

## Chairman's Award - Team 1828

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2018 - Team 1828

### Team Number

1828

### Team Name, Corporate/University Sponsors

Caterpillar Inc., Tucson/Vail Unified School District/Elegant Iron&Vail Academy & High School&Cienega High School&Empire High School&Andrada Polytechnic High School

### Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years

Arizona's funding is low for education, so FIRST provides an opportunity for intellectual and academic growth. We learn all we can, and then we teach. We attend demonstrations to promote STEM, we volunteer with STEM camps and FLL/FRC teams, and our students become mentors; our team goal is over 1,000 hours of community outreach every season! More than 93% of our graduates seek a major/career in the field they held in the team. Team participants become students, teachers, and FIRST mentors!

### Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years

This holiday season, we adopted two families in dire need. We walked and demonstrated robots at The Buddy Walk for Down Syndrome. We joined a Mini Maker Fair at Barnes and Nobles, and previously, we created a carnival game for a low-income school, made care packages for deployed soldiers, and participated in a can food drive for the local food bank. Our team also presented to a group of high school students to show the importance of STEM Careers at Raytheon's American Indian Network.

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

Every year, we demonstrate our robot on local news/TV stations. We also created and showed PSA videos at schools, discussing issues such as texting and driving as well as recycling. At one school event, we created a Lego room, allowing students of all ages (K-12) to experiment with their imagination. We also participate in STEM showcases at local schools and at a district wide fair. AZPM, the local PBS channel developed a documentary of our team, and they broadcasted all over Southern Arizona.

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

At competitions, our members seek teams in need, and one time, our students crossed language barriers in order to help a Chinese team pass inspection. They would not have been able to compete without help. At a school district-wide event Vail Pride Day, our team has judged JFLL teams on their presentations. Within our community, we communicate with the other FIRST programs such as the JFLL, FLL, as well as FRC teams. We offer them tours and mentors to assist them during their season/meetings.

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

We started and assisted FRC team 5539. At competitions, we cheer them on and help them in their team pits (along with any other time that is in need of a BoxerBot paw)! We open our build room for tours, we seek opportunities to help initiate teams, and we also invited teams from around our local city to attend kick-off this year for collaboration in ideas to combat the challenge. Local schools, through demonstrations and outreach, have asked for our help, and we go out of our way to help.

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

In 2012, the BoxerBots started two separate First Lego League (FLL) teams at Vail Academy and High School! Team members from 1828 the BoxerBots assisted the teachers in helping explain the aspect of robotics to their students. This year, we started an FLL team at La Paloma Academy, a Title I school. Every week, we send members to help at their meetings, and one of their mentors comes and assists our team as well. We have given teams tours of our build-room and invited them to KickOff.

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

Our team demonstrates our robots around our community to help inspire FIRST students; several members have assisted FLL teams at Desert Sky Middle School, Gale Elementary, Copper Ridge Elementary, Vail Academy and High School, and La Paloma Academy (K-8). We attend meetings at La Paloma, inspiring their members to work as a team and demonstrate the importance of leadership. We also helped the build/programming process at Gale Elementary and Desert Sky as they got closer to their competitions.

**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)**

Weekly, our students mentor the FLL team at La Paloma. Members have also helped the FRC team at Desert View High School, emailing them often, and we invited them to KickOff; we still send them emails to ask if we can provide aid. As the FLL teams at Gale Elementary and Desert Sky Middle School got closer to their competition, we sent members weekly to mentor. Another team member assisted a FLL team at Copper Ridge Elementary and was awarded the Coach/Mentor Award.

**Describe your Corporate/University Sponsors**

Caterpillar Inc. is our main monetary sponsor; they give the 1828 BoxerBots a chance to apply what FIRST teaches to the real world. The Vail School District provided our build room. Elegant Iron donates materials and teaches students to powder-coat. We also receive tax credit donations, local stores donate materials, and the Arizona Senior Academy contribute money. Toshiba donated two computers! AZPM, the PBS channel, gave us notoriety by creating a documentary about the team.

**Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years**

The BoxerBots have been sponsored by Caterpillar since 2011. Caterpillar has paid for materials, trips, equipment and other expenses since. Caterpillar offers training at our meetings through our mentor Jesse Farmer. He offers the team trips to their TPG site, southwest of Tucson Arizona. Elegant Iron has taught students how to powder-coat our robot for color! The Vail School District also provides students laptops as well as a build room/workspace to work in for the past four years.

