

Chairman's Award - Team 5577

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2021 - Team 5577

Team Number

5577

Team Nickname

Kinematic Wolves

Team Location

Detroit, Michigan - 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.

Our participants gain an understanding of STEM through FIRST, which creates comfort in STEM content, allowing them to take action to pursue STEM or other careers, they previously did not have confidence in. All our alumni have graduated from High School and have five alumni currently serving as active mentors. ? of our alumni changed career goals from humanities to STEM while on the team. 70% of our alumni pursue four-year STEM degrees, while 30% attend community college.

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

One opportunity our team uses in the community is our school's Corporate Work-Study Program (CWSP). This initiative not only funds our team but also provides internships for students who are interested in pursuing STEM careers. This is helpful, as our community consists of 90% minorities, and it is a fact that in STEM communities, minorities are underrepresented. Furthermore, our team has encouraged 98% of team alumni to pursue STEM careers, leveling off Detroit's STEM disparity.

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?

Our team is role models of student engineers in the community. Working with business leaders highlighting the need for STEM programs we increase engagement and funding for our members. These initiatives lead to an increase in the school's CWSP sponsors with a STEM connection by 60%. We raise awareness by developing a 5K fun run to promote community-based STEM opportunities. This provides an expandable platform via social media to continue conversations creating a sustainable channel of growth.

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

Being a founding team that started the Robotics and Engineering Center of Detroit (REC'D), we are recognized as role models within this *FIRST* community. We collaborate within all *FIRST* levels over the past six years as teams understand we are the source of advice and assistance. We continually work within *FIRST* teams in our community to provide them with support and opportunities to showcase their projects through one-on-one sessions and scrimmages throughout the year.

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

At the REC'D, we host a minimum of one seminar on pneumatics, business, and marketing initiatives for the ten teams working at the center each season. Leading network activities to increase because it supports positive cooperation. We assist the Detroit area FTC teams by hosting scrimmages and mock judging sessions. We assist in hosting the Detroit FTC Qualifier Event for the past six seasons. We mentor six FTC teams in our community in collaboration through the Motor City Alliance (MCA).

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 mission is to provide opportunities that inspire others by showcasing our future leaders' abilities. We push curriculum to increase STEM options for the students leading to nine new STEM-related classes increasing exposure through community activities such as parades and holiday charity events. These events allow us to showcase our team while working with young people by learning how to drive the robot or how computer code functions.

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

Sponsor: Support for DTE Energy recruitment of mentors, showcasing our robot at their world HQ to inspire the public about FIRST. Community: Provided SouthWest Detroit Environmental Vision's Cadillac Urban Garden with the design and construction of 4 rainwater collection systems. These decrease the garden's carbon footprint. Partnered in Robotics Engineering Center of Detroit with 9 FRC teams. Team: Collaborate with FRC503 on an alliance to support STEM and FTC Robotics teams in Detroit.

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 is the epitome of equity, diversity, and inclusion with every activity we promote. We are 98% minority, are located in a minority-represented community. The team's representation includes members who are part of the LGBTQ+ community and strong female leaders over the past seven seasons. We encourage all team members to speak their minds without fear of ridicule. Members are accepted no matter their background, heritage, race, or gender. Everyone is encouraged to be themselves.

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

To ensure the sustainability of our team, we focus on funding and training. We created a three-year look-ahead budget and business plan to keep ourselves financially in check. We instituted annual community fundraisers to support STEM initiatives beyond robotics. We take the initiative to sign up for summer immersion programs for our members. We update our sponsors about our achievements and activities, including our pipeline, to showcase our role in developing STEM careers.

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

Our initiative to level the disparity in STEM is connected to communication. Using social media to acknowledge our sponsors through tags. Incorporating their activities with the team via e-blasts highlighting their involvement. Personalizing thank you letters and mailers to each sponsor. Embracing events to showcase our connection which assists with industry communication. And inspiring our mentors to promote the team within their company to increase additional opportunities for the sponsors.

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

An area we were unexpectedly affected by is working while social distancing. We continually try to find new ways to keep the team members involved while in our "work from home situation." With a decent size team, we do not bring everyone to the building. We have most mentors and certain students virtually. Our team has the leads of each subteam in the building and hands-on. While members who are in training stay virtual and stay in check with updates.

