

FIRST Impact Award - Team 422

2025 - Team 422
Team Number
422
Team Nickname
The Mech Tech Dragons
Team Location
Richmond, VA - USA
Describe the impact of the <i>FIRST</i> program on team participants within the last 3 years. Think about percentages of those graduating high school, attending college, in STEM careers, leadership skills, and serving as mentors/sponsors in <i>FIRST</i> programs.
We are proud to have 100% of our members graduate high school and attend college with 78% pursuing STEM. With 6250+ service hours, and 200k+ dollars in scholarships, our team provides students with innumerable opportunities and connections for their lives while spreading the FIRST ethos. 30+ alumni have returned to aid our team. With leadership training, many go on to be pioneers with 3+ STEM startups, 14+ Doctorates, and jobs at Google, NASA, SpaceX, and Amazon.
Describe your community along with its unique opportunities and circumstances. Think about your geographic region, diversity of town/school, language barriers, socioeconomic barriers, and cultural expectations.
Team 422 is based in Richmond city which lags behind in funding and support for STEM education. With 40 Title I schools and 70% of the 22K Richmond Public School (RPS) students considered economically disadvantaged, our team is the city's STEM Hub by keeping all our events 100% FREE. As a magnet school for 14 diverse counties, some members have commute times of 1 hour+, but we aim to use this wide reach to impact the 200,000 students we have here in Central VA through creative partnerships.
Describe the team's methods, with emphasis on the past 3 years, for spreading the <i>FIRST</i> Mission in ways that are effective, scalable, sustainable, and creative.
We effectively spread FIRST's mission with our 100% FREE programs by additionally fundraising \$25K to further FIRST/STEM in our community. We #MakeFIRSTLoud permanently with statewide efforts including: VA FIRST Robotics Day Bill, Legislative Open Houses, and our Virginia Advocacy Conference. We make FIRST for everyone through creative partnerships like with Autism Society of Central VA and specialized programs like "Dragon Flight Academy," "Kickoff in a Box," & FLL Bootcamps/Scrimmages.
Describe your team's goals and the progress you have made towards them to fulfill <i>FIRST's</i> Vision.
Because RPS fell behind in STEM, our goal is to increase accessibility to students in our city and beyond. Our FIRST Robotics Day Resolution celebrates Chesapeake FIRST to highlight the importance of STEM education for ALL students. By partnering with Richmond Parks and Rec., we created

curriculums for Title I schools. Spreading FIRST at demos, STEM workshops, and STEAM nights, we have driven 300+ miles to inspire diverse audiences to pursue a future with FIRST.

What impact has your team seen from your efforts described in the above question? How does your team measure impact?

By impacting 18K people, we've improved RVA's STEM atmosphere. Students join FIRST programs after attending our events—10% of 422 are prior event attendees. Legislators know us by name and the local impact of FIRST— awarding us a commending resolution. We measure results through event surveys using QR codes and a spreadsheet to record statistics and overall qualitative experiences. Through LinkedIn and alumni surveys, we see how our efforts impact students in their professional careers.

Please provide specific examples of how your team and team members act as role models within the *FIRST* community with emphasis on the past 3 years. How do you share these best practices with other teams?

We spread institutional knowledge through our virtual Virginia Advocacy Conference, inviting Chesapeake FIRST, legislators and FRC teams to share ideas on spreading FIRST with advocacy. Utilizing Gracious Professionalism and Coopertition, we invite teams to initiatives like Robotics STEM Advocacy Alliance and VA STEM Advocacy Seminar. We collaborate on our outreach/advocacy initiatives to give them a head start; partnering with teams 1086,401,2998,540,2068,5338 & national teams 4905 and 85607.

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

We sustain the only other RVA FRC Team, 2998, by providing \$6K funding, parts, technical mentoring, field space, and advocacy support. We started 12 FLL teams at 3 elementary schools through weekly in person mentoring and assisted 5 teams. We support all FIRST levels by hosting our FLL tournament since 2001 and FTC kickoffs while providing \$2K to FTC teams. We educate potential coaches and public school officials at all events on how to start teams, providing tables and coaching resources.

