

## FIRST Impact Award - Team 201

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| <b>2023 - Team 201</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Team Number</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Team Nickname</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| The FEDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Team Location</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Rochester, MI - USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Describe the impact of the <i>FIRST</i> 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 <i>FIRST</i> programs as mentors/sponsors.</b>                                                                                                                                                                                                                                      |
| Since 2020, 100% of agents graduate high school and pursue higher education. Most agents pursue STEM-related majors, continue their involvement in FIRST and earn substantial scholarships. The FEDS enable students to explore outside their comfort zone, reconcile different perspectives and passions, while building lifelong bonds with peers and the greater community. Agents experience an inclusive family-like culture that enhances character, responsibility, communication, and self-confidence.      |
| <b>Describe your community along with how your team addresses its unique opportunities and circumstances.</b>                                                                                                                                                                                                                                                                                                                                                                                                       |
| Our community is home to many engineering firms, yielding ample avenues to expand STEM education. As gracious stewards of all opportunities, we volunteer at STEM fairs, provide STEM workshops, and promote STEM in our community, through block parties, festivals, back-to-school events, the Christmas parade, meeting with public officials, and community service. We run an annual STEM book drive and recently built a robot for the Rainbow Connection, used to deliver wishes to terminally ill children. |
| <b>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?</b>                                                                                                                                                                                                                                                                                                         |
| Our team measures results through quantitative and qualitative feedback. Through STEM outreach, recruitment, and training, we brought 1000+ new people into FIRST. We exceeded a goal to establish FIRST at every school in our district, currently overseeing 84 teams, accounting for 66% of all FIRST programs in RCS. We advocated for a FIRST-inspired robotics class that has been taken by 170+ high school students since 2020. Through end of season interviews we measure the efficacy of our methods.    |
| <b>Please provide specific examples of how your team members act as role models within the FIRST community with emphasis on the past 3 years.</b>                                                                                                                                                                                                                                                                                                                                                                   |
| Through student-led fundraising, the FEDS support STEAMEX FRC 6832, providing their FRC registration for 4 years. We model safety, often earning the Safety All Star Award. One of our agents advanced as a Dean's List Finalist last year. We have consistently won the Entrepreneurship award and                                                                                                                                                                                                                 |

our principal recently honored us with the Character Award, celebrating our leadership in global STEM initiatives. Outreach to a local preschool and the Older Person's Commission models service through STEM.

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

Since 2020, we have started 84 teams: 4 FTC, 20 FLL Challenge, & 60 FLL Explore, enlisting 500+ students. Annually, we host an FTC qualifier and 6 FLL tournaments, engaging 600+ students. We inspire younger students through 2000+ hours of mentoring. By providing free summer workshops and an all girls group called STEM CAD-ettes, we engage students at every level of FIRST in the off-season. We volunteer at FIRST events hosted by other teams and regularly collaborate within global FIRST networks.

**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 annual summer workshops provide 100+ cadets technical and business skills to be well-rounded STEM leaders, doubling demand for FTC teams in the district. Through STEM CADettes, we inspire 20+ girls to foster their hands-on skills while building meaningful relationships, resulting in 5 girls joining our team. We have donated Mindstorm kits, school supplies, and \$500 to Yuwa, an all-girls school in India, resulting in their principal committing to expand STEM education in their curriculum.

**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**

We partner with district leaders, such as our principal and school board president, yielding greater access to resources for FIRST programs. We work with the PTA, resulting in annual STEAM Fairs reaching hundreds of K-12 students. We collaborate with our sister schools to advocate and host multiple FIRST events at every level. Through advocacy with our Mayor, we aim to gain contacts with robotics-related companies to gain mentors, student exposure to industry leaders in STEM, and new sponsors.

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

We celebrate diversity and aim for equity. Accepting we all have hidden biases, we practice open communication about challenging topics to cultivate the emotional safety required for constructive dialogue that upholds equal access to learning, a sense of belonging, and feeling valued, all while protecting our team's culture. By starting our STEM CADettes program, we promote diversity and companionship, fostering an inclusive space for young girls to learn and build their confidence in STEM.

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

Our advocacy informed a new hire in our district of a centralized director to oversee all STEM programs. This new Career and Technical Education role helps preserve and grow the FIRST network and ensures institutionalized access to FIRST programs throughout our entire district. We proactively budget, fundraise and solicit new sponsors, recently hosting a sponsor retreat resulting in 3 new sponsors. Our extensive pipeline of K-8 cadets and our large alumni network informs future sustainability.

