

Chairman's Award - Team 2062

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2021 - Team 2062

Team Number

2062

Team Nickname

CORE 2062

Team Location

Waukesha, Wisconsin - 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.

"CORE 2062 has impacted my life in a positive way. I have learned skills that I wouldn't have learned otherwise," expressed one member. Over 60% of the team felt likewise, saying that CORE helped them "moderately/significantly" improve their communication, problem solving, and time management. Furthermore, 90% plan to pursue a STEM career. Our alumni reflect this, with over 90% studying or working in a STEM field. Alumna Lizzie says, "Joining robotics was the reason I became an engineer."

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

Southeast WI has a number of STEM companies and universities. CORE has partnered with them to host outreach events, getting younger students excited about STEM. Our community also has other unique opportunities we volunteer at, such as GE Girls, Serve Our City, and STEM for Girls, which promote STEM for underrepresented groups. As well as this, CORE has students from all 3 Waukesha public high schools and 2 charter schools. Members are able to make connections that they wouldn't otherwise.

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?

CORE makes a year-round commitment to *FIRST*, partnering with WI FLL, our sponsors, and others to spread *FIRST*'s message through various community events. At events like Southfest and the State Fair, we engage the audience in STEM by doing hands-on activities and demonstrations. We measure our impact through both the impact hours contributed by the CORE family and the approximate number of people reached, and we are always looking for ways to impact more people and spread *FIRST*'s message.

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

CORE is recognized for the excellent quality of the FLL tournaments that we host and run. In the last 3 years, we hosted and ran 2 FLL sectionals and 2 scrimmages, and last year, we hosted the WI FLL Championship, impacting 137 teams and over 3000 people. We've also shared our safety program with over 180 teams by doing 700+ safety demos at FRC tournaments in the last 3 years and by posting videos of various safety demonstrations and shop safety on our YouTube channel.

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

In 2018, CORE helped start 3 teams in our community, funding them and providing several student mentors. Students continued mentorship at another school until last year. We also began working with La Casa de Esperanza—a dual language charter school—to start a robotics club, helping them prepare to implement FLL by 2021. However, due to COVID, they were unable to start the team. At the County Fair, we have an FLL table and robot demonstration to promote interest in FLL.

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?

CORE started an FLL scrimmage 5 years ago to help teams practice for competition. We initially had 4 teams in attendance, but through our diligent efforts, we increased the attendance to 21 teams in 2019. In the last 3 seasons, the CORE family spent over 4000 hours running, hosting, and assisting at 22 FLL tournaments. The WI FLL Affiliate Partner Lisa Bartig commented, "Without CORE, Wisconsin FLL would not be as successful, impactful and be able to grow the number of teams as consistently."

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

CORE works closely with our sponsors to inform others about FIRST's message. In the past 3 years, CORE has participated in 31 sponsor-hosted events. We are also part of the Southeast WI Coalition, where 18 area FRC teams work to spread FIRST's impact on WI. The teams work together to encourage growth and cooperation amongst ourselves. CORE and the other teams emphasize the cooperation that is so vital in FIRST, preparing for the season together and offering aid and resources to each other.

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 reaches out to as many different people as we can through participation in events like Milwaukee's Serve Our City, the La Casa de Esperanza's Open Houses, and North South Foundation meetings. Our team also promotes inclusion in the team. In fact, 71% of our leadership is female. We also discuss a variety of topics such as mental health and LGBTQ+ identities. We share our support with others through the pride buttons we hand out at competitions.

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

CORE's subteams are entirely student-led. To select student leadership each year, applicants have interviews with mentors and the previous year's leadership before undergoing a team vote. Subteam leads for the next year are announced in May/June, allowing the existing leads plenty of time to train and guide the incoming leadership team. Leads and senior team members work to train rookie members, compiling "Books of Knowledge" that are regularly updated to streamline training.

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

Since 2018, CORE has contacted over 100 new businesses, spreading awareness of FIRST's message. We make calls to local companies, and do presentations and robot demonstrations to engage them with the team. Our partners appreciate our biweekly email updates during build season, as well as our invitations to attend meetings, tournaments, and an end-of-year banquet. We have also demonstrated our robot at sponsors' events like Rockwell's Engineering Week, Generac's Robotics Team Day, and GE Girls.

