our online FLL lessons to teach 75 kids who were touching “real robots” for the first time and helped them build their own small robot to take home. At the

Silicon Valley Fall Fun Fest, we scrimmaged with other teams, while showcasing the “STEM in a box” kits we developed for remote workshops. We demonstrate the FarmBot in person at weekend programs, helping kids plant their own seeds and encouraging them to return to try their produce. *** For the past 17 years, the Space Cookies have been mission-driven to fuel FIRST programs. We impact the next generation of technology leaders by challenging perceptions of what girls can do, bringing robotics to our community, constructing Girl Scout STEM programs, creating global FIRST programs, structuring sustainable FIRST pathways, and making FIRST more inclusive. ;

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