What other initiatives have you created, grown, sustained, or participated in (*FIRST* or otherwise) to help inspire young people to be science and technology leaders and innovators? What outcomes have you seen from your efforts in the past 3 years?

Peer pressure in middle school deters kids from science, but our annual STEM Day made it “cool” again to 600+ students in the last 3 years with presenters from a variety of careers inspiring the future STEM workforce. We created the Inspire Robotics program, obtaining a \$6K grant to create an after-school VEX Robotics league at 6 Henrico County elementary schools. Through 55 demos and events with partners like the Autism Society, RITS, RABID and Immersecon, we bring STEM to diverse audiences.

Describe the partnerships and relationships that you've created with other organizations (teams, sponsors, educational institutions, government, philanthropic entities, etc.) and what you have accomplished together, with emphasis on the past 3 years.

As official free vendors of Richmond Parks & Rec, we improve Title I after-school programs. We are expanding with the Autism Society, creating a unique summer camp for special needs students. We grow STEM communities with the non-profit RITS and combat robotics, RABID. We created partnerships with 2 new sponsors, Cobotiq and Evergreen. We cultivate long-term relationships with sponsors, Dupont (24yrs),Afton (23yrs),Shubert Foundation (3yrs),Ourisman (7yrs),Intuitive (7yrs), & Gene Haas (2yrs).

Describe your team's efforts in the past 3 years to promote equity, diversity, and inclusion within your team, <i>FIRST</i>, and your communities.	
We provide \$10K in financial assistance to low-income 422 members. We create a safe space with our Student Experience Committee for our 10% LGBTQ+ and 70% POC members. Mentors transport students for 2+ hours to ensure inclusivity for students that live in distant counties. We prioritize reaching low-income and special needs students, creating individualized curriculums. As Latinx membership grows, we incorporate Spanish-language instruction at our FLL bootcamps and scrimmages.	
Explain how you ensure your team and the initiatives you have created will be sustainable.	
Our team raises \$25K a year in advance for stability. We maintain sponsor relationships through newsletters and sponsorship tiers. Our corporate structure implements a subteam system to provide members with a specific role, ensuring motivation to stay with the FRC program. We keep our alumni engaged through team kickoffs to ensure that institutional knowledge is passed down. We ensure our team legacy in RVA through flagship events like FIRST Robotics Day, VAAC, STEM Event, and FLL Tournament.	
Highlight one area in which your team needs to improve and describe the steps actively being taken to make those improvements.	
We struggle with student burnout due to driven personalities, which also impacts member retention. To help create a fun atmosphere, we created the Student Experience Committee to hold team bonding events. We created new sub-teams to allow students to explore their niches, like graphic design, and tap into their creative side. We recruited 6 mentors to guide students in these growing sub-teams and provide individualized attention in efforts to make the team a safe and less stress-filled space.	
Briefly describe other matters of interest to the <i>FIRST</i> 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, particularly noteworthy, or had a large impact.	
Maggie Walker is a Governor's School, requiring a heavy workload and long commutes, but students stay committed to FIRST despite the criteria for a Governor's Seal Diploma. We 3D print dragon-themed items to fundraise, blending arts and STEM to promote our team's theme. In line with our school's international focus, we created STEM kits for Afghan Refugees and hosted school supply drives for the International Rescue Committee. Everyday at 4:22 PM, members celebrate our team on our Discord.	
Judge Feedback	
Is there anything missing from our submitted materials? An area the team has an opportunity to improve. Something that really impressed the judges.	
Essay	
"Why does a humanities focused magnet school need a robotics team?" We at Team 422: The Mech Tech Dragons, are asked this question time and time again since our inception in 1999 at the Maggie L.	

Walker Governor's School. But we justify our existence with our student-led impact, like passing our FIRST Robotics Day Resolution and acting as the STEM Hub of Richmond City and its surrounding communities. We enact change through our grassroots efforts to bring FIRST and STEM to every student, regardless of background.

