

Chairman's Award - Team 2220

[Print](#)[Close](#)

2018 - Team 2220

Team Number

2220

Team Name, Corporate/University Sponsors

3M/Thomson Reuters/Skyline Exhibits/Blanda/AgriBank&Eagan Senior High

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the 2017/2018 year and the preceding two to five years

Blue Twilight is a community team where members become leaders. 100% of students are involved in leading an outreach event, camp, and technical or business project on the team. Experience on Team 2220 gives students a clear idea of future educational pursuits; 100% seek a higher educational degree, > 90% in STEM. Our alumni are directors of programming and marketing at MN GoFIRST, start FIRST teams in MA and WI, and tutor college students in CAD and programming material developed by team 2220.

Describe the impact of the *FIRST* program on your community with special emphasis on the 2017/2018 year and the preceding two to five years

Goals in our strategic plan include reaching out locally and globally to the underserved community to provide "equity and access." We did >338 outreach events in the past 5 years. We ran >18 free camps for kids at the women's shelter and the inner city to spark interest for an education in STEM. We help boy and girl scouts earn their robotics badge. We also helped implement 5 STEM classes at our high school and created 6 free camp curriculums to develop skills in STEM.

Team's innovative or creative method to spread the *FIRST* message

This year, Women in Robotics Empowering Sisters (WIRES), Robots Without Borders (RWB), and STEM in Action conducted >106 outreach events to execute our strategic plan to spread FIRST's message, reaching >99,000 people with 34 students. WIRES increases females in STEM as demonstrated by 57% of our leadership team being female. RWB spreads FIRST's message with Spice Gears, Engineers without Borders, and the UN. STEM in Action provides "equity and access" to 17 inner city and rural schools.

Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Katie developed STEM in Action to share STEM with 234 underserved students. Nick brought robot design and build to summer camps. Through RWB, Luke and Katie trained the Spice Gears in Poland. Olivia, Katie, Shelly and Grace visited the UN to advocate for STEM and were interviewed by the press. For WIRES, Anusha and Riley hosted Cookies College & Careers, a professional women's panel. Ihra and Roshni created a safety video on battery spills. We are role models who inspire the FIRST community.

Describe the team's initiatives to help start or form other FRC teams

We will increase the number of FIRST teams in Minnesota and world-wide with our strategic plan. Over the past 5 years, we mentored 26 FRC teams to be sustainable, and we connect with schools without FRC to find the resources needed to start a team. RWB is a program we started in 2015 to spread FIRST to all countries in the world. We traveled to Poland, Germany, New York, and France to grow FRC by collaborating with local government officials, global sponsors, a local FRC team, and the UN.

Describe the team's initiatives to help start or form other *FIRST* teams (including Jr.FLL, FLL, & FTC)

Initiatives to form other FIRST teams include the Eagan FIRST Robotics (EFR) umbrella program and RWB. In the past 5 years, we started 59 FIRST teams, started an FLL team in every ISD 196 elementary school, and started 6 umbrella programs world-wide. We started the first FTC team in the district, then expanded the FTC program the following season; currently there are 15 teams in the EFR umbrella program. This year, RWB started 12 FLL teams in Europe and created a umbrella program in Poland.

Describe the team's initiatives on assisting other *FIRST* teams (including Jr.FLL, FLL, FTC, & FRC) with progressing through the *FIRST* program

Through the Eagan FIRST Robotics (EFR) Program, we assist in the progression of FIRST teams in our community by regularly transitioning teams from FLL to FTC and we welcome all students to join the FRC team. We annually run a mock FLL competition for 12 FLL teams who interact with FTC teams and FRC team. We work with 14 FTC teams in EFR nearly daily and they are inspired to join the FRC program. While mentoring FLL and FTC teams, we talk about the challenges and fun in the next level of FIRST.

Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (includes Jr.FLL, FLL, FTC, & FRC teams)

Blue Twilight worked with the Spice Gears in Poland to start and mentor 12 FLL teams and will have 36 FLL teams in Poland next year. We share a workspace with 14 FTC teams and help them with their robots and outreach programs 3 times per week. We met with the FTC Green Girls before a competition to have them practice their presentation. We worked with the FTC Blue Crew to mentor them in their robot design. We worked the Sarcastic Potatoes, an FLL team, to mentor them in their research project.

Describe your Corporate/University Sponsors

Blue Twilight partners with international and local sponsors who support us by giving financial aid, in-kind donations, valuable mentors and international support. Local businesses help through in-kind donations, design reviews and providing individual training for members. Our sponsors go beyond financial support and mentoring to supply 3D printing, components, and safety products. The ability to impact the underserved community and the world is thanks to our sponsors.

