

## Chairman's Award - Team 2341

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2022 - Team 2341

**Team Number**

2341

**Team Nickname**

Sprockets

**Team Location**

Shawnee, Oklahoma - USA

**Describe the impact of the *FIRST* 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 *FIRST* programs as mentors/sponsors.**

In the past 3 years, 100% of seniors graduated from high school, 100% attended college, and 91% are pursuing STEM degrees, with 73% in engineering. Alumni have earned \$83,000 in FIRST scholarships and received internships at Bison Metals, OG&E, and others. In 2019, team members met with the Career Tech State Director to request high school credit for after school robotics programs. Because of their work, now all FIRST members can receive 1 elective credit per year for after school robotics.

**Describe your community along with how your team addresses its unique opportunities and circumstances.**

Our community's population is around 31,000, with a poverty rate of 21%. The per capita income is \$23,000, with 21% living in poverty. To address poverty in our area, our team created STEM on Wheels, a mobile STEM camp that teaches healthy living. Pathways to STEM is held during after school programs for kids in poverty. It shows them how to achieve careers in STEM. We donate materials to FIRST teams in need and assist them with writing grants to fund their seasons.

**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?**

A team member/mentor went to Kenya to mentor a team we met at Championship, taking them LEGO robot parts. While there, they visited another school to share FIRST, taking them a computer and LEGO robot kit. We continue communication with those schools. We organized STEM City at the Star-Spangled Air Show, sharing FIRST with around 285,000 people. We run a 4-week robotics camp each summer, introducing FIRST to kids. We collect data at each of our events and log the data into a spreadsheet.

**Please provide specific examples of how your team members act as role models within the *FIRST* community with emphasis on the past 3 years.**

We share our practice field with about 10 teams per year, manufacture robot parts for teams and run events such as Robot Rampage (offseason event), Brainstorm Night, and Robot Showcase (last big practice), setting the tone for Coopertition. New in 2021, we organized and hosted the Oklahoma Outlaw Competition for 16 teams, with safety protocols in place. This year, we are partnering with Team 5454 to teach them our scouting methods at the Green Country and Arkansas Regionals.

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

The past 3 years, we mentored/assisted 10+ FLL teams, assisted 11 FTC team, started 6 FRC teams/revived 1 FRC team, and mentored and assisted 10+ additional FRC teams, helping with grants, programming, awards and parts. We provided online LabView and CAD classes during COVID. After meeting an FLL team from Kenya at Championship, a team member and mentor traveled there to take them LEGOs and assist them with their season. We have assisted, mentored, and started 156 *FIRST* 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?**

New this year is our Pathways to STEM initiative, an after school program for disadvantaged kids that connects STEM activities to real world experiences and careers. We have reinstated our STEM on Wheels program for high poverty schools, teaching STEM to kids who might not have access to this type of curriculum. Our other initiatives are a new Aerospace Camp, a Rocketry Class, Sprockets in Training, and our Le'go Your LEGO Drive. We serve an average of 30,000 kids yearly.

**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 created a partnership with Oklahoma Christian University. This has resulted in the admission fee being waved for our team members. The Engineering Summer Academy fee has also been waved for our members, and students attending are eligible for an automatic \$1000 scholarship. In return, we manufacture parts for the OC Baja racing team. We partner with the Oklahoma Aeronautics Commission and Tinker Air Force Base, both of which give us money for our Aeronautics and STEM summer camps.

**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 who is interested in robotics. We don't feel that race, social status, or any other difference is a factor in whether someone can excel in *FIRST*. New team members have stated that they felt welcomed and comfortable being themselves on our team. We promote women in STEM by yearly attending the "Worth It" conference, which is designed to draw women into STEM careers. We are also using our resources to Promote *FIRST* in our Native American and lower income communities.

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

Senior team members mentor younger members, teaching them skills and helping them find their niche on our team. We host a recruiting night in the fall where members seek to make visitors welcome so they will want to return as team members. Members look for grants to fund outreach, and all members are involved in those opportunities, embracing what it means to be a Sprocket. Our school commits \$30,000 per year to our team, and we work to make sure our relationship with our sponsors continues.

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

To recruit sponsors, we get involved in their activities, such as Boeing Friends and Family Day and Tinker AFB air shows. To retain them, we continue to stay involved with them, visiting their businesses and making sure they know we appreciate them. We engage our sponsors by inviting them to eat with us on Mondays at our team meal and inviting them to our practices and events. Our sponsors also send mentors to work with us and offer our team members internships (20 so far) after graduation.