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

Our emphasis is on bringing FIRST's mission to the community, primarily "under-served and under-represented" populations. This is our heritage, and we are proud of it. However, we know, going forward, the families will need opportunities to progress into the melting pot that the US historically provides. We show our friends, neighbors, and ourselves that we have the abilities as those who have gone before. We pull ourselves, through hard work and intelligence, towards our future.

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.

Through the school's Corporate Work-Study Program (CWSP), we gain real-world experience and job training. Members are placed in positions that allow for individualized training and experience during the off-season and beyond. This

unique relationship pushed us to fabricate, assemble and deliver face shields for hospitals and first responders, despite being isolated due to the pandemic, including our partners. It is allowing us to give back to our support system.

Essay

I am Lizbeth Morales, Captain of FRC5577, the Kinematic Wolves, from Detroit Cristo Rey High School. Here is our story.

Our mission is to encourage student interest in STEM in our community. Doing so prepares us to work and thrive in our increasingly technology-driven world and global economy. We have come far in "changing the game" in our school, partners, and community, as you will see below.

Our team's diversity and thirst to improve their lives drives us to support our local robotics programs and other local STEM activities. As a leader for STEM initiatives in the city, we are using alternative methods of continuing our operations under pandemic conditions.

Our team is from the SouthWest neighborhood of Detroit; Motor City.

Some statistics to help you know us:

Detroit's avg. household income - \$25,383, approx. 1/2 of Michigan's

In SouthWest Detroit we are:

67% Latinx, with 30% foreign-born, a community of immigrants.

14% African American

17% Caucasian.

46% have no high school diploma

30% are K-12 age

10% 18-22

50% 22-64 years.

35% of households are 2-parent families

5.7% of high school graduates attend college

Our team demographics reflect our neighborhood, with 82% Latinx, 15% African American, and 3% Caucasian.

Our homes are far from the American Dream of a single-income family. Most family members old enough work must have a job to help support their family. Common occupations include production and construction. Only 0.9% of these jobs are STEM-related.

Our school offers a college preparatory education without regard to a student's socioeconomic background. The school slogan; "the school that works!" reflects that all students participate in a Corporate Work-Study Program (CWSP), providing entry-level corporate positions to students. Sponsors provide on-the-job experience and a salary to pay their tuition. This process also works within our team. Our sponsors help build up our team as well as our school.

The past three seasons, we have maintained a membership of 35 students, which is 10% of our school population. Team members are desired by our CWSP sponsors to work in STEM-related entry-level positions. Our students are introduced and groomed for future employment as college graduates. The school achieves 100% graduation rates with 100% college acceptance. This compares with a city average graduation rate of 85%. Additionally, 85% of our school alumni and 98% of our team alumni are currently in college. Southwest Detroit's average is 5.7%.

We model our team operations like our sponsors, creating Business, Mechanical, Electrical & Programming sub-teams. Each sub-team has its specialists, such as Marketing and Finance. But our structure does not limit our students' experiences. Students from the Business Team may help the Mechanical Team, or vice versa, allowing for open communication and family feeling.

When the pandemic hit, one of the struggles was the loss of physical connections of our wolf pack. We shifted into virtual meetings and small gatherings as we started our summer initiatives. The most important thing for us is maintaining our pack, reaching out, supporting, and helping each other, even remotely.

More than 95% of our team members lead and participate in other activities. One of the clubs is the Circle of Support Club, which brings education and advocacy for Detroit's immigration issues. This initiative is personal to us because of the number of our families impacted by immigration. Our families came to the United States for a better life, and being a member of our team provides opportunities to advance that dream. We care about each other; Our team is a family.

33% of our team members are female, which is higher than the national average of 20% female representation in STEM careers. An example is Yaritza. She joined the team out of curiosity as a freshman and quickly discovered her passion for problem-solving. Into her 2nd year on the team, she took advantage of our off-season programs, such as a summer enrichment class at Michigan Tech, to develop her mechanical engineering interests. Starting her 3rd year on the team, Yaritza's dedication to assisting the team in various remote activities, including constructing robot-specific presentations, highlights our approach to a task's functionality.

