

## Chairman's Award - Team 5810

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2020 - Team 5810

**Team Number**

5810

**Team Name, Corporate/University Sponsors**

The PPG Foundation/Boeing/Boys and Girls Club of Whittier&Neighborhood Group&Neighborhood Group

**Briefly describe the impact of the *FIRST* program on team participants within the last five years.**

Our team members have received 610 internship hours at Willick Engineering and have gone to prestigious colleges such as UC Berkeley, USC, Pomona College, Cal State Fullerton, and Rice University; taking with them the X-Bots values and starting up several outreach programs that will include future GoBabyGo! Events. 100% have graduated from high school, 100% have gone to college and 88% are pursuing STEM careers.

**Describe the impact of the *FIRST* program on your community within the last five years.**

Our team is the first robotics program in the entire city of Whittier which means 86,838 people weren't exposed to robotics. We have spent a total of 9,144 hours working to better our community. We made it our mission to impact a whole city's worth of people and as of 2019, 10,009 people have been personally impacted by our outreach and we have reached 288,967 people.

**Describe the team's methods for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative.**

FIRST teaches that any student has the drive to learn and pursue a career in engineering. We show this by creating Engineering programs for the students in lower-income communities. We started six Ev3 robotics programs for pre-teens and 12 WeDo 2.0 programs where kids build their own robot and compete together. Our team also started two Bio-Medical Engineering programs where kids build prosthetic arms and compete in our Future Engineer Competition. We allow for kids to compete at a lower cost.

**Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate**

We've shared our passion for improving the world with other FRC teams by teaching teams how to create a GoBabyGo! workshop in their community. This is a STEM program where students build specially designed physical therapy cars for toddlers with cerebral disorders affecting their mobility. We have also inspired many other B&G Clubs around us to get involved. With the support of PPG, we're planning a nationwide rollout impacting thousands by 2021.

**Describe the team's initiatives to help start or form other FRC teams**

Our team members started team 6554 Phoenix Robotics and mentored them for the teams full term. We taught three international students from Japan how FRC worked so that they'd be able to bring FRC to their community in Japan. We have also made our team the district team for the Whittier School District so that any interested highschoolers can join and be welcomed. Our team was published in two newspapers which reached approx. 208,261 people and taught them about FRC.

**Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)**

Our team started and fully funded four FLL teams, we spent a total of 705 hours working one on one with these students. 88% of the past FLL team members have advanced onto our team. Our team member, Kenneth, also started an FTC team at Cerritos Highschool where he was able to take the lead and guide them daily. We are working with FTC teams and our city of Whittier to start more FTC programs in 2020.

**Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program**

We have assisted several FRC teams at competitions by providing them with supplies essential to complete their robot. We also assisted team 6554 at a competition when they needed support fixing their code. We had team members helping them with their code for an entire competition and we were also donated \$500 to their team to help them go to Worlds. We have also assisted two FLL teams by giving them a tour of our workshop and providing them with an educational glimpse of how to build a robot.

**Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)**

We have created programs for several FLL teams to learn about robotics and served as guidance for the students to properly understand engineering concepts. This is a form of mentorship that we would provide every week and found it to be very beneficial to the teams. We spent 120 hours total focusing on this extension mentorship program.

**Describe your Corporate/University Sponsors**

We have a total of 11 multi-year sponsors that guide and support our team. 92% of our sponsors have returned annually and 25% of our members have interned with our sponsors in the past five years. Mentorship has doubled from two of our sponsors in the last five years. Our main sponsors being Willick Engineering, Boys and Girls Club of Whittier, and Boeing. We keep our sponsors updated through quarterly update meetings.

**Describe the strength of your partnership with your sponsors within the last five years.**

In order to be a sustainable team, we rely on our sponsorships. We keep them involved by giving them a detailed account quarterly on how our team is benefiting through their sponsorships. We host meetings for all our sponsors to ask questions and refresh on our purpose. We showcase our sponsors on our shirts, pit, and website.

