



CARMEL HIGH SCHOOL ROBOTICS

FRC TEAM 2035 • THE ROBO ROCKIN' BOTS

FIRST Robotics Competition Team 2035
The Robo Rockin' Bots
Present Our 2017 Chairman's Award Submission:
"A Dream Pursued"

Every societal change begins with a dream. But a dream is only a vision until hard work and determination are put behind it, driving it. Only then can a dream finally become a reality.

In 2007, seven dedicated students from Carmel High School established FRC Team 2035, The Robo Rockin' Bots. They had a dream. Little did they know that ten years later their dream would become a reality, as STEM spread rapidly across the Monterey Peninsula. By assisting the elderly and captivating the minds of underrepresented students, their vision continues to expand. Starting small with just 7 members to over 60 today, Team 2035 has blossomed to change our community's culture in realizing that STEM isn't just about technical skills, but also about building character.

1. Transforming the Student Base

Our mission statement is to help all members achieve their full potential as human beings through the encouragement of creativity, critical thinking, and collaboration. We want to foster lifelong learners with the skills to lead healthy and productive lives in society. As a result, Team 2035 has spearheaded a change to include more STEM related courses in Carmel High's curriculum. Starting after our first year in FRC, the school board provided generous support towards more STEM classes, like robotics. We've now cultivated a career pathway of beginner to advanced levels of engineering, computer science, industrial arts, and automotives, all of which are fully supported by additional resources throughout the Monterey Peninsula, such as



CARMEL HIGH SCHOOL ROBOTICS

FRC TEAM 2035 • THE ROBO ROCKIN' BOTS

articulation agreements with local community colleges. Because of these partnerships, team members can also extend their STEM experience with internships available at the Naval Postgraduate School and the Monterey Bay Aquarium Research Institute. During these internships, students are challenged to solve real-world problems involving intense teamwork and sharp learning curves.

Through our shop doors, Team 2035 has encouraged students to pursue their passions in exemplifying leadership skills while spreading the message of STEM and FIRST. The founding of the Math and Science Olympiad Clubs, in which students mentor each other for competitions in advanced levels of STEM knowledge, are among the many student-run extracurriculars that we've brought to our campus. Members have also created Wired for Connections, an energetic community service club where tech-savvy students dedicate themselves to assisting senior citizens with their electronic devices. These clubs serve as part of a school-wide movement to celebrate STEM on a larger level. As a result, we've devoted efforts to the offseason, transforming robotics from just a seasonal activity to a year-round commitment. From building a T-shirt cannon robot for pep rallies to hosting weekly skills workshops for new members, Team 2035 diligently furthers appreciation for technology at our school.

However, just as the sciences are important to improve society, the arts are equally as important to our culture. Our team has branched out to assist many extracurricular organizations around campus. In providing marketing strategies for our Mock Trial team, creating opportunities for graphic design students to create robotics shirts and posters, and engineering sets for the Drama Department, we hope to generate an immeasurable impact on intellectual



CARMEL HIGH SCHOOL ROBOTICS

FRC TEAM 2035 • THE ROBO ROCKIN' BOTS

culture school-wide. Starting from just a dream, it's remarkable to look back and see how far our school has come.

2. Changing Community Culture

As our dream slowly unfolded on campus, we've looked to the community in order to push our boundaries and see just how much we can give back. After ten years of outreach, we have founded and mentored eight other teams (4171, 4255, 5104, 5171, 6039, 6410, 6506, and 6665) along the peninsula. Our extended reach ensures success for the community by providing opportunities for STEM education in the schools around us. In particular, working with the Salinas School District to create Teams 6506 and 6410 at the Salinas and Everett Alvarez High Schools, we've created a strong foundation for disadvantaged areas to confidently build a greater appreciation for STEM. This was a landmark opportunity to introduce STEM to many future first-generation college students and provide resources for those in need. In similar fashion, we've also been determined to support women in STEM by starting and mentoring an all-female FRC team, Team 6665, from Santa Catalina High School. Abby Lambert, Captain of Team 2035, sees this effort as particularly important to the future of society: "Women provide a unique perspective to the STEM fields and are necessary for progression in our country's innovation. If more women are encouraged to participate, stigma will decrease, leading to even more involvement and the creation of a positive feedback loop of increased women in STEM industries."

