

FIRST Impact Award - Team 115

2023 - Team 115
Team Number
115
Team Nickname
MVRT
Team Location
Cupertino, CA - 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.
100% of MVRT members graduate high school with 98% pursuing STEM fields in Post-Secondary Education. Students leave MVRT with experience not only in STEM, but also in Business, Marketing, and Finance through our Operations division, while also learning soft skills such as leadership, collaboration, organization, and time management. MVRT fosters well-rounded students, preparing them to take on engineering-based challenges in the real world.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Silicon Valley is a center of innovation in the STEM field. MVRT is grateful to naturally have a large community of students, parents, alumni, mentors, and sponsors invested in our success and the STEM field. We partner with large local corporations such as Google, Intel, and Polygence, not only to secure funding but to set up direct opportunities for our students to advance their careers. 1500+ MVRT alumni have pursued STEM careers in the bay area, creating an extensive MVRT alumni network.
Describe the team's methods, with emphasis on the past 3 years, for spreading the <i>FIRST</i> message in ways that are effective, scalable, sustainable, and creative. How does your team measure results?
Every year, MVRT reaches over 3000 people annually through demonstrations from local events like the Cupertino Rotary Fest to global events such as the Semiconductor Industry Awards. With our FLL, SiSTEM, CADology, Ohana/Eureka, and other programs, we target hundreds of students, hoping to inspire them to pursue STEM fields in the future. Advocating for STEM in our local government, MVRT has earned funding for new robotics resources for future generations with the passing of Bond Measure G.
Please provide specific examples of how your team members act as role models within the <i>FIRST</i> community with emphasis on the past 3 years.
MVRT's student liaisons spearheaded the research and fundraising efforts necessary to pass District Measure G101, a bond that included over 10 million dollars in funding for a new robotics center for the

benefit of FRC teams in our district as well as local teams. MVRT lends its knowledge to other teams through events such as the WRFF conference. Our team was also invited to the Semiconductor Industry Awards night to represent FIRST to major silicon valley corporations.

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

Over 25 years, MVRT has fostered a large FIRST community. MVRT has mentored over 25 FLL teams in the past 3 years, even providing mentorship experience to Team 670 through our program. MVRT has provided close assistance to over 15 local teams by lending our resources, machines, and mock field to them. MVRT publishes a plethora of online resources including everything from CAD training to our STEM symposiums for teams across the world to use and reference.

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?

MVRT hosts and participates in a wide variety of demos within our community including the SIA awards night. MVRT also has created specifically crafted programs targeting elementary through high schoolers, inspiring them to pursue STEM fields, also setting up opportunities with our sponsors such as Google for students to further their interests. We work to include all members of our community, even economically disadvantaged and special needs students. MVRT believes that STEM is for everyone.

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

With local business UStar Education, we have set up a partnership for our FLL program, providing us facilities as well as interested students while we provide mentorship and resources. MVRT has a deep connection with sponsor Polygence to set up our STEM Symposiums while also providing scholarships for students interested in pursuing STEM research. MVRT places sponsor logos on its shirts, robot, and website and provide sponsors with reports on our efforts, possible thanks to their generosity.

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

Within the team, MVRT has set up SiSTEM to help create a more welcoming environment for women interested in the team resulting in a 30% increase in active female members. SiSTEM pairs female rookies with veterans to provide them guidance and support not only on the team but through their high school careers as well. MVRT also holds STEM symposiums throughout the year, inviting speakers to bring awareness to the struggles of Women, LGBTQIA+, and Racial minorities in STEM.

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

MVRT utilizes our pipeline method. We reach out to young students through our CADology program, introducing them to STEM. With our FLL program, with almost 8 challenge teams per year. After FLL, students are invited to join our HeadStart program, a week-long summer camp to introduce incoming highschoolers to FRC. 80% of HeadStart students continue on to the team. 98% of our alumni pursue STEM careers, providing us a network of alumni mentors passing down their knowledge to future generations.

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

MVRT's strong community outreach and presence is well regarded by community and corporate entities, leading to a strong platform for sponsor recruitment. Thanks to our location, many team parents work in the STEM Field allowing us to reach out to new sponsors through our parent network such as Palo Alto Networks. MVRT sends donors event recaps, weekly updates, newsletters, and handwritten thank yous, resulting in long-standing partnerships (5-10 years) with 60% of MVRT's corporate sponsors.

