

Chairman's Award - Team 5740

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2021 - Team 5740

Team Number

5740

Team Nickname

Trojanators

Team Location

Cranberry Township, Pennsylvania - 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.

Over the past three years team 5740 has seen a 100% graduation & college acceptance rate, with 82% opting to continue in STEM majors. Our 10 current seniors have been offered \$1,900,800 in scholarships, with 90% pursuing STEM majors. 5740 has also produced a Dean's List Finalist & a Dean's List Award winner. An alumni with high-functioning autism claimed his involvement prepared him for his major in computer science; FIRST fostered his passion.

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

As part of a faith-based community, 5740 values service; we are committed to service through STEM. Our SeniorsFirst(SF) initiative is aimed at bringing STEM to the often overlooked elderly population. SF made 8 visits to local nursing homes, running robot demos & teaching seniors how to use Skype & Facetime to connect with their loved ones, facilitating meaningful interactions amidst Covid-19 visitor restrictions. In April, 5740 handmade 200 facemasks for our flagship SF facility.

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?

5740 utilizes team & community connections to spark creative initiatives. For example, our connection with The Children's Home of Pittsburgh(CHP) allows us to annually fabricate adapted toys for medically fragile children; 5740 raised \$2000+ & adapted 28 toys for this cause! This year we made CHP the recipient of our Innovation Challenge project, the Button Buddy, a 5740-made device that increases communication & mobility. This relationship makes our team members more empathetic & well-rounded.

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

Team 5740 created the Pennsylvania Advocacy Conference of Technology (PACT), which advocates to representatives to increase the amount of STEM education funding in PA. 5740 was also invited to the FIRST Advocacy Summit hosted by FRC 2468 & FIRST Updates Now to talk about the challenges & successes we have had with advocacy within PA. 5740 also hosts a podcast series called InsideFIRST which showcases our team's initiatives & FIRST happenings & has accrued over 500 views.

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

In 2019, 5740 co-founded FullCircle(FC) with FRC 6814. FC is dedicated to mentoring & assisting rookie teams. Within the last three years, FC has mentored 18 rookie teams, helping with all aspects of *FIRST*. FC teams have won a total of 8 Rookie All Star & 9 Highest Rookie Seed awards! Additionally, we have helped start 18 FLL teams & 2 FLL jr. teams, directly mentoring the Saint Kilian FLL program that included ? of the 3rd-8th grade population & is now self-sustaining.

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?

5740 annually holds STEM camps, where we invite incoming 4th-9th graders to CAD, build, program, & wire a robot, all while teaching gracious professionalism. We have taught 50+ campers since 2018, with over half enrolling in North Catholic & joining 5740. Over 2 years our FRC Bootcamp program has brought 20+ young *FIRST* participants into 5740 build meetings. This program allows FLL & FLL Jr. kids to get a glimpse of what they are able to take part in as an FRC team member.

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

5740's partnerships have allowed us to reach across our region & the world. We have connected with FTC 15430 to emulate our FTC class structure in Arizona, partnered with FRC 6814 to create FullCircle, networked with Point Park University to educate our media subteam through their film school, & partnered with the career development department of our school to offer 8 Career Action Plan(CAP) talks & 25 field trips for our whole school in order to get them excited about careers in STEM.

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

5740 has a strong relationship with the St. Anthony program at our school, which has recruited multiple team members with intellectual disabilities. These members have gone to pursue a STEM major & participate in school day STEM enrichment programs. 5740 annually attends the Christmas on Troy Hill event where we bring robots to underserved communities & have Christmas-themed robotics games for the kids. Our school provides the families at these events with assistance during the holiday season.

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

5740 annually brings in our industry mentors to hold in-reach events which teach new & returning members technical skills such as CAD, wiring, & coding. We have various community partnerships such as our connection with the Children's Home of Pittsburgh, which allow us to hold unique, targeted, & recurrent events within our area. 5740's 7 subteam leads & shared leadership style empowers young members to get involved in the team as leaders to sustain our mission of building students.

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

5740 has coordinated 25 STEM field trips, several of which have been hosted by our sponsors' companies for the entire student body. We have recruited 5 mentors from our sponsors' companies. Our team sends video updates & letters to keep them up to date on our progress & express our gratitude for their financial support. Sponsors have been invited to North Catholic to present to all students about their fields & invigorate STEM interest through our school's CAP talk program.

