

FIRST Impact Award - Team 1710

2023 - Team 1710
Team Number
1710
Team Nickname
The Ravonics Revolution
Team Location
Olathe, KS - 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.
Team 1710 teaches members technical, organizational, and social skills that help prepare them for future careers in STEM and beyond. In the past three years, 100% of team members have graduated high school and attended college. Of those, 92% have majored in STEM-related fields, with alumni working at companies such as Lockheed Martin, SpaceX , and Boston Dynamics. Several have returned to FIRST programs as mentors, sponsors, team coaches, or even team founders.
Describe your community along with how your team addresses its unique opportunities and circumstances.
Olathe is a melting pot of a community, and we strive to celebrate and accommodate the diversity in our area. Of 82 languages spoken in our school district, Spanish is the most prominent, so this year we translated our outreach advertisement to Spanish in order to serve the lingual needs of our community. We also seek to provide for the underserved population by making our outreach accessible to all and volunteering to assemble school supplies for those who can't afford it.
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 empower the future of the students in our community by hosting outreach events and making team social media posts. We host an annual summer camp for kids in grades 3-8 with an FLL game and a winter workshop that teaches the attendees coding. We measure results through the feedback surveys we receive from parents and attendees. This feedback allows us to improve and evolve our programs to better impact the community by partnering with groups like the Black Student Union and Special Education.
Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.
Our team members are role models for FIRST teams throughout the area. We have multiple students currently on the KC STEM Alliance advisory council, students who volunteered at the FLL Championship

for our region, and mentor other teams. In addition, we regularly share our knowledge with others on Chief Delphi such as our swerve code and bearing strategies. There are a few students who have been assisting a rookie team from Brazil as they navigate the build season before joining us at a regional.

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

A recent initiative that our team founded in 2022 is called Robotics Outreach Pipeline for Everyone (ROPE). In our ROPE initiative we are working with the Kansas legislature, to allocate 8 million dollars to start FLL, FTC, and FRC teams in the state of Kansas. Over the last several years, we have started 13 FIRST teams and we are striving to spread FIRST with everyone. We have supported Team 9085 from Brazil in their rookie season. Team members mentor multiple FTC 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?

Annually we host Winter Workshops and Summer camps. Students build, design, and program SPIKE Prime robots, competing in an FLL style game we create. We also host an annual You Go Girl Workshop, introducing girls to STEM and showing them there is a place for them. We conduct a survey before and after the workshop asking the attendees if they see themselves entering a STEM field in their future. The before and after survey showed a significant increase in interest in STEM careers.

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

Team 1710 has made several partnerships with organizations both in our community and around the world. We're working with our state legislators to further FIRST by starting FIRST teams in every public school in the state. Through our FIRST Fund and FIRST Exchange programs we've donated money and shared spare parts with several teams across the nation. We've held fundraisers and LEGO drives to donate LEGO sets to children at Children's Mercy Hospital and Kids TLC.

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

Our You Go Girl and Rainbow Alliance initiatives were created to address the equity, diversity and inclusion opportunities in STEM. Through our valued partnerships with Special Education students, the deaf community, the Black Student Union, and the underserved community, we bring STEM to groups that may not have access. With Special Education we do quarterly STEM activities. Beyond our partnerships, we promote these values through our consistent social media presence.

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

One of the ways our team remains successful year-to-year, is through extensive documentation of procedures our subteam leaders share with the rising leaders. Our leaders teach others, encouraging strong knowledge retention by investing in underclassmen. During the season, we encourage subteams to provide opportunities for members to lead various projects. Both of these prepare leaders for the next season and ensure we transition smoothly between years.

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

Our team uses SWOT analysis to enhance our funding strategies. One way we recruit new sponsors is by giving formal business presentations. We also connect with local companies. Another way that we retain sponsors is by keeping them engaged with a newsletter so that they know what we have been doing and how we have been using their donations. In addition we created a tier sponsorship system.

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

Our Rainbow Alliance initiative is one area that could use improvement. Rainbow Alliance promotes inclusion among LGBTQIA+ and BIPOC individuals. We promote diversity with posters, buttons and an annual diversity video. We plan to further spread awareness by giving presentations and handing out informative cards at competitions. We increased the number of social media posts to raise awareness for important events such as Black History month and Transgender Day of Remembrance.

