Chairman's Award - Team 4013

2020 - Team 4013

Team Number
4013

Team Name, Corporate/University Sponsors
Best Buy/Lockheed Martin/Walt Disney World Co Design & Engineering/MetaVR&Orlando Science Middle & HS

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

Students get hands-on experience in CAD, programming & machining, & hone responsibility & leadership skills. 100% of our members are accepted to college and our alumni have attended universities like GT, Duke, & MIT. Members intern with global companies like Northrop Grumman and P&G. Students are encouraged to ask questions & explore subjects that interest them to inspire a pursuit of learning. Above all, our members strive to build a family of Clockwork Maniacs.

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

As a result of our influence, our school has opened 6 STEM campuses in Central FL, increasing student population from 125 to 2,900. We assist a STEM club at our local library, have run a Boy Scout STEM merit badge event for 3 years, & host annual summer camps introduce elementary and middle schoolers to robotics. This year, we've held 14 demos in a range of locations to reach a variety of audiences. Our team has clocked over 9,000 hours of community service through year-round events.

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

To fulfill FIRST's mission to transform our culture, we engage audiences that are often left unaddressed. We started the District 5 Youth Advisory board to educate underprivileged youth & establish STEM programs. Our annual Down Syndrome Foundation STEM Day as well as our demos at GKTW and Dreamflight bring FIRST & STEM to new groups. We've also held demos & shared our experiences with international students & administrators from Iceland, Japan, Singapore, & India to promote FIRST in education.

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

Our members have directly mentored 45 teams and assisted countless others. We helped FRC team 6473 transition from FLL to FTC to FRC and last year, we transitioned 3 FLL teams to FTC teams. Through year-round events, our team has clocked over 9,000 hours of community service, showing to other teams that FIRST is about more than just robotics. Our alumni embody this spirit - six mentor FIRST teams and one was a 2015 World Championship Dean's List Winner.
Describe the team's initiatives to help start or form other FRC teams

Demoing our FRC robots at Otronicon for 6 years as well as I/ITSEC, & Makers Faire for 3 years sparks interest in the FRC program. After helping FRC 6473 transition from FLL and FTC into an FRC team, we presented tips, held a FIRST demo at a local Boys & Girls Club to help them recruit new members, helped with programming and mechanics, and provided tools and space to work. This year, we invited middle-level FTC teams we started to our FRC kickoff to inspire them to join FRC in the future.

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

We've started 38 FIRST teams through presentations, workshops, open houses, and demos, all of which promote interest in FIRST. Our STEM summer camps inspire elementary and middle schoolers to pursue robotics. After running a summer camp for 25 homeschool students, they started their own FTC team which has run for two years with our mentorship. This year, we've started 3 new FTC teams & rebranded 2.

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

We train teams via presentations & workshops to educate not only students, but coaches as well. Last year, we helped FTC 15064, 15065, & 15067 graduate from FLL to FTC, mentoring them through their past 2 seasons by sharing our workspace, tools, & skills. We have hosted 308 local and international teams in 29 FIRST events that we run, like FLL & FTC tournaments. While hosting these events, we encourage the students to journey further in their FIRST careers by sharing our personal experiences.

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)

When we host FTC Build-It Days, FTC Scrimmages and FRC Practice Days, we help mentor less experienced teams. We provide teams, such as FRC 6473 or our 3 new FTC teams, assistance with programming issues, access to tools, a workspace, and anything else they may need. Since last year, we have run FTC informational sessions for over 100 families at the beginning of each season to teach them the basics of FTC procedures & help teams register and apply for grants.

Describe your Corporate/University Sponsors

We appreciate the continued monetary contributions of our corporate sponsors Disney, MetaVR, & Best Buy - with their support, our team's gears can keep turning. Our sponsors provide more than just financial aid; we have a mentor from Lockheed Martin, & members from Fluid Power Society have helped us with pneumatics. Mill & Nebraska gave us a workspace for free for 2 years. Our school, Orlando Science, provides us with workspace, equipment, & outreach opportunities to represent them at events.

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

When our sponsors host events, we make it a priority to attend. We've held a FIRST demo at NASA's Dreamflight events the past 3 years, volunteered at Lockheed Martin's FLL tournaments for 2 years, and attended Lockheed Martin's E-week for 3 years. Every year we also demo for our school at public events like open houses and conventions. Our work with our other sponsors allows us to promote their events within our school and community.

