

Chairman's Award - Team 201

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2021 - Team 201

Team Number

201

Team Nickname

The FEDS

Team Location

Rochester, Michigan - 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.

Since 2015, all FEDS have graduated high school and pursued higher education with an average team GPA of 3.5+. Most FEDS took at least one STEM-related AP course in high school and collectively, FEDS have been awarded \$250K+ in scholarships since 2015. Students who join the FEDS feel more confident to pursue STEM education and career pathways to build long-standing relationships with mentors and peers. Each year, more graduates stay involved as mentors.

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

Our district includes the suburbs of Rochester/Rochester Hills (87K people). During the pandemic, the FEDS participated in the *FIRST* in MI PPE Challenge, donating safety supplies and PPE to local senior living facilities. The FEDS participate in an annual hunger walk, run a homeless clothing drive, coordinate a STEM book drive for 5 Little Free Libraries in Pontiac, and have partnered with the Rainbow Connection to provide a robot to grant terminally ill children last wishes.

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?

We build strong relationships with all stakeholders, measuring impact with annual surveys and interviews, growth of teams, financial performance, marketing reach and tracking progress toward goals. We are close to achieving a goal to have a *FIRST* program at all 21 of our district's schools with 17 schools currently active in *FIRST*. We spread the word through social media, our website and community service. We visit classrooms (K-12) to encourage students to get involved in *FIRST*.

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 FEDS raised \$5K to pay for STEAMEX (6832)'s registration when they experienced financial hardship in 2020. We actively collaborate with FRC Teams 245 & 5436. The FEDS collectively contributed 2K+ hours of mentoring to FLL/FTC participants. We are active participants in the E-Reach virtual platform developed by STEAMEX. FEDS regularly host & volunteer at *FIRST* events. FEDS have won multiple GP and safety awards, highlighting positive modeling aligned with the *FIRST* mission.

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

We started 40 new teams, bringing 225 new students into FIRST, including 3 FTC, 1 FLL & 17 FLL Jr. teams. We oversee these teams' MDE grants, assist mentors & coordinate with the school district. FEDS have each contributed 20+ mentoring hours per season and have hosted FLL expos and an FTC competition while also assisting other teams hosting FIRST events. The FEDS are actively pursuing a new FRC team at a local private high school and at our district's alternative high school.

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?

We are inspiring girls through a partnership with Yuwa, an all-girls school in rural India for girls at high risk of becoming child brides. We donated a Mindstorm kit and hold regular peer-to-peer meetings. The school is incorporating the kit into their curriculum. We also have a partnership with the International Rescue Committee (IRC), supporting refugee children by donating 3 We Do kits and 6 Mindstorms for use in after school programs across 5 sites, reaching 100+ refugee students.

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 are part of Rochester United, with teams 245 & 5436. Together, we have advocated with one voice to affect STEM-forward policy changes in our district, including the adoption of robotics as a standing high school course and a streamlined approach to coordinating FIRST programs. This partnership has enabled peer relationships across schools with students assisting each other to host FIRST events. We also serve as co-chairs on our district's PTSA STEAM committee.

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

FEDS promote diversity, equity & inclusion (DEI) through direct recruitment of girls & by creating a warm culture that allows all students to feel welcome. FEDS joined the FIRST LGBTQ community & are respected advocates within our school district's diversity network. FEDS' demographics reflect our commitment to DEI with 25% of our team being female, half our team's students/mentors being non-white & our insistence that participation be accessible to all students despite financial challenges.

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

The FEDS are governed by an operating committee and bylaws, including a team treasurer to oversee financial stability. We have saved enough money to afford one full season without our largest sponsor. The FEDS foster strong relationships with students, mentors, graduates, sponsors, school leaders & members of other teams. Through our investment in K-8 FIRST programs, we sustain the future pipeline of students inspired by STEM education.

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

The FEDS recruit new sponsors through direct marketing and maintaining connections with alum, mentors and community leaders. We have retained our two largest sponsors for over 20 years and have recruited 6 new corporate sponsors over the past 3 years. We join sponsors for service projects, visits to their sites, and benefit from their mentors. We retain sponsors through regular communication, making measurable impact and being a responsible steward of their generous resources.

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

We would like to increase the number of technical mentors on our team. Our plan to achieve this includes: continuous engagement with recent graduates so that they are more likely to stay engaged in the future; recruit/onboard more parent mentors with technical expertise; continue sharing this need through our sponsor networks; and collaborate with our sponsor, OU, to create an internship position for a STEM-focused college student to be a mentor on our team.

