

Chairman's Award - Team 6831

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2020 - Team 6831

Team Number

6831

Team Name, Corporate/University Sponsors

Google / Insitu & Hood River Valley High School

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

Past FIRST participants have had success continuing their education in STEM-related careers. FIRST has led current and past students to connect with engineers in order to form strong relationships and provide internship opportunities.

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

During the last five years, the FIRST program has grown in both numbers and diversity within our community. We've seen an increase in the number of individual participants, the numbers of teams, and public support. Our community has been able to fund technology and infrastructure to make STEM more accessible to students who otherwise would not have access.

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

Our team has built a lab on wheels, the Fab Bus, which allows us to bring STEM to underserved populations in our community. The STEM Fair brings together the entire community for a celebration of STEM and FIRST. We also reach the Spanish-speakers in our community by creating bilingual content and even creating programs in Mexico.

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

We want to act as role models and inspire other FIRST teams by striving to always be active in the FIRST community through volunteering. Teams feel comfortable approaching us with questions when they need help. More students want to continue STEM in the future after seeing our success.

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

Coming from a small town, it is hard to have enough resources and people to have more than one FRC team. While we primarily work with FLL and FTC teams, our team plans to expand FRC to the neighboring town, the Dalles. We are working with the Gorge Tech Alliance to gather resources and support to start an FRC program in the Dalles to further spread FIRST.

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

We sent LEGO kits and an old game field to Mexico to introduce the idea of FIRST to their community. This is a continuous program, and the partnership we have started will last for years to come. We are starting from the ground up, which means it will take time. In addition, local FLL coaches feel like they can create new teams because they know they have the support of our team to help them.

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

As a team, we have been able to mentor a variety of other FLL and FTC teams. We take turns mentoring FLL teams in the Hood River Valley as well as FTC teams. We also host and volunteer at FLL and FTC competitions in order to support our local teams.

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 divide and conquer in order to annex the entire Columbia River Gorge. Since our team is diverse, we are able to connect with all students in our school district. From the orchards of the upper Hood River Valley to the downtown area that is the windsurfing capital of the world, we aspire to be active role models for FLL mentors, competition volunteers, and STEM teachers for future generations of FIRST participants.

Describe your Corporate/University Sponsors

Our unique location has allowed us to partner with corporations such as Google, Intel, Instiu, Collins Aerospace, and Cardinal Glass. While these large sponsors aided our program, small local businesses, Hogg & Davis, Hood Tech, Prigel Machine & Fabrication, Gorge Tech Alliance, and Power Design Inc. have donated time and resources as well.

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

Many workers from our sponsoring organizations volunteer as mentors for our team. We have developed strong relationships with workers at Hood Tech and Insitu. These volunteers assist us by donating their time to improve our robot designs, mentor our members, and run local FIRST competitions.

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

Merriam-Webster dictionary defines a cult as "great devotion to a person, idea, object, movement, or work." By this definition, FIRST is a cult indeed. We have devoted our time, resources, and intellectual curiosity to support FIRST and its core values. These core values have positively impacted our lives, and we want to share the joy that FIRST has brought us.

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

One of our most empowering accomplishments has been establishing the first Unified Robotics program in Oregon. This program partners FRC members with special-needs students to design, build, and program Sumo bots that later compete during the FTC competitions. We hope that this program will become as prominent as FIRST has become in our community and nationwide.

For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.**Team Captain/Student Representative that has double-checked this submission.**

Edith Soto

Essay

Picture a typical robotics room. A room filled with state-of-the-art technology, large windows, and air conditioning. This room is organized, and quiet music plays to help engineers and programmers work. Well, our robotics room at Hood River Valley High School, A05, is the exact opposite. It's filled with ancient Windows 7 desktops, and the only window is covered with posters to prevent the adjoining classroom from witnessing its chaos. Heat radiates from the classroom, as it is at least ten degrees warmer than the rest of the school from the hard work of both machines and students. Robot parts are stacked from floor to ceiling in the main room as well as in the storage closet we call the tool room. The clock on the wall holds members captive as it only ever reads 3:15. An odd mixture of 70s rock, bandsaws, and 3D printers blare down the hallway regardless of whether or not school is in session that day. Despite its flaws, this is the room we call home.

Created in 2017, A05 Annex, Team 6831, was initially 11 members. Since then, we have grown to a diverse group of over 25 members. A05 Annex is based in Hood River County, a small, rural area with a population of roughly 23,000. Team 6831 has prioritized breaking down the barriers that prevent students from participating in FIRST: a lack of transportation, a lack of community awareness, and a lack of financial support. Through the Gorge Fab Bus, our team has triumphed over these obstacles in our efforts to provide everyone with equal access to FIRST. However, Team A05 doesn't plan on just giving our county access to FIRST; our ambitious mission is to annex the world into FIRST Robotics by helping the underserved communities across nations. In this respect, we have already begun to reach across national borders.

In 2018, we increased the number of FIRST participants by absorbing members from ten different FTC teams from our high school into A05 Annex which meant annexing the small, dark corner adjacent to our school's woodshop. We quickly outgrew the space we call the "Annex" and began the hunt for a new workspace beyond our school campus with the goal of creating a sustainable FIRST program that could reach our larger community. Developing a sustainable team required more than just recruitment; however, the financial demands still needed to be addressed. We have broken this financial barrier by combining school funding with local business donations, thereby allowing any student in our school district to participate, free of charge, regardless of individual financial resources.

