

Chairman's Award - Team 3654

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2020 - Team 3654

Team Number

3654

Team Name, Corporate/University Sponsors

Arconic Foundation/UTC/Bob's Discount Furniture/A Wizard Did It/Lauren States/Solid Works/Michele Ciancola/Stanley Black and Decker/Swanny Seirup&Mercy High School

Briefly describe the impact of the *FIRST* program on team participants within the last five years.

FIRST is a stepping stone for our students to pursue STEAM after Mercy. Students with a wide range of skills and abilities find major roles, encouraging uniqueness and independence. Team members explore STEAM and participate in a safe and accepting environment, surrounded by women in the field. 82% of 2019 team graduates pursued STEAM studies, 90% in the last 2-5 years went on to study in STEAM fields. This season, the team recruited 14 members, one transferring specifically to join the team.

Describe the impact of the *FIRST* program on your community within the last five years.

At Mercy, we continue to look to FIRST for inspiration for our future. We have added 16 STEAM classes to our course list since being involved in FIRST, making 45.6% of all classes STEAM-related. Our demonstrations at Open House have sparked interest in new students coming to Mercy. The TechTigers immerse themselves in our community by demonstrating at activity fairs and summer camps. We have also partnered with the Middletown Youth Services Bureau and Kid City to run STEM activities.

Describe the team's methods for spreading the *FIRST* message in ways that are effective, scalable, sustainable, and creative.

Girls actively volunteers for causes meaningful to them and use those opportunities to spread the FIRST message. We raised \$217 with a movie night and \$1,580 with a Jean Day to support the Girl Up Boston Coalition. Globally, our team supports girls rights to education: providing bicycles in Malawi for transportation to school, fundraising refugee tuition fees in Uganda, and nearly \$1,800 for school supplies in Guatemala. We also collected sanitary supplies for girls in Ghana with PIIP.

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

The TechTigers bring opportunity to members through leadership roles during the season. For 2020, we offer 9 leadership positions, roles that help us share knowledge acquired as senior members with new team members and prepare our future TechTiger leaders. We also participate in multiple outreach events, fairs and sponsor events. For our 10th season, we invited other teams to celebrate our birthday. Our team encourages positive team interactions with our annual FRC "Friendship Scavenger Hunt."

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

Our team has founded FRC team 8167 at Coginchaug High School for the 2020 season by reaching out and building a relationship with their students and moderators. We also founded team 7694 at Northwest Catholic High School for the 2019 season. We have assisted FRC team 5658 during their first years by sharing strategies, outreach ideas, sponsorship and finances.

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

Our team has mentored JP11 LEGO LION 14105 during their first season and we previously talked to Woodrow Wilson about forming a team. Unfortunately, due to our fundraising requirements, we are not able to help form Jr. FLL, FLL or FTC teams.

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

TechTigers are ready and willing to assist teams new to FIRST. In the last 5 years, we logged 985 volunteer hours that include volunteering at FIRST events and attending other team meetings. To encourage teams, we hosted Portland FTC in our shop and helped out at FLL events. We offer teams use of our workshop and made ourselves available to answer questions they may have. In 2018, we held an imagery workshop for FRC 4557 and they went on to win the imagery award at NE District Championship.

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)

We work with FIRST teams at outreach events including RoboFest, Circus Robotix, FLL and FTC events. Three of our mentors work with FRC teams 8167 at Coginchaug and 7694 at Northwest Catholic. One of our mentors helped with Coginchaug's programming team and taught a training program at their school. We previously met with Northwest Catholic members to mentor and assist in forming their team. Members have worked with FLL team 14105 at JP11 LEGO LION, a vex team in Wallingford, and FTC Team 8152.

Describe your Corporate/University Sponsors

Sponsors range from large corporate sponsors to small businesses. Mercy, being our anchor sponsor, is our biggest supporter. They provide an amazing workshop and support us in ways that aren't just monetary. Arconic, our largest donor awarded us a \$30,000 grant in 2020. Through conversations with Arconic, they encouraged us to apply for a larger grant resulting in a \$10,000 increase. Other donors include the Linde, Bob's Discount Furniture, UTC and the Filipino-American Association of Engineers.

Describe the strength of your partnership with your sponsors within the last five years.

A priority of our team is to maintain strong relationships with our sponsors. We attend company tours and have received invites to present to our school's Board of Trustees. We keep personal contact through our newsletter and social media platforms to keep them engaged. Our team invited our sponsors to competition, sent thank you gifts and invites to our shop where they are shown how our team operates. We are supported by our repeat donors, whose donations sustain us throughout the season.

