

Chairman's Award - Team 7034

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2021 - Team 7034

Team Number

7034

Team Nickname

2B Determined

Team Location

West Linn, Oregon - 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.

Membership in our team has been a central part of the high school experience for many of our graduating members. With 100% of seniors from the past three years both graduating high school and attending college, our members are prepared for their future STEAM endeavors. The 12 female members of our team, half of which are leads, provide insightful perspectives and ideas. Participation in our team is a great way for students to gain hands-on skills and discover new talents and interests.

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

Our FRC team was created to address the lack of hands-on STEM opportunities at our high school. Since then, we've grown to spread STEM through our involvement with our city council, school district, monthly community ivy pulls, local library, other non-profit groups like girl scouts, American Association of University Women, etc. Through COVID-19, we've continued our efforts through distanced camps and making face shields and ear savers from 3D printing at members' homes for our community.

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?

In our attempts 2B Educators, we have hosted 9 STEM camps with almost 200 campers; aiding in our recruitment process. Growing from a club of 15 students to now a 35 member nonprofit, our efforts have enabled us to coordinate over 50 various outreach projects. Our success is not only measured by the number of students we have reached but by the access points and visibility we have created by making STEM present in the hallways of West Linn and in our community.

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

Our partnership with other FRC teams like 1425 and 2471 in face shield creation in a pandemic has shown how *FIRST*'s values are rooted in cooperation, innovation, and impact, instead of just competition. Our 2020 virtual game Pandemic Pindown was shared with FRC teams, allowing members to participate in a mock game and work through the brainstorming and engineering process. Our team also created an instructional video for ORTOP's *FIRST* Fair on running STEAM Camps for other FRC teams.

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

Outside our school, we have mentored 2 new FTC teams one of which we assisted in the creation of. We gave them access to parts and machinery along with sharing our knowledge of 3D printing, design, and electronics. The team also supports the many FTC teams at the high school. This year we provided advice and are looking forward to assisting a new FLL team that got a late start. We are currently working with the public library to provide a "check out" FLL space for local teams to meet.

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 in-person summer camps for middle schoolers and day camps for primary schoolers have continued virtually since 2020 to inspire students to discover many paths in STEM education through team lessons and speakers in exciting fields. Additionally, we have partnered with the local West Linn Public Library to host drive-a-robot days to introduce students to our team, and we continued this partnership in COVID-19 when we created a virtual weekly challenge for the community to participate in.

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

Our involvement with our city council, school district, and other FRC teams, has led to our team's ability to manufacture face shields, masks, and ear savers for those in need. With SOLVE, we've volunteered to protect Oregon's parks. We've introduced youth to robots at our local library, OMSI, city fair, and local primary and middle schools. With Girl Scouts, we've hosted a girl scout camp. With our sponsors, Mentor Graphics & LAM Research, we've brought robotics to "Take your kid to work day".

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

Our team strives to be inclusive and encourage original ideas. Part of our goal is to inspire students and equip them with real-life skills to pursue future careers. Most STEM fields are male-dominated, so we are proud that 40% of our team and 50% of the leadership team are female. In our community, we have reached out to underrepresented groups through the Unified robotics program, and in the spring we'll begin a 3-week STEM camp for girls to foster interest in and hear from women in STEM.

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

Our Unified Robotics program which encourages special and general education students to collaborate in robotics and our all-girl STEM Camp has received a grant allowing us to get the resources we need to expand our programs. Through Unified, camp planning, and FTC/FLL mentorship, we ensure newer members participate in planning and oversight roles alongside leads for training. We've also created standards and procedures for many key processes that can help pass down knowledge from previous years.

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

From cold calling to door-to-door requests, our team has evolved to create a program that engages our sponsors. We use a monthly newsletter to communicate with all our partners, detailing our projects and events that allow our sponsors to be involved in our monthly activities. In recruitment, we sort sponsors as, local, corporate, fundraiser, grant-based, or in-kind, