

Chairman's Award - Team 1138

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2022 - Team 1138

Team Number

1138

Team Nickname

Eagle Engineering

Team Location

West Hills, 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.

FIRST's impact ignites ambition in Team 1138 through teamwork, gracious professionalism, and innovation. 14 of our students have earned their SolidWorks Associate Certification, proving their expertise in CAD. Our seniors have a 100% graduation rate, and FIRST has enabled students to receive acceptances and scholarships from colleges such as Stanford, USC, and MIT. Moreover, 31 students have been inducted into the IRHS, and both our President and Vice President have won FRC's Dean's List award.

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

Our team is entirely student-led, building leaders in engineering, business, design, and programming through hands-on experience. Our leadership structure enables students to rise up the ranks and become capable leaders, even if they joined with no prior experience. Specialized jobs and subteams, combined with an engaging environment, give members an opportunity to utilize their unique talents and explore their specific interests.

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?

To help provide opportunities in STEM education to underserved communities, our team partnered with SASA to advocate for Title 4 Part A in the ESSA, which allocates funding for after-school activities such as robotics. Over the summer, we met with 3 House Representatives and 2 Senators to discuss the benefits of STEM activities and the impact of FIRST on participants nationwide. With the help of our activism, the bill was passed with an increase of \$85 million from its 2021 Fiscal Year.

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

Our members constantly seek to provide opportunities for people around the world to learn STEM skills and spread the mission of FIRST. One member independently worked with university students in Tanzania through E3 Empower Africa to teach them CAD, while two of our members teach underprivileged children in Taiwan English and coding. Furthermore, one of our members partnered with Senator Feinstein and VP Harris to CAD a mask design and provide 3D printed PPE's to hospitals across the nation.

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

In 2019, we mentored rookie team 7650 from Switzerland, advising them through Skype calls and hosting them in their 1st USA tournament. That year, we also helped establish FTC team 6282, allowing them to transition from a small group working in a garage to a full-fledged team competing at league level. We still mentor them today, and hope to continue providing rising teams the resources and mentorship to succeed. Additionally, this year, we helped run an FTC competition at Monrovia High School.

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?

Every summer, Team 1138 teaches hundreds of K-8 students robotics at our school's annual STEM summer camp. Inspired by our mentorship, many of these kids have made their way onto Team 1138, playing a key role in the engineering process and rising into leadership. Additionally, three years ago, our team inspired our school to implement 10 STEM courses teaching skills such as Python, Java, C++, 3D modeling, and principles of engineering, along with a specialized STEM Lab on campus.

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

Support from our sponsors - NASA JPL, Xerox, Comcast NBCUniversal, the Gene Haas Foundation, Aerojet Rocketdyne, and Mechanix Wear - has enabled us to pursue our mission of assisting underserved communities, leading to our association with SASA to advocate to congress alongside 5 FRC teams. Also, we've partnered with We Rock the Spectrum to create a robotics program designed for children on the spectrum, and have established connections with AYF, Girl Scouts, and CII to expand our impact.

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

This year, we have our first majority female Executive Team, and 50% of our full leadership team is female. Our team's diversity serves as a model on campus for equality and inclusion in the world of STEM, as we display how anyone can be an engineer, even with no prior experience. Additionally, we strive to combat inequality when it comes to STEM education for underserved communities through our partnership with SASA and our programs with We Rock the Spectrum, AYF, and Girl Scouts of America.

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

Strong bonds between members, alumni, and mentors ensure the team's continued success in fostering new engineers. Every year, our alumni return to mentor new teammates, passing down their knowledge. Our leadership is structured to ensure sustainability and cultivate skills, as each subteam has an underclassman as a lieutenant to assure a steady transfer of information. We even have our own SolidWorks Course for our team, designed by our current Vice President when he was just a sophomore.

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

Team 1138 maintains close bonds with our sponsors, such as NASA JPL, Xerox, Comcast NBCUniversal, the Gene Haas Foundation, Aerojet Rocketdyne, and Mechanix Wear. Our sponsors often arise due to existing relationships with the team, resulting in close engagement. In 2018, we became 1 of 53 NASA house teams. To sustain connections with our sponsors, we create annual reports informing our sponsors of their impact on our team, along with consistently sending thank-you letters, plaques, and updates.

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

As an 80+ person team, we often experience clashing perspectives when it comes to design and strategy decisions. Some designers may be proud or unwilling to accept other ideas. In order to value everyone's ideas and balance opposing views, we have intensive design meetings where anybody can offer input, no matter their rank. With a thorough peer-review process, our members channel their opinions into constructive feedback, building off each other to collaborate in the full design process.

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

Our team strives to spread the *FIRST* message through creating opportunities for underserved communities, seeking to combat inequities in STEM education. This year, our team worked with the organization, We Rock the Spectrum, to create a unique robotics course designed specifically for children on the autism spectrum. In order to broaden our impact, we have begun expanding our program to more We Rock locations, along with AYF, CII, and Girl Scouts to continue creating more of these opportunities.

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.

Above all, our team prides itself in its family spirit. Every year during build season, the entire team sits down at one table for dinner, where we eat, talk, and laugh in order to take a break from the stress of robot building. Family dinners strengthen our bonds and cement 1138 as not just a team, but a family. This family spirit is everlasting, and during FRC season, our alumni, who we call "legends", return to offer their guidance and write their words of wisdom on our "Legends Board."

Essay

Eagle Engineering today is the product of thousands of working hands and minds uniting on one common goal: to learn, build, and rise together. Starting in our hometown, our team, 1138, has spread the message and values of FIRST to continents across the world, reaching communities untouched by STEM. For 19 years, we have passed down our motto, "We Build For a Better Tomorrow," to an ever-changing student body. Our team works diligently to rise to unique perspectives, and by fostering a sense of empowerment and resilience, we have opened new opportunities for discovery, education, and innovation.

Our student-led team provides hands-on experience within an engaging environment, allowing our members to join without prior experience and become capable leaders in engineering, business, design, and programming. The team has grown substantially over the years, expanding from just 5 people to over 80 diverse and passionate members. This has allowed new subteams to arise, such as our new Animation subteam, which won Best Theme for the 2022 Safety Animation Award. Our leadership structure enables students to rise up the ranks, starting out as a rookie, rising to lieutenant, and eventually becoming the leader of a subteam. Such a structure ensures the team's sustainability, as it prepares students for the next year, allowing each generation of students to pass on their knowledge to the next.

Our team's mission is to give underserved communities opportunities to learn robotics by expanding the impact of STEM education. We do this by providing avenues for learning, growth, and experience, giving these communities chances that they may not have had otherwise. Recognizing our access to resources, we seek to mobilize our assets both in our local community and across the nation.

Children with special needs are frequently barred from enrichment activities, resulting in them having less opportunities to learn about STEM and robotics. Seeking to combat this, our team partnered with the organization, We Rock the Spectrum, to design a unique, specialized program to provide children with Autism Spectrum Disorder the opportunity to build robots and engage in STEM.

Since this program is one of the only ones of its kind, we had to start from scratch. We methodically built and rebuilt a model of the Clawbot we'd be teaching the class, analyzing every step and modifying the instruction manual to signify places where helper assistance might be necessary. Additionally, we implemented a 2:1 teacher-student ratio for low-functioning children, along with other tailored accommodations. By crafting the curriculum to the specific needs of children with ASD, we aimed to help the kids reach their full potential in understanding, interacting, and learning with robotics.

On September 3, 2021, after over a year of working at the local and corporate levels, we were finally able to launch our first 6-week session. It required more adaptation than we originally thought; when one child finished his robot early, we sought out new ways to further his education and taught him autonomous programming. Watching the engagement and growth from all of the children as they built their own robots and fostered bonds with our team members, we were struck with just how much we had brought to the kids with just a few robotics kits and a willingness to share our passion with others. In January 2022, we held a second session, and have more planned for the summer and autumn of 2022, along with expanding to different We Rock locations. In addition, we hope to branch out and invite other teams to participate in this program, engaging the entire FRC community in our effort to welcome neurodivergence into the world of STEM.

Our mission to create more opportunities for underserved groups has inspired us to pursue change not just in our local community, but across the nation. In the summer of 2021, we partnered with the Student Association for STEM Advocacy to advocate for Title 4 Part A in the Every Student Succeeds Act, which allocates funding for after-school activities such as robotics for communities with limited access to resources. Our team met with 3 House Representatives and 2 Senators to discuss the benefits of STEM activities and the impact of FIRST on participants nationwide. We worked with FRC teams across the nation and collaborated directly with California teams 12675, 649, 1622, 1522, and 6165, establishing strong bonds as we practiced with them, shared notes, and learned each others' stories.

Our experience advocating to Congress not only gave our team members valuable experience in the political process, but opened our eyes to the impact of STEM in the real world. In our congressional meetings, we presented statistics on STEM jobs and the high employment rates that students who participated in FIRST programs received, which strengthened our resolve to enforce equality in STEM education. As a result of our activism, the funding passed at \$1.3 billion, an increase of \$85 million from the Fiscal Year 2021 enacted level. We are honored to have played a role in expanding support for STEM education, and hope to continue working on a national level to help give even more underserved communities the opportunities that they deserve.

Eagle Engineering strives to create opportunities for STEM education at our school any chance we get. Robotics is the future, and we consistently propose initiatives to our school administration, working with them to increase STEM activity. Within the past three years, 1138 has inspired our school to implement a total of ten classes related to robotics, technology, and engineering. These classes range in teaching a variety of programs such as Python, Java, and C++, as well as teaching skills such as 3D modeling and other principles of engineering and technology. Additionally, by serving as a model for professionalism and dedication, our program led to the creation of a specialized STEM Lab on campus so that other students can learn the real-world skills that our team champions. Our team plays a central role in providing support to this new department by lending kits, offering tutoring, and creating tutorials.

Our mission to spread our knowledge and empower kids to embrace robotics extends to other FRC teams as well. Three years ago, our team began mentoring and supporting Team 7650 from Switzerland, communicating with them digitally through online collaboration tools, such as Skype and Ryver. By the end of the season, we hosted Team 7650 as they entered their first tournament in the U.S., where they won the Rookie All-Star Award, qualifying them for FRC Worlds.

Along with mentoring fellow FRC teams, we strive to create an impact in the FTC community as well. In 2019, we helped establish FTC team 6282 from Simi Valley High School. They started as a small group working in a garage, until the mother of our current team president was able to take over the team. She, along with several members of 1138, helped expand their team to 10 people. Our President Lucia Giacalone spends much of her time mentoring 6282 and teaching them how to work together to be a strong, self-sustained team by organizing leadership and helping them establish subteams. In addition to teaching them how to order parts and hardware, we connected them with SolidProfessor to get CAD licenses, allowing them to build more efficient robots with 3D printed parts that couldn't be fabricated otherwise. Under our guidance, Team 6282 has transformed from just a few inexperienced students to an efficient, full-fledged team, even qualifying for the next level of FTC competition. We still mentor 6282 today, and hope to continue providing rising teams the resources and mentorship to succeed. Furthermore, to extend our impact in the FTC community, this year we helped run an FTC competition at Monrovia High School to continue allowing teams like 6282 to thrive and engage in healthy competition.

Even with all of this, we still have upcoming events to further our impact. On February 18, we will be hosting a robotics workshop with the AYF to teach young Armenians the importance of STEM. On February 26, our team will participate in STEAM Day at MATES Charter Elementary to teach youth about FRC and discuss the importance of learning skills in robotics. On March 5 we will host a multi-troop event to help local Girl Scouts get their programming badge by building and programming FLL robots. Finally, we have gotten in contact with a former partner, Children's Institute Incorporated, who we created a robotics curriculum for before they lost their funding. Now with our larger team and their renewed funding, we hope to accomplish what we couldn't before.

Although Team 1138 is empowered by students, we wouldn't have been able to achieve these accomplishments without the assistance from our coach, mentors, and sponsors. Our school, Chaminade College Preparatory, provides us with funding and work space. NASA JPL, Xerox, Comcast NBCUniversal, the Gene Haas Foundation, Aerojet Rocketdyne, and Mechanix Wear support us with monetary donations, while SolidWorks, Jaytech Welding, and MetalChem offer necessary services for the team, such as welding, program licenses, and machining. In addition, we earned the honor in 2018 of being selected to be one of fifty-three NASA house teams. We truly appreciate our sponsors' generosity, as these organizations have introduced us to invaluable mentors and motivated us to improve ourselves so that we can expand the FIRST legacy around the world.

Our commitment to rise above and lead in service and knowledge exemplifies our team motto: "We Build for a Better Tomorrow." As we expand our impact to underserved communities, we promote the importance of STEM to everyone we engage with, inspiring generations of innovators still to come. Through outreach, membership, and service, our once ambitious goal of spreading the mission of FIRST has become a reality.