Describe the strength of your partnership with your sponsors with special emphasis on the 2017/2018 year and the preceding two to five years

Blue Twilight partners with our sponsors on key STEM outreach events. We reach out to underserved and rural communities by partnering with Thomson Reuters on the UN conference and STEM in Action. We collaborate with 3M for Robots Invade the Plaza and RWB; they provide >\$10,000 annually for RWB. We partner with Prime Design to design and fabricate parts. We collaborate with our sponsors to inform them about season progress, current projects, and show the incredible impact on the community.

Describe how your team would explain what *FIRST* is to someone who has never heard of it

FIRST is a robotics program that is More Than Robots; students learn how to communicate, lead and impact their community. The core values of FIRST are "Gracious professionalism" and "Coopertition" which teach you to be gracious and professional in all situations and to cooperate with your competition. FIRST gives students real-world experience in engineering and business. FIRST teaches the importance of STEM outreach and creates leaders who are committed to changing their community and world.

Briefly describe other matters of interest to the *FIRST* judges, if any

Through RWB, Blue Twilight has increased access and awareness of FIRST and STEM education around the world. Team 2220 has dedicated >5,400 hours of STEM outreach this season. Through WIRES our team's female membership has more than doubled to nearly 40%. In team 2220, 100% of our students take on a leadership role demonstrating our value of developing student leaders. We impact FIRST locally and globally through our STEM advocacy, "equity and access", and growing FIRST world-wide.

Team Captain/Student Representative that has double-checked this submission.

Katie Hendricksen

Essay

Blue Twilight Team 2220 has initiated a culture change to impact our school, underserved communities and other FIRST teams. Students, mentors, and sponsors of team 2220 realized that a culture change was needed in our community. We started with a strategic plan, a plan that would soon change the world. The strategic plan is to "Light up robotics, light up the world." Sounds simple, right? All we do is focus on initiative, innovation, and building robots. However, our strategic plan is much more detailed in that it includes STEM outreach, student leadership and the expansion of FIRST locally and globally. By executing on our strategic plan, we have a culture that changes our students, our community and the world. Blue Twilight transforms the lives of people in our community and our world through innovative and impactful outreach initiatives. In the past year, Women in Robotics Empowering Sisters (WIRES), Robots Without Borders (RWB), and STEM in Action conducted over 106 outreach events, reaching over 99,000 people, with 34 students. We doubled the number of outreach events over last year, and we have done almost three times the number of events in our local community. We exceeded the 2,220 Hours Challenge for the 3rd year by reaching over 5,400 hours of outreach. We document events with Outreach Event Forms that assist us in improving our outreach to provide better assistance to teams, reach a larger audience and ensure our outreach is sustainable from year to year.

WIRES is increasing the number of females in robotics and in STEM. In 2013, Blue Twilight created WIRES to introduce young women to career opportunities. Since then we increased our impact with this program by uniting males and females on our team and throughout our community. From 2014 to 2018 we increased females on the team from 12% to nearly 40%. We have a female captain, the controls subteam is led by two females, and our leadership team is 57% female. This year WIRES hosted 10 outreach events reaching 4,288 people. WIRES holds coding camps for girls to foster interest in computer science in middle school. To support the Women's Shelter in Eagan WIRES organizes a toy drive and invites the children to free STEM camps. Students from around the Twin Cities explore STEM careers by visiting technology companies such as Mayo Clinic and Microsoft. This year we hosted a new series of events called Cookies, College, and Careers, where female professionals shared their career experience and answered questions about being in STEM related fields. WIRES is increasing girls' involvement on the team and in STEM related activities. Robots Without Borders is creating more FIRST teams and making STEM education accessible world-wide. The Robots Without Borders program was founded in 2015 to "light up the world." Goals in our strategic plan include increasing STEM Advocacy and FIRST worldwide. In 2016, we were introduced to the only FRC team in Poland by 3M. We partnered with and visited the Spice Gears to grow FIRST in Poland by visiting schools, businesses and government officials. We also donated 2 FLL kits. In 2017, we went back to Poland to assist 12 new FLL teams and prepare them for the first ever FLL tournament in Poland. We visited potential sponsors, government officials and presented at an educators conference. There is now so much interest in FIRST, that we anticipate having 36 FLL teams next year. Robots Without Borders has been engaging with the United Nations to leverage STEM programs to help achieve their 17 Sustainable Development Goals (SDGs). In 2016, we created the World Advocacy Conference at UNESCO in New York to advocate for STEM opportunities and FIRST world-wide. In 2017, we went to the UNESCO in Paris to continue our STEM advocacy and to meet with Engineers without Borders. In 2018, we were invited to the ECOSOC Youth Forum where we provided input that was included in the final recommendations on how STEM could help achieve the 17 SDGs. Through partnerships with the Spice Gears, Engineers without Borders, and the United Nations we have continued to increase STEM Advocacy and FIRST worldwide.