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

We battle the STEM stigma, "that robotics is for one type of student." This perception often deters possible STEM participants because they don't fully understand the depth of 5740's program: technical & non-technical subteams. We want 5740 to be perceived as a program rather than a team & would like to acknowledge the numerous avenues that can be pursued from participating in *FIRST* Robotics. We market ourselves to students with diverse interests as a small business with a home for everyone.

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

Team 5740's mission is to build students of creativity, leadership, and professionalism. We participate in inspiring STEM events that engage students as young as 3! Innovative events such as The STEAM Carnival in Pittsburgh & STEM demos at a local Montessori school utilized LEGO robotics to expose 1000+ young students to STEM & robotics. Events like these form students equipped with gracious mindsets and professional skill sets applicable to all futures.

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.

At the beginning of the COVID-19 pandemic, 5740 created a mask fabrication instruction manual & coordinated a mask drive within our school & community which brought in over 1000 masks to 6 local healthcare facilities. A foreign

exchange student's family from Thailand used our manual to fabricate & ship 300+ masks to 5740 from overseas! We also created the Chairman's Cloud, a place for teams to collaborate with their Chairman's submissions which now hosts 4 teams' submissions!

Essay

John

5740 is defined by our Vision to see our communities served by our team equipped with gracious mindsets & professional skill sets. As a senior, I have seen our Mission to build students of creativity, leadership, & professionalism transform my teammates into compassionate young adults prepared to excel after high school. The expansion of STEM appreciation as a result of our Vision & Mission didn't happen overnight. Every member & alumni of 5740's 7-year history has been instrumental in the growth & creation of STEM recognition & opportunities through every event, initiative, & interaction, furthering these goals through FIRST expansion, STEM advocacy, student involvement, & Service through STEM.

Our success in developing students in light of our Mission is evident by 2 members becoming Dean's List Finalists, and one becoming an award winner! Our members carry the same traits expected from Dean's List nominees. 5740 forms well-rounded individuals, preparing them for college & technical careers by using industry tools & mentorship. Our students & alumni have proved this through our 100% college acceptance rate, and this year's 10 seniors being offered \$1,900,800 in merit scholarships, with 9 intending to major in STEM. FIRST robotics continues to be pivotal in team member's decisions to pursue STEM careers. Prior to joining 5740, I had no interest in engineering of any kind, but through the countless hours of design, hard work, and learning, I am certain that I want to be a mechanical engineer.

Dalhart

In 2020, I became a FullCircle (FC) mentor to continue 5740's involvement in this initiative. In 2018, FRC 5740 and FRC 6814 saw an opportunity in the FIRST community. New teams were being started but lacked the resources & guidance needed to be sustainable. Alumni of 5740 were committed to improving this. 5740 co-founded FC with Team 6814, a team we mentored during their rookie year. FC's mission is to mentor rookie teams in both the technical & non-technical aspects of FRC to develop sustainable programs. In its inaugural season (2018-19) FC started 2 teams & mentored 9 from the US, Canada, & Ukraine. Additionally, FC developed 10 original articles with over 10 teams to outline the fundamentals of FRC. These articles received over 1500 downloads, were featured on the NASA Robotics Coalition's website, were translated to Mandarin, & distributed to 83+ Chinese FRC teams by F&D Studio, a FIRST partner organization. The mentored teams' success proved that this program is both scalable & sustainable. Since 2019, the 18 total teams mentored have collectively won 8 Rookie All-Star awards and 9 Highest Rookie Seed awards in addition to numerous robot design, business, and safety awards. Personally, I loved seeing the rookie teams I mentored be successful because it reaffirmed the technical expertise that 5740 instilled in me. FC has been one of the most rewarding experiences I have taken part in during my time in FIRST Robotics and it laid the groundwork for my future in FIRST volunteering and mentorship during and after college.

Furthermore, through my experience in FIRST Robotics, I was selected as a Carnegie Robotics Scholar where I was assigned two mentors who meet with me weekly to prepare me for my future degree in biomedical engineering. I was connected with this opportunity through North Catholic's career development department and I would not have had this opportunity if it wasn't for my FIRST involvement. This scholarship is also coupled with a summer internship where I will be able to work on cutting-edge technology at Carnegie Robotics in the summer before I attend college. The technical expertise that 5740 has taught me will be invaluable within my internship and I look forward to seeing 5740's impact on the futures of North Catholic's students for years to come.