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

FIRST is a global series of robotics competitions that aims to excite & introduce students to engineering. It's an opportunity for future leaders to learn skills & traits essential to being successful in their careers. To us though, it is more than just an educational program. FIRST gives us a chance to give back to our community & create a family of members & volunteers. It gives us a platform to positively impact people's lives by introducing & sustaining STEM programs.

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

To us, FIRST is more than just a competition - it's a platform for a new generation to learn skills that impact real-world industries. We run an Autodesk CAD certification center which has prepared 128 high students, over 85 of which will take the test this year. Members helped manufacture parts used to grow plants in the ISS through NASA's PONDS program. We work with occupational therapists to design diagnostic kits for disabled children & adaptive aids to make life easier for their patients.

For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.

Since our inception, we've expanded access to STEM & FIRST programs and improved quality of education in our community. We've changed our school culture & curriculum, inspiring the addition of an engineering program that teaches over 1/3 of our high school's students and the opening of 6 STEM campuses. We started 38 FIRST teams, mentored 45 & hosted over 300 teams in 29 FIRST events. Through outreach & media, we've reached 6.87 million people, & clocked over 9,000 hours of community service.

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

Avari Mallonee
Essay

Our world is ever evolving, with game-changing innovations shifting how we work, how we play, & how we live more rapidly than ever before. The education of today must prepare a new generation for the work of tomorrow that doesn't exist yet & cannot be clearly defined. This shapes FRC 4013 Clockwork Mania's mission - to push for new methods of education through FIRST to change our culture.

Clockwork's Maniacs come from a variety of ethnicities & backgrounds, making diversity a priority for us. Our team aims to introduce young women & minorities to the opportunities that FIRST provides. We start with a strong bond among our members; we are one big family, composed of dedicated alumni, members, & mentors. Our team structure emphasizes the role of student team leaders to focus on teaching & guiding newer members. Student & mentor led offseason workshops on topics like milling/machining, CAD, & assembly to prepare the team for the work ahead of them.

We use our skills beyond just building a robot through our 3-part outreach program, "Making the Clock Work". The first part of our program "Making the Community Tick" engages the local community with student run programs. The next part, "Meshing with Public Figures" collaborates with major media, political figures, & professionals in STEM fields to create self-sustaining STEM programs connecting to a larger audience. Finally, "Winding up the World" introduces, expands, & sustains STEM programs globally to inspire an international community of problem-solvers.

Making the Community Tick

Clockwork Mania is a well-known figure in our school's community & takes initiative to revolutionize our school's curriculum. After our team's relentless efforts, our schooled added an engineering academy, inspiring over 1/3 of our high school students to pursue an engineering track. We also run an Autodesk CAD Certification testing center which is preparing more than 85 students to take the exam before the end of the school year. This enriched curriculum has attracted students from 5 counties & grown our school's student body from 125 to over 2,900. The students that go through our robotics & engineering program experience great successes, including a 100% college acceptance rate & attendance to universities such as MIT, Virginia Tech, Duke, Georgia Tech, & Tuskegee. Our students also receive internships & job opportunities to companies such as Northrop Grumman, Procter & Gamble, VEI Systems, & Altec Industries. We spread this success through our state by influencing the opening of 6 STEM campuses - 3 elementary schools, 2 middle schools, & 1 high school - through presentations, such as the ones we hold for county school boards.

We also reach out to the local community by hosting weeklong robotics camps; many kids who attend, including dozens of current & former members, join a FIRST team afterwards. We ran a 10-week long STEM Club for 25 homeschooled students to expose them to a variety of topics, from simple machines to forensics. As a result, many of them applied to our STEM charter school & started their own FTC team. We've also made the effort to reach audiences that are often overlooked in our community. This year, we held our first annual Down Syndrome Foundation (DSF) STEM Day, where we introduced students from the DSF's high school club to a wide variety of STEM topics. For the past two years, our team has also taught & assisted classes at a local library where students are introduced to robotics & engineering concepts.

Beyond just inspiring the next generation of engineers, Clockwork Mania also helps sustain existing FIRST teams as a leading member in our local FIRST community. For the past 9 years, we've volunteered at & hosted annual FIRST events such as FLL & FTC Tournaments, FTC Judgement Days, FTC Practice Days, & FRC kickoffs. In total, we've hosted 308 local & international teams at 29 events! We've also started 38 FIRST teams & mentored 45 by helping them register & apply for grants & by providing continued guidance, resources, & access to our workshop. This May, we will be leading weekly classes for FTC teams we've started & mentored as well as a robotics bootcamp over the summer for incoming FRC members. This year, we've started 3 FTC teams & rebranded 2. We continue to graduate teams through FIRST program. Last season, we helped FTC Teams 15064, 15065 & 15067 transition from FLL to FTC last season and mentored them through the process. We have also helped FRC 6473 progress from FLL to FTC to FRC by providing resources & mentoring.