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

A STEM-focused environment, the Monta Vista community and by extension MVRT has struggled to place emphasis on soft-skills and operational divisions. To combat this, MVRT promotes itself not only as a robotics club, but a club where individuals can learn skills such as graphic design, finance, and more. Encouraging members to join at least one engineering and operation division, our efforts have resulted in over 60% of active members participating in our operations divisions in some capacity.

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

As a student-led team, MVRT promotes responsibility and independence. Members are encouraged to interact and learn from mentors and alumni. We are dedicated to fostering a passion for STEM through team-based engineering challenges. Team veterans create and teach curriculum to rookie members. Furthermore, during the build season, team leads guide members through planning, building, and testing robot mechanisms, gaining hands-on engineering experience and leadership expertise.

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.

Over the past 4 years, MVRT has advocated to our local government the importance of Robotics and STEM. With the assistance of our fellow FUHSD robotics teams, MVRT has diligently researched and campaigned our community and our government, promoting FIRST, Robotics, and STEM along the way. Our efforts have secured over \$10 million in funding towards a brand new, state of the art robotics center for our district and community teams to use.

Essay

MVRT works to fulfill its mission of creating the "visionaries of tomorrow" today by participating in FIRST and inspiring students of every demographic through mentoring and community outreach. We stand

together as a family of diverse backgrounds, ready to face hardships and difficulties ready to use our ingenuity to achieve a common goal. MVRT builds and inspires the next generation of engineers and leaders and innovators.

Structure With over 190 registered members, 15 mentors, and 25 years of history, MVRT is one of the largest and most experienced teams in the NorCal area.

MVRT is split into two core branches, Operations and Engineering. Operations is comprised of the Outreach, Marketing, and Finance divisions, and Engineering is comprised of the Mechanical, Software, and Electrical divisions. Team members are encouraged to join a division in each branch, creating well-rounded students with skills in both operations and engineering ready to take on the real world.

A large team creates a large impact. Reaching over 4,000 people, assisting over 20 FRC teams, and pouring thousands of hours of dedication into the team and community each year, MVRT has fostered inclusivity and diversity in order to bring innovation to the STEM field.

Pipeline Jumping into STEM MVRT sustains our communities' connection to FIRST through a well-designed pipeline of opportunities into STEAM, designed to promote both innovation and FIRST principles to today's youth and alumni, beyond the team.

MVRT has reached out to elementary and middle school students through our CADology program. Over the course of 6 weeks, MVRT teaches students Computer-Aided Design (CAD) through TinkerCAD and Onshape, introducing advanced engineering concepts in a simple method. In the past two years alone, CADology has impacted over 230 students, with 72% of them joining MVRT's FLL program, the next step in the pipeline, and their STEM journey.

Building on the success of CADology, MVRT invites students to participate in its FLL program. Having mentored 26 FLL teams, and 200 students between 2020 and 2023. This year all our teams ranked in the top 10 in regional competitions with 7 teams advancing to district championships.

To introduce incoming high schoolers to FRC, MVRT hosts HeadStart, an annual weeklong summer program, providing students with a simulated build season. Students gain hands-on experience with not just designing, wiring, and coding a robot, but also designing effective outreach programs, budgeting funds, writing grants, and marketing their team. 80% of the 60 students who attended HeadStart, went on to join the team as rookies for the 2023 season.

From CADology to FLL to HeadStart, MVRT successfully lights up a path of opportunities into FIRST, energizing all to participate in FIRST.

Lasting Legacy MVRT utilizes its expansive network to maintain relationships with alumni and mentors to sustain the passage of knowledge to our younger members.

MVRT ensures to maintain strong sponsor relations, interacting with them in demos such as the 2022 Semiconductor Industry Association Awards Night. After helping Google restructure the APIs for their arm and beta testing Intel's RealSense camera, MVRT partnered with Polygence, a local company that has provided our students' scholarships and enabled them to pursue STEM and humanities-focused research projects. By fostering connections with our sponsors, alumni have a more direct path to engaging these

companies and joining the workforce.

Returning to the team as mentors, MVRT alumni continue the cycle of inspiring a passion for STEM in today's youth, motivating the next generation of MVRT to constantly innovate to find creative solutions.

Lighting Up Pathways to STEM In 2021, MVRT launched STEM4Kids, a program in which students from underfunded communities are taught basic applications of STEM skills over the course of a school year. STEM4Kids teaches topics such as Physics, Chemistry, and Biology as well as computer science languages such as Python, Java, and more. STEM4Kids has helped these students understand that a career in STEM is within their reach. Over the past three years, this program has reached 100+ schools impacting students living in underprivileged districts.

