

## Chairman's Award - Team 6328

[Print](#)[Close](#)

2020 - Team 6328

### Team Number

6328

### Team Name, Corporate/University Sponsors

Patriot Beverages/Bose Corporation/BAE Systems&Littleton STEM Education Foundation

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

In the FRC6328 family, 38 FRC and 40 FLL students from 6 districts work, learn, and play together. Here, timid FLL students learn to speak to a roomful of adults; FRC members learn CAD/CAM, programming, machining, media, and teamwork; special needs students are able team members; and high school age leaders command 27 technical, business, and outreach subteams. The impact is clear: all 10 of our FRC graduates have moved into STEM majors, many with FIRST scholarships, all with bright futures.

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

FRC6328's yearly outreach has grown exponentially. Outreach man hours grew from 854 in 2018 to 2027 in 2019, totaling 148 events since 2016, with 60 of those events occurring in 2019. One demo we planned in 2019 was the WaterFire Moon Landing event, where we brought together 13 FIRST Teams for a crowd of over 100,000! Furthermore, our unique workspace has allowed us to become a STEM hub in town, hosting events like the FLL Jr. Expo, which brought FIRST's mission to over 200 community members.

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

We spread the message of FIRST both locally and worldwide through our 9-tier outreach program, including FIRST Global, Girl Up, and FTC outreach and several others. Our programs target those with limited access to STEM including women, students with special needs, and underserved students. One partnership we have is with the Jackson Mann Community Center, an after-school program for Allston-based students. We set up STEM workshops and are working to get their own FIRST teams established.

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

Gracious Professionalism always comes first. Our team members, students, and adults live GP as volunteers at our 5 FLL events and State Championship, 4 FRC events, 2168's global hunger food drive, and more! FRC6328 is one of 6 teams founding the Open Alliance in 2020, publishing an open build blog and inspiring other teams to do the same. We also participate in the Compass Alliance, providing resources to teams worldwide, and have 3 students who are LGBTQ+ ambassadors for the FRC community.

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

We have an extensive FRC outreach program, including rookie team outreach and mentoring and assistance of existing teams. Thus far we have assisted 21 FRC Teams. Our 18 How-To guides help with focused topics, such as establishing a 501(c)3 and conducting a sponsor campaign. In 2020, we created care packages for all 8 rookie teams in NE, and visited their workspaces. We have also donated tools and parts to FRC7869 for the 2020 season, including a 3D printer and 2 laptops.

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

We run and directly coach 5 FLL teams in Littleton, plus 3 FLL and 4 FLL Jr teams in Bolton. FRC6328 members volunteered 1777 FLL hours in 2019 alone, up from 993 in 2018. We host 5 annual FLL events: an FLL Qualifier, FLL Practice Interviews Day, FLL scrimmage, FLL Jr Info Session, and FLL Jr Coach Training. We have also held 2 FLL-based summer camps internationally: 1 in Hyderabad, India in 2017, and 1 in Hong Kong in 2019. Additionally, we work closely with FTC12897, hosting joint demos.

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

FRC6328's greatest strength is our FLL-to-FRC Transition program. Grade 8 FLL members participate in technical training and offseason competitions in the fall before the FRC season. This program has brought 23 FLL alumni to the team since 2017. We have extended this program even further to invite FLL & FLL Jr members to build meetings and competitions, where they learn key skills such as using basic tools and scouting. We wrote a resource guide so other FRC teams can set up similar programs.

**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 had 38 FRC members mentoring FLL and FLL Jr students in 2019, forming strong mentor-mentee bonds. We also developed joint FRC-FLL outreach events, such as Boston Greenfest and RoboExpo, where our FLL members learn the importance of community outreach. As a founding member of the Open Alliance, we have been working with 6 other FRC teams, providing content worldwide. We have also been featured on "FIRST Updates Now" 3 times, discussing Open Alliance, quiet rooms and rookie team start-up.

**Describe your Corporate/University Sponsors**

Our major sponsors for the 2020 season include Patriot Beverages, ETM Manufacturing, Gore Foundation, Flashforge, BAE Systems, ZOLL Medical, Raym-Co, The Mighty Oak Fund, and Workers Credit Union. The team takes pride in attracting sponsors from a variety of industries by effectively demonstrating that FIRST gives students the opportunity to learn skills useful in any sector. We visited 6 sponsors in 2019 to learn about their businesses, and to show our sponsors the impact of their generosity!

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

Our team's top sponsor, Patriot Beverages, donates a 4200 ft2 workspace to our team, which serves as our team HQ, and the location of multiple FIRST events year-round. We also hold an annual Pasta Dinner in the fall and a Sponsor Open House in the winter, where we recognize our sponsors and highlight their contributions. For the 2020 season, we ran a sponsor campaign where team members personally reached out to potential new sponsors, bringing in 18 new companies for 2020.