Consisting of students from 14 counties, our team has grown to be the largest STEM outlet in our school with 78 members composed of multiple female-led sub-teams, 10% LGBTQ+ members, and 70% POC membership. Our entrepreneurial student-run structure contains 19 subteams headed by a C-Suite, integrating the team's technical and outreach efforts to ensure all members find a fulfilling role. Despite a lack of school funding, our team succeeds by maintaining partnerships with sponsors, raising \$25K a year to ensure sustainability. Our fundraising has grown with our impact, having gained 2 new sponsorships this year.

Each year, rookies engage in subteam rotations and technical/safety training, emphasizing a holistic understanding of the team. We cultivate leaders by holding annual Corporate Leadership bootcamps, providing public speaking training, StrengthsFinders checks, compatibility training, and people management tips. At our 2025 kickoff, VCU's Dir. of Univ. Development taught us communication skills through implied improv. We conduct post season SWOTs and set SMART goals for the next 1-3 years.

The cornerstone of our team's legacy is our outreach. We champion FIRST through our Triple-A program: Advocate, Advance, and Advise, impacting over 18,000 people in the past 3 years. To advocate, we promote the permanent expansion of FIRST programs. To advance, we create lifelong STEM enthusiasts in our community. And to advise, we break barriers to entry in STEM through mentoring and partnering with all levels of FIRST teams. Our mission is to transform not just our students, but our entire community.

ADVOCATE FIRST Robotics Day in Virginia We wrote, sponsored, and passed the "FIRST Day in Virginia" Resolution in 2024, establishing March 31st as FIRST Robotics Day in the Commonwealth of Virginia. The preambulatory text refers to not only the importance of STEM education for the future, but also Chesapeake FIRST Robotics and its partnerships with universities and corporations. Unlike other bills, this resolution will operate in perpetuity, cementing FIRST's legacy. This year we will be celebrating FIRST Day in a partnership with VCU, inviting legislators and community members to see FIRST in action.

Virginia Advocacy Conference Responding to the prohibitive cost of the National Advocacy Conference, we created the accessible, free and virtual Virginia Advocacy Conference (VAAC) in 2021. Each year, we partner with other teams, professional lobbyists, legislators and FIRST Chesapeake to make our voices heard by planning, leading and executing the conference. We host legislators from both sides of the aisle as well as FIRST Chesapeake executives to introduce teams to advocacy. We also collaborated with the Robotics STEM Alliance to invite teams to help them create similar initiatives.

Expanding legislative Impact Our Legislative Action Plan showcases FIRST's impact to VA legislators. Through our Legislative Open House, we invite members of the General Assembly, school boards, and the city council to learn how crucial FIRST is to STEM education in Central Virginia. Co-planning the Virginia Advocacy STEM Seminar with team 1086, we advocated for bill SB5 to provide Title I school STEM competition funds by visiting the General Assembly 6 times. We also expand our advocacy impact through roundtables with 8 teams nationwide.

ADVANCE Our team focuses on underrepresented demographics, impacting people through FREE initiatives.

Our New Partnerships As a designated community partner with Richmond Public Schools and official FREE vendors of Richmond Parks and Rec., we have served 10 Title I schools this year alone through FLL programs, teaching 320 students math, coding, teamwork, and critical thinking skills. We created individualized curriculums to teach robotics basics as partners with the Autism Society of Central VA. When they said that the students—including those that were nonverbal—enjoyed our workshops more than any other summer program, we decided to expand the partnership to create a summer camp to make STEM a permanent part of the organization. As headliners of the ImmerseCon STEM convention, we lead the STEM gala through virtual robotics simulations, our team robot, FLL tables and STEM activities to bring robotics to diverse audiences.

We also partnered with the Henrico Education Foundation, writing and receiving a \$6K grant to create an after-school STEM VEX Robotics League at 8 Title I elementary schools.

Through our demos at the Richmond Institute of Technology and Science and judging competitions at RABID, a combat robotics organization, we engage different robot enthusiasts to create a symbiotic relationship to grow both Chesapeake FIRST and those programs. We also partner with 3 RPS elementary schools to host STEAM nights and demos.