**Describe how your team would explain what *FIRST* is to someone who has never heard of it**

FIRST® Robotics Competition (FRC) is a mind sport that combines science and technology for high school students, which aims to inspire the next generation of STEM leaders by developing a passion for STEM careers at a young age. They provide students with a unique opportunity to engage in hands-on technical engineering training that develops their leadership skills so they can inspire others and give back to their communities.

**Briefly describe other matters of interest to the *FIRST* judges, if any**

Since the time we started, we have had an average of 15 students, making us a relatively small team. We acknowledge our disadvantage but we don't let it hold us back. Everything we have done is because we know that any small ripple can make an enormous change.

**For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.****Team Captain/Student Representative that has double-checked this submission.**

Cassandra Avila

## Essay

### Our Mission

X-bots Robotics Team 5810 recognized the lack of robotics programs in our community of Whittier and surrounding cities. As FRC students we couldn't imagine a life without robotics and wanted more students to understand how amazing it truly is. Our team set out to make robotics well-known for all students in our community. Spreading the FRC name was important whether it was through clubs or teams we knew, we needed to reach every age of youth. The most important thing for us was to make all these programs free of cost and sustainable for a long time. Team 5810 needed to make sure that there was nothing holding these kids back from their future in STEM.

### Our Robotics Camps

X-Bots set off to create our STEM community, in the summer of 2016 we teamed up with the Boys and Girls Club of Whittier and started the first two robotics clubs in Whittier. This number has grown fast and as of 2019, we have started 18 free robotics programs for Elementary to Middle school students. Our team has spent a total of 3,924 hours working one on one with these kids and have impacted a total of 257 students. Our team has seen their lives change in incredible ways and their goals have become more focused. Normally, at the beginning of our camps, we ask the students what they want to be in the future; 42% of the students say that they didn't know. At the end of the workshops, 85% knew what their goals were for the future and the remaining students were highly considering Engineering. Team 5810 took programs such as WeDo 2.0 and EV3 and created a mini Competition called Future Engineer Competition. These students are able to take their finished projects and compete with them in several games and obstacles.

We Do 2.0 focused mainly on elementary students, this program we can say has made an enormous impact on students. It has ignited their passion for STEM; the middle schoolers, were always ready to learn and would run up to us asking for more meetings. X-Bots took this as the biggest win because not only were they participating but they found the program fun. They looked up to our team members as role models and they started to emulate our values. By 2019, 65% of our students were girls and 87% developed an interest in programming. By the end of each program, students knew how everything functioned and were able to build and program on their own.

Lego EV3 program concentrated on courses and games that we created for the students to compete against each other which they found to be very exciting. This was a way to keep them motivated with an end of the year competition and mini-games during the program. Team 5810 had 92% of students come back every year and 63% of which moved on to our Biomedical Engineering program.

### Biomedical Engineering

Biomedical Engineering is a program that we started in 2015 and 2019 for middle to high schoolers. This program taught students how engineering could be used with various sciences by starting off the program with the different kinds of engineering. Our team made it a competition for the students and had them build their own prosthetic arms. X-Bots has created three of these programs and has put in a total of 504.5 hours into them. We have seen an astonishing impact on these students with 91% becoming interested in STEM. Students find such an interest in Engineering that they start volunteering to help out in We Do 2.0. This is a big deal, especially since these students live in low-income communities where they normally need the support.

### FIRST Lego League

In 2015, X-Bots started four FIRST Lego League teams that we fully funded and guided four times a week for two years. Team 5810 has spent a total of 705 hours with these students and have taken them on field trips showing the different fields of STEM with environmental science. All end up wanting to go into STEM and 85% of these students have joined our team. Our team brought in speakers such as Imagineers and Boeing Engineers to explain their fields. All of the students have shared their interest in prestigious colleges looking to our alumni for inspiration.

### Demo

Sharing all that we do as a team is such an important opportunity in our eyes. This is the reason why we spend a lot of time performing demos for kids, government officials, and potential sponsors. X-Bots realizes the importance of making STEM known and this is one way to pique the interest of our community. Our team has spent 1105 hours demoing our robots and have reached 43,495 people impacted in the last five years. We also take this time to share our goals for outreach in hopes of inspiring people to make a ripple of good. This is a huge accomplishment for a small team because we were able to make robotics a reality in so many people's lives and not just something unreachable.

