

## **FIRST Impact Award - Team 2341**

<b>2024 - Team 2341</b>
<b>Team Number</b>
<b>2341</b>
<b>Team Nickname</b>
Sprockets
<b>Team Location</b>
Shawnee, OK - USA
<b>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.</b>
In the past three years, 100% of our seniors graduated high school, 79% of our graduates have continued to pursue a STEM degree in college, and 21% pursue a vocational career. Team members and alumni have achieved internships with Boeing, EnviroSystems, Bison Metals, TDK, and Tinker, and 45% of alumni have continued involvement in our team and other FIRST programs. This year our team is made up of 23 boys and 9 girls. A team survey showed 81% of members plan to go into a STEM field.
<b>Describe your community along with how your team addresses its unique opportunities and circumstances.</b>
Our community has a per capita income of \$26,577, and a population of around 31,720, with a poverty rate of 20.2%. Only 20% of high school graduates in our county go on to a higher education. Our team created programs such as STEM on Wheels and Career Exploration Night which educate elementary and middle school students about the many STEM careers to address poverty in our community. We open our workspace to local FIRST teams where they have access to machines and guidance from our team.
<b>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?</b>
This year we will continue our Oklahoma Regional tours, 297 students and 20 teachers attended last year. We build long-term relationships with schools through our programs, allowing us to work consistently with the students. We organize data from our outreach in a detailed spreadsheet including volunteer hours, our role in the event, FIRST teams and people reached, and alumni. Team surveys found that 34% of current team members participated in one of our 23 team events prior to joining the team.
<b>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.</b>

Our team hosts annual FLL qualifier competitions at our school. Team members set-up, emcee, referee, and run the event. For the past three years, we have partnered with team 5454 to share scouting methods and data at regionals. Over the past three years team members have volunteered as announcers, judges, and referees at local FLL, FTC, and FRC competitions. This year, we have become a regional partner for FIRST Ladies, an organization that promotes gender inclusion in STEM and FIRST.

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

This year, 3 team members and 1 Sprocket-in-Training became official student mentors for 4 FLL teams, and our team often meets other teams to assist them in their efforts. We have impacted 51 teams across all FIRST programs in the past 3 years, bringing our total to 391 impacted teams. This season, FRC team 9487 from Brazil asked us to present at their Rookie for Rookie Conference. We shared our knowledge and experience to help 15 rookie teams develop sustainable practices within their 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?**

Our STEM on Wheels program teaches healthy living and our team-written curriculum to local elementary schools below the poverty line or without STEM programs. We also run our new program, Career Exploration Night where professionals in STEM fields are brought to speak with kids about their experience in a STEM career. Other initiatives include aerospace summer camp, summer rocketry class, robot presentations in elementary schools, Sprockets-in-Training, and our annual Le'go Your LEGO Drive.

**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**

Our team works with Community Renewal, a local nonprofit, by participating in their block party and events. We often volunteer with the local Community Market. Outreach programs such as STEM on Wheels and Senior STEM are funded through a grant from the Avedis Foundation. We also work with The City of Shawnee Parks and Recreation Department on a variety of service projects. We partnered with the school's American Spirit team to restore a totem pole and for the Boys and Girls Club STEM Fair.

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

Our team accepts anyone interested in robotics. Our diverse backgrounds make us stronger as our unique perspectives promote ingenuity and growth for the whole team. A mentor did a week-long camp with the Cherokee Nation, sharing the message of FIRST and his experience working as an engineer. This year we became a FIRST Ladies partner team and continue to promote women in STEM through annual volunteering at the Worth It! Conference and attendance at the Women in Science Conference.

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

Our team keeps extensive documentation of all team events, including templates and curriculums for all programs. All team members participate in outreach events, so everyone is involved in sharing STEM

and FIRST. Experienced team members mentor newer members, teaching them skills and helping them find their niche on the team. Many alumni have returned to continue this cycle of learning. Our schools commits \$30,000 a year to our team, and team members look for grants to fund outreach programs.

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

Many of our sponsors are recruited through connections of team members, mentors, and school. In 2022, we manufactured medals and presented them to our sponsor Northrup Grummon at the Championship in Houston. We also invite sponsors to competitions and team events. Team members and alumni have also found jobs and internships working for our sponsors such as Boeing and Tinker. We do an annual presentation to the school board to update the school on team activities, impact, and achievements.

