

Chairman's Award - Team 3654

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2021 - Team 3654

Team Number

3654

Team Nickname

TechTigers

Team Location

Middletown, Connecticut - 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.

Through FIRST, members of the TechTigers have developed leadership, independence and work ethic, even facing great adversity. FIRST has led 90% of our TechTigers in the last 3 years to pursue STEAM studies, including a recipient of a FIRST scholarship in 2020. In the 2019/20 season, the team recruited 14 new members, including one who transferred specifically to join the team. Despite the challenge of recruiting during Covid-19, we added 7 new members who embody the FIRST message.

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

The TechTigers have advocated for STEAM and as a result our school has added 16 STEAM classes to our course list, making 45.6% of the curriculum STEAM-related. We demonstrate our robot at activity fairs and summer camps. Throughout the pandemic, we have mobilized to help healthcare workers and homeless shelters. We distributed handmade masks, delivered pizza, and donated Keurig coffee makers to 3rd shift nurses at Middlesex Hospital.

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 places emphasis on our ability to be compassionate, creative, and flexible to meet new challenges. We provided bicycles in Malawi for transportation to school, raised money for refugee tuition fees in Uganda, school supplies in Guatemala, and girls' education in India. So far, we made 3D-printed face shields and ear savers for multiple organizations. To combat Covid-19, we donated 216 masks, 39 earsavers and 47 face shields. We delivered 39 pizzas to hospitals to thank first responders.

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

The TechTigers play a vital role in their community by spreading the mission of FIRST. We participate in various school and FIRST events, accumulating nearly 1,000 volunteer hours in the past 5 years. Through these efforts, we were able to establish relationships with role models like Lauren States; a Mercy alumna, Harvard Fellow, and former Chief Technology Officer of IBM Corporate Strategy. Our team encourages positive team interactions with our annual FRC "Friendship Scavenger Hunt".

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

Our team has founded team 7694 at Northwest Catholic High School for the 2019 season. We have also founded FRC team 8167 at Cuginchaug High School for the 2020 season by reaching out and building a relationship with their students and moderators. We have assisted FRC team 5658 and JPII LEGO LION 14105 by sharing strategies, outreach ideas, sponsorship and finances. We also participated in long-distance mentoring via email with fellow all-girls FRC Team 5975 in Portland, Oregon.

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?

In the past three years, the TechTigers have helped to inspire young people to be leaders and innovators through organizations such as Girls Who Code, Films on Foss and Girl Up. We have mentored at summer camps and held single-day events to exhibit our robot. A student traveled to Ghana with the People Investing in People Foundation to educate young girls. This season, we conducted a presentation for elementary girls through Collins Aerospace in an effort to introduce them to STEM and FIRST.

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

A priority of our team is to maintain strong relationships with our sponsors and other organizations. 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 our sponsors and fellow teams 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.

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, *FIRST*, and your communities.

We pride ourselves on being an inclusive organization where students and mentors can be free to let their personalities and differences shine. Our differences allow us to generate unique thoughts and dialogue that result in our outreach portfolio. We attain our goal by encouraging our members to participate with the Diversity and Inclusion Committee at Mercy High School.

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

We are led by 3 co-captains, 2 co-safety captains, and leads for each major facet of the team. Each facet is responsible for sharing acquired knowledge and teaching future leaders of the TechTigers. Each team member is emboldened to exercise leadership through communication, enthusiasm, and constant encouragement for each other. We document and organize ourselves with a cloud based filing system that retains our historical data for future members to access.

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

Our team demonstrates a strong connection to all of our sponsors, whether they are donating for the first time or returning for our new year. We participate in various events companies invite us to such as Henkel, Pratt and Whitney, Collins Aerospace, and many others. We invite our sponsors on tours of our facilities and keep contact through letters, social media, mentors, and more.

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

Our team could improve our overall communication. Although we have thrived through Covid-19 and continued to stay active in our community and FIRST, our team could always encourage more team bonding. To improve, our captains and mentors have encouraged junior members to participate in subteam updates and general discussions. We want everyone to have a voice!