Our relationships with our school and team sponsors to develop a pipeline into STEM careers positions us as community leaders. We do not want to move to a better area, we want to make our neighborhood better. We support innovation developers through our work with other robotics programs and STEM enrichment opportunities. More than 1/2 of our team have said they are hoping to come back to support and mentor teams after graduation.

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Our team began when our original team sponsor, The Ideal Group, connected with a community resource center in Detroit and proposed a Robotics Build Center. The Robotics Engineering Center of Detroit, R'ECD, came from this idea. It is where we gather after school during the season to build our robots. We were 1 of 2 teams who initially started at the center. The build center grew from 2 teams to now 10 with over 150 students. Being an older team at the center, we promote Coopertition® and take the initiative to help other teams by hosting workshops on Business Plans, Social Media, and Pneumatics. We act as a resource to other teams at the center. We all come from the same community.

Our development of a pipeline into STEM careers pushes our creativity to advance other robotics programs. Detroit Public Community Schools promote teams' establishment, and we work side by side with these teams through the Motor City Alliance (MCA). We joined FRC503 to create MCA to expand robotics and STEM programming for the 49 recognized FTC teams in the city. This includes frequent support as well as delivering seminars on how to regroup and run virtually during the pandemic. Younger teams are facing difficulty meeting remotely.

This season, we are collaborating with six charter and private schools and three public schools out of the 49 registered teams to prepare for competitions directly. In past seasons this number was higher but is down due to the pandemic. We have run and hosted or co-hosted FTC competitions every season for the past six years. We run and host FTC scrimmages for teams to practice before qualifiers. The teams have an opportunity to practice for their interview through a mock judging session where we provide feedback to them to prepare for their events.

The development of STEM is beyond just robotics. It is the game-changer in our community. We incorporate STEM into the community by bringing it to events. Our annual Cinco De Mayo parade is where 10,000 spectators join to watch, learn, and record our robot in action.

We showcase and promote STEM at our school's biggest fundraising event, GEMS of Detroit. Over 800 guests attend. They drive the robot, learn about our team, and are shown ways to support us.

Our Build Center hosts an annual Sponsor Night, where all of the teams promote STEM successes in the community. One of our most anticipated events is Miracle on Vernor. This yearly holiday gathering lightens up everyone's spirits. We engage over 2,000 participants with STEM, seeing our robot and enjoying science-based activities.

Our multi-year initiative is designing and building Rainwater Collection Systems. This allows the Cadillac Urban Garden to decrease its reliance on city-provided water. We finished 4 water collection system during the pandemic by working in small groups and planning the required activities before gathering on-site.

Our team took a turn when the pandemic came. We shifted our outreach initiatives and our meetings to a virtual platform where we brainstormed different activities to participate in, including the development of presentations for virtual showcase events with other FRC teams from around the world.

The pandemic hit our community hard. Financial impacts to our families due to the loss of jobs or the need to care for vulnerable members were palatable. Even though they had to stay at home, our team members recognized a need and manufactured face shields to distribute to businesses and community organizations. Because we had to meet remotely and did not have the required equipment at our disposal, we coordinated with each other to deliver 3D printers, thermal laminators, and necessary supplies for team members to work on this project at home. The students engaged their families to assist them with the production, providing a fantastic STEM opportunity for the younger family members. The more we produced, the more we donated to the community, including the Detroit Public Safety Foundation. We were the only robotics team in Detroit to support their need for PPE like our face shields. We understood the importance of PPE in the fight against COVID for those front-line workers. We connected with two of our sponsors, DTE and Walbridge, to ask if they needed any of our shields. Both of these sponsors were impressed with our offer. They may not have needed them, but to be considered at that moment was well received. Our founding sponsor, Ideal Group, helped us distribute the shields through their workforce. We joined the FIRST in Michigan 1,000,000 PPE challenge to record our various donations. We were 1 of 2 FRC teams to donate close to 600 shields over three months. Our school uses our remaining supplies as a physical barrier option for the faculty, staff, students, and visitors.

As we look to the future, we continue to keep our team healthy and viable by following our Business Plan and developing a three-year rolling budget. We are developing more STEM courses for our students. Partly because of our success, the school STEM curriculum has been increased by 9 new classes. Over the next 3 years, our goal is to add more AP STEM-related courses.

We look forward to continuing our game development as each year passes.