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

FIRST is a family with widespread interests - and a particular fondness for robots. We each have different skills, but we're all in it together, and work to support each other. We want our students to be well educated, capable, lifelong learners, and good people. We compete hard, but fairly; we help others in our community because it's the right thing to do. It's in our nature to make mistakes, but we learn from them. FIRST is the foundation for our robot family.

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

Mental health is a priority for FRC6328. We are proud to be a member of the Compass Alliance, a large global resource hub, where we work to establish quiet rooms at events, including both World Championships in 2019. We want to increase mental health awareness in FIRST and make FRC a better place for everyone. We wrote 3 resource guides surrounding mental health, and keep a quiet room set up in our workspace. Our team is at our best when our members are at their best!

**For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.**

Although FRC6328 has only existed for 4 seasons, we have had an impact similar to older teams. Before FRC6328, Littleton had 1 FLL team. Now we have 1 FRC, 5 FLL, and 2 FLL Jr. teams. Beyond Littleton, we have global influence, such as our new Girl Up Club. Girl Up members raised \$1000 to build a classroom for refugee girls in Uganda, and are planning a Respect Day for women in STEM. These events and experiences bring us together, creating a tight knit family with a global impact.

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

Maddie Tuck

## Essay

### Chapter 1: Our Roots

"Ohana means family. Family means no one gets left behind or forgotten." When we first formed Mechanical Advantage FRC6328 in the summer of 2016, the commitment, enthusiasm, and hard work from our 11 students touched the hearts of the entire community around them. Though we didn't realize it at the time, our team was already becoming a family.

Our family home, whether it be unused rooms in a high school, a home garage, or our current 4200 square foot workspace, has always housed a variety of willing, ready, and prepared students. Starting with just 11 student members our rookie season, our diverse team now has 38 FRC students, nearly one-third of which are female, from six different school districts and ranging from grades 6-12. We are inclusive to students with special needs, and our total number of students has grown every single season. We take pride in that 100% of our alumni pursue STEM majors at a wide variety of colleges and universities, many of whom have secured FIRST scholarships.

Due to space constraints, our workspace at Littleton High School was no longer a viable option after our rookie season ended in 2017. This did not deter us and we continued to work hard out of a home garage as a temporary space through that off-season. Our extensive outreach program that summer drew in many new sponsors and planted seeds of connections with groups such as the Littleton Board of Selectmen. Our story captivated the Board, who generously introduced us to the leadership of Patriot Beverages and brokered an arrangement resulting in Patriot Beverages donating our current workspace.

We are incredibly thankful every day to Patriot and all our sponsors, often telling the story of how we acquired our workspace to new team members to illustrate the criticality of outreach and community connections to team function and sustainability. To thank our sponsors and keep them connected as part of our extended family, we host annual End of Build Open Houses and community pasta dinners. We send annual thank you postcards and newsletters to our sponsors, and keep them updated during the build and competition season. Our relationship with sponsors goes both ways: in return, our sponsors invite us to visit their operations and teach us about various industries.

Transitioning into the 2020 build season, our team implemented a new team structure based on lessons learned from our previous seasons, that ensures students have plenty of opportunities to apply for, grow into, and fill the 27 student lead positions available, balancing the technical and business aspects of our team. Business leadership roles ranging from Sponsorship Outreach to Social Media Leadership ensure a place for everyone in our family.

### Chapter 2: Spreading Our Branches

To continue developing our team, we use an effective, sustainable method to keep a steady stream of young students joining our team. Our FLL-to-FRC transition program starts with our five Littleton FLL teams who meet twice a week in the FLL off-season, build, and competition season - three were started in 2017 and two were added this season. In addition, we have three sister teams in Bolton that we mentor and welcome to Mechanical Advantage upon their graduation. We have 40 FLL students throughout the Littleton teams alone. In the off-season leading up to their first FRC build season, we integrate 8th graders into the FRC program through off-season training meetings and competitions to get a sense of the atmosphere of builds and competitions, as well as how the team works. Moreover, we had seen too many graduating FLL students intimidated by the "big robots," especially girls, and many stopped participating. To push back against this trend, we aim to continue our transition program by hosting our 5 annual FLL events. With our FLL teams having a lack of opportunity to rehearse their presentations to real-world engineers, we identified a need to start an interview day in 2017. Having the knowledge of practice scrimmages, we looked around for similar events with interviews but found nothing in the area. Therefore, we decided to pilot an event - providing the only FLL interviews day in MA - and in 2019, we had to double the number of practice interviews (18 to 36 teams) available to accommodate demand!