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

It is our goal to have a FIRST program at each of our district's 21 schools. We have existing programs at 17 of 21 schools and continue to promote the program at the outstanding schools. We are also innovating solutions to bring FIRST programs to rural areas in India, starting with Yuwa by donating a Mindstorm kit, consultation and holding peer-to-peer meetings. We aim to figure out a way for them to fully participate in FIRST in the future despite lack of an existing FIRST network near them.

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.

Despite the pandemic, the FEDS maintained all of our teams (K-12) while continuing to be engaged in the game design process, community outreach and mentoring. A new idea we have for the future is to create a replicable STEAM Library

for kids to borrow books/toys that inspire interest in STEM. Overall, the FEDS inspired higher recognition of robotics in our school, demonstrated by the fact that our blue banners are now hanging in the gym for the first time, alongside athletic awards.

Essay

SUSTAINING OUR MISSION

The mission of FEDS (201) is to inspire students to be STEM leaders through mentoring and innovation. The FEDS (Falcon Engineering Design Systems) are "Agents of Change" inspiring innovation and STEM education in our own community and internationally. Our deep, 23-year history has enabled us to become a team that values learning, diversity, and inclusion. We enjoy a strong network of relationships with students, mentors, sponsors, elected officials, our school, and other FIRST teams. As a 3-time Gracious Professionalism, Safety, and Chairman's Award winner, we embody the FIRST core values. Our team consists of a diverse population consisting of over 50% non-white and 25% female, with many females in key "lead" roles for a functional area. Our team has grown substantially with more girls in leadership roles, with two female co-captains leading us to a Chairman's award in our first attempt at the Michigan Regionals. This is a direct reflection of the confidence our students are gaining in teamwork, public speaking, leading, and mentoring. The number of full-time female mentors has risen to 43%. Each year, more graduating students return as mentors while they pursue STEM majors, thus creating long-lasting relationships enabling continuity and leadership.

ACHIEVEMENT and COMMUNITY IMPACT

During the past 3 years, we started 41 new teams including 3 FTC teams, 7 FLL teams, and 26 FLL Jr. teams as a part of our goal for FIRST to be in all 21 schools in our district. During the pandemic, we started a new FLL Jr. team at Long Meadow Elementary School. We have maintained all teams by working with them virtually. Our head mentor oversees the initial applications, access, and management of MDE grants for the 41 FIRST teams while FEDS provide weekly mentoring.

Our commitment to outreach and service has led FEDS to perform over 2,000 hours of student outreach, STEM advocacy, mentoring, and community service in the 2019-2020 school year. We continue to reach out to develop and support new teams building on our successful fundraising the \$5K registration fee for STEAMEX (6832) in Mexico. This year we partnered with Yuwa International School in India for at-risk girls to whom we sent lego kits to spark their STEM interest which keeps them in school to avoid becoming teen brides. We are actively recruiting a local private school, Lutheran High School Northwest, to establish an FRC team and we will resume guiding them through the process once the pandemic is managed.

The FEDS have strong relationships with elected officials, local businesses/organizations, school administrators, parents, and students. Our school has recognized the STEM importance and the impact of FIRST and will implement a robotics class based on the FIRST curriculum. To help expose underserved communities to STEM, the FEDS launched our first STEM book drive collecting and donating over 100 books to 5 little Free Libraries throughout Pontiac. We have strong representation within our school district's PTSA, with one mentor acting as our school's PTSA STEAM Co-chair, along with FEDS students as co-chairs. Through our work with the PTSA, we have helped host annual STEAM fairs for both elementary and middle/high school students for the past five years. During the pandemic, our students mentored middle school students who created short videos of fun science experiments that were cataloged on a new YouTube channel. Other community service work includes the coordination of donation drive for those that experience homelessness with warm winter clothing in partnership with the Oakland University medical students outreach program. We have donated safety supplies to area senior living facilities throughout the COVID-19 pandemic which included safety glasses, hand sanitizer, and cleaning supplies, as part of the FIM PPE Challenge. This season, we have partnered again with the Rainbow Connection, a local organization that provides last wishes and support to children with a terminal illness. The team is building and donating a robot that is completely student CAD designed and student-built that will deliver last wishes packages to kids.

