

FIRST Impact Award - Team 3932

2023 - Team 3932
Team Number
3932
Team Nickname
The Dirty Mechanics
Team Location
Boca Raton, 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.
100% of DM are HS grads & 97% attend college; 90% of alumni are in great STEM careers. Mentors train students year-round in HW & SW skills preparing them for STEM education. 50% of team are female students inspired to pursue engineering careers. Preparing confident leaders, sponsors provide 5-10 GLS & RYLA scholarships yearly for students to learn latest leadership skills. \$1M+ has been earned in FIRST partner & other scholarships & grants. 4 alumni are currently mentoring 3932.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Reached out to 10 local high schools & home schools without FIRST teams to develop a relationship for their students to join our community team. In 2021, worked with Rotary Club on their Digital Inclusion Initiative to provide access to the internet. We partnered with them to set up & program 600+ routers to be distributed to local disadvantaged youth without internet. During Covid, we started an at-home small robot car program for all members to gain programming skills.
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?
Represent FIRST in 9 yearly holiday parades, reaching 260K+ Demo robots & present FIRST at local events & schools to 8425+, inspiring involvement in robotics. Repair 200+ bikes to distribute to local charities, gaining recognition in non-profit & donor communities. Create/distribute 500+ PPE to 15 organizations nationwide during COVID. Wrench car magnets & stickers uniquely identify & brand us. We measure results by alumni success: college graduates, STEM jobs, & inspired as FIRST mentors.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
FIRST Inspiration Break - Provide inspirational notes & hygiene products in competition restrooms, website shares initiative for teams to also be "Ambassadors" Team volunteers/referees at FLL & FTC & FRC. Assist field setup & teardown at competitions. Assisted 15+ teams with robot & bumper repairs &

autonomous programming at competitions. Provide How-To videos & training on YouTube to share with teams (6000+ views.) Invite other teams to contribute to our cereal drive during off-season events.

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

Assist: Provide many FIRST teams with "How To" videos on our YouTube channel, 6000+ views for bumper construction, 3CIM ball shifter gearboxes, FRC Control Elements, Configuring Driver Station SW for any device, & electronics training. Assist teams at competitions with robot & bumper repairs, autonomous programming.. FLL teams also assisted by receiving advice from DM referees at competitions. Mentor: team members have mentored 4 FLL teams. Start: 2 local FLL teams created by team members.

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?

Reached 8K+ with robot demos. Demos at schools changed girls' view that robotics is "just for boys." Participated in local school's STEM days/nights & Cox Science Center demo - robot demos & allowing kids to drive robots. Seeing our team in parades, TV news clips, newspaper articles, website, social media or videos inspires recruits. FLL teams started & mentored encourage kids to join FRC. 30% of members teach coding to young kids through canCode & CodeNinjas & inspire them to join FIRST.

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

Worked with Rotary Club on their Digital Inclusion Initiative. Partnered with MCS charities for bike repair outreach. A mentor is on local HS Engineering Academy board. Stryker donates funds & an experienced mentor. Scholarships to RYLA & GLS donated by sponsors. Canon donated camera, printing, sponsors team & SFL Regional. iPi Soft donated animation licenses. St. Andrews School provides robotics lab & funds. Inviting FIRST teams to help, we collected 1500 lbs food & cereal for local charity.

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

Inclusive community 4-H team with students from 9 different schools & 2 homeschools comprising diverse backgrounds. No financial barriers to join team. Since 2012, female membership tripled & we maintain a 1:1 girl-boy ratio for the past 3 yrs. Current team leadership is all female. Male & female members in all functions. Recruitment events held at multiple high schools with diverse students. Currently working on a video project for FIRST Like a Girl.

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

Have kept 10 sponsors, 6 mentors for 10+ yrs. 3 full-time alumni & 1 part-time returned to mentor this year. Year-round program develops team skills & expertise. Wix is used for easy updates to website. Discord, Zoom, & Google tools used for task organization & communication. Recorded student training videos available for future use. Demos at local high schools, events, & organizations to recruit new students & sponsors. Annual RYLA & GLS scholarships teach leadership skills to team members.

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

Engaged with Rotary Club on their initiative to set up & program 600 modems distributed to disadvantaged youth. As sponsors Innovaxe & Canon have struggled to find skilled employees, we've connected them with 15 of our members/alumni for internship & job opportunities. Students are empowered to obtain sponsorships directly. Sponsors are updated on our progress & events throughout the year. Website includes [Become Sponsor] button.