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

FIRST is an international organization with over 400,000 students. Aimed to inspire, K-12 students to be a part of STEM, FIRST enhances and "funifies" learning, and teaches real world skills such as teamwork, communication, leadership, and time management. This program will be the hardest fun anyone will ever have! FIRST is a second family, and new members join each year. The team members have similar interests, and many lifelong friendships are formed since so much time is spent together.

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

In 2012, the BoxerBots coined the term "Varsity Engineering." It means we embody the future vision of FIRST as an organization with a well-known competitive presence: "Sports for the Mind." We have the competing mentality of other varsity sports; we ignite interest into students! In our efforts to promote this idea, the BoxerBots wear custom jerseys and earn varsity letters. Our state championship banner hangs next to other sports banners in each of our high schools.

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

E L Peters

## Essay

Team 1828, the BoxerBots, uses the "power" of teamwork to make a difference in the lives of people who do not have the necessities or even the luxuries we have. This approach started in 2012 when we teamed up with two district schools' National Honor Society chapters, and collected over two tons of food for our local Food Pantry. We were very excited to help, and our actions grew in scale. We still assist the food drive, but the team also spent hundreds of dollars and hundreds of hours developing a robotic game to use at a Title 1 elementary school's carnival. This game became the trademark of our outreach program, where prizes?and more importantly, enjoyment through STEM?were provided to young children free of charge. We realized then that young people need help, but others do too. This led to further expansion of outreach, and we began a program called To: Battle, From: The 'Bots. We collected needed supplies and BoxerBot team gear to send to American soldiers deployed overseas. This was very rewarding, especially because some of the parents of our team members are soldiers, and we are also 10 minutes away from Davis-Monthan AFB. On a somber note, one of our mentors Fred Liguori, was diagnosed with Hodgkin's lymphoma (cancer), so we decided to raise money to support him. We collected money to assist part of his treatments, and we named our 2014 robot "Not Bad," because that was his seal of approval when he saw each task completed.

In addition and recently, at Raytheon's American Indian Network event, we demonstrated our robot to a group of high school students. We discussed the importance/benefits of STEM Careers, and we spoke to them and answered questions about our involvement/interests in STEM; they also drove our BoxerBot robots. They claimed we left a "paw-sitive" impact in their future plans. This season too, we assisted the community by "walking" our robot at the Buddy Walk?an event that raises funds for curing Down Syndrome. At this event, our team demonstrated to over 2,000 people, to include individuals afflicted by the disability. We were paired up with a buddy, and the team and robot walked with her. She was very proud to have us there! Additionally, this holiday season, we adopted two families who were in dire need of holiday cheer. Our team members purchased and donated many gifts, and we dedicated a meeting to wrap the presents; this continued to make us feel like a family not a team. We ate, drank hot chocolate, and listened to music, knowing the gifts we bought would bring joy. To top off our community involvement to low funded programs, we started an FLL team 35258 Future Tech at a Title 1 school?80% of students qualify for free and reduced lunch?La Paloma Academy!

At La Paloma Academy, our team attends weekly meetings, and teach leadership, teamwork, and help them to organize their team structure. Along with Future Tech, we have also started as well as mentored 2 FLL teams at Vail Academy and High School. This season alone, the BoxerBots have assisted FLL teams 26585 TigerBots, 19861 Robotic Cougars, and 32738 Da Bomb! Our involvement with FIRST teams continued in the 2015-2016 season by working in collaboration with Palo Verde's Optimal Robotics 4841; they hosted the event at their school, and we created the flyers, volunteered to help set up the event, reset the fields, and cleared and cleaned up after event. The entrance fee was to bring canned goods for the local food bank, so our team contributed wholeheartedly. Moreover, during the 2014-2015 season, we established our partnership with Desert View High School in Tucson, Arizona by creating an FRC team. We brought prospective student leaders from Desert View to our build room and we taught them all we could about our robot, the overall program, and FIRST. Equally important, we wrapped up outreach for the 2014-2015 season by conquering language"roadblocks" with a Rookie Team from China. They needed a lot of help rebuilding their robot in order to pass inspection, and we made sure they could compete; they made it!