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

Our team aspires to spread STEM to every part of our community. We've helped found various teams, and through our FIRST Fund program we help teams with monetary support by sharing financial practices. We have also facilitated the exchange of parts between FIRST teams through a new program called FIRST Exchange. We have initiatives called You Go Girl and Rainbow Alliance, where we seek to empower those from historically underrepresented and marginalized demographics to pursue STEM fields.

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.

Three things that set us apart from other teams are that we are student-led, self-sustaining, and have a corporate team structure. Our team is structured in individual departments focused on Design, Build, Programming, Media, Graphics, Outreach, Finance, Informatics and Initiatives. We pride ourselves on developing student leadership - all of our sub-team leaders are students. Additionally, Team 1710 is financially independent, relying on sponsorships and fundraising efforts to support our team.

Essay

Team 1710 empowers the future. Through the ways we further FIRST - by expanding and encouraging current teams, our equitable initiatives, and our many outreach efforts we empower others to join STEM.

Team 1710 is on a mission to put a FIRST team in every elementary, middle, and high school in Kansas. We are working with the Deputy Director of Commerce for the State of Kansas to allocate funds to enable every school to have an FRC, FTC, or FLL team, which could equate to as much as \$8,000,000 for robotics education in our state. This exciting expansion of STEM opportunities will help fill the STEM pipeline for our state and is a continuation of our preexisting Robotics Outreach Pipeline for Everyone (ROPE) program, which is our initiative to increase the number of FIRST teams.

We've learned a lot about financially sustaining a team over the last 18 years. To help other teams, we established FIRST Fund, a grant program to provide up to \$500 to teams who express financial need. To make this possible, our team raises funds for grants outside our own operating budget each year. Through FIRST Fund, we provide teams with a copy of our financial handbook, which contains budgeting and fundraising strategies so that they can become self-sustaining. Last year this program helped make it possible for Idaho-based Team 8546 to travel to the FIRST Championship in Houston. Teams from across the world applied for the program this fiscal year and we have already approved our first two grants for this season. One team is from just outside of New York City and the other is from Mexico, both consisting of students from families of financial need who will use the \$500 grant toward their robot build.

Two major obstacles for FIRST teams are obtaining parts and implementing sustainable practices. To solve these dilemmas we created FIRST Exchange — a website allowing any team to post spare parts for others to claim. Its goal is to mainstream the exchange of lightly used parts in a convenient and cost-effective way, only asking recipient teams to pay for shipping. Last year, several teams were able to successfully trade parts, including one exchange between teams over 500 miles apart. Considering the demand from our pilot season, we are improving the user interface and security, and it will be rebranded as: RavonEx. Our home state was recently ranked lowest of all 50 states in the US by Mental Health America's comprehensive measures, and this crisis has personally affected our community. In past years we've experienced loss on our team and to help us heal we began You Are Not Alone (YANA): an initiative dedicated to supporting and destigmatizing mental health issues while providing resource awareness. During the COVID-19 quarantine, our team led a social media campaign with other partnering teams to share coping strategies, reaching over 47,000 people with our series of posts. Additionally, throughout the build season, tension and stress can increase, so we implemented "Mental Health Hours" to promote coping methods and relaxation for the team members. These effectively ease tension through sports, meditation, and board games. One team favorite is painting happy little trees with Bob Ross. The open, creative time is always a fresh brain-break from robotics work. In prior years, we partnered with the Sources of Strength organization, and our school's Diversity Leadership Club (DLC) to host a mental health speaker at our school. We are working to host similar events this year to extend healthy mental health practices to others in our school and community. This year, we partnered with the Director of the Johnson County Mental Health Center, and invited him to speak at the Heartland FRC Regional to teach our community about the 988 hotline. We make it our job to ensure everyone knows that they are valued, heard, and that there are outlets to get through every struggle. We truly believe that You Are Not Alone.