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

During COVID, students lacked hands-on experience & felt disconnected. We created a Robot Car Program which developed software skills in 100% of our members. Recorded our Zoom skill training workshops in a variety of software tools & electronics to grow team skills. Met in small, safe groups to work on Infinite Recharge at Home. Utilized Discord for communication & social interaction. Our next goal is to increase communication with families while maintaining youth protection protocols.

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

Year-round community FIRST program offers students STEM & soft skill training. Apply FIRST skills to better our community with Rotary Club Digital Initiative & MCS Bike Repair outreach. We volunteer at FIRST events & assist teams to code/fix robots & bumpers. Continue FIRST Inspiration Break initiative. We share our "How To" videos on YouTube. Sponsors award 5-10 leadership training scholarships per year. Alumni earned \$1M+ in FIRST partner & other scholarships/grants. 90% of alumni are in STEM.

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.

40 notable achievements: Participated at 3 World Championships Dean's List Award Winner 3 Dean's List Finalists 2 Woodie Flowers Finalists Regional Awards: 2x Champion Alliance Engineering Inspiration Award qualifying for 2022 Championships 3rd Alliance Captain 3 Entrepreneurship Awards Razorback Hall of Fame Volunteer of the Year award 3rd Place Infinite Recharge At Home & Autonomous Award Zinc Judging Group Over our history, we have participated in almost all competition Quarterfinals

Essay

CHARGED UP FOR THE FUTURE!

CHARGING UP THE COMMUNITY 3932 was founded in fall of 2011 to connect our Palm Beach County community to FIRST. When a local school team disbanded, families sought new teams for their children. Met with few options, the families formed their own community 4-H team. As we grew, Saint Andrew's School kindly sponsored a stable base for our team to charge up our minds & prepare our members for "bright futures." Our goal is to develop capable young technical leaders through hands-on experience to prepare them for continued STEM education after high school. Keeping STEM accessible to all high schoolers ensures that every student has the skill, experience, & tools needed to have a successful future!

ACCESSIBLE ENERGY Just as accessibility is central to the impact of energy on our lives, it is key to Dirty Mechanics' mission. 3932 strives to make STEM available to all who are passionate about robotics & STEM. To maximize our reach across the community, we draw team members from 8-14 schools & home schools across the area each year. At Dirty Mechanics, no student is turned away because of a lack of experience or financial barriers. Our team draws its power from our 20 sponsors & motivated mentors. Our community of sponsors ranges from technical companies like Stryker Robotics to the marketing powerhouse of a realtor, with many supporting us for over 10 years. This combination of donated parts, machines, supplies, & funding allows our team to remain efficient & low-cost to team members. To keep the power flowing, we are guided by a team of all-volunteer mentors who dedicate their time and experience to teaching & empowering the next generation of engineers. Each mentor cares deeply about the FIRST mission & uses FIRST Core Values to foster the team's cohesive dynamic. Just as sustainable energy initiatives are not limited to one neighborhood, neither are we. We not only cater to future engineers but connect to the entire community. Promoting FIRST through parades has spread awareness of STEM & FIRST in our community, reaching 30,000 people per year. For the Boca Holiday Parade, we march with robots to the delight of our community. We have won 1st place Walking Group since 2018. 3932 partnered with our Rotary Club sponsor on their Digital Inclusion Initiative to energize internet access. We set up & programmed 600 routers to distribute to disadvantaged youth in our community schools. We were honored to be recognized for our work in our community with the Engineering Inspiration award at Bayou Regional which qualified us to go to the 2022 Championships.

SUSTAINABILITY Robotics teams need to stay charged up & motivated to preserve sustainability. Engagement with FIRST throughout the year is critical to our team. With our year-round program, we continuously train new team members, enabling them to learn from our mentors & experienced team members. This emphasis on year-round training wires us to update our skills & knowledge to maintain our team as an excellent alliance partner & competitor. During COVID, team 3932 used the extra time to invest in our team. Like the switch to sustainable energy –the switch to a virtual world took time & didn't immediately pay off. With over 2,000 hours of Zoom work & training sessions, we kept our team engaged & learning. In the summer of 2020, we started our at-home robot car program. It taught every 3932 student object-oriented code in Python & Java languages. The time invested in learning skills, completing all 2020 FIRST challenges, & creating training videos alongside updating our website & YouTube channel was extensive. We also polished our presentation skills for our virtual challenges & Chairman's Award. We created an entirely new branding guide as well as social media guidelines to keep our energy flowing out to our community. Currently, our 2:1 student:mentor ratio plugs in personalized training for students in both foundational skills & advanced robotics. Mentors lead classes on wiring, soldering, FRC control elements, & etc. We also have several student-led 3D rendering & Java video tutorials accessible by team members throughout the year. The junior members learn tips & tricks with machining, electronic mapping, vision software, & CAD skills directly from mentors & experienced members during the off-season. These investments paid off in an incredibly rewarding way. All members

showcase their abilities through off-season competitions such as Space Coast Showdown & Pirates Pillage. This gives new 3932 members a preview of FIRST competition experiences.