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

Recently, CORE has been focused on recruiting students. We attend 8th grade interest nights to promote the team and have been doing active outreach at all three Waukesha public high schools, working with administrations to spread information about CORE both digitally and physically. Also, our recruitment materials are now more accessible through linked presentations and videos on our website. We plan to start more FLL teams in local middle schools, setting up a "feeder system" for CORE.

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

CORE develops STEM leaders and innovators, giving students experience with responsibility and team management. At outreach events, we engage members of the community in STEM. On the team, we nurture a love for science and technology that persists as CORE students go beyond high school. One alumna said, "I found my confidence as a member of CORE. CORE has made me into the type of person who will run full steam ahead into something challenging, scary, but ultimately super awesome."

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.

This season, in conjunction with the Game Design Challenge, CORE students have decided to play the game that the

team has designed, CORE: Data Breach. The whole team has been split into two "alliances", which will compete against each other with robots that they designed and built. This is a unique opportunity that allows all students to work with new people, assume more responsibility, and learn about all aspects of building a robot. It also increases team morale during a challenging time.

Essay

Renewable energy is vital to our future; it offers a clean, sustainable way of fueling our world. Likewise, CORE is vital to our community; we energize others to learn more about STEM, fuel our workforce, and constantly innovate. Whether by finding solutions to new game challenges or more ways to engage others in STEM, we advance STEM education and the mission of FIRST. CORE's mission states: "CORE 2062 strives to be a place where the passions of our students become skills, concepts transform into physical products, and zeal creates a positive community impact." Beyond just STEM skills, students learn leadership skills while building relationships with team members, mentors, sponsors, and the community. We truly make a difference in the world.

CORE charges up our students

Our annual student survey shows that CORE helped improve members' technical skills and life skills. Over 63% of current students reported an improvement in their communication skills, 73% in problem-solving, and 60% in time-management skills. CORE also encourages learning and academic success among our members. Over 86% take advanced math classes; 83% take advanced science classes; and 90% take engineering, PLTW, or computer science classes. In fact, members are more likely to take challenging courses, with each student taking an average of 7.4 AP courses during high school. 100% of CORE students plan to pursue a post-secondary education, and 83% anticipate working in a STEM-related career. CORE is proud to have made a difference in our team members' lives.

Programming subteam alumna Julia had never programmed before joining CORE. By her sophomore year, she was leading the subteam. Due to her experience on CORE, she secured both a programming internship and acceptance to MIT. In her words, CORE "helped me a lot with the classes because I learned how to work with others, and how to program. I also now have a network of friends and mentors that I can go to for advice."

Members of CORE continue to be STEM leaders after their time on the team; nearly 30% of surveyed alumni are still involved with FIRST. 100% of surveyed alumni said that CORE had a "significant" or "very significant" impact on them; they found their passions for STEM on CORE, and the skills they learned helped them succeed in their post-secondary education and careers. One alumna said, "Through FIRST, I was able to discover and refine a passion for design and large-scale projects. I developed not only technical skills, but people skills like leadership, team building, and communication that have served me in school and in the workforce."

A prominent feature of our team is our student-led structure. This structure develops members as leaders in technology and engineering by giving students the opportunity to assume responsibility and manage a group of people, promoting teamwork and decisiveness. The 3 elected leads—Engineering Project Manager, Communications Director, and Safety Captain—oversee the team. They preside over various subteams—Mechanical, Design, Controls, Programming, Outreach, Safety, and Scouting—each of which have a student leader directing their tasks and training. The student leads work to improve upon previous years' rookie training and direct other team members. For the last 2 years, CORE has cross-trained members for different subteams, allowing greater efficiency during the build season. This fosters better communication between subteams. By evolving our methods, student leaders make training smoother and more comprehensive.

CORE generates a culture of safety

With rookie training, students also undergo rigorous safety training. During pre-season, CORE members from all subteams are taught general safety. They are also instructed on how to use every machine in our metals and wood shops and are required to pass 10 safety tests. During build season, our Safety Captain leads weekly safety briefs about various topics, such as Lock-Out Tag-Out and fire safety. Safety representatives from each subteam monitor the safety of fellow students. This year, we made our safety program more accessible for our students and other teams by filming our safety demonstrations and uploading them to our YouTube channel.

In the 2018 and 2019 seasons, CORE gave 732 safety demonstrations to other teams at competitions. At regionals, we are affectionately called "the earplug team," as we actively distribute earplugs in the pits and the stands when our decibel meter readings show unsafe sound levels. An eyewash station, first aid kits, and injury report forms are easily available near the front of our pit in "no-drop zones". This culture of safety has resulted in CORE winning 15 safety awards since our formation in 2007.