A few years ago one of our team members was treated for Leukemia at Children's Mercy Hospital, revealing the lack of normal childhood opportunities for children in long-term care. In collaboration with Children's Mercy Hospital, we realized LEGO sets are the perfect toy to engage with this demographic in a fun, STEM-related way. Thus, we began a LEGO drive, marketing at school, competitions, and through social media. Last year this mission came full circle when one of our team members' siblings received a

LEGO set from our drive during their stay at the hospital. We are projected to collect and donate a total of over 200 LEGO kits this year, bringing our total to 500 LEGO kits over our 3 years of doing this LEGO Drive. This year we expanded our donation partners, and included Kids TLC - a program that helps kids who are in foster homes, families struggling with mental health issues, and domestic abuse victims.

Rainbow Alliance is our initiative to promote the inclusion of LGBTQIA+ and BIPOC individuals in STEM fields. We make posters and buttons that we distribute at competitions, along with creating an annual diversity video. We also create social media posts to acknowledge important months, such as Native American Heritage month, Pride month, and Black History Month - reaching over 5,500 people. We have presentations about allyship and inclusion of LGBTQIA+ people, which is transferable to most facets of diversity. We believe that inclusion is important on our team and in STEM as a whole because STEM is essentially responsible for guiding the future, and we can't expect to build a future for everyone if we don't include everybody in those conversations.

STEM fields - engineering in particular - are notoriously male-dominated, but our You Go Girl (YGG) initiative aspires to change that by empowering women, and encouraging them to pursue STEM. As our oldest initiative, it has taken many forms over the years. Research suggests that girls lose interest in STEM in middle school, so we host annual workshops to inspire continued STEM interest focused on this age group. During our last YGG workshop, we hosted middle school girls, and taught them fun STEM concepts. At the start and end of our workshops we measure their interest in STEM and our survey indicated a significant increase in STEM career interest. In addition to our YGG workshop, we create posters and trading cards of girls on our team, female professionals in STEM, and historically significant women in STEM. One of our most recent activities we have done with girls is a Girl Scout event/workshop at a local elementary school. At this event we helped them learn how to code with SPIKE Prime Robots and taught them problem solving skills.

Outreach is a priority on Team 1710. We dream of a future where everyone can experience STEM. Each year our team reaches well over 100,000 people while forming meaningful personal connections with 2,677 people through hands-on outreach events. All team members contribute to outreach, volunteering a combined 2,500 hours over roughly 60 events; we estimate that the average team member will have completed approximately 50 hours of outreach by the end of the year. We personally develop, plan, and execute each of our events including hosting an FLL qualifier each year, with 16 teams attending this year. Each year our team welcomes elementary and middle school students into our facilities for 2 week-long camps where we teach engineering design and coding principles primarily through our own variation on an FLL styled game. This year we created a game called "Aquatic Adventure" which features eight unique challenges that progress in difficulty. Students learn how to operate SPIKE Prime robots. We also teach them how to code with P5.js line code or Scratch coding. Additionally, we endorse inclusion in STEM throughout our community. This year our team has made diverse partnerships with groups such as our school's Special Education department and Black Student Union. We translate our event advertisements into Spanish to better accommodate for the lingual diversity in our community.

Just as we continue to expand our initiatives and outreach programs, we also continue to develop our organization system. We noticed a problem with organization - or lack thereof - of robot parts. When certain important pieces got lost, it caused frustration, requiring unnecessary money and time to remedy the situation. To address this, we did an extensive organization makeover to sort and label every item we have for a new inventory system. We created a digital system for keeping track of this inventory information in Google Sheets using the Google Apps Script. We update our new inventory daily and have

seen significant change in productivity and cost efficiency.

Safety is a very important part of a robotics team. Team 1710 ensures that members using machines are well-trained. Our team easily identifies who is certified in each machine through our washi-tape method. We mandate proper machining attire for those in the shops. We create safety videos that we upload to our YouTube channel in order to teach others how to use these machines safely. Our team puts up posters and hands out buttons and comic books at competitions. Our team members are trained on how to do CPR in case of any emergencies.

Many alumni work as engineers, some at companies such as SpaceX and Lockheed Martin. We keep in touch by inviting them to major team events such as our team showcase and through a monthly newsletter. This newsletter contains updates on our robot and team projects along with subteam highlights. Our alumni give back to the FIRST community by mentoring and volunteering at FRC competitions. Our alumni have had a profound impact on our continued legacy of traditions and learning that contribute to our success.

Team 1710 works diligently today in order to empower the people of tomorrow. ;