In 2017, Blue Twilight in partnership with Thomson Reuters created STEM in Action to impact the underserved community through innovative events, free camps and hands-on activities. We continue to change hundreds of lives each month with this program by our motto "equity and access." At the STEM in Action Day 234 students from 14 inner city and 3 rural schools had the opportunity to hear keynote speakers and listen to STEM professionals where they could choose from one of four tracks, Artificial Intelligence, STEM Careers, Cool Tech, and Startups. The speakers had diverse backgrounds and 12 out of the 19 speakers were female. We ran over 18 free camps where we reached out to inner city students and children at the women's shelter to give them an opportunity to learn about STEM and FIRST robotics through building robots. Our hands-on curriculums include 6 different camps: CAD, pre-engineering for 3rd-5th, pre-engineering for 6th-8th, Website Design, Arduino Programming, and Robot Programming. Our Bots-To-Go robots are available for students to drive at any event. We created the Maker Arts Fest with the library to expand on the Makerspace our team created 4 years ago. The Maker Art Fest hosts a variety of people who show their enthusiasm about science and technology emphasizing STEAM to inspire the community to become makers. We engage thousands in our community through these hands-on activities.

When a student joins Blue Twilight, they become a leader. A leader who makes a difference in the world while they're on the team and long after they graduate. They gain extensive hands-on training in safety, outreach and robot design/build to prepare to make an impact on the world around them. We focus on being student led, trainings are prepared and taught by students with guidance by mentors. Our upperclassman partner with underclassman to lead events to ensure sustainability. 100% of students on team 2220 lead a camp. Students become better leaders when they teach because they not only remember what they have learned, but they also learn how to be patient, understanding and present class material. 100% lead an outreach event which is important because it creates leaders who focus on more than robots and impact their community. 100% of the team leads a technical or business project on the team. These best practices are effective to develop leaders who impact the world. Because of the level of preparedness, 100% of our students continue on to higher education and more than 90% go into STEM careers.

Essay - page 2

Students are leaders in safety and are so well versed in safety that any team member is qualified to be the safety captain. We do this by conducting hands-on training for tools, PPE, fire safety, First Aid, CPR and AED training. After training, students must pass a quiz after training and sign a Safety Contract. Team 2220 creates online safety videos for other teams including safe robot lifting and battery spill response.

We grow FIRST locally and globally in several ways. To grow FIRST locally, we have created Eagan FIRST Robotics a 501(c)3 booster club that offers scholarships to students who are in need. We have one FRC team and 14 FTC teams that draw team members from the community including homeschooled, public, and private school students. We ensure each of the elementary schools in our district has at least one FLL team. Not only do we provide mentorship to these teams, but we also assist in providing funding. This feeder program creates sustainability for FRC. To grow FIRST globally we started the RWB program and partner with the UN. We have also grown and sustained FIRST locally by holding a series of seminars for other FIRST teams including team project management, outreach fundamentals, safety captain training and WIRES. Over the past 5 years, we held 31 seminar sessions at events like the University of Minnesota's MN Splash, Minnesota Robotics Invitational and our annual Week Zero event. We run 4 events for all levels of FIRST. The impact locally and globally in the past 5 years has resulted in Team 2220 mentoring 68, starting 59 and assisting hundreds of FIRST teams. All four district high schools have an FRC team and all district middle schools have access to both FLL and FTC teams. Our goal for these schools is to impact the students in our community so everyone has the opportunity and access to join a FIRST team.

Thanks to our beloved sponsors and mentors for their support, we are able to impact the school, the community and the world. We visit our sponsors to provide them updates on how the season is going and a summary of current projects. Through timesheets and event forms we show sponsors the incredible impact on the community. We focus on maintaining sustainable relationships with our sponsors by partnering on events, showing employees the robot and bringing them robot cakes and donuts. We also partner with them to provide opportunities to underserved students and grow FIRST. We thank our mentors by recognizing one mentor each week with the "Power Up Award." The mentor receives a speech prepared by one of the students and a gift from the team often, a T-Shirt, a 3D printed robot, and a treat.

Blue Twilight has changed the culture of our school, our community and our world through STEM outreach, student leadership, and the expansion of FIRST locally and globally through our strategic plan. To "Light up robotics, light up the world" means that we change the world. We change cultures to get more girls involved in STEM. We change lives by providing "equity and access" giving everyone the opportunity to have access to STEM and FIRST. We change the world by increasing STEM Advocacy and FIRST worldwide. With the leaders we develop, our goal to "Light up robotics, Light up the world" continues to become a reality.