

FIRST Impact Award - Team 5816

2023 - Team 5816
Team Number
5816
Team Nickname
Gra-V Robotics
Team Location
Winter Garden, FL - USA
Describe the impact of the <i>FIRST</i> 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 <i>FIRST</i> programs as mentors/sponsors.
Gra-V's mission is to create an environment where students can discover new interests and develop hard and soft skills that will prepare them for the future. Gra-V and FIRST have ignited many students' passion for STEM on the team, leading 100% of our current members to hold an interest in pursuing STEM careers. Throughout our team history, 100% of our alumni have graduated high school with over 98% matriculating to post-secondary institutions across the United States.
Describe your community along with how your team addresses its unique opportunities and circumstances.
It's our calling to do our part to make an impact in any situation. By taking on partnerships, opening our build space, and hosting or running numerous events, we provide opportunities for everyone. Whether that includes helping make assistive technology, creating PPE to assist healthcare workers, or sharing our resources with other teams, we make sure everyone in our dynamic community is able to learn and experience STEM.
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 spread inspiration for STEM and the FIRST message via interactive robot demos at community events such as Synapse Orlando, Maker Faire, Otronicon, and more. Our involvement in our community helps us connect with young students to inspire them to connect with a FIRST team nearby. These efforts helped us see a 500% increase in recruitment after coming back in-person from the pandemic.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
Gra-V acts as role models by supporting and running FLL events and logistics. We act as referees, build materials, and set up the playing fields. In addition, we host pre-season workshops, inviting local FRC teams to our space to work together preparing for the following season. Partnering with FTC team 15065

A Byte Irrational, we show younger FIRST students the virtues of Gracious Professionalism by assisting them at outreach events.

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

This year we have assisted the rookie Brazilian team FRC 9045 North Lions with virtual awards and programming meetings as well as sending resource packets. During the 2022 and 2023 seasons we have hosted a Boys and Girls Club team, FRC 6473 RockStar Robotics in our build space, since their facility does not allow them to use machinery to build their robot. At our competitions we dedicate ourselves to provide parts and assistance to other teams.

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 participates in outreach events such as Maker Faire and Otronicon where we engage youth in hands-on projects to inspire them to take on their own projects. We also go to local schools to introduce them to FIRST and STEM. At these events we bring a past year FRC robot and Cratebot, a kid-friendly robot that kids can interact with . Because of our reputation and reach in our community, approximately 15% of our students joined Gra-V after these outreach events.

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

We continue to partner with the Maker Effect Foundation where we volunteer at the annual Maker Faire to broaden FIRST's reach to over 10,000 yearly attendees. Each year we partner with FRC team 1902 Exploding Bacon to co-host the FRC season kick-off with about 12 FRC teams comprising 200+ students/sponsors/mentors in attendance. After losing our build space in 2020, our team worked with Orange County Public Schools to grant us access to a new space, fostering a long-term partnership.

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 turns limitations into opportunity, keeping low dues to allow any student the availability to join. We take pride in our diverse family of over 74% of students from Hispanic, Asian, and African American backgrounds. By having a majority-minority team we strive to welcome minority students into FIRST and promote diversity in the STEM community. We foster female leadership on our team, and created the First Ladies Lead position, hoping to inspire female leadership in our community.

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

In 2021, we initiated a recruitment campaign to increase team numbers. Using social media, flyers, and digital platforms such as a new Gra-V link tree, we saw a 320% increase in membership, and this can continue to help spread our word for years to come. We highlight the events we participate in, which inspires people to get involved with our team. Attending the Space Coast off-season gives new students a taste of FIRST.

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

past 3 years

Training our students in grant writing, face-to-face presentations, and company/industry networking at outreach events enables us to candidly showcase FIRST, encouraging potential sponsorships. We have welcomed Leidos, Custom Metal Design Inc., Collins Aerospace, and Disney Imagineering to the Gra-V family this year. To engage our sponsors, we share monthly team newsletters, leverage social media, and host monthly sponsor days.

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

Over the past year we've prioritized taking steps to increase our presence in the Central Florida and FIRST communities. Over the past year, we have taken steps to achieve this by creating a social media division on our business team. We have created a plan for posting on a regular basis, using Notion to distribute media types and determine target audiences. Our efforts have proven successful, and recently we have seen a 1274% increase in accounts reached.