CHARGING UP FIRST To further ensure sustainability, we are committed to teaching the next generation of South Floridians so that there will always be future Dirty Mechanics! We inspired our sponsor, St. Andrews School, to create FIRST FLL & FTC programs so students have the skills to join our FRC team. On our Youtube channel, we post how-to videos on building 3CIM Ball Shifter Gearboxes, Beater Bars, as well as robot bumpers to instruct the FIRST community. There are nearly 6,000 total views of these videos! In the past two years, our 3932 students have educated over 220 children in STEM & FIRST. Team members Eva & Rebecca have started & mentored 2 FLL teams, with one that is currently competing at the regional level. Team member Sienna has created & taught Code Ninjas Robotic classes that have taught over 180 middle & elementary school kids FLL robotics. Our members support FLL by mentoring & volunteering at local, regional, state & out-of-state levels. Similarly, team 3932 mentors, parents, students & alumni alike have volunteered with FRC Field Setup, Admin & Announcing, Robot Inspection, Safety Glasses, & Robot Queuing at regionals the team has attended –totaling over 70 individual volunteers over the years. We developed our FIRST Inspiration Break initiative with FIRST's positive mental health & the "#IAMoreThan" initiative in mind. At competitions, many have their minds on robots, not themselves. We want to remind people mental health is equally as important. So 3932 gives fellow competitors a "FIRST Inspiration Break." We stock baskets of personal hygiene products, deodorants, hair ties, mints, etc. in competition restrooms. We decorate restrooms with fun uplifting quotes to inspire & encourage everyone to "Keep Calm & Wrench On!" This initiative is shared on our website so that any team can also be a "FIRST Inspiration Break Ambassador." Local STEM outreach demos are a staple of Dirty Mechanics. Each year, students & mentors travel to community schools, promoting FIRST & expanding STEM. We advance FIRST spirit to engage yearly in local public school open houses & community events, reaching & spreading FIRST to over 8,300 people. For example, in 2021, we traveled to the Verde Middle School STEM day where middle school students were introduced to FIRST robotics. They excitedly drove our robots around their school courtyard! In 2022, at Cox Science Center, we demoed our robots to intrigued kids & parents. Members of 3932 not only secure team sustainability through their hard work but also confirm an energized future! 100% of team members graduate high school with 90% enrolled in engineering fields of study. Members of 3932 have won full college scholarships, FIRST Partner Scholarships, & college grants which total over a million dollars. Graduates have been hired to work at prestigious companies like Tesla, Amazon, Leidos, Regeneron, etc. Four alumni are currently 3932 mentors. Many alumni return for our big FIRST kickoff event.

ENERGIZING THE COMMUNITY We worked with Morningday Community Solutions on a bike repair initiative, using our mechanics' skills to fix broken bikes. Over 200 repaired bikes were distributed by the charities in our community. Our efforts earned 3932 & FIRST recognition in the non-profit & donor community. This student-led project helped 3932 hone their mechanical skills, spread the ideals of FIRST, & have a positive impact on the community. During COVID, we 3D-printed over 500 PPE "ear-savers" to give to 15 healthcare organizations nationwide. Both in & out of the workshop, we are constantly innovating new ways to augment the impact of STEM. This has led to rewarding experiences for our team & positive contributions to our community. These effects are similar to the ones that will be seen as society works to augment the impact of sustainable energy. Volunteering at youth outreach organizations such as canCode is another way we spark student involvement in STEM. One-third of 3932 members have partnered with the non-profit organization canCode to teach 400+ underprivileged children to code at 9 community centers. Team members collaborated to create 10 engaging curriculums for canCode students. Additionally, our team has donated nearly 1,500 pounds of food & cereal from our

yearly food drives to a local charity, Boca Helping Hands. We have spent over 200 hours volunteering for this cause. We have invited other teams to join our cause during off-season competitions to increase our cereal drive collections.

MODERNIZING POWER 3932 inspires young visionaries to be confident STEM leaders by engaging them in meaningful programs to build science, engineering, & technology skills. Our creativity & hard work sustained our team during the pandemic, catapulting us to become more technically proficient, revolutionize our branding, & transform into stronger leaders. Leadership, Innovation, Communication, & Coopertition, our goal: electrifying our community! ;