Everett

As a team, we have been able to greatly increase the amount of STEM opportunities at our school in a number of different ways. Working with administration, we helped to start 9 STEM electives, encompassing everything from computer science to engineering design. These courses have greatly rounded out our curriculum & allowed students to explore STEM in many different ways. Having taken some of these classes, I can confidently say that they have better prepared me for my life after high school. Among the more traditional classes, we directly created FIRST Class Robotics 1 & 2, which allows students to join our FTC team & experience FIRST without the extracurricular commitment. Many students who take class decide to join 5740 after the semester, which was the case for me as well! The course was so successful, that it has been emulated & implemented into Desert Mountain High School in AZ by FTC 15430. In addition to these classes, we advocated for 25 field trips & 8 Career Action Plan (CAP) talks. These have allowed students both on & off of our team to learn about a variety of different STEM careers. These range from tours of local businesses & our sponsors' facilities, to presentations by industry professionals, all of which give insight to what a career in STEM is all about.

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We value STEM and FIRST programs across Pennsylvania! Through our efforts, we helped start an FLL program at a local grade school, which at the time of its creation involved 90 students, 33% of the 4th-8th graders. This program has since grown & become completely self-sufficient. Beyond our local community, we started the Pennsylvania Advocacy Conference of Technology (PACT) with the goal of expanding STEM funding statewide. In 2017 Pennsylvania was ranked 48th out of 50 for state STEM funding. Through PACT, we met with several local & state representatives, asking for their support of the PASMART funding bill. The bill was eventually passed, allocating \$40 million to STEM education, making PA 2nd in the nation for STEM funding. This money has been used to bring the life-changing experiences of FIRST & STEM to underserved students. For example, the Philadelphia Robotics Coalition used their PASMART funding to create 200 FLL teams in the Philadelphia area!

Katie

In 2019, 5740 presented PASMART and PACT at the Three Rivers Educational and Technology conference (TRETc), as part of the student showcase. We spoke with administrators and educators about how to apply for the PASMART grant, and how they could use it to start FIRST teams and to further STEM education in their schools. 5740 was a FIRST showcase team at TRETc where we demoed our robot with our FIRST regional director. This year our lead mentor, David Yackuboskey, won the TRETc Innovation in Education Teacher of the Year Award. This award recognizes teachers who promote careers in STEM through their curriculum and instruction and foster cooperative relationships within their community. Mr. Yack is just one example of the amazing mentors that further 5740's mission and vision of building students!

Since my freshman year, I have grown as an individual and as a 5740 member. I have seen my efforts become increasingly integral to 5740's various technical and non-technical initiatives. One of my favorite efforts is our toy adaptation initiative where team 5740 identified an issue that manufactured adapted toys for medically fragile children can cost up to \$300! 5740 came up for a solution for this problem where we purchased store-bought toys and adapted them using the technical skills that 5740 taught us. Since the initiative's inception, 5740 has adapted 28 toys and raised over \$3200 from our boosters and fundraisers. These toys were donated to the medically fragile children at the Children's Home of Pittsburgh where over 40 children are able to play with them daily. This initiative is just one example of the innovative ways that 5740 impacts our community for the better.

Aside from our community, 5740 has been striving for improvement through increased female STEM involvement. Team 5740 ran a Women in STEM camp for 25 campers at our sponsor Berner Int. with the help of the former CEO. At the camp, the girls used sponsor products to learn how structures can be built to withstand hurricanes. Furthermore, 5740 had the opportunity to send 4 girls to attend Westinghouse's Women in STEM Day to learn from female role models in the STEM industry; this year 5740 members attended this event virtually. I was grateful to be selected as one of the students who attended. At the women in STEM day, we received information about the different STEM disciplines, toured their nuclear training facility, attended a Q&A panel, and had one on one discussions with their female engineering employees. Throughout my time on 5740, I have seen us grow in numbers and inclusion and I look forward to seeing how 5740 continues to grow and inspire others in the future.