Throughout our team history, workshops have been a reliable way to share our dream with the community. Multiple times per year, Team 2035 invites professors from the Naval



CARMEL HIGH SCHOOL ROBOTICS

FRC TEAM 2035 • THE ROBO ROCKIN' BOTS

Postgraduate School and the Monterey Bay Aquarium Research Institute to teach students from other schools concepts in vision programming, CAD, and CNC milling. Preventing a lack of resources from limiting teams, we take materials to other schools to empower teams with the skills needed to succeed in FIRST. One of our highlights this offseason entailed traveling to Salinas High School and hosting a soldering and wiring workshop followed by a presentation in digital and analog circuitry. We've also been holding an annual robotics advisory for the last six years where local teams come together to share ideas and resources. Bringing participants from local organizations, such as the Hopkins Marine Station of Stanford University, CSU Monterey Bay, and MATE Underwater Robotics, we manage resources for anyone in need. Under our motto, "if we have it, they can use it," our team diligently supports an open shop and supply policy where other schools can not only benefit from the use of our equipment, but also from our mentorship to cultivate self sufficiency. For instance, our student welders have been training other teams on welding safety and techniques during the last three years. Through helping teams in our shop until they have the ability to "fly" on their own, and even create their own teams, we generate a chain reaction that improves society as a whole. Ultimately, it's not about us, it's about growing STEM's impact even if it's in ways we can't achieve alone. Team 2035's Head of Build, Jack Brewer, reflects that "it's the act of giving that really makes it all worth it in the end. That's what FIRST's dream is all about." By sharing our resources, lending our guidance, and giving it our all, Team 2035 continually reminds the community the goals of FIRST: to make what was once impossible into reality by inspiring change and challenging perceptions in STEM.



CARMEL HIGH SCHOOL ROBOTICS

FRC TEAM 2035 • THE ROBO ROCKIN' BOTS

3. Honoring the Past, Securing the Future

Taking initiative to reach an audience other than FRC is a key component in our outreach. We strive to captivate multiple age groups and create a well-balanced community that addresses STEM to the interests of both young and old. After communicating with our school board, we've incorporated robotics into the curricula of pre-kindergarten, elementary, and middle schools within our district. Bringing our demonstrations to them, we motivate younger students by showing how STEM works outside of the classroom. A major event involves an assembly at Tularcitos Elementary School where we display our robot and introduce FIRST values of Gracious Professionalism and Coopertition. "A lot of the time, we get kids saying they want to be an engineer or an astronaut," Team Co-captain, Henry Kou says. "And it's always fun to tell them that with hard work, they too can reach their dreams."

To satisfy the needs and interests of the senior citizens in our community, we've created Wired for Connections, a student-run organization that provides 1-on-1 tutoring sessions with seniors on the use of technology. Club leaders have recently presented their cause to a local Apple Store and secured a partnership where members get private workshops with Apple employees to master the art of mentoring. Whether it's troubleshooting a malfunctioning iPhone or teaching a local citizen how to use email for the first time, Alessandro Boaro, senior member of Team 2035, notices that "there is a powerful emotional element to the club that keeps [him] motivated to spread STEM in the community." Aiding the elderly to become accustomed to today's technology and inspiring our youth to pursue STEM pathways allows us to set an important precedent to cherish our past and secure our legacy.



CARMEL HIGH SCHOOL ROBOTICS

FRC TEAM 2035 • THE ROBO ROCKIN' BOTS

4. Fulfilling a Pledge, Fulfilling a Dream

FIRST is not just about building robots; it's also about building character and communities. Ten years ago, we set to work, using STEM to improve education and the lives of others. As we progressed from being the only team on the peninsula to creating eight more today, we've realized the power of dreams. Because of our vision, a learning culture boosted by STEM exists in our district. Because of our spirit, an all-female robotics team stands as the repudiation of a shattered social norm. Because of our pledge, the youth and elderly alike look to STEM for inspiration and imagination. This is our dream coming to fruition. But we aren't stopping here. There are always more opportunities to take, more doors to be opened, even if we can't see them just yet. With this in our minds and hearts, we continue to forge ahead, spreading the ideas of FIRST and bettering the community around us. We are one team with one dream. We are Team 2035.