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

Two years ago, we noticed that many of our team members didn't know about all of the outreach the team was doing and while most team members participated in some outreach, the majority was done by a small group of people. To ensure everyone is able to participate in outreach events, we have started putting sign-ups in our team communication app and making announcements about upcoming events during practices. We also set a minimum of 10 volunteer hours per person to encourage participation.

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

Our team is heavily student-led, encouraging members to become science and technology leaders as they take the reins in designing, programming, making game strategy decisions, and writing grants. Members learn by doing with guidance from mentors developing technical and soft skills along the way. Our goal is to empower our team members to succeed beyond our team. Members have received Dean's List awards and honors/scholarships from organizations, such as OKWIT, for their STEM leadership.

**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.**

Last year we started Senior STEM, a program that brings STEM activities to residents at retirement communities. The program became a fun way to engage our older population and bridge the gap between generations. We visit monthly, guiding 5-10 seniors through fun STEM activities. Team members look forward to working with and talking to the residents. Last year the residents watched the livestream of our competitions to support us, and were excited to hear about it when we came back.

**Judge Feedback**

Who/When	Feedback
Mar 09, 2024 02:33:10 PM EST	<p><b>How can our team in a small community create an impact equivalent to teams in larger areas, both in numbers and types of activities? We have connections with teams and businesses worldwide but are somewhat limited by money and size of the team.</b></p> <p><b>An area the team has an opportunity to improve.</b></p>

## Something that really impressed the judges.

### Essay

Two years ago we noticed our outreach was spread thin, so we decided to regroup and focus on quality over quantity with a goal of making a deep connection in a few of our most impactful programs. Revisiting the same groups consistently not only made a greater impact, but allowed us to start new initiatives without compromising ongoing efforts. We built a strong foundation, documented everything to better continue these initiatives, and created a sustainable plan for the team during future years. This year, we expanded and built upon the foundation we laid. Coming from a small town with high poverty, our team compensates for our limited resources by forming relationships within our community. Winner of the Pritzker Architecture Prize Diébédo Francis Kéré once said, "If we learn to build with local materials, we have a future." Utilizing our local materials, our team was able to build a strong foundation for the growth and development of our team's impact within our community. This season marks the largest team we have ever had consisting of 8 mentors and 32 students; in 2007 our team consisted of 3 mentors and 6 students. This growth and new guidelines encouraging participation in team outreach has allowed us to further expand our outreach.

100% of our seniors attend college or pursue a vocational career after high school, with 94% of all graduates pursuing STEM degrees since 2007. Members and alumni have received internships from Boeing, Bison Metals, Enviro Systems, Tinker, and TDK. We maintain strong relationships with our alumni, who continue to uphold the Sprockets' mindset in FIRST and STEM. Ron Markum, mentor and Woodie Flowers award winner, is constantly using his experience in the STEM field to teach us about life post high school.

When students join the Pre-Engineering Academy, we invite them to attend our practice and learn about our team. They go through stations explaining the main aspects of our team: robot, Impact, and scouting. They experience what it's like to be on the team and are invited to attend future practices to see Sprockets in action. We also have Sprockets-In-Training, a program that facilitates progression of programs by giving younger students the opportunity to shadow our team, attending practices and competitions. 75% of current team members attended a team event that encouraged them to join our team. At the beginning of every mandatory Monday practice, we gather as a team to plan the week and what each member will accomplish within our to-do list. Not only do our team members support each other, but our parents support us too, bringing Monday meals for us to share and bond as a team. Because we are 1 of only 2 organizations in our county bringing awareness to both FIRST and STEM, we saw a need to do more for our community in STEM exposure. We host an aviation camp in the summer, teaching students about aviation through hands-on learning. Students learn about different types of aviation while building small rockets, model airplanes, and Lego vehicles. We also run a LEGO robotics camp during the summer. Worth It! is an annual event held to empower young women to pursue STEM careers. During this event, our female team members teach attendees how to drive the robot, educate girls about what is available through FIRST, and encourage them to join a FIRST team. Last year, team members attended McCloud Junior High's career day to teach kids about STEM, robotics, FIRST, and Gordon Cooper Technology Center. Kids participated in a fun STEM challenge building bridges from straws, paper, and tape. We taught students about FIRST robotics and the technical programs they could join in the future. This year we participated in their parent night and extended our STEM on Wheels program to their school.