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

We expanded on our team's student leadership by adding the Director of Marketing and FIRST Ladies Lead positions. Our students develop confidence and communication skills by taking responsibility in creating connections outside of the team and leading robot design. The Gra-V ethos encourages us to take these skills and pass them onto the next generation of STEM leaders as we become alumni.

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.

Participating in Gra-V has given a couple of our students the connections needed to earn internships while in high school. Students gained the opportunity for a paid summer robotics internship earning basic robots training, receiving training certifications, and advancing in their professional careers. The creation of the Gra-V scholarship fund allowed the recipient to pursue her degree in biomedical engineering to build prosthetics, inspired by assistive technology work on the team.

Essay

FRC team 5816, Gra-V Robotics' mission is to connect our expanding community to STEM by breaking down barriers. Our team's family atmosphere and momentum are derived by fostering the core values of FIRST, Gracious Professionalism, Coopertition, and entrepreneurship. Our impact rings true through the hearts of all those who enter our build space, all those within our local community, and our family around

the globe, breaking down barriers because this is who we are!

At Gra-V, our number one goal is to allow any student the opportunity to receive high-quality STEM education. We do this by having \$150 dues, allowing students to travel with the team and gain access to experiences outside our local community. To further this notion, our new dues policy allows students to put 10% of the money they raised towards their fees. This, coupled with year-round meetings, opens doors and supports students in the Gra-V family.

Our team model gives students the opportunity to demonstrate leadership. Our student-led leadership structure consists of the President, Director of Business Management, and Director of Engineering. These positions are broken down into smaller subteams, allowing new students to learn from veteran members and providing us with mentoring opportunities to practice leadership skills and mentoring.

An important goal for us this year was to increase representation for women on Gra-V. Since the start of this season, we have doubled the number of women on the team. Also, we added the role of the FIRST Ladies Lead to our student leadership team to demonstrate support for inclusion.

A unique quality of Gra-V is the students that make up our team. Being a community robotics team brings students from across Central Florida, making our team consist of 33% homeschooled students and 66% from 6 different high schools. In addition, over the past 3 years, we have had 12 unique languages spoken at our build space. The team is proud to be composed of a diverse range of racial and ethnic backgrounds, with 26% Caucasian, 26% Asian, 16% African American, and 32% Hispanic/Latino. This representation of different backgrounds is celebrated and deeply integrated into our team's culture.

A core value of Gra-V is learning through hands-on experience. Students practice skills in CAD, programming, tool safety, and the engineering design process. Gra-V students also get invited to attend networking events and conferences such as the Synapse Summit and I/ITSEC to learn how to give elevator pitches and create connections. Students learn how to market a business by directing Gra-V's social media pages and websites.

Our team wouldn't be complete without our mentors; they guide us on our journey of discovering barriers to break down. Many of our mentors are FIRST alumni working in STEM fields, inspiring us to pursue higher education to advance our professional career paths. They support us by writing letters of recommendation, connecting us to scholarships, and sharing job openings. This creates opportunities to explore STEM leadership for greater innovation.

The COVID-19 pandemic was a challenging and pivotal time for Gra-V. We lost our build space and suffered a decline in membership. However, our students stayed passionate through hard times, partnering with one of our team sponsors, Lockheed Martin, to 3D print over 10,000 units of PPE for Orlando Health, Advent Health, and other essential workers. We continued to hold weekly virtual meetings, keeping our students engaged with grant writing and design skills to prepare for the next season.

A meaningful part of what makes up Gra-V is our commitment to immersing ourselves in our local community and STEM-related events. We have had 14 robot demonstrations since coming back in-person post-COVID. At events like Synapse and I/ITSEC, we gained experience presenting FIRST in a professional setting using networking and business skills. Looking to innovate, we created a QR code for

easy access to donations, potential partnership/sponsorship resources, and FIRST information, all via our team's link tree.

Our partnership with the Maker Effect Foundation opens doors to accessibility in STEM education in Central Florida. Volunteering at Maker Faire again this year, we made over 800 shirts, raising thousands of dollars to help support the foundation's mission. Our students also volunteered at the event by helping to run the FIRST, Make-a-Shirt, Steamroller Printing, and Mold-A-Makey booths.