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

FIRST is an organization full of innovators, engineers, students and teachers who come together to integrate STEAM into their everyday lives. It provides the resources to give safe access to STEM-involved clubs and programs from grades K-12. FIRST motivates young girls and boys to explore their interests and give back to their community. It also promotes self-confidence, teaches leadership and encourages diversity.

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

Our team strives to participate in as many volunteer events as possible, mainly through the organization Girl Up. For the upcoming year alone, we are planning to attend a self-defense workshop, a Day of Action lobbying for Educational Justice, and a leadership summit. We are currently selling bracelets at our school for Girl Up with an expected \$200 profit for donation. Furthermore, the TechTigers hosted a robotics panel at ConnectiCon, to encourage families to become involved with FIRST.

For FRC teams older than 5 years, briefly describe your team's broader impact from its inception.

We impacted our school by broadening the focus on STEM which resulted in a more advanced STEM curriculum. 90% of our graduate students who have majored in STEM fields went on to receive scholarships, awards and work for NASA and earn PhDs. More globally, we worked with Girl Up to raise money for villages in Guatemala with school supplies and ran a drive for People Invested in People for feminine products to provide to girls in Ghana.

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

Holly Lewis

Essay

It only takes one person to start a revolution. Or, in the case of the TechTigers, it takes ten teenage girls. In 2010, FIRST contacted Mercy High School about starting a FRC team to increase the participation of girls in the NE FIRST community. Two FIRST representatives sat down with three teachers and ten students on October 25, and the TechTigers were formed. Ten years later, our revolution has touched not only the lives of our team members but our school, community, and world.

Being a TechTiger has been empirically proven to elevate the success of a Mercy girl after high school, particularly in STEAM fields. For instance, 100% of TechTigers pursue post-secondary education, 90% continuing to study a STEAM field. Moreover, our members consistently earn an average of \$15,000 more in STEM-specific scholarship money per year than other Mercy STEM majors. We have consistently been recognized for excellence in academics, service, and leadership, receiving 3 Rensselaer medals, 10 Society of Women Engineers Certificates of Merit, and 3 awards from the National Center for Women in Information Technology in the past 5 years.

When she graduates, each TechTiger is armed with self-confidence and an affinity for collaboration cultivated by numerous opportunities for student leadership. We are led by three co-captains, two co-safety captains, leads for each major facet of the team (superstructure, chassis, programming, and business), and assorted project managers, all constantly communicating in person and via Slack. While these roles are important, our philosophy that anyone can be a leader is even more crucial. Each team member is encouraged to exercise leadership through communication, enthusiasm, and constantly encouraging themselves and others to reach their full potential. We are a community that has perfected pushing the boundaries of what a teenage girl can do. Once they graduate, TechTigers are fully prepared to take on a co-ed world with courage in their convictions, social boldness, and gracious professionalism.

Beyond our members, the TechTiger revolution has permeated the entire Mercy High School community. Since our inception, our members have consistently advocated for an adaptive, modern curriculum that prepares students for careers in STEAM. As a result, the school has put a spotlight on STEAM with the creation of six science classes, five computer classes, five science-based clubs, and annual participation in the Physics Olympics, American Region Math League, and DigiGirlz events. Mercy has now been awarded national honors for excellence in STEM, such as the AP Computer Science A and AP Computer Science Principles Female Diversity Awards.

Mercy recognizes the importance of the representation of girls in STEM that we provide. Our school features the TechTigers at important events like open houses, student orientations, school marketing materials, board meetings, and summer programs. The team has also participated in the school's annual Yellow Rose Auction, creating a STEAM-themed educational toy box to be auctioned off during the fundraiser. Through these efforts, we were able to establish relationships with role models like Lauren States. States is a Mercy alumna and member of the Mercy High School Board of Trustees, Harvard Fellow, former Chief Technology Officer of IBM Corporate Strategy, and 2014 inductee into Women in Technology International, Women in Science and Technology Hall of Fame. Upon visiting our workshop for the first time in 2018, Ms. States voiced her admiration for the TechTigers dedication to STEAM and to each other. She remains a champion for the TechTigers, wearing her orange team shirt to every competition and urging her fellow board members to support our mission.

Outside of Mercy, we maintain a strong connection to our Middletown roots. We have frequent demonstrations at community events such as the Main Street Stroll, New England Electric Car Club Car Show, Midnight on Main, and many others. We have repeatedly partnered with the organization Girls Who Code to facilitate summer camps and single-day events where our team members lead activities, including robot demonstrations, binary bracelets, and squishy circuits. We have also been heavily involved with the local Films on Foss program, demonstrating our robot to children before the movie showings. In 2018, we assisted in planning one of these events, suggesting the movie Hidden Figures and handing out special Katherine Johnson stickers.