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

The TechTigers have made it their duty to embody the FIRST mission whether in their community or globally. We impacted our school by broadening the focus on STEM which resulted in an 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 work with Girl Up to raise money for girls education.

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.

The TechTigers have attended events ranging from self-defense workshops to leadership summits. Furthermore, the TechTigers hosted a robotics panel at ConnectiCon to encourage families to become involved with FIRST. The TechTigers have worked tirelessly to make the best of our season during the COVID pandemic and tried to participate in as many volunteer events as possible. Helping first responders was one of our biggest priorities this season.

Essay

It only takes one person to change the game, 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 within the NE FIRST community. Two FIRST representatives sat down with three teachers and ten students on October 25th, and the TechTigers were formed. Eleven 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 in a STEAM field. Moreover, our members consistently earn an average of \$15,000 more in STEAM-specific scholarship money per year than other Mercy STEAM majors. We have consistently been recognized for excellence in academics, service, and leadership. We have received 4 Rensselaer medals, 12 Society of Women Engineers Certificates of Merit, and 6 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 of whom constantly communicate in person and via Microsoft Teams and e-mail. 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 teenage girls 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. Most importantly, what we contribute to FIRST is a consistent positive representation of girls 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.

Our TechTiger game changers have 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 new 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 also participates 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; a Mercy alumna, Harvard Fellow, and former Chief Technology Officer of IBM Corporate Strategy.

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 bracelet making, and assembling squishy circuits. We have also been heavily involved with the local Films on Foss program, demonstrating our robot to children before the movie showings.

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 a large portion 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 hundreds of 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-girl FRC Team 5975 in Portland, Oregon. In 2019, we founded our first FRC team, 7694, and mentored them since. Last year we continued this mission by founding and mentoring our second FRC team, 8167. This year, we continue to mentor these teams virtually because of the Covid-19 pandemic.

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In 2018, we decided that changing the game for 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. In 2020, we raised almost \$1800, more than enough to equip an entire village in Guatemala with school supplies. So far, we have raised nearly \$600 towards a fundraiser geared to diminish gender-based violence in places like Uganda, Liberia, India, and Guatemala. 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." This year, we have had our TechTigers working through virtual workshops, activities, presentations, and Q&A's, with Girl Up to empower young women to better their communities by connecting science with humanitarianism.

Another organization we have worked 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.

We all know that COVID-19 has had a great impact on the world this year, and the Tech Tigers were not an exception. Only 9 days after our first competition of the season, Mercy High School closed its doors for the state lockdown, leaving our workshop empty and our spirits down. Despite this setback, we have remained dedicated not only to learning and growing in the STEM field but also to serving our community. We have continued to collaborate over email and meet weekly over Microsoft Teams. It only took us two weeks from our last competition to find our footing in our socially distant setting. We used our machine skills to sew masks, our brainpower to 3D print approved face shields and ear savers, and our hearts to hear that third shift nurses at Middlesex hospital felt unappreciated and to bring them pizza with homemade cards. So far we have sewn and donated 216 cloth face masks to essential workers, St Vincent DePaul soup kitchen, St. Vincent Hospital, Middlesex Hospital, AMC, and locals. We have 3D printed dozens of ear savers which were donated to Apple Rehab, Middlesex Hospital, St Vincent DePaul Soup Kitchen, and UCONN Health, as well as 47 face shields which were donated to Apple rehab, Trinity College, and local dentists. So far we have donated 39 pizzas and a new Keurigs over 9 trips to the third shift nurses at Middlesex Hospital. In addition to this outreach, our team members have also taken initiative to volunteer in other ways while they are in quarantine such as cleaning up litter in Middlefield and taking temperatures for physician's offices. This season, we conducted a virtual presentation for elementary girls through Collins Aerospace in an effort to introduce them to STEM and FIRST.

As we move forward into our eleventh 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 Stephanie Lahart said, "She didn't play the game, she changed the game!"