

Chairman's Award - Team 5816

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2021 - Team 5816

Team Number

5816

Team Nickname

Gra-V Robotics

Team Location

Orlando, Florida - USA

Describe the impact of the *FIRST* program on team participants within the last 3 years. This can include but is not limited to percentages of those graduating high school, attending college, in STEM careers, and in *FIRST* programs as mentors/sponsors.

FIRST has empowered our students to achieve high, with 100% of current members planning to pursue a career in STEM. Additionally, 100% of our alumni have graduated high school and matriculated into prestigious post-secondary institutions across the United States. The FIRST program has inspired our students to collaborate on new projects, learning important values such as teamwork, communication, leadership and technical skills that students continue to hold long after graduating.

Describe your community along with how your team addresses its unique opportunities and circumstances.

Our community encompasses all those impacted by us: people with all backgrounds, people with disabilities, FIRST teams, and more. Our 3D printing and soldering lab has enabled us to serve them in unique ways. We have created over 10,000 PPE items and distributed them to essential workers. We also eliminated the price barriers of Assistive Technology (AT), adapted toys, and designed the Freedom Wing Adapter to make the online world more accessible for people with disabilities.

Describe the team's methods, with emphasis on the past 3 years, for spreading the FIRST message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?

We measure results through individual impacts. We have seen that the most effective way of spreading the FIRST message is by letting people experience it. Whether it is by letting a child drive our robot, teaching people how to mold a makey at Maker Faire, or by making personal connections with them via conversing about common interests, the essence of FIRST attracts everyone. The collaborative atmosphere of FIRST instills big smiles and awe-looks at all of our events.

Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.

We act as role models by interacting with other levels of FIRST. We assist different teams in Central Florida by hosting and volunteering at multiple competitions such as FLL qualifiers, regionals, and state championships. We run the logistics for the FTC Tesla league in addition to providing the fields and students to volunteer for positions at FTC events all around Central Florida. Additionally, we host a FLL Coaches Conference to help new and old coaches connect with the local community.

Describe your team's initiatives to Assist, Mentor, and/or Start other *FIRST* teams with emphasis on activities within the past 3 years.

Gra-V's mission is to spread the values of STEM and FIRST to children of all ages. At every event we attend we are always providing resources and contact information for people to start or join a robotics team in their area. In 2018, we saw a need for an FTC Team so we started and mentored 14418 Constant Chaos. In 2019 we got additional funding and started another FTC team, 16733 Sprocket Scientists. Also in 2019, Gra-V started and mentored FLL teams 44589 Crashing Cosmos and 44590 Eclipse.

Beyond starting teams, what initiatives have you done to help inspire young people to be science and technology leaders and innovators? What results have you seen from your efforts in the past 3 years?

Gra-V annually participates in events such as Otronicon and Maker Faire. Through these initiatives, we directly impact the youth by engaging them in hands-on projects, such as Molding-a-Makie, Make-a-Shirt, driving our robot or creating custom 3D printed parts, inspiring them to take on their own projects. We also host the Summer Robotics Institute (SRI), where students learn technical skills for free. These have led to an increased membership and interest in STEM careers.

Describe the partnerships you've created with other organizations (teams, sponsors, educational institutions, philanthropic entities, etc.) and what you have accomplished together with emphasis on the past 3 years

Through our relationship with AT Makers, we have the mission of creating a world full of opportunities for people with motor disabilities. Together, we have created the Freedom Wing Adapter and hosted Adapt-A-Thon annually to allow people with motor impairments to experience and interact with video games and toys, many for the first time. Additionally, with our 3D printing lab, we work together to design and create parts for their assistive technology projects.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

Gra-V transforms limitations into opportunities. Our low dues allow anyone to join our team, resulting in a very diverse family, comprised of over 60% Hispanics and 43% women. Furthermore, we strongly support female leadership in the team, having elected a female president for the past 4 years. Being a minority-majority team, our family atmosphere empowers minority students to participate in STEM and makes them feel welcomed in FIRST, promoting an inclusive community in the wider world abroad.

Explain how you ensure your team and the initiatives you have created will continue to run effectively for the foreseeable future

We have learned that we can sustain and maintain relationships by being reliable and consistent. Gra-V always provides the attention and volunteers for any type of work our community is in need of. To keep our collaborative culture alive, we mentor FLL and FTC teams, building strong links with the students who will become the future of Gra-V and equipping them with the tools and skills to ensure the continued success of our team.

Describe your team's innovative strategies to recruit, retain, and engage your sponsors within the past 3 years

Sponsors are the foundation of our team and are part of our family. We welcome them to gatherings, meetings, and many of our outreach events, integrating them into the FIRST community and introducing them to new networking opportunities. Our expos and community ties have opened doors to new business relationships. Personalized gifts are distributed at the end of the season and their logos are proudly displayed on our robots and website.

Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.

Over the last year, Gra-V struggled to keep morale high during the pandemic. To help solve this, we wanted to continue our mission and utilized our 3D printing lab to create and distribute PPE to first responders. Even virtually students were able to make an impact and help their community which helped to boost team morale. To supplement the loss of in person interaction, we organized virtual game days where students were able to continue growing their bonds with each other.

Describe your team's goals to fulfill the mission of *FIRST* and the progress you have made towards those goals.

Gra-V hosts expos and events that provide opportunities to strengthen confidence, communication skills and resilience. We provide our students with the resources to succeed. Whether it means teaching them coding, using the 3D printer, or teaching them how to write grants and communicate professionally, we are inspiring a next generation of leaders and innovators. Gra-V provides the connections for students to get an early start on their careers through internships and other opportunities.

Briefly describe other matters of interest to the *FIRST* Judges, including items that may not fit into the above topics. The judges are interested in learning about aspects of your team that may be unique or particularly noteworthy.

We are proud to be a student-led team. From robot design to money management, our students take initiative and make the decisions. Our mentors guide students on the right path by providing alternatives and presenting unique ideas without interfering with their choices, but rather inspiring critical thinking. All leadership positions are student-elected with each position taking on the responsibility of organizing different aspects of the team, together shaping how we run.

Essay

Five years ago, a group of mentors built a nest in which FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition (FRC) team 5816, Gra-V Robotics, hatched into the world. Based upon the values of FIRST, Gra-V promotes teamwork, Gracious Professionalism (GP), innovation, entrepreneurship, STEM, and leadership skills as crucial principles to build up the future leaders of tomorrow. Our mission is to unite the community in Central Florida under our wing. Team 5816 supports an atmosphere of GP and meaningful relationships that will inspire students to soar to new heights.

As we grow over the years, unique feathers grow, representing the diversity among our students. Their distinct backgrounds create a medley of colorful feathers giving us flight. The distinctiveness of each individual on our team contributes to the unique, family-like atmosphere. Our low membership dues promote inclusion; it only takes passion and dedication to join the team. Committed to this idea, our team reaches students from 6 different schools and 3 homeschooled from 3 different counties. Additionally, student diversity includes 4 languages and 4 nationalities. This has allowed us to help international robotics teams during competitions, such as Brazilian team 7566 in 2018. Our team is composed of 7% Asian, 7% African American, 64% Hispanic, and 22% Caucasian, forming beautiful colors.

We are dedicated to the inclusion of women in STEM. Our team is composed of 43% young women and elected a female president the past four years; equal opportunity is given to our girls. Our team has also hosted the US Department of State's Empowering Women Leaders in STEM. At this event, Gra-V students had the chance to network with women from around the world, presenting FIRST, and both sides sharing our unique experiences in STEM.

Our mission is to spread our wings as wide as possible throughout the season. We have collaborated and continued to support other FRC teams such as 5842, 1649, 6409, 6527, and 7450 by lending them a helping wing with resources, time, and effort. Additionally, we keep our "nest" open to other teams, like FRC team 1065 when they had no access to a build space, and team 6527 when they were not allowed to meet at their school. In addition, we welcomed members from FRC team 7728 when their team was disbanded. We strive to help other birds fly high and build a beautiful flock that impacts an even greater community.

In 2019 and 2020, our team ran pre-season workshops alongside FRC Team 1902, where over 12 FRC and 3 FTC teams came to prepare for the build season ahead by collaboratively sharing their knowledge and interacting with each other. We have also co-hosted the official Central Florida Kick-Off with team 1902 since 2018, bringing FRC teams together in a fun atmosphere to start the season off on the right wing. From 2016-2019 we hosted our annual scrimmage, welcoming anywhere from 4 to 8 teams each year to test their robot on a full-sized practice field. After scrimmage, the fields are offered to the Orlando Region for teams to practice on. Furthermore, we provide materials for 21 FTC and FLL tournaments in Central Florida in addition to running the logistics for the Renaissance CFL in FLL and Tesla League in FTC.

Our members recognize the importance of mentoring to inspire a generation of hatchlings that will one day grow their wings and leave the nest, carrying our values and principles wherever they go. Over the past 3 years, we have started 2 FLL and 2 FTC teams that we continue to mentor and share our nest and resources with; allowing them to soar high. Additionally, we have hosted and run multiple events for FLL, among them 2 pre-qualifiers and 3 qualifiers. We ran the Pineloch Elementary School Qualifiers in 2018 and 2019 and assisted at the FLL Regional and State Championships 2018-2020. To further support FLL, we hosted a Coaches Conference in 2018 and 2019, providing instruction and resources for the younger birds in FIRST. Subsequently, we have used our 3D printers to create and design trophies for FLL Jr in 2018.

