

FIRST Impact Award - Team 8711

2023 - Team 8711
Team Number
8711
Team Nickname
The Midnight Ostrich Runners
Team Location
Broken Arrow, OK - 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.
While this is only our second year to compete in FRC, our team has been active in FTC since 2016. During our Rookie season in FRC we had two alumni from the previous season return and volunteer at the Oklahoma Regional & the Green Country Regional while taking college classes. At season end, we had three seniors graduate from the team, all are now in college, one is working toward her biomedical engineering degree and the other two are working towards mechanical engineering degrees.
Describe your community along with how your team addresses its unique opportunities and circumstances.
We are a community-based team that works out of two cubicles in the offices of our primary sponsor, Sisu Energy & Environmental. The students on our team come from different backgrounds & various schools that do not have in-house FIRST programs. Our meeting area is on the 10th floor of an engineering office & the team lives in the inner city & surrounding suburbs across Tulsa County. While the team is not together at school every day, working outside of school rules has advantages too.
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 maximize our efforts at events with high concentrations of interested people. Maker Faire, Tulsa Air & Space Museum, & Scout Badge-a-thon events have opportunities to reach folks that are already interested in robots. For others, we get creative with attractions like ToolBot, the roving tool box, & BubbleBot, with a bubble machine, air horn, & laser light show. We think FIRST Rocks & our painted rock campaign is designed to reach people at random through a social media rock hunt.
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 volunteers at FLL qualifiers, championships, & festivals. We help set-up & tear down at FTC & FRC competitions. We provide instruction to other teams at kick-off events & on an individual basis to help them through technical & non-technical issues. We provide parts & monetary support to teams less

fortunate than ourselves. We share FIRST with our community. We don't do these things to win awards. We do them because they need to be done & we have fun doing them.

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

We love FLL & we assist many teams each season. We mentor three Lindbergh Elementary teams & this year we ran Windmill Day where 22 teams built functional windmills to spark project ideas. In FTC we present technical information at kick-off each year, provide parts & technical assistance to teams in need, & this season we provided over \$300 of electronics & wheels to a rookie team in Kazakhstan. This season we donated \$1000 to FRC team 3507 for registration & we started FRC team 9007.

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?

We have run summer robotics training camps, provided attractions at after school events, & run sessions to help boy scouts & girl scouts earn their robotics badges. We volunteer as referees & judges at FLL events across Oklahoma & the Kansas-Central regions. We recently recruited two new members to our team because they witnessed our efforts in FLL over the years and wanted to be a part of our solution. We often receive thanks from coaches and members of other teams for our work.

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

We have presented at Tulsa Maker Faire since our team was formed & have been recognized as a Maker of Merit by the Tulsa FabLab that runs the annual event. We have a relationship with the Tulsa Air & Space Museum that allows us to use the facility to run events like FLL-Explore Festivals & in return we present at fundraising & promotional events to support their efforts. The Oklahoma Science & Engineering Foundation is the FLL PDO & we build field kits & Championship trophies each season.

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

We have always been a diverse and inclusive team. Our members come from a variety of ethnic and economic backgrounds across Tulsa County. We have found over the years that we do not need to seek out diversity as long as we are open and inclusive to anyone that wants to join our ranks. Our actions in our community demonstrate teamwork across culture, race, & sex. It is our goal to promote a positive image to our community by maintaining an inclusive environment of equality within our team.

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

Our team culture is designed to promote a tradition within the team where the most experienced members mentor new teammates to pass along the history of the team as well as the initiatives that we have established. To ensure that these traditions are not lost, we have implemented a documented ceremony & celebration to enhance their value & spirit. New team members do not receive their hat until they take The Midnight Ostrich Runners Pledge at their first competition.

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

past 3 years

We understand that our sponsors need to be recognized. At championship last season we sought out the folks working with DoD STEM to tell them how much we appreciated their support. We invited them to spend some time with the team and as a result, we have been featured in several of their social media posts to promote their involvement with FIRST. For our local sponsors, we provided cookie & cupcake trays to express our appreciation. To recruit new sponsors, we started a letter writing campaign.

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

As a community-based team without a central pool for recruiting as can be found in school-based or organization-based teams, we have found it to be difficult to recruit new team members, especially through the dark COVID years. Most of our outreach efforts result in helping students find teams that are operational in their own schools or to support the formation of new teams. We have recently started approaching community-based FLL teams with members that are aging out of FLL as a source.