CORE powers the message of FIRST

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CORE ensures the sustainability of robotics and FIRST by investing in FLL. We work diligently to provide FLL teams with a positive tournament experience and to inspire a greater passion for learning and STEM. Lisa Bartig, the WI FLL Affiliate Partner, said, "Without CORE, WI FLL would not be as successful, impactful and be able to grow the number of teams as consistently. CORE is an integral part of WI FLL with hosting FLL tournaments, being super volunteers, and planning the future of FLL in Wisconsin." During non-COVID years, CORE hosts and runs at least one FLL event annually, running 2 Sectionals in the last 3 years. Furthermore, we hosted our first Wisconsin FLL Championship in February 2020. Since 2018, the CORE family (composed of current and past team members, mentors, and their families) has dedicated over 4300 impact hours to FLL, affecting 300 teams. For 2019's 32 team Sectional, we provided over 90% of the total volunteer hours needed, and for the State Championship we provided 85%. In the words of Lisa Bartig, "CORE hosts one of the best FLL tournaments every year."

In 2016, we hosted our inaugural FLL scrimmage, which was designed to prepare rookie FLL teams for the competition environment. Since then, it has become an annual event, hosted and run almost entirely by the CORE family. By 2019, scrimmage participation quintupled to 21 teams.

CORE also promotes STEM education for younger students, working with the School District of Waukesha (SDW) to increase participation. Over 75% of our team participated in robotics programs prior to joining CORE. In the fall of 2018, we started and funded three new FLL teams at a local elementary school. Last year, some members mentored an FLL team at another elementary school in the district. Our future goal is to find and train new mentors in each school and subsequently, to start more FLL teams in the district.

CORE energizes our community

Along with our involvement in FLL, CORE is heavily involved in SDW events. We display our robot at multiple events at all 3 high schools. Over the past 3 years, we extended the message of FIRST to over 800 people of all ages at the SDW Open Enrollment Day as we drove our robot and informed others about FLL and FRC. Through our presence at school events such as 8th grade interest nights, open houses, Hillcrest Math Night, and Blair Fair, we have impacted over 3,700 students, staff members, and people in our community.

CORE's impact extends beyond SDW as we engage in year-round promotion of FIRST at businesses, schools, and local events. Since 2018, we've contacted over 100 new businesses, introducing many of them to FIRST. We promote FIRST at sponsor events like GE Girls and Rockwell Automation's UPAF Fundraiser, and at popular community events such as the Waukesha County Fair, State Fair, and Maker Faire. We reach out to many different members of our community through events such as Serve Our City in inner-city Milwaukee; a North South Foundation meeting, which helps spread FIRST to the Indian community; and the La Casa de Esperanza's Open Houses where we share FLL with Waukesha's Hispanic community.

CORE also shares the message of FIRST with local companies, partnering with them to spread STEM education. We have strong relationships with all of our sponsors—some since CORE's inception. This year alone, CORE partnered with 6 new companies and continued sponsorships with 25. 21 of these companies are STEM-related and 6 employ our mentors, deepening our partnership and ensuring a long-lasting relationship. We have toured 5 of our sponsors' facilities and attended 31 events hosted by them, presenting what our team and FIRST have to offer.

A long-term sponsor, Dematic, recently chose FIRST as its North American Outreach focus. 2 CORE mentors serve on their committee to advise the distribution of funds toward FIRST teams and college scholarships. As well as this, we work with our university sponsors to learn about their educational opportunities for students, and we volunteer at their STEM outreach events. Our relationships with our sponsors help not just the team, but also individual students and the rest of the community.

CORE ensures sustainability for future students

CORE hopes to continue advocating for STEM education in Waukesha County and beyond. In the next 5 years, we plan to start and mentor FLL teams in more SDW elementary and middle schools. Our long-term goal is to implement FLL in every SDW middle school. To do this, we need to increase student interest across the district—another goal. We hope to strengthen student involvement in FIRST and FLL in our district through increased mentoring and involvement by CORE students at district events. This will not only ensure CORE's sustainability, but also foster passions for engineering and technology as students prepare to enter the workforce.

CORE is a sustainable way of powering the engineering and technology fields, in the same way that renewable energy is a sustainable way of powering our world. We charge up our students, generate a culture of safety, and energize our community. Above all, we continue to power the message of FIRST by building lifelong skills and inspiring innovation.