Meshing with Public Figures

In the past, we have attended & given presentations at school expos & conferences for education to explain what FIRST is & the importance of incorporating it into everyday learning. Partnering with District 5 Commissioner Regina Hill gave us the opportunity to create the District 5 Youth Advisory Board, a student-run committee who's input influences education within the District. We worked closely with Regina to spread FIRST & STEM in community events, such as the District 5 STEM Expo & Forever Family Christmas to low-income families. We have taught our local Boys & Girls Clubs as well as the Boy Scouts of America the fundamentals of FIRST, robotics, & engineering.
Clockwork takes initiative to attract political support for STEM Education to impact real-world policy. We've met with the Mayor of Orlando, Buddy Dyer, & Senator Soto multiple times to discuss the importance of STEM programs in the community. Our most recent interaction with Senator Soto was at our school, where we held an FRC robot demo & showed him our team's workshop. We've also met with Senator Bill Nelson & the Mayor of Lake Mary at the grand opening of our Seminole County STEM school, to introduce them to the FIRST program. We also frequently invite Orange County Public Schools Board members to tour our workshop & discuss the importance of emphasizing STEM in education. To attract engineers to FIRST, we've attended conferences like the Engineering & Construction Contracting Association Conference, Emmerson Exchange, & Association for Advancing Automation Conference. During these conferences, we have interacted with thousands of professional engineers from across the world to demonstrate our robots & introduce them to FIRST. We've also had booths at I/ITSEC & MakerFaire for 3 years as well as Otronicon for 6 years where we have interacted with over 153,000 attendees.

For the past three years, NASA has offered us a booth at an event dedicated to providing ill & disabled children from the UK the experience of a lifetime, Dreamflight. Interacting with the underprivileged children inspired us to cooperate with professionals for our project: "COGnitive Solutions". Through this project, we work with Occupational Therapists (OT) around Florida to design & manufacture equipment for them & their patients: equipment which most schools or organizations lack. We kickstarted our program by working with Tammy Bishop, an OT. She explained that she was not able to test children with the proper equipment & had to find ways to create her own. Our team fabricated & supplied her with a diagnostic kit which she now uses weekly. Using her feedback, we've improved the kit, sent her a new version, and have these designs available for future use.

More recently, we have explored the applications of 3-D printing to occupational therapy by collaborating with Keiser University's OT department. They were interested in using adaptive aids in their program, which are devices that make daily tasks like writing, eating, & even opening doors easier for people who have physical disabilities. However, Keiser's OT department did not have access to a 3-D printer or CAD. Clockwork has stepped in to design & fabricate aids to make their patients daily lives easier.

We have also worked with Positive Behavioral Supports (PBS) who tasked us with programming a therapy app for kids dealing with physical & behavioral disabilities. The app helps therapists monitor kids while also remaining subtle to avoid making the child feel uncomfortable.

Winding up the World

We network internationally to promote STEM education beyond just our local community. We have presented to members from the Ministry of Education of Singapore as well as students, educators & school administrators from Iceland & India to talk about FIRST & its importance in education. We've also interacted with students from STEM Schools in Japan that have visited our campus for the past four years. Each year, the Japanese students & our team exchange cultural & scientific knowledge before we provide a tour of our workspace, showing how our machinery & robots work. Within FIRST, we've established international connections, such as mentoring 2 Brazilian FLL teams through weekly Skype calls.

Our team has been featured on the local, national, & international news multiple times, such as article features in Latina Magazine & several local news segments about FIRST, our team, & our accomplishments. Two of our members have been featured live on a European news channel, talking about the importance of STEM & FIRST. Through our community outreach & media sites, our team has reached over 6.87 million people. This number comes from 4.2 million through magazines & newspapers, 1.7 million through television, 817,000 through direct outreach, & 149,500 through social media.

Our impact on our community is timeless, having clocked over 9,000 hours of community service. With 2 mentors recognized as Woodie Flowers Finalists & a member as a Championship Dean's List winner, our team always strives to serve as a role model team & exemplify the true meaning of FIRST. It is our mission to change our culture by introducing & sustaining STEM programs around the world to improve the lives of underprivileged youth. Because we know all the work we do amount to great things, we believe that even the smallest gear makes the clock work!