New in 2023 is our program Career Exploration Night intended to expose young people to a variety of

careers and pathways to reach them. Our first event focused on health careers. We invited 4 healthcare professionals from local industry to join us for a night of hands-on activities and informational sessions. 11 students, 3rd-8th grade, attended and participated in hands-on activities resembling tasks our local medical specialists do in their jobs. They built model prosthetic hands, practiced bandaging each other's arms, and filled cavities in 3D printed teeth. Last season, we provided an organized tour of the Oklahoma Regional, hosted in our town, to grade school students in surrounding counties. The goal of this event was to show younger students what it was like to be involved in a STEM field and a healthy team-based environment. We created an organized schedule of the day and contacted 82 schools. We were able to bring 297 students and 20 teachers to the competition. We gave safety presentations and showed them all the different components of the competition, from the pits and Impact teams, to the robot fields. They had the opportunity to meet competing teams from all over the country. This experience gave students an insight into both FIRST robotics and STEM careers, something our team focuses heavily on in every outreach opportunity. We also provided teachers with information on starting FIRST teams in their school and our other elementary outreach programs.

We run a cost-free STEM On Wheels camp for low-income students where we provide healthy snacks to local 3rd-5th grade students and facilitate interactive STEM activities that teach the importance of STEM. Many students we work with have never heard of robotics before, so we talk to them about our team and robotics while keeping them busy with fun activities. This season we have visited 4 local elementary schools, seeing an average of 53 students each time. We revisit the schools we attend because we believe that continued exposure is the best way to make a real impact. This program is a great way to build connections with the next generation of students and get all our team members involved, sending 4-5 students to each school, no matter their position on our team. STEM on Wheels helps students build a foundation for their specific future in STEM.

We have had many opportunities to build our community in ways other than STEM, and we are geared up to strengthen these ties as the season moves forward. Last year, our entire team took part in sponsoring 4 children for our local Angel Tree, shopping for the items on their list. The Community Market in Shawnee welcomed us as volunteers throughout the past two seasons, where team members assist with sorting donations, help customers shop the aisles, and unload groceries into cars. The Guided Grayland, a game store in downtown Shawnee, was in need of major repairs such as clearing out old tile and carpet so several team members worked to get the store cleaned up. Community Renewal, a non-profit operating in Pottawatomie County, invited us to join them at one of their many block parties. At this event, we had a booth where we displayed our 2022 season robot, teaching adults and kids how to drive it. We provided Lego pieces for kids to build with and informational pamphlets about our team and technology center. We love working in our community to make it a better place, and the more businesses, organizations, and individuals that we work with, the better.

While serving our community, we focus on encouraging high school students to pursue STEM careers and connecting them with STEM opportunities. Seminole High School hosted a STEM fair which we gladly participated in, educating high schoolers about both our robotics team and the Pre-Engineering Academy that most of our team members attend. We informed students about the program, inspiring them to follow their STEM passions. During Sophomore Showcase at Gordon Cooper Technology Center, sophomore students learned about robotics and participated in a fun STEM challenge. We also run STEM Day, an annual STEM based challenge for local freshmen. Team members visit local schools in the preceding weeks to help them form a team to compete in the competition; winners receive prizes such as 3D printers, science kits, and K'Nex for their classrooms.

Our team realizes we are fortunate to have the resources we do, so we invite local teams to utilize our space. We have assisted teams Team 3247 Robopack and Team 1750 ThunderStorm Robotics. In past years, we have designed new ways to help FIRST teams. For example, we created and hosted the April 2021 Outlaw event to allow teams to compete in person towards the end of the pandemic. We gave 4 robot awards to the winning alliance and the top-seeded team. One coach commented, "I can't tell you enough how much this meant to our kids, and we appreciate you very much." Additionally, our team consistently hosts FTC and FLL events at our school. We have hosted the Shawnee FLL qualifier annually since 2008; team members volunteer to judge, referee, queue, and announce.

Sprockets strive to build our own local FIRST community by reaching out to and collaborating with other FIRST teams in our area. To do this, we have reached out to teams on social media and invited them to join us in person or online for technical help and fun. After kickoff, we have invited teams in our area to join us for an overview of the rules, brainstorming about robot design, and a game mockup using rolling chairs and people as robots. One of our engineering mentors taught a beginner CAD class that members of local teams took part in, and another mentor taught a LabVIEW class. We have started, mentored, or assisted 284 FRC, 14 FTC, 53 FLL Challenge, and 40 FLL Explore teams.

British architect Sir Norman Foster said, "As an architect, you design for the present, with an awareness of the past, for a future which is essentially unknown." As we strive to promote STEM and the values of FIRST within our community, we plan for the present, learning from and building upon our past, in an effort to model the future we hope to create. ;