Backtracking to summer break of 2012-2013 and 2013-2014 season, the BoxerBots partnered with the Vail Discovery Learning Camp for students in our community aged 5-12. In addition to multiple robot demonstrations, question and answer sessions, and friendly plugs for Junior-Varsity Engineering, team members volunteered hundreds of service hours collectively; we definitely maximized our presence and "empowered" the success of the camp. Since then, the BoxerBots have continuously increased the amount of assistance and demonstrations at camps. In the 2016-2017 season, we helped as well as led an activity in the Young Coders & STEM Camp, a camp for students 3rd-5th grade, and we also volunteered at a SET Camp, a STEM camp for students 6th-8th grade. This 2017-2018 season, we volunteered and demonstrated our robot at the STEM Camp for 6th-8th graders and the Junior Engineering Camp for 4th-8th graders. In the future, the BoxerBots will continue to plan, spread the word of STEM, volunteer at more summer camps, host local competitions for VEX Robotics teams, start after-school programs, aggressively recruit more girls, and find more sponsors who "empower" us to continue year to year. We are already in the process of collaborating with Camp Invention to host a STEM summer camp for young students this season!

Continuously seeking to reach out, we cultivated a relationship that began 5 years ago with our local television news (KGUN 9). Since 2012, we have presented our robot/team yearly, and KVOA News since 2013. We also had many articles about our team on the Tucson newspaper. The Vail Voice and the Arizona Daily Star two additional locals newspapers also included thorough information about our team. In December 2018, the Arizona Daily Star featured the BoxerBot captain and the team in the front page! Equally or more exciting, our team was shadowed by Arizona Public Media (AZPM), the local PBS channel. They developed an 11-minute documentary of our team that broadcasted multiple times all over Southern Arizona. Many community members commented on how the team was an inspiration to them. On our own, we have also created videos. Team members have creatively written, directed, and edited Public Service Announcements (PSA), to educate schools. These announcements although educational, also showcase STEM in a new and exciting way. The PSA videos informed about the importance of recycling, and the seriousness of not texting and driving. For the recycling video we used our 2015 robot, and the texting and driving video featured the 2015, 2016 and 2012 robot. Concurrently, we developed and enhanced our web resources at 1828BoxerBots.org, on Facebook, Instagram, Twitter, Snapchat, and on YouTube, to provide resources for those who wish to learn more about FIRST or the BoxerBots.

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One of the main ways our team "steers" our community in the direction of STEM and the message of FIRST is by showcasing our robot and team at local events, whether events are STEM-related or not. At each event, we have demonstrated our robot in front of hundreds of people of all ages. We allow anyone to drive the robot as well as answer any questions they have about STEM, FIRST, and/or our team. We began attending science showcases at Vail Academy and High School since 2011, Mesquite Elementary since 2013, Vail Pride Day STEM showcase at the Pima County Fairgrounds, and started attending showcases this season at Sycamore Elementary and Senita Valley Elementary. We also attended Vail School District's first ever Computer Science Night at the Vail Innovation Center, where we interacted with middle school and high school students interested in coding. Senator David Bradley attended the event, and he had questions about the BoxerBots and individual team members. We explained FIRST to him, and the goals and duties of the team. For more general community events within Vail/Tucson area, our outreach has only "accelerated." We have "rolled our wheels" to events such as the Fort Huachuca Safety Fair, reaching over 300 people, Arizona STEM Adventure, reaching over 1,000 people, Vail Pride Day, reaching over 5,000 people each year for the past four years, Vail Country Fair, reaching over 2,000 people, Family Fun Day, reaching collectively over 3,000 people for the past two years, and SARSEF Future Innovator's Night, reaching over 3,000 people. We have also demonstrated to/outside Harbor Freight Tools, Ace Hardware, Hotrods Restaurant, Flight Safety, Raytheon, Texas Instruments, Air National Guard Air Force Reserve Test Center, broadening the "destinations." For recruitment, we attend open houses at each of the four schools in our school district as well as the Vail Digital Learning Program, an online school. In addition to demonstrations, we showcase our team through volunteering at STEM events like the Mini Maker Fair at Barnes and Noble as well as helped set-up and run a VEX EDR Competition in conjunction with Palo Verde.

When it comes to community outreach, the BoxerBots do not experience any "speed bumps" that hinders the progression we have made in "motor-vating" the public to become more involved and invested in STEM education and activities. About 80% of team members have headed to college after graduation; more than 20 students entered STEM programs at postsecondary institutions. Since 2009, nearly 75% of team seniors have graduated and entered STEM-related college programs. Just as our robots run on CIMs, our team outreach is also powered by CIMS: Community involvement, Interaction with FIRST and STEM programs, Media, and Showcasing/demonstrating. We know that there is not an end result, but a "journey from the destination" that these "motors" will take us in our future. Our involvement has "fueled" the next generation of STEM leaders and has "turned the wheels" of a mindset in a location that under-appreciates education!