From May to December every year, a dedicated group of our FRC students mentor and coach our FLL teams, forming incredible bonds and extending our family-based mindset beyond the FRC level. By forming these bonds between existing and future FRC students, FRC becomes less scary to younger students, who may be afraid to jump in and get involved from the start. Volunteer hours allocated to FLL mentoring has built up substantially over the past three years: more than double the hours from 2017 to 2018 (400 to 993), and nearly doubling from 2018 to 2019 (993 to 1,777). The numbers speak for themselves - 82% (23/28) of our FLL graduates have moved on to FRC!

## Essay - page 2

Over the past four years, our family tree has grown within our local community and globally - including Hyderabad, India; Hong Kong, China; and two all-girl FIRST Global teams in Liberia and Afghanistan. Reaching a total of 148 outreach events from 2016-2019, 60 of which were done this past year, our outreach is a never-ending, skyrocketing push to reach a large variety of people. Our 2,027 outreach hours in 2019 dwarfs the 854 hours from 2018.

The highlights of our outreach efforts encompass the WaterFire demo in Providence, RI (which reached over 100,000 people), Best Buddies STEM events, and Hyderabad, India and Hong Kong LEGO robotics programs. In the summer of 2017, a student member of the team brought an FLL kit to a local middle school in India to 10-12 year olds and worked to incorporate LEGO robotics into the school curriculum. In the summer of 2019, another student member designed an FLL camp curriculum and brought it to kids from ages 9-15 in Hong Kong, teaching them to build and program FLL robots with a kit and guidebook. Split into nine sections, our outreach program has mentors and student leads for each subteam: traditional events, team events, FRC outreach, FTC outreach, Girl Up, FIRST Global, FLL & FLL Jr, Resources, and Compass Alliance projects. We aim to spread the message of FIRST to diverse groups and groups with limited access to STEM: our Allston Community Center partnership enabled us to reach underserved students in the Boston area.

Besides focusing on growing our own branches, our team has also contributed and helped to grow the branches of other teams to create a whole forest family. Over the course of the past four seasons, we created 18 Resource Guides to help FRC teams with topics such as establishing a 501(c)3 and team sustainability, with two new guides for 2020 featuring sponsor outreach and creating Girl Up clubs. We are also participants of the Compass Alliance, Open Alliance, Hear For You, FUN shows, and we have assisted a total of 21 FRC teams.

Looking back at how difficult our rookie year was, we wanted to aid rookie teams in their first year doing FRC, so we put together "Welcome to the Family" kits for the seven rookie teams in New England this year. The kits contain FRC6328 resource guides and mini quiet room setup, among other items. Throughout the process of delivering these kits, we got to meet the teams in their workspaces and help with anything as needed - from making parts to providing assistance - bringing back memories of our humble beginnings as a rookie team.

### Chapter 3: Leaves to the Sky

As the Mechanical Advantage family grows and our roots become stronger every year, we are expanding our efforts to other FRC teams. We knew we wanted to address mental health in FIRST. Sometimes long hours working on the robot or loud and stressful competitions can be too much to handle. Being able to unwind and relax if we are feeling overwhelmed is vital, but finding space to do this at robotics competitions is hard. To combat this, we help set up quiet rooms at FLL & FRC events. We supply items like coloring books, yoga mats, relaxation tips, and a mental health resource guide.

This season we have joined together with five other teams from around the globe to found the Open Alliance, a group of teams that share their build season for the public. We run a blog where we post updates about progress on our robot, which is also cross posted to our build thread on Chief Delphi and our team's social media accounts. The Open Alliance is great for all teams participating; we have even seen many other teams follow our lead and start their own open build processes.

This off-season we began to extend our branches beyond FIRST too. Our team includes many female mentors and young women student leaders. We pride ourselves on inspiring girls to dive into their STEM education. We find that building up girls' confidence and their engineering skills at a young age encourages them to pursue their goals in a male-dominated career path. To support this goal, this year we started a Girl Up club, The Girl Up Stemminists of Littleton, which focuses on promoting education and leadership for girls and young women in developing countries. The team raised a grand total of \$1,000 to go towards building a classroom in Uganda. Now an important part of our family, the Girl Up club has FRC/FLL members and students from nearby towns.

### Conclusion: Family

"Ohana means family. Family means no one gets left behind or forgotten." At its core, this is the idea that family and friends are bound together, they work together, and must not forget each other. Our robot is a symbol of our family and everyone in our family can talk about what they did to contribute to that symbol. We've nurtured our family to build strong, robust roots that can support and nurture a growing tree with a solid, healthy trunk and new branches and shoots growing every season. We can't wait to see what branch will grow next!