

Chairman's Award - Team 4635

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2019 - Team 4635

Team Number

4635

Team Name, Corporate/University Sponsors

PrepaTec, Eugenio Garza Sada/General Motors/T-REX/FRISA/H-E-B&PrepaTec Eugenio Garza Sada

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2018/2019 year and the preceding two to five years

The FIRST program has allowed our team members to develop into confident, collaborative and empathic leaders, with a desire to share their passion for science and technology, and further their engineering and business skills. Compared to the state average of 23%, 100% of our members have moved on to pursue college degrees. Ninety-six percent of those are in STEM fields, three of them studying abroad with FIRST scholarships.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2018/2019 year and the preceding two to five years

Every year we host a robotics summer camp in addition to teaching weekly STEM courses for students from 20 schools across the state. Since 2017 we started the Creativity Out of the Lab Project, using technical abilities learned through FIRST to improve lives, which we've applied to vulnerable communities in our state through water filtration and improved housing. Since 2018, we manage a program that does weekly STEM and leadership activities at a home for girls, impacting 42 middle schoolers.

Team's innovative or creative method to spread the *FIRST* message

We advocated for FIRST's inclusion into the curriculum of PrepaTec, since we believe every student should experience it. We have reached over 180,000 people through robot exhibitions at conventions and middle schools. Through a 12,000+ global social media audience; 70 appearances in local news outlets, 7 coming from Monterrey's most well-known print newspaper, El Norte; we've demonstrated the impact FIRST has had on our team members and illustrate how STEM education has life-changing potential.

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

Botbusters team members dedicate time to improve housing in impoverished communities, and inspired 40 students to join; work alongside our entire sophomore generation on Pi Day, fundraising to buy materials for our robotics classes; video-chat and offer workshops to other teams around the country for support in creating initiatives according to FIRST values; invite other teams in our city to networking events with possible sponsors and prominent community members.

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

As the first FRC team in Monterrey, 4635 has been a prominent member of FIRST Mexico. We've imparted workshops for teachers, parents, and students to help with registration process, team management, and robot design; mentored teams 6017, 7725, and 6647 and routinely assist all 7 FRC teams in Monterrey and northeastern Mexico; invited FIRST-bound students from PrepaTec, Cumbres to accompany us to Regional Competitions and worked with their school administration to start rookie team Overture 7741.

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

Our advocacy of the FIRST program with our sponsors led us to start the Botbusters' FTC and FLL teams, establishing a 10-year Botbusters FIRST program that recruits young and curious students from 20 schools through FLL Team 8265 and further develops their STEM skills and critical thinking through FTC Team 13531. Botbusters challenges the engineers of tomorrow with the 'hardest fun they'll ever have' as they solidify teamwork and problem-solving skills through FRC Team 4635.

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

We are a resource hub for teams in our state: maintaining contact through social media and opening up our makerspace; visiting 4 other teams' workshops to help with organization and equipment; led 4 conferences on team management; provided insight into FIRST awards to rookies 7421 & 7725; assisted FRC teams 24 times through video-chat; translated for 2 years, along with 2283, the complete FIRST Safety Manual to Spanish, helping more than 80 Mexican teams and Spanish-speaking students worldwide.

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 started and currently mentor FLL 8265 and FTC 13531, the latter having won National Winning Alliance Award, Think Award, and Rockwell Collins Innovation Award in 2018-19. Team 13531 is composed of freshman students, and work closely with our senior student mentors in business, programming, and mechanics. As the host team for the FTC North Regional 2018, we developed a strong connection with local FTC teams and follow-up with them through video-chats.

Describe your Corporate/University Sponsors

Our university sponsor, Tec de Monterrey, pays the salary of three mentors, former Botbusters and current engineering students, and our participation in one regional competition. Risoul sponsored the FTC North Regional 2018, which we hosted. Milwaukee remodeled our workshop with \$250,000 MXN worth of tools. General Motors, gives \$100,000 MXN worth of materials annually. Sponsors like Corporación Eléctrica, T-Rex and Andatti help us economically, while others like POISE provide mentorship

Describe the strength of your partnership with your sponsors with special emphasis on the 2018/2019 year and the preceding two to five years

We maintain a mutually beneficial partnership with our sponsors. We host T-REX's annual "RoboCamp" and mentor kids aged 7-15 in robotics classes; 3 of the summer camp's alumni have joined 4635. Risoul has invited us to participate in city-wide exhibitions and Milwaukee tool demonstrations; their sponsorship made it possible to host the FTC North Regional in 2018. To thank all our sponsors and family members, we host an annual "Robot Reveal" dinner event where we present our FTC and FRC robots.