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

It is our mission to spread the vision of FIRST through the science of fun in order to create a better tomorrow that is just a little less stuffy. We work towards this vision with every outreach event by making attractions informative & entertaining. Using FIRST style show bots that blow bubbles, toss wiffle balls two stories into the air, or let kids drive LEGO machines via Bluetooth tablets, we attract attention & provide guidance for parents & potential coaches so they can know FIRST.

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.

The Midnight Ostrich Runners was formed to fill a void in our community. It is based soundly on the belief that in the long term, this has to be fun, or nobody will want to do it. This is why we are proud to be the first team in FIRST with an ostrich as a mascot & why we often give nicknames to our tools or robot mechanisms. McThingy-Bopper is simply much more fun to say than rotating component intake equipped with flexible members to provide a compliant contact surface.

Essay

Off in the distance a twinkling light appears on the horizon & soon a faint humming begins to fill your ears. Slowly the twinkle grows into a blinding glare & the hum becomes a rumble that rattles your bones. An incredible burst of wind, dust, & feathers slam into you for an instant & then vanish into the night,

leaving only the red glow of taillights as you check your watch to find that it's midnight. At least that's how it might feel if we were actually smuggling large birds at night, but so far, we haven't encountered anyone willing to pay our rates for a really large one egg omelet & until the market opens up, we'll just keep building robots.

The Midnight Ostrich Runners is a FIRST team formed in 2016 to fill a hole in our community & provide an avenue for students without access to FIRST an opportunity to participate. We started as FTC team 11354 & last year we took the leap into FRC as team 8711. Based in two cubicles in the engineering offices of Sisu Energy & Environmental, we work to fill that hole & promote FIRST to improve our culture & have a little fun.

We are intentionally not a large team as most of our recruiting efforts result in helping students find existing teams in their own schools & we do not poach members from other teams. Currently we have 6 team members freshmen to senior age from 3 different schools across 3 different cities as well as two home schoolers. The two coaches are both mechanical engineers from Sisu & one is a FIRST alumni. We have a part-time engineering mentor from American Airlines, a non-engineering mentor, & a remote mentor from Boeing.

We start our team meetings with a Safety Moment presented by a random team member to keep safety in mind. Most of our funding comes from grants like DoD STEM, Boeing, & NASA. We receive some funding from a few local companies & through other fundraisers, like our letter writing campaign where we contacted 64 local businesses to introduce FIRST & ask for their support.

Our team reaches out to our community in a variety of ways. Robot demonstrations are an effective way to reach students, parents, & potential coaches. We have demonstrated robots & visited with our community on multiple occasions at the Science Museum Oklahoma in Oklahoma City, Aerospace Advocacy Day at the Oklahoma Capitol, the CareerTech Summit Faire for teachers, & Boeing Family Day. Since our team was formed, we have run a booth at the Tulsa Maker Faire each year. In 2021 we demonstrated 17 FLL, FTC, & FRC style robots to reach over 1000 masked visitors. In 2022 the mask was off & we demonstrated 13 FIRST robots, provided 921 engineering career books, & 404 STEM kits to reach over 3400 visitors. We have been recognized as a Maker of Merit by the Tulsa FabLab that runs the annual event for engaging kids with Bluetooth LEGO robots & promoting STEM in our community.

We think FIRST Rocks & so should you. Our most creative outreach campaign involves a little paint & a lot of rocks. Each season we decorate rocks with STEM paintings & hide them around areas where people may congregate for other activities. On the back of each rock, we write our social media tags so folks that find our rocks can look us up online & learn a little about FIRST.

Each season our team members, coaches, mentors, & alumni volunteer as referees & judges to support FLL events. In 2021 we volunteered at the Jenks qualifier to serve 20 teams, the Oklahoma championship to serve 32 teams, & the Kansas-Central championship to serve 14 teams. In 2022 we volunteered at the Jenks qualifier to serve 22 teams, the Muskogee qualifier to serve 15 teams, the Oklahoma championship to serve 34 teams, & the Kansas-Central championship to serve 13 teams. We also ran an FLL-Explore festival at the Tulsa Air & Space Museum in the spring of 2022 for teams that were unable to participate in the fall due to lingering COVID restrictions. For the past few years, we have also built the championship trophies & field elements to support FLL.

We support FTC events by helping set-up & tear down. In December 2021 we ran an FTC league meet to support 18 FTC teams at Lindbergh Elementary where we mentor FLL teams & help out with events like Santa Shop & Fun Night.