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

Our team would like to improve the diversity of our sponsor group. By doing this, we broaden the possibilities for internships for students with a broad range of interests. Steps we have taken to improve in this area include bringing potential sponsors, such as Bison Metals and Dan Foss, into our workspace to let them see what we do in *FIRST*. An alumnus has since secured an internship at Bison Metals, but we are seeking to add to our range of possibilities.

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

Our team encourages members to become science and technology leaders by giving them the reins in design and programming, making game strategy decisions, and writing grants. We seek to become risk takers who can change the world. Team members met with the Director of Career Tech to accomplish getting high school credit for after-school robotics programs in Oklahoma. 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.**

During COVID, our community scrambled to find PPE for our first responders. Even though we couldn't meet as a team,

students took home 3D printers loaned to us by the Army National Guard and our school. We made over 300 face shields and 100 ear protectors for 2 clinics, 3 hospitals, and 2 schools. Nurses and doctors thanked us and gave donations to our team for helping the community. This helped us feel engaged in a solution to this crisis and a strong connection to the people in our area.

## Essay

Over 3 years, the Sprockets have faced many challenges. COVID took our school superintendent, Bob Perry, one of our biggest cheerleaders and supporters. It left one of our coaches seriously ill and on oxygen for weeks, even as she came back to mentor us. Through this, we have learned how precious the bonds we have with one another are. Team 2341 has embraced the challenges by keeping our eyes turned forward and our minds turned upward. Henry Ford stated, "When everything seems to be going against you, remember that the airplane takes off against the wind, not with it." This quote embodies the perseverance with which we have overcome, setting our sites on things that matter and learning to become the people we want to be.

Sprockets mentors (3 Woody Flowers finalists and 1 Volunteer of the Year) teach us FIRST skills and help with homework, scholarship applications, and college visits. 91% of team members go to college, with 100% being offered scholarships. For example, an alumna, in her sophomore year, has a paid internship at Bison Metals, after receiving a scholarship from Oklahoma Women in Technology to attend Oklahoma Christian University. Our alumni are often hired by our sponsors, having worked for Boeing, EnviroSystems, and Tinker. We maintain strong relationships with our alumni, who continue to uphold the Sprockets mindset in FIRST and STEM. Being a 15-year team, consisting of 16 members (4 girls, 12 boys), each year we assess our programs that are no longer relevant and strive to bring new STEM and FIRST programs to our community. We are a high poverty community where the differences in opportunities vary greatly, with most kids barely leaving their hometowns. So, this year, our focus is helping kids in poverty to see ways to break the poverty cycle, helping them set goals and showing them avenues to reach them. NEW this year is our Pathways to STEM,

bringing knowledge of STEM careers to kids in poverty. In a community where the per capita income is \$23,000, many kids are caught in the poverty cycle. This program shows them that there are multiple pathways to well-paying STEM careers, many which do not include college degrees. "Community Renewal", a non-profit organization designed to help restore communities, helped us with this endeavor. We are holding our classes in 2 of their "Friendship Houses" in underserved neighborhoods. We want to inspire kids in poverty to see beyond their current situations through STEM games and projects, leading them to jobs in STEM fields.

Also NEW this year is our Mission STEM, a program that immerses at risk youth into STEM and FIRST Robotics. Serving 24 students during our first year, we partnered with Mission Shawnee, a non-profit organization under the umbrella of United Way that provides one-to-one mentorship to at-risk students. We provide the curriculum, teachers (team members), facility and LEGOs for this program. Next August, the beginning of the FLL season, we will coach 2 FLL Challenge teams with kids from this fellowship. We are funding this initiative through grants from the Tinker/DoD, the Oklahoma Aeronautics Commission, Northrup Grumman and Gordon Cooper Technology Center.

Another NEW endeavor for the Sprockets is our Experimental Aircraft Aviation Camp, which was funded by grants from Tinker AFB/Department of Defense and the Oklahoma Aeronautics Commission. This is a summer camp that merged Experimental Aircraft Association curriculum with LEGO construction. In our first year, we served 24 kids. A 4th NEW undertaking for us this year was done in a partnership with Channel 9 News. We were asked by Val Castor, famous storm chaser, to engineer a custom rack for his new storm chasing truck that would work with his new equipment. We were successful. Now, when we watch Val and Amy Castor chasing tornados on Channel 9, we know that we are playing a small part in keeping Oklahomans weather safe. In addition, our NEW Oklahoma Outlaw event was born out of the need to feel our FIRST family around us. Amid COVID, we felt compelled to create an Oklahoma event, hosting and running the 2021 game for 16 teams from around the state at our facility (requiring masks, temperature checks, and limited team members present). We gave 4 robot awards to the winning alliance and the top seeded team. Comments from teams were, "It was a great inaugural event, and we look forward to coming back if it continues, I can't tell you enough how much this meant to our kids, and we appreciate you very much." Mentors and teams alike needed this event to get back to the camaraderie we all feel in FIRST.