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

In summer 2022, we researched companies online and by driving through industrial malls in our area. Through a sponsor retreat, we built a comprehensive database of potential sponsors and created a rating system to prioritize those most likely to sponsor us. After communication with these companies, we secured three new sponsorships. We celebrate sponsors on our website, team uniforms, banners, robots, thank you cards, hosting "sponsor week" on social media and an annual in-person celebration.

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

Based on feedback from annual surveys and interviews, we prioritized improving new student participation in hands-on technical activities. We established new processes to streamline training including use of Github and a standardized form to document technical progress, while developing a prototype library. We conducted our own Robot in 3 Days challenge to engage new students in the design process, resulting in increased participation of new FEDS during our team's prototyping and build season.

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

We exceeded a goal to start FIRST programs at all schools in our district and are growing the number of FLL/FTC teams to accommodate all interested students by recruiting and training more mentors, helping them access meeting space, supplies, and funding. We are hosting more FTC/FLL events to accommodate new teams. Through global partnerships, we are working towards co-hosting a Girls in STEM virtual conference. We hope to host an all-girls FTC qualifier alongside FRC teams in the near 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.**

FEDS often report feeling our team is like a family and maintain FIRST ties for the long haul. We laugh together, we work hard together, and we have even cried together. On the bus ride home from States last year, almost every FED took to the mic to share their appreciation of their teammates, some through tears and others painfully shy, yet despite the vulnerability of the moment, this went on for the full hour it took to get back to RHS. This exemplifies the family-like culture of our team.

**Essay**

Once a FED, always a FED Team 201's operations span two-and-a-half decades of extending access to and generating enthusiasm for STEM education. As "Agents of Change," we garner generous support from corporate and community sponsors, mentors, state grants, and fundraising to provide a full continuum of FIRST programs for participants to learn and grow lifelong connections. The mission of the FEDS (Falcon Engineering Design Solutions) is to inspire students to be STEM leaders through mentoring and innovation. We foster student growth with technical, business, and community relations. Our team advances the FIRST mission through Operation FIRST, Operation Outreach, and Operation Global. Our current team of 50+ students is extremely diverse and operates through subgroups: electrical, mechanical, programming, CAD, machining, scouting, business, and safety. Students elect co-captains who are liaisons to mentors and lead the full team in areas of communication, team spirit, and strategic planning. This year, co-captains created "Agent of the Week", celebrating a student's outstanding efforts and awarding them a personalized button. Our business group has sewn badges with different color threads showcasing individualized roles and achievements to wear at our upcoming competitions. Student leads direct activities of their respective subgroups. An impressive achievement by our scouting leads was developing our first-ever scouting app, switching from a pencil and paper method, which is usable for the Charged Up challenge. Many FEDS alum stay connected through alumni get-togethers, such as our annual "FEDSgiving" and competitions. We prioritize and nurture alumni relationships, understanding their critical role in the long-term sustainability of our program, operationalizing our motto "once a FED, always a FED." Because of our culture of support, 21 of our alumni have returned as mentors. Alumni mentors help conduct annual interviews with all FEDS to gather ideas for team improvement and ways to make a greater impact. To end our offseason, we created our version of "Robot in 3 Days." Mentors devised a robot challenge requiring student leads to work with new students to design, wire, and program a robot to accomplish tasks. This allowed student leads to practice communication skills and helped new students gain technical skills through hands-on experience with a robot in a fun way. One clear benefit of this process was that new students participated more readily in our post-kickoff robot design discussions.

**Operation FIRST** Since 2020, we have started 84 new teams in our district, including 4 FTC, 20 FLL Challenge and 60 FLL Explore teams, exceeding our goal to establish FIRST programs in all 20 schools in our district. Despite the pandemic, we engaged and sustained teams virtually, adding many new teams and providing startup operations including funding, parent volunteer recruitment and training, while facilitating access to necessary district resources. We provide oversight by managing initial applications, distributing MDE grants, and offering peer-to-peer mentoring. Our annual FTC qualifier hosts 600 students and is run by 150 volunteers. We aided our district to host its first-ever FRC competition last season. In 2022, we hosted 500+ students at 4 FLL Tournaments. Agents take leadership roles in hosted events, such as referees, judges, inspectors, and assistant event coordinators. Since 2020 our successful efforts to extend STEM education have provided access to FIRST programs to 1000+ new students. We maintain a steady pipeline of cadets from FLL to FTC, with a team culture that students describe as "being inclusive" and "like a family". Over the last three years, the FEDS have demonstrated high fidelity in business planning, fundraising, marketing, and risk management. Our efforts were recognized with the Entrepreneurship Award in 2022 at the district and state levels. Our award-winning business plan helps us identify potential risks, strengths, and opportunities to maximize our stewardship of generous sponsorships. Through an annual leadership retreat, student leads and mentors work together to map out team goals for the upcoming season. Students plan, prioritize and conduct an annual neighborhood can/bottle return drive, a team yard sale, and several restaurant fundraisers.