Bringing our summer workshops to students at the Science Museum of Virginia, the Richmond Car Show, and the Girls For A Change: Black Girl Rally at Virginia Union University, we reach those who have never heard of FIRST.

STEM Event Seeking to make STEM “cool” again, we target middle schoolers by planning, executing, and hosting our annual STEM Day event. Created in 2018, guests experienced a day full of fun and STEM exposure. In the past 3 years, 600 students interacted with 30 speakers from the video game designers we met at ImmerseCon to medical professionals. We expanded our previous partnerships with RABID, RITS, and Linebird (drone company) presenting at the event. By also creating our novel rocketry activity, we received an average rating of 9.3/10 for inspiring students to pursue STEM. The event showcases the diversity of STEM careers and 10% of our team attended the event in middle school.

“Kickoff In a Box” The “Kickoff In a Box” robot cube is a tool created and used by our team to teach students the engineering design process. Taking the cube to all our events this year, we enabled students to understand how to design an FRC robot while giving them visual-spatial practice. We shared this activity on Chief Delphi, receiving 500 views from FIRST members globally.

ADVISE Dragon Flight Academy In 2023, we started the Dragon Flight Academy, a free programming workshop designed to provide all students with an advanced skill-set in coding, build and game strategy. Since we couldn't go to every school in RPS, we decided to invite them to us. Through 13 workshops at our school, we were able to provide a level of enrichment to students who struggle to find FLL resources during the season.

FLL Subteam Focusing on inner-city Richmond groups, we mentor and started 12 FLL teams at 3 underserved schools. In the past 18 months, we have volunteered 800+ hours and invested \$10k+ in our

program. Our favorite memory is a student saying “We wish you could be here every day.”

FLL Offseason Scrimmages and Bootcamps Because students lack experience with FLL competitions, we held 3 free off-season events for 100 students to build and compete with robots. Students were divided by skill level and were given one-on-one instruction, team building, and judging. By providing kits and assistance, students and coaches learned complex topics such as sensors, programming, and the judging process outside of a competitive environment.

FRC Team 2998 We support FRC 2998 in Richmond by providing them with sponsorships and funding resources worth \$6K. We also support them with technical mentoring, outreach, and advocacy resources. For example, we invited them as presenters at our Legislative Open House, and wired and programmed their robot to make it competition ready.

FLL Tournament Starting in 2001, we host the longest running FLL tournament in Richmond. Over 3 years, 70+ teams have been a part of our event. In addition, fun is held in no small regard. We created “fun rooms” for VADC FLL, allowing students to decompress and enjoy themselves in a non-competitive environment.

FTC Kickoff Our team held an inaugural FTC kickoff for teams in the Richmond area to teach essential skills like leadership and teamwork and provided parts worth \$2K. Borrowing from our own training methods, we assisted in breaking down the challenge through brainstorming rotations.

IMPACT Alumni Our 300 alumni are a testament to the impact of 25 years of our team. We are always in touch, inviting them to events and connecting through our LinkedIn. Our alumni database allows us to track alumni success, a testament to our team's efforts to allow our members to excel. They continuously present at our STEMinars—discussions between our team and STEM professionals about their career journeys. 100% of 422 members are college-bound, with 78% going into STEM fields from the class of 2024. They go on to success, like Michael B, creator of drone company LineBird, who was featured on the Forbes Next 1000 list. He credits 422 for inspiring him to pursue STEM.

Social Media With 3000 followers on our social media platforms, we expand our reach on Instagram, Facebook, Twitter, LinkedIn and our TikTok page, with over 70k+ views. We also have 6 NEWS features promoting FIRST on CBS 6 News, Richmond Times Dispatch, and ABC 8, reaching ½ million viewers.

This is why our school—and every school in Virginia—needs a Robotics team. We at 422 are patrons of Advance, agents of Advise, and champions of Advocate. Our love of FIRST is second to none—reflected in our continuous commitment to transforming students, communities, and the world.;