Like a bird needs its feathers to fly, our team needs students and mentors working together to reach our goals and attain new heights. We place a strong emphasis on our relationships, creating a family atmosphere among ourselves that extends on to our mentors, sponsors, and community. Through dinners every night during build season, movie nights, and holiday parties, we come together to share our stories, ideas, and distinct foods from across the world. Even during the pandemic, our family atmosphere flourishes. Despite these difficult times, students have hosted virtual game nights after meetings, creating a more sociable and dynamic environment. After the Orlando Regional's cancellation, our students gathered online to play video games, including Minecraft and Animal Crossing, to continue to strengthen their bonds.

After graduating, alumni continue to hold the many values and traditions they have learned throughout their time on the team. Over our team's history, 100% of our alumni have pursued higher education at schools such as MIT, UF, Rose-Hulman, and Yale. Furthermore, our work in collaboration with the FIRST community has inspired a new generation of scientists and engineers with 100% of our current members looking to pursue careers in STEM fields. Students are able to use the various soft and hard skills such as communication, teamwork, leadership, design, and much more to aid them in their future careers.

Essay - page 2

We recognize the importance of our sponsors to the success of our team. As part of our family, we invite them to our meetings, events, competitions, and family nights. Through this, we hope to include them into the FIRST community by showing them how beneficial this program is to the forming of well-rounded students that will leave a lasting impact in the community.

Committed to taking the community under our wing, we have dedicated over 10,000 hours to community service in the past 3 years. The beauty of FIRST is the reciprocation of impact at outreach events. As we showcase our robots, projects, and values, we ignite passion in other people. In the same way, their enthusiasm and interest inspire us to keep this program alive. As we participate in numerous events such as Otronicon, HamCation, I/ITSEC, and Maker Faire, we interact with people of all ages, creating unforgettable moments in our community.

From 2016 until the COVID-19 outbreak, we have assisted with the Summer Robotics Institute (SRI), providing any high school student in Central Florida with a free opportunity to experience STEM. SRI allowed dozens of underprivileged teens to explore or develop a new passion. There, students learned skills in Computer-Aided Design (CAD), electronics, and had the opportunity to build and program robots to perform specific tasks and outcomes. SRI has become crucial to our legacy as it has led to 31% of our current members joining the team. Through SRI, we have grown new feathers and we hope to continue this endeavor as soon as possible.

We appreciate the numerous first responders in our community. With the COVID-19 pandemic, many of the first responders lacked PPE needed for work. We took the initiative to use our 3D printers to make over 10,000 face shields, providing them to first responders, medical professionals, and essential workers free of charge in gratitude for their continued commitment to society.

Through events and projects, we impact as many individuals as we can. Back in 2016, our team decided to expand its wings and change the game for people with disabilities by igniting our partnership with AT Makers. For the first time, students broke barriers for children with disabilities by modifying how toys operate. We have hosted and volunteered at AT Makers' Adapt-A-Thon since 2017, where we adapted over 250 toys. During this process, team members carefully disassemble, modify, reassemble, and return the toys to their original packaging. These modifications, which frequently include larger or easier-to-operate buttons or triggers, allows a child that may never have been able to operate their favorite toy to activate it on their own. Also, we annually present how 3-D printing can be used to provide cost-friendly alternatives to current technology for people with disabilities at the Assistive Technology Industry Association (ATIA) Conference.

In December of 2019, our team partnered with ATMakers to develop and produce the Freedom Wing Adapter (FWA). This adapter was created to allow individuals bound to wheelchairs the ability to play video games comfortably using the Xbox system. While we recognize the various tech companies that have created devices to help with this, they typically require an individual to adjust to a new device. The FWA attaches to the wheelchair by disconnecting the individual's chair drive system and using the joystick designed for them by medical professionals and allows them to control their game. By adding Bluetooth, individuals can use a mouse, fly drones, or operate home automation equipment with greater ease. Our team has and continues to provide adapters to individuals for free by open-sourcing this project.

As birds grow, they exert a bigger influence on the ecosystem around them. From helping teams at competitions, to establishing FLL and FTC teams, to emphasizing the importance of being a family, we have gone above and beyond to maximize the impact of FIRST over the years. By progressively promoting free opportunities for our youth and creating new ways for children with disabilities to interact with the world, we will continue to change the game for everyone. Here, our unique students come together to build incredible things. We will continue to extend our wings over communities to form the next generation of Game Changers.