We work collaboratively with the other two high schools in our district (teams 245 and 5436). Together we are Rochester United. We are thrilled they joined our initiative for a postcard campaign to thank our Michigan lawmakers for the continued support of the FIRST MDE grant program. Their students and families joined us as we hosted a very successful FTC Qualifier and FLL Expo events. We look to continue hosting more events in the future. Together we participate in many community events to advocate STEM and FIRST to the public.

Through our team's direct advocacy and guidance with our principal and the district STEM Advisory Committee, we were successful in developing and implementing an in-school robotics course modeled after FIRST which is now in its first year at each of the three high schools. Through our work over the past three years, we have garnered greater visibility and attention to robotics among school leaders. Elevating the image of robotics on par with athletics in our school, one example is demonstrated by our principal hanging all of our blue banners in the gym alongside the athletic banners for the first time and hiring a muralist to paint the walls outside of our work areas with FEDS imagery.

FIRST PROMOTION and SPONSOR PARTICIPATION

To actively spread the FIRST message in sustainable and creative ways, our head mentor regularly consults with leaders at FIM, other head mentors and is the point person for FIRST in our district. He is a founding member and active participant in a district-wide committee focused on promoting FLL and FTC teams' success.

Our generous sponsors along with our active fundraising and careful financial stewardship have enabled us to have the security of financial reserves to support our team for one-year without our major sponsor. This has also enabled us to waive student fees during the pandemic, providing an opportunity to provide economic relief to our student's families. Our business plan won the Entrepreneurship Award at Regionals last year.

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Through our team's innovative strategies to recruit, retain and engage sponsors over the last three years, we have galvanized long-standing relationships with existing sponsors, mentors, parents, and FEDS alumni to recruit new sponsors and maintain existing sponsorships. Our longest-running sponsors, General Motors R&D and The FCA Foundation continue to provide generous financial support and mentors to our program. Engagement to retain these sponsors over the past 23 years includes providing ongoing reports about our team's activities, hosting an annual sponsor night, and highlighting all our sponsors during our sponsor week on social media. In recent years, we have secured new sponsorships from Bosch, Dura, ABB, Driven Engineering, and Continental. We sustain our relationships with sponsors by participating in community service activities facilitated by sponsors and through visits to their sites where students can interact directly with people working within STEM fields. Participating in the "Walk for Warmth" event with our sponsor, Genisys Credit Union; the FEDS brought our demo bot to participate in the walk which provided fun for the kids at the walk and an opportunity to share information about the FIRST program while also helping to raise funds for families struggling to pay for heat. FEDS volunteered to help at the Intelligent Ground Vehicle Competition (IGVC) with its host and our sponsor, Oakland University, allowing FEDS to discuss how the FIRST program has impacted them and to recruit new mentors to the program. As a result of this involvement, the FEDS gained a CAD mentor who is an OU student that provided weekly CAD training to our students. Students have visited ABB and participated in a tour where they were able to meet and talk with professionals from several fields and play with the training robots in their training facility.

FUTURE GOALS

We actively engage parents and sponsors to attract and retain more technical mentors who are willing to share their excitement and knowledge with students but would like to amplify this effort moving forward to expand our depth of technical mentors. We will continue to maintain engagement with recent graduates so that they can be mentors on the team. We will promote the need for mentors throughout all our networks including the school community, social media, and sponsors. Through Rochester United, we will share mentor resources across our teams. We are also exploring the potential of partnering with our sponsor, Oakland University, to create an internship position for an engineering student to be a technical mentor on our team.

The FEDS will continue to work toward our goal of successfully establishing a FIRST program at all 21 schools in our district, with 17 currently established and running, 4 remaining. We also aim to add new teams to existing schools where the number of teams is insufficient to meet the demand of the student interest.

We intend to grow our new partnership with Yuwa International School for girls in India over the next few years toward the establishment of a FIRST program. Given that there is not currently an existing FIRST network, we anticipate needing to work with FIRST national and others to come up with an innovative solution to bringing a FIRST program within the reach of students in places like this globally.

We also aim to expand our partnership with the IRC to share resources, consultation, and mentorship, potentially leading to a more rooted FIRST model within their after-school programs with refugee children.

CLOSING

Embracing the values of FIRST while building upon our proven accomplishments and our brand, the FEDS continue to change the world through STEM education, while highlighting the imagery of federal agents as "Agents of Change".