**Operation Outreach** The FEDS organize a STEM book drive each fall, collecting and donating 300+

books for nearby Little Free Libraries. We regularly participate in STEAM events throughout the community, providing robot demos and science experiments. Noticing the departure of many girls from FIRST between FLL and FTC, we started STEM CADettes to engage middle school girls at monthly STEM-focused meetings led by our female high school agents. Activities include making tables and shelves for our shop. Through this program, we have reached 20+ girls in the past two years, many of whom joined our team. We aimed to explore the potential for starting Lego Discovery programs within our school district and local community. We set up meetings with leaders from our district's Caring Steps Center which serves preschool children and visited a private childcare center, Above & Beyond, to introduce the Discovery program, donating Discovery sets after a facilitated workshop with their kids. We received great feedback and look forward to expanding this program. We also set out to establish a new "LEGOs with Seniors" program with our local Older Person's Commission (OPC). Students pitched the idea to the OPC, resulting in a pilot program launched in February 2023. Each Saturday morning, Agents visit the OPC, equipped with various LEGO sets, and build LEGOs and relationships with senior citizens who in turn, share their stories and life lessons, in a spirit of mutual companionship. As students, we are learning so much from participants and hope to bring them joy through this program. The FEDS exemplify FIRST values through collaboration with our two sister school teams, the AdamBots and Cybercats, under our "Rochester United" coalition. Students from each team meet weekly to brainstorm, negotiate, and collaborate on collective advocacy priorities, understanding that we have more power together than we do in silos. Currently, we are advocating for our district to invest in a STEMnasium that will provide the necessary space for our district's STEM programs, including a shared FTC and FRC practice field. We recently attended a school board candidate forum to promote STEM. We are also meeting with the Mayor of Rochester Hills, to build more connections with robotics companies in our area and garner greater investment in STEM education for FIRST programs. Our agents served on the Michigan Advocacy Council (MAC) Board, helping to organize the conference to increase funding for FIRST through our legislators. In 2021, after learning that neighboring Ohio doesn't have the FIRST/VEX state grant opportunities we have in Michigan, we shared on our website and social media a State Grant Advocacy Toolkit to inspire advocacy by FRC teams with the Ohio state legislature. We also advocate for greater diversity, equity, and inclusion on our team, in our own community, and beyond. We have given presentations to our community's Diversity, Equity, and Inclusion Parent Network, seeking input to maximize access to FIRST programs for all students. We are slated to present to our district's Equity Committee to share FIRST values and how we operationalize them. We also provide free menstrual products at the FIRST events we host. In addition, we became a m.e. FIRST Ambassador, an initiative started by Space Cookies FRC 1868, to ensure menstrual equity at the FRC competitions by committing to stock menstrual products at both our district events this year. We were honored to work with the local charity, Rainbow Connection, combining a passion for both innovation and service. Our agents designed, built, wired, and coded a robot named Brooks that is used to deliver last wishes to terminally ill children. We participate in an annual Hunger Walk, led by the AdamBots, conduct an annual Winter Clothing Drive and give to a school food drive during the holidays.

Operation Global We keep a constant connection with STEAMex FRC 6832 in Monterrey, Mexico. With our support, STEAMex developed a meaningful FRC program while starting and mentoring several FLL and FTC programs in their area. Understanding that STEAMex is providing amazing opportunities to students through their programs in one of the most resource-deficient parts of the world, we felt a responsibility to share our resources. Our agents voted to prioritize support of STEAMex and fundraised the yearly \$5K it costs to pay for their full registration. In return, STEAMex provides us with helpful feedback on our awards submissions and gives us global outreach opportunities, broadening our perspective through a different cultural lens. A major highlight of going to the World Championship was

spending a day with STEAMex members in person. We also fundraised to assist Yuwa, an all-girls school in rural India. This off-season, we sewed scrunchies to sell and raised \$600, used to provide STEM-focused school supplies and computers to Yuwa. This was done in partnership with a student-run women empowerment organization, The Scrunchie Project. We collaborated with teams from across the U.S., Israel, and Mexico to host an International Mentors Seminar, educating 50+ participants through break-out sessions covering FIRST-related topics and hosting a Q&A with Jon Mittelman, a worldwide Chairman's Judge. We shared our core values and advice on success at all FIRST levels. Our agents joined Matrix FTC 20870 in India to host a Girls in STEM Webinar and were featured in their podcast series. We are now partnering with Matrix to advocate for sign linguists at FIRST events to maximize accessibility for all.

"We are Team 201 and our mission is not yet done!" ;