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

FIRST gives students an opportunity to become change-makers. It introduces students to the wonders of STEM and empowers them to solve challenges alongside enthusiastic and brilliant people. It teaches you the importance of communication, as it helps you build a path towards a future you're truly passionate about. FIRST creates global citizens that are ready to answer the problems plaguing the world today, not only by honing their knowledge, but also their will to face them.

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

Team 4635, a supporter of #FIRSTLikeAGirl, has partnered with Girl Up Monterrey to help 42 girls in vulnerable situations learn about STEM through weekly activities. Concerned for our environment, Botbusters coordinates an annual community-wide electronic waste recycling campaign, gathering over two tons of old gadgets. Concerned with our students' financial need, we devise fundraising activities to help our members bear the costs of travel associated with regional and world competitions.

Team Captain/Student Representative that has double-checked this submission.

Kristen Corlay

Essay

The FIRST experience makes the Botbusters feel like we're about to launch into the adventure of a lifetime. FIRST has been the rocket that has propelled team 4635 to fuel our own learning and that of those around us. We've embraced challenges and have inspired others to do so as well, motivated by the feeling of empowerment we get by reminiscing about our FIRST journey.

PHASE 1: Mission Control

Botbusters was established in 2013 in Monterrey, Mexico by 12 high schoolers with a strong interest in science and technology. Six years later, our team has grown into 24 enthusiastic young minds and 8 experienced mentors and coaches, many of which once proudly wore the Botbusters uniform. We focus on diversity by including students from different backgrounds, breaking gender barriers, and even adjusting our workshop for one of our mentors who uses a wheelchair. 100% of our team members have moved on to college, in contrast with the state average of 23%, and 96% have pursued STEM-related careers, three of them through a FIRST scholarship.

Botbusters have utilized the STEM and business management skills gained through FIRST to create startups that aim to improve the quality of life of humanity. Diego Roel, founder of STRAP Tech and former electrical lead, developed an innovative wearable for the blind with sensors that increase independent mobility. Julián Ríos, Antonio Torres and José Lavariega, former Botbusters, have created, through their company, EvaTech, a wearable biosensor brassiere that detects breast cancer, the leading cause of death among Mexican women. These actions demonstrate how FIRST inspires us to use our experience to generate change in the real world.

PHASE 2: Space Center

As advocates of FIRST, our recent efforts have expanded its influence exponentially within our national high school system, consisting of 36 schools. Our workshops have introduced FIRST to educators all around the country at national conferences, attended by 500 school administrators and teachers, who have then been inspired to launch programs in their community.

Our head coach pioneered a FIRST course with academic credit in our city, designing a curriculum that reaches about 120 senior students per semester. It provides practical knowledge to teenagers with no previous hands-on experience with STEM, as well as an introduction to business management and communication with industry representatives. This gives students the experience and motivation needed to decide if they want to pursue a STEM career. Additionally, one of these courses focuses on our Creativity Out of the Lab community outreach project, helping students prototype solutions to improve housing in vulnerable communities, through water filtration and automated gardening systems.

PHASE 3: Our FIRST Crew

Botbusters is one of the most seasoned teams of the FIRST MX family. That's why we want to promote STEM to everyone, everywhere. We started FRC team 7421 and assist 7 FRC teams in our city and state. We lend robot parts and share insight regarding robot design and FIRST awards. We've even visited, per request, 4 other team's workshops to aid in robot construction and have offered our workshop and its machinery as a resource for other teams. During build season, we video-chat with different teams every week and contact 500 teams through social media to offer them support. We also assist existing initiatives, helping 2283 translate the FIRST Safety Manual to Spanish. Aware that FIRST is more than robots, we've participated in FRC team-building summits like FIRST Fest 2018 in Puebla, where we hosted gender equality and engineering inspiration workshops.

We deeply appreciate our sponsors for their time, mentoring, and funding. We're fortunate enough to be sponsored by international and local tech companies that share our vision that everyone should have access to STEM education, such as Risoul whose sponsorship helped us host the FTC North Regional 2018. However, we are always looking to expand our crew to pursue our mission. Team 4635 is the last stop of a 10-year FIRST Botbusters program, that starts with the recruitment of young students from 20 different schools through FLL 8265, mentored by Botbusters, and continues through FTC 13531. Our FTC team was the Winning Alliance and Think Award receptor at the National FTC competition. We like to think that the FLL pioneers of today are the FRC members of tomorrow.