In 2016, MVRT established a lasting partnership with the Ohana club, enabling us to create a community for special-needs high schoolers looking to innovate in STEM. Students gain exposure to STEM in a hands-on manner through MVRT's monthly STEM workshops that include interactive lab activities. Through these workshops, the students are able to learn at a pace best suited for them and gain hands-on exposure to STEM.

Forming lasting friendships that help them exercise their interpersonal skills, STEM4Kids and Ohana target communities that are often overlooked in STEM, considering those with different experiences and capabilities as us and providing them opportunities to shine.

Shining a Light on Inclusivity After noticing a measurable drop in the retention rate of female and non-binary rookies on the team, MVRT initiated the SiSTEM (Siblings in STEM) program in 2016. This initiative seeks to provide support for female and non-binary rookies with the goal of making them feel welcome during their time on the team. SiSTEM pairs veteran MVRT members, "Big Siblings", with female and non-binary rookies, "Little Siblings". Returning from the pandemic, MVRT has worked to expand the program to ensure that Little Siblings and Big Siblings stay connected throughout the school year with monthly check-ins known as SiSTEM days in which the groups participate in fun bonding activities which build lasting relationships that transcend robotics. Today, our female and non-binary rookie retention has escalated by 85% from 2016, with over 40% of our leadership team comprised of female members, significant progress from only 16% in 2015.

Additionally, through our annual Diversity in STEM symposium, professionals from underrepresented demographics in STEM give presentations about their careers to community members. Over 150 individuals from Monta Vista and the Cupertino Community attend these symposiums. MVRT also works to illuminate equitable opportunities for the LGBTQIA+ and BIPOC communities through these symposiums, where we partner with the famous LGBTQIA+ protest group Turing Circle and the racial justice group Bias Busters. Throughout 2021, MVRT recorded and posted these workshops on Youtube reaching 553 people. By educating our members and helping them develop the necessary awareness to be inclusive members of the team, they go on to be inclusive and equitable members of the STEM field.

Resilience During the Pandemic In 2020, MVRT recognized how online learning made it difficult for special needs students to work on improving interpersonal and motor skills while making connections to concepts through hands-on experiences. Expanding on the Ohana program, MVRT created Eureka in order to help elementary special needs students gain a stronger foundation of STEM through hands-on learning during the pandemic using at-home lab kits. Eureka was founded with the goal of combatting

special needs students' isolation during the pandemic by creating a safe, nurturing environment where they could collaborate and interact with new peers.

MVRT collaborated with HongYun Art Academy, a small business struggling to recover from the pandemic, allowing for the creation of several art and STEM-based projects, such as building an interactive mirror. MVRT helped bridge the art community with the STEM community, inspiring HongYun students to find an intersection between their various passions. Similarly, MVRT partnered with UStar Education, a local afterschool center lacking teachers for their students, eager to learn about STEM. MVRT taught free FLL lessons while mentoring six teams of 10 students with UStar Education while inviting other FUHSD teams such as Homestead High School Team 670 to inspire them to start their own FLL programs. Through our collaboration, Hongyun Art and UStar Education were able to spread STEAM and FIRST to these creative students, while offering new creative classes.

Energizing FIRST Teams In order to help broaden facilities and resources for our FUHSD teams, MVRT partnered with the other district FRC teams to advocate for a district-wide playing field, ensuring funding through being included in the Measure G Bond. Building up to Measure G, MVRT led door-to-door walks in order to promote the passing of the legislature, has worked side-by-side with the superintendent for the past four years, and recently has been developing the site with the architect.

In 2016, MVRT alumni Lucas Tao set up a partnership between MVRT and the Taiwan-based World Journal Organization (WJO). Through this partnership, MVRT focused on exposing more Taiwanese students to the world of engineering by expanding the FIRST program in Taiwan. With the help of our program, over 120 Taiwanese students have been impacted thus far, and FRC Team 7069 - Taipei 101 was formed, the fourth-ever FRC team in Taiwan. Since then, MVRT has conducted two additional demos with WJO students, introducing over 70 Taiwanese students in total to engineering and FIRST. WJO brought 70 Taiwanese students to attend MVRT's HeadStart summer camp through 2020 to learn the core engineering and operational aspects of running an FRC team

MVRT, a Family MVRT has been promoting the FIRST message for over a quarter of a century and aspires to continue doing so. We embody our mission statement and FIRST's core values throughout our programs and partnerships. We are a family of individuals dedicated to fostering a passion for science and technology. We have changed the culture of our school, district, and community. We are MVRT. ;