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Since becoming a team, we have participated in 58 community events. This is the 11th year for our Le'go Your LEGO Drive, in which we donate new LEGO kits, for therapy, to Children's Hospitals in cities where we compete. A team member, Blake, was a recipient of one of these LEGO kits. He has expressed how valuable the LEGO kit was for his emotional health and how it led him to join the Sprockets. This year we will only be able to do a small LEGO drive (COVID), sending kits to Oklahoma Children's Hospital and making our 11-year total approximately 3600 donated kits to 13 hospitals in 7 states. We are now slowly reimplementing our 32 current STEM events, impacting about 758,000 people in 11 years. These include Mother/Daughter STEM Night, Wise Guys! Girl Power!, SOAR3 STEM Camp and our mentor-written You Be the Astronaut!, which promote STEM and FIRST. In 2020, we began our STEM on Wheels program (ages 7-11), with team members writing a \$15,000 grant to the AVEDIS foundation to fund it. This program takes STEM classes in health and nutrition to kids in high poverty communities. The curriculum is written and taught by our team members, is completely free to kids, and taught at 26 school districts. During the height of COVID, STEM on Wheels came to a brief halt but resumed in the fall of 2021. We have revised many of our lessons, and we are taking our new and improved STEM on Wheels out to the community once again. Our total impact in STEM each year is about 210,000 people. A special international effort we embrace began at FLL World Festival, 2019. Meeting a struggling FLL team prompted a team member and mentor to travel to Kenya 2 summers ago to assist the Alliance Girls High School. We sent boxes of Legos and gave them FLL training. We have since mailed 3 other boxes of LEGOs to this team. Then traveling to Alungo Secondary School, they delivered a robot kit and laptop, providing an orientation to FLL and offering our continued support. This school has since built their first robot and is well on their way to being an official FIRST team. In the past, team members have also traveled to Japan, Rwanda, and Italy to do outreach, and we have met with a family who moved to Nepal, sending them with LEGOs and intentions of starting an FLL team.

Our team strives, even in crisis, to continue to spread our love for FIRST. Our team has started/assisted 47 FRC teams, 14 FTC teams, 53 FLL teams, and 42 FLL Jr. teams, bringing our total FIRST teams started, mentored, and assisted is 156. We hosted the FLL State Championship twice in the past 4 years. Members raised \$10,000 to run each event and helped plan the competition, judge, emcee, and reset the fields. We annually host an FLL Regional Qualifier and FTC Qualifying Event, when COVID protocol allows for it. The past three years, we started and led 3 FRC teams through rookie seasons (8074, 8086, 7473). Each year, we share our practice field, machine shop and water jet with 10+ local teams (such as 8064, 2723, and 6464). The Sprockets also attend/hold events where we share FIRST with an average of over 2,538 people each year. Lieutenant General Donald Kirkland's publicist asked us to help organize STEM City at the Star-Spangled Salute Air Show (Tinker AFB) 3 years ago. We invited other FRC, FTC and FLL teams to come share FIRST with us. We brought a full field and had robots playing the Deep Space game so the community could see what we do in FIRST. A total of 285,000 people attended that event last summer. Since the air show didn't take place in 2021, the next one will be 2023. We have been asked to organize STEM City at the air show once again. Two years ago, team members gained support from State Senators, the State Superintendent, and the Lieutenant Governor to get elective credit for every Oklahoma FRC participant. We conferenced with the Oklahoma Career Tech Board of Education, finally getting approval for after school robotics students to get up to 3 credit hours towards graduation. Our team is trained and tested by one of our engineering mentors, in lab safety, hand tools, power tools, and eye, ear and hand protection. We maintain SDS sheets and have a safety officer who monitors us for safety practices. Sprockets transfer that safety-minded attitude to younger students through safety programs (COVID safety this year), serving 922 students so far. Other topics we have tackled are environmental and weather safety. In addition, our mentors are 100% ALICE certified. Because of our safety conscious attitude, we have won 5 Industrial Safety awards and 5 Safety Hard Hats for our safety initiatives. Through the encouragement of our coaches, mentors and teammates, we are learning to overcome what, at times, feels like the impossible. We are discovering that we are stronger than we think and with our team rallied around us, we will become our best selves. FIRST is and always will be our foundation for seeking STEM careers. We embrace the opportunities we have been given as members of the Sprockets and those opportunities have created in us a lifelong love of engineering. Eddie Rickenbacker once said, "Aviation is proof that given the will, we have the capacity to achieve the impossible." The things we have accomplished as a team demonstrate both our passion for FIRST and STEM and our refusal to believe that there are any limits we can't overcome.