The TechTigers recognize the significance and power of the FIRST community. That is why we focus our outreach on helping FIRST flourish. For the past five years, FIRST volunteering has made up the majority of our community service, totaling over 1,000 hours. We often partner with the organization Call Before You Dig to sponsor official events and donate safety glasses.

In the past five seasons, we have mentored the FLL Team JP11 LEGO LION, a Vex team in Wallingford, and FTC Team 8152. Additionally, during the 2019 season, we participated in long-distance mentoring via email with fellow all-girls FRC Team 5975 in Portland, Oregon. In 2019, we founded our first FRC team, 7694, and mentored them since. This year we continued this mission by founding and mentoring our second FRC team, 8167.

Mastering the force means nothing if you don't use that power to help others. The TechTigers are three-time Imagery Award winners, and in 2017, Team 4557 contacted us for help with their imagery plans. We visited their school to lead a workshop focused on the value and practical application of team imagery. When our combined work paid off and their number was called for for the Imagery Award at the 2018 NE District Championships, our members cheered the loudest as 4557 walked to the field to receive their trophy.

Another example of our community-oriented mindset can be seen in our scouting program. In 2017, we developed a digital scouting system that generates point averages and rankings that we found immensely useful for strategy and alliance selection. The next year, when Team 4557 asked to use our data for alliance selections, we not only obliged but decided to publish all of our live scouting data via a QR code in our pit.

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Most importantly, what we contribute to FIRST is a consistent positive representation of girls in robotics. This season, the TechTigers are the only all-girls team in New England, a district of 236 teams. After we won the chairman's award for the first time in 2019, girls on other FRC teams came up to congratulate us. They told us that they see us as validation that they belong in robotics. Every student on our team is female—the drivers, the captains, the artists, the finance experts. We are proof that FIRST is for everyone.

In 2018, we decided that helping girls in Connecticut or even just the United States wasn't enough. We wanted to do something more, help girls across the world overcome barriers to their education that their gender presents. First, we partnered with the United Nations Foundation Girl Up. We created a club at our school that extends beyond robotics members with the goal of raising money for girls' education in third world countries. With Girl Up, we hold annual movie nights, bake sales, jean days, and other various fundraising events. In 2018, we raised money for bicycles, bicycle repair kits, and basic maintenance training for 15 girls in Malawi, a country where only 9% of women finish secondary school. For this work, we were named Girl Up Rookie Club of the Year out of hundreds of new clubs formed internationally.

In 2019, we sponsored the education of 89 Ugandan refugees for an entire year. So far this year, we have raised almost \$1800, more than enough to equip an entire village in Guatemala with school supplies. Our team members have elected to go even further into Girl Up, attending the Global Leadership Summit in Washington D.C. or serving on the board of the Boston Coalition. In 2019, we partnered with the Boston Coalition to organize a STEM for Social Good event named "Steminist Saturday." Through workshops, activities, presentations, and Q&A's, we worked to empower young women to better their communities by connecting science with humanitarianism.

Another organization we work closely with is the People Investing In People Foundation. Their mission is to bring FIRST and STEAM education to underprivileged areas, particularly Atebubu in northern Ghana. The TechTigers set up PIIP's fundraising system and facilitated their cultural exchange program consisting of weekly video conferences between our members and girls living in Atebubu. We have also organized several hygiene supplies drives with a particular emphasis on menstrual hygiene. Over the last three years, we have sent thousands of feminine hygiene products to girls in Ghana, translating to weeks of schooling that would have otherwise been sacrificed. Finally, last summer one of our team members traveled to rural Atebubu for three weeks to establish a computer lab, teach hands-on science classes to over 150 students, and facilitate a campaign focused on women's health awareness, including feminine hygiene outreach and product distribution.

As we move forward into our tenth season, it is hard to believe that the TechTigers' revolution all began with a garage, drill press, and vision of what FIRST and the world could be. We are now a family that supports each other in an environment where not many others will. We are a role model, featured in the New Haven Register and Strong Magazine for Girls, showing others that femininity and meekness are not synonymous. We are a force for change and a hope for the future.

Still, our mission remains the same: STEM for all. While the work is not always easy, it is always worth it. Most importantly, we recognize that this work is never done. As Han Solo said, "People are counting on us! The galaxy is counting on us!"