Last season we helped build & tear down the RapidReact FRC field at the Oklahoma & Green Country Regionals. First to arrive & last to leave is part of who we are.

The Midnight Ostrich Runners do not limit ourselves to supporting our FIRST community just at competitions. We provide training for other FIRST teams & coaches through in-person presentations, online videos, one-on-one tech visits, & published guides. This season at FTC kick-off we taught 3 classes about bolted joints, fasteners, & the proper way to use them. Last season the FTC kick-off was online & we taught multiple sessions of team branding, power transmission, & bolted joints. At free summer camps we have taught interested students how to build & program LEGO robots. Training for coaches requires more than just construction & programming so we typically take them through an FLL or FTC season in a day or a week depending upon the group. FTC teams that participate in league meets are often rushed & sometimes do not complete their robots prior to events. We take extra parts to league meets to support these teams & instruct rookies how to finish their robots. This past summer we made a cookbook for Road Runner, a motion planning library that can be used for programming autonomous trajectories in Java for FTC robots. We worked through the tuning process of the Road Runner system using our own robot, Frank's Car, as an example & documented each step in detail, including code snippets, & tips to help other FTC teams understand how to use Road Runner in competition. To make sure that this guide is effective, we spent a day with our first user to verify that they were able to go through all of the steps & implement this system. Sometimes it is difficult to get excited about technical things so we try to include fun facts, jokes, & interactive examples when helping others.

Not all training we provide is for FIRST teams. This past spring, we learned that the Girl Scouts of Eastern Oklahoma had run into a situation where they did not have enough staff or volunteers to support a Robotics Badge-A-Thon that they had scheduled so they reached out to us for help. We ran 4 sessions with groups of Girl Scouts, teaching them how to program EV3 robots & how to present their designs to an audience. In total we helped 140 scouts receive a total of 420 badges that day.

While the robots are an effective way to reach most groups, others require a different approach. This past season we discovered that many FLL teams were having difficulty understanding the Innovation Project portion of their SUPER POWERED challenge, so we generated a plan to help them spark ideas for their projects through a hands-on activity & some on-topic conversation. We held Windmill Day at the Girl Scouts of Eastern Oklahoma activity center where we provided windmill kits to 22 FLL teams, walked them through the construction process, & tested their mini power stations. Following testing we discussed real-world problems that they encountered with their machines & real-world problems with electric generation & transmission across America. In total the teams were able to generate 11.5 volts of DC electricity & went home energized to complete their Innovation Project.

Training & Inspiration are great, but people need things too. Knowing that it is nice to feel appreciated, we made goodie bags full of treats that we distributed to the Oklahoma FLL Championship volunteers. The overwhelming response was that they would have liked more chocolate in the bags.

FIRST is global & so are supply chain issues. Recently we learned that we are internationally famous when FTC team 22801, Bolt.m3, from Kazakhstan contacted us on Instagram asking for assistance.

They were unable to source critical electronics for their control system & fortunately we were able to help. After several discussions we donated a set of Andy Mark mecanum wheels, several cables, four Spark Mini motor speed controllers, & a power distribution hub to fill their needs.

Each season we provide random parts to FTC teams so they can keep their robots running. Cables, bearings, & bolts are always needed at competitions. We also share models of typical parts with teams so they can 3D print them at home in their favorite colors, like battery holders, & alliance marker systems.

The summer leading up to our first FRC season we completed a design project preparing for FRC. A 3D printed robot signal light mounting bracket was designed in OnShape & we liked it so much that we printed one for every FRC team in Oklahoma. Not wanting to leave anyone out, we sent the design to AndyMark, who has included it on their website, free to all teams.

Now that we have completed our first season of FRC & we are no longer rookies, we have been helping other FRC teams as well. Recently we were able to provide some gears & slide bearings to FRC team 7744 that they could not find for their robot.

We also discovered that FRC team 3507, Ubotics, did not have enough funding to compete this season & we were able to donate \$1000 to their team.

Prior to forming an FRC team, we developed a strategy for sourcing funding, parts, & competing from an FTC standpoint. Our system for success was proven last year when we earned our way to the World Championship. This year we are using this same plan to start FRC team 9007 in Muskogee, who also has an established FTC team. We have helped them source funding, tools, robot parts, & we have been providing training to help them through their rookie year.

The Midnight Ostrich Runners, FRC 8711, is more than just another robot team. We have grown to fill that hole in our community, & we recognize that these holes need to be filled around the globe so the road to FIRST is smooth. ;