After receiving a \$50,000 grant from the Mills-Davis Foundation, we renovated a retired school bus by implementing high-tech equipment to create a mobile STEM classroom which allows us to break the transportation barrier and bring STEM to underserved parts of our community. The bus features laser printers, 3D printers, iPads, an FLL game field, EV3 robots, Spheros, and much more. The Fab Bus debuted at the 2018 Columbia River Gorge STEM Fair. From there, we collaborated with our district's Migrant Summer School to create a state-aligned curriculum and implement it in a classroom setting. Since then, we have created a variety of lessons that have been taught to over 700 students. Our bus has visited all five elementary schools within the Hood River County School District. We have also taken the bus to activities outside of student-related events to raise awareness and generate further support from community members. We plan to expand our audience to other Columbia River school districts in Washington State.

The annual Gorge STEM Fair is the ultimate celebration of FIRST. In June of 2014, a few FIRST students from Hood River Valley High School set up tables at "First Friday" for high school engineering students to present their projects to the community; this activity was dubbed the "Hood River Engineering Fair." The following year, the event took over an entire city block, featuring student projects, an FTC demo field, and a few tech-related businesses. Over the following years, the newly named "STEM Fair" continued to grow exponentially, featuring an array of STEM related activities as well as FLL, FTC, and FRC demos. In 2018, A05 partnered with the Gorge STEM Hub to organize the entire event. Currently, the STEM Fair is up to 50 booths ranging from activities such as robotics demos, electric cars, and virtual reality, and we expect to continue growing in the coming years. It is amazing how students, volunteers, and local businesses can all come together to participate in the ultimate celebration of FIRST.

After completing the first phase of our mission of introducing FIRST to the Columbia Gorge, it was time to begin the second phase of making FIRST more equitable. As we brainstormed how to create equitable access to the robotics community, the challenges surrounding the lack of accommodations for our school's Special Needs program within our school became clear. Since FIRST traditionally has not provided any resources to accommodate students with a diverse set of abilities, we took it upon ourselves to forge a program called Unified Robotics. In alliance with staff members and students, we developed the first Unified Robotics program in Oregon. We took the core values of FIRST which we take to heart and integrated them into a new program that would meet the needs of these differently-abled students. We started organizing and eventually created an enticing game that would establish a program and gain momentum in our community. Unified Robotics pairs FIRST team members up with students with intellectual disabilities to get them involved in robotics. These Special Needs students work one-on-one with a FIRST team member to create a Sumo bot out of LEGO Mindstorm sets. It has been so powerful to see FRC students and the community support these students as they participate in an event that was unimaginable at the beginning of the year.

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In addition to the lack of diversity in our school's Special Needs department, we noticed our robotics program does not accurately reflect the demographics of our school, nor of our community in general. As of 2018, the enrollment rate in our high school engineering classes was 23% non-white students, which is startlingly low compared to our school district of 49% non-white attendees. To solve this issue, we created bilingual STEM curriculums which functions in a traditional classroom setting as well as in the mobile Gorge Fab Bus. We teach kids at a young age that, regardless of the language barrier, they, too, can excel in STEM. Our first year at our district's Migrant Summer School we taught a total of 162 fourth and fifth graders. The following year we made it a priority to teach all 300 students enrolled in Migrant Summer School. We created flexible lesson plans to be inclusive of pre-kindergarten through seventh grade students, including ESY (Extended School Year) students as well. We taught the basics of programming along with the engineering design process. The most memorable interaction we had with the students was when we were handing out the certificates of completion in the end, and a student approached us with a big smile because, with our support, he had graduated. The Columbia River Gorge is fortunate to have a community that is supportive and active within the robotics program. Unfortunately, this is not the case everywhere. When we met two binational teachers from Zacatecas, Mexico, this problem became clear to us. The teachers we met were very interested in implementing robotics into their school curriculum, but their community lacked the resources to develop a sustainable robotics program. It is important to our team that regardless of location, everyone has equal access to succeed in robotics. So, we annexed Hidraulica, Zacatecas, Mexico into the A05 community by providing all the required materials—laptops, robotics kits, previous season FLL game elements, and bilingual engineering design process posters—to start an FLL robotics program in three elementary and middle schools. This is merely the beginning because as we know, it takes time to overcome these barriers to devise a sustainable program.

A05 knows that, in order to maintain the FIRST program in our community, we must represent the values of FIRST, which include gracious professionalism, cooperation, and embracing the spirit of volunteering. Many of our team members host and volunteer at events such as the Gorge STEM Fair, the Hood River Valley STEM Nights, FTC League Play, and the FTC Super Qualifiers. Our members also mentor three FLL teams and ten FTC teams in our community. Through active leadership in our school and community, we act as role models inspiring students across the Gorge to participate in FIRST.

Youth who have been through the HRVHS FIRST Robotics program are now engineering professionals in our community and are even returning to volunteer in and support our program. We currently have two full-time volunteers and four part-timers. A05 sponsors also provide internships for FIRST participants, allowing engineering experience to come full-circle. A05 actively seeks to partner with volunteers from local firms such as WAAAM, Google, Insitu, Gorge Technology Alliance, and Cardinal Glass. Not only do we receive financial support from these companies, but they also donate their time to help create a thriving FIRST program in the Gorge.

Sustainability is our goal as we annex the world. We are constantly working to maintain and develop our sponsor relationships both from a financial and volunteer perspective. We also work to recycle our robots and their mechanisms from previous seasons. With the Gorge Fab Bus and FIRST programs, we share FIRST and STEM with young people throughout our community and beyond. By sharing our love of FIRST, we are helping our community and A05 thrive in the future. Hopefully, one day, everyone will call A05 their chaotic home too.