### GoBabyGo

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At our local site, with support from PPG Foundation, we started GoBabyGo!, this is a STEM program where we build specially designed physical therapy cars for toddlers with cerebral disorders affecting their body mobility. These children are too young for wheelchairs and are not getting the stimulus most children would normally get at their age. Team 5810 changed it slightly to make maximum impact in our community, where hundreds of students from B&G Clubs around us can learn to build these specially designed physical therapy cars for toddlers. The program is a unique combination of peer-to-peer learning paired with a half-day hands-on workshop that draws in the families and toddlers who benefit from the finished product. X-Bots Robotics has served as the primary planner and facilitator of this program. X-Bots has spent a total of 2160 hours working on planning and administrating this program. Our team has built 50+ cars for kids as of 2019 and we are planning on multiplying this by 2020. In 2021, X-Bots will be leading the Boys and Girls Club of Americas, Annual Keystone Conference Service Learning event. This means we will be teaching 1,500+ students and donating 300+ cars to be built in the course of one weekend. Our team is also planning a California wide roll-out, impacting thousands of people in cities such as Berkeley, and LA county.

**STEM Quest**

Team 5810 created a fun interactive program called STEM Quest and brought it to the La Habra Citrus Fair and the Girls in STEM program at the Columbia Memorial Space Center. The program consisted of six games where the kids learned about the different parts of STEM and level up as they completed the hands-on projects. Our team rewarded the winners with 3D fidget spinners that we CAD'd and 3D printed. Team 5810 put 654 hours into this program and impacted a total of 8000+ families.

When working with the Girls in STEM program we were able to give a presentation about all the different STEM careers that there are and what people in STEM careers do. This was all led by our female mentors and students and truly impacted these students' views. Then we let them try hands-on projects that we specially tailored for the girls. It was amazing to see them building their STEM Quest contraptions such as catapults, cars, and bridges. This STEM Quest allowed us to reach more students that weren't always exposed to STEM and made it a reality for them.

**ACTS OF GOOD**

While our team loves to spread the good through STEM, we also see the value in giving our time to people in need. Our team has participated in Operation Christmas Child where we get to prepare gifts for underprivileged children. X-Bots was able to prepare 1,000+ boxes for kids in the Philippines.

Ever since 2015, we have been closely working with the Whittier Hills Healthcare Center. Our team decorates the rooms for Christmas and Fall while we carol with the seniors. X-Bots has become very close with all of them and we come in during the year to play Bingo. It's very inspiring to see their view of life and the positivity they spread, this form of outreach allows for us to see the community we are impacting in a different light. All the gifts and decorations are donated by our team in hopes of bringing happiness to these seniors' lives. These traditions will stay for years to come and as of 2019, 2,650 amazing lives have been impacted. Team 5810 has dedicated a total of 2,764 hours into this program and we are working to triple these numbers in the next couple of years.

**The Future**

Our team has grand plans in store for the future of our outreach that we couldn't be more excited to share. In 2020, X-Bots is planning on starting and fully funding more FTC teams as well as FLL teams. We are in the planning process with 2 FTC teams and our local school district for these programs. Our team is also planning to start an Orthopedics in Action, a unique, hands-on curriculum that features real-world challenges from orthopedic surgery and biomedical engineering. Team 5810 is also raising funds to start a Cyber-Seniors program at the nursing home to teach seniors how to use technology and allow them to connect with family. In the summer of 2021, we are planning a California roll-out for GoBabyGo! impacting thousands and leading the Annual Keystone Conference Service Learning event for the B&G of America. X-Bots is estimating a total of 4,000+ hours of outreach including the planning and distribution of these programs in 2020.

**Our Community**

X-Bots is humbled how we can take our passion and serve through our leadership. Team 5810 has dedicated 9,144 hours to the betterment of our community and we feel blessed to have reached 288,967 people, 10,009 of which have been personally influenced by our outreach. Our hardships are what make us stronger and in the end, it's our act of love that always shines through. In X-Bots this is our core value and we constantly strive for this as we grow as a team taking it with us through build season as well as off-season.