Gra-V's dependability in the community brings us invitations to events at Northlake Park Elementary School, Lake Nona Middle School, the Triangle Fraternity, and more. We create relationships, partnering with a shared mission of getting people of all ages excited about STEM with hands-on learning. This year, we were able to revive our child-friendly demo robot, "CrateBot," to bring to outreach events, letting children ride and drive it as they learned about the mechanisms inside. Our team used this experience to demonstrate science and technology to people of all ages by explaining the dynamics behind electronic systems, code, and basic robot functionality.

Gra-V Robotics has had the privilege to work with ATMakers to develop the Freedom Wing Adaptor (FWA), which allows people with motor disabilities easier access to electronics. The adapter attaches to a motorized wheelchair and gives the user a joystick to maneuver devices like a computer mouse, drone, or even operate home automation equipment. Our programming team is working to develop future plans with the FWA to expand its uses into FIRST.

A massive part of how Gra-V interacts in the community is through the help of our sponsors. This summer, Gra-V students met with a local manufacturing company, Custom Metal Design Inc., to discuss a potential partnership. Students created a presentation, developed a speech, and negotiated with the company's Vice President for a \$1000 metal donation. This learning experience showed our students how to pitch ideas, communicate our budget, and create strong partnerships.

Gra-V uses the connections we share in the Central Florida community to further the mission of FIRST with other teams. We have hosted the FIRST kickoff with FRC team 1902 Exploding Bacon since 2018, where 12 FRC teams participate in season preparation workshops each year. Since 2021, we have run the FLL Challenge regional competitions in Central Florida, where we helped volunteer, build the fields, and hand out awards. Gra-V also leads the logistics for all Central Florida FLL competitions by ensuring that every event has the equipment and materials needed to succeed.

During the 2022 and 2023 build seasons, we have helped FRC team 6473 Rockstar Robotics by inviting them into our build space to use our equipment since their facility doesn't allow students to use tools. Since 2021, we have invited 4 local FRC teams to our pre-season workshops at our build space, where we teach the technical skills needed to prepare for the season ahead. We also extend our support to FTC 15065 A Byte Irrational, where we work together and help them with materials and technical knowledge when needed. Using our resources over the last 3 years, we have provided materials, tools, and guidance to teams at all levels of FIRST.

Competing in the Space Coast Showdown during the summer of 2022, we showed new students what FIRST and Gracious Professionalism means to Gra-V. We make it a goal to help out other teams in any way we can by lending parts or offering help in repairs. This season we plan on having a bumper station available for teams in need. Members of the Gra-V family volunteer at many FIRST competitions. At the

Tallahassee regional, we set up and took down the fields, helping load up the truck at the end of the event.

Our global impact would not have been possible without social media. Utilizing cross-platform posting and making use of tags, we have seen over a 600% increase in accounts reached in the past year. Furthermore, we work to encourage those within the FIRST community to spread STEM by participating in movements like #howdoyougp and the Black and White Challenge, a 5-day posting marathon; this spreads the word of FIRST and helps us create partnerships.

Our international efforts to support STEM education aims to bring FIRST's mission worldwide. During 2022, we partnered with Brazilian rookie team FRC 9045 North Lions to help them integrate into the FIRST community. Because one of our students is from Brazil, we were able to easily provide information in their native language. We host meetings and share resources about how to use FRC drive code, fundraise, prepare awards, and run a sustainable team. Since the start of this relationship, many of our students have gotten the opportunity to develop friendships with North Lions members and get a glimpse into STEM in Brazil. By expanding our reach globally, we can impact the teams as we are now and impact even more teams in the future.

Students on Gra-V use their languages and backgrounds to bridge connections. Last year at the Orlando Regional, a Turkish team had a language barrier, so a Gra-V student, fluent in Turkish, assisted them during the event. Last year our team attended the first International Ladies in FIRST conference, hosted by Turkish team 6025, the Androit Androids. This year we also attended the US State Department Women in STEM conference for the 3rd time, meeting women from different countries worldwide and sharing FIRST's impact on our lives.

Gra-V lights the spark of innovation by creating the next generation of science and technology leaders. As we expand our impact, we aspire to continuously break down barriers to enable anyone to embody the mission of FIRST, because that is who we are: Team 5816 Gra-V Robotics!

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