PHASE 4: Sending the Signal

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Team 4635 makes it a priority to lead the efforts that give back to our community through creative, impactful, and sustainable projects. Our primary objective has always been to promote and involve our community in STEM education and demonstrate its potential to change lives. In previous years, Botbusters has worked non-stop to spread the FIRST message through creative and interactive robot exhibitions at Horno 3, a prominent science museum; San Pedro de Pinta, a weekly street fair; International Book Fairs; and visits to 17 schools. This season, we participated in tech summit Zona Híbrida, where we talked about gender equality in STEM and presented our robot; Soluciones Tecnológicas, a tech business symposium hosted by our sponsor, Risoul, where we exhibited our robot; Conecta, a university summit where we built and exhibited a robot replica of Wall-E; visited 2 schools and received 300+ students from 6 local middle schools in our workshops. We've reached 180,000+ people throughout the years, hoping to inspire children and adults alike to be STEM leaders and innovators.

Beyond igniting the spark for STEM in children through our exhibitions and visits, we wish to engage them in science and technology at an early age through hands-on education. For four years, we've helped our sponsor T-REX teach weekly STEM courses aimed towards elementary school children from 20 local schools, and hosted annual robotics summer camps with 60+ attendees. T-REX students compose our FLL Team 8265, which is preparing to compete in the 2019-20 season through the mentorship of Botbusters students.

In 2018, we partnered up with a local "Girl Up" chapter. Girl Up is an organization hosted by the UN Foundation that aims to empower girls worldwide. To start this partnership, we organized a computer science workshop for 50+ girls in our community. Due to its success, it inspired us to start our Girls in STEM program with the home for girls, Casa Ortigosa. We visit Casa Ortigosa weekly since September 2018 to give them leadership and STEM workshops, showing them that their vulnerable situation is not a limitation to their creativity and dreams. Our goal for next year is to start an FLL team with these girls.

In 2017, Botbusters started the Creativity Out of the Lab (COOL) Project that aims to promote the usage of STEM in the improvement of life quality. The COOL project focuses on one community and organization at a time. Currently, we partnered with TECHO, a non-profit that seeks to overcome informal poverty settlements and improve living conditions in Latin America by building low-cost housing. These houses, some built by fellow Botbusters, have been life-changing for the 128 families living in the marginalized "La Aliancita" community. However, the original house design lacks a rain-proof and safe drinking water is scarce. Considering this, we devised a rain collecting system and water filters for the community, which have been implemented in 8 houses.

Monterrey, our home city, is notorious for its pollution, as 5,000 tons of waste are produced each day. Concerned for our environment, we organized an electronic waste collection program, as part of our effort to bolster recycling culture in our community. In less than 2 weeks we collected 2 tons of waste last year. We took apart the gadgets before they were sent off to the recycling facility so we could reuse some of their material, and this year's collection is set for the last week of February.

We've collaborated with the Debra Foundation, which aids children afflicted with butterfly skin; attending their Christmas parties for 3 years and letting them drive a robot, demonstrating that their condition is not a limitation. We've also visited Casa Douglas, a local orphanage, to introduce the kids to gameplay with LEGO robots. Moreover, we helped fundraise and gather donated goods for the victims of the 2017 Mexico City earthquake.

Our success in the FIRST Program has led us to appear in the media. Through 70+ appearances in local news outlets, 7 coming from Monterrey's most well-known print newspaper, El Norte; featured twice on local TV channel Multimedios, watched by more than 10 million people daily; twice in Frecuencia Tec, currently within the 30% of most listened national radio stations; and a social media audience adds up to 12,000+ followers, reaching people from Israel, Canada and Turkey; we've demonstrated the impact FIRST has had on our team members and illustrate how STEM education has life-changing potential. We are part of a motivational speakers program in our city; where we've been able to inspire over 250 kids at private and public schools by covering topics like: STEM education, gender equality, and entrepreneurship.

PHASE 5: Final Frontier

Team 4635 has come a long way since joining FIRST in 2013, the adventure that decisively changed our lives. The 80 students that have passed through Botbusters have improved by living countless adventures and discovering talents they weren't aware of. FIRST has given us the opportunity to become the leaders of our own journey. We power through with innovation, enthusiasm, teamwork, and communication. Every competition is a chance for growth and a test of our will. Our greatest wish is to help more people fall in love with STEM. That's the spirit of Botbusters. Whenever someone thinks of FIRST, we want them to be reminded of the classic slogan "Who you gonna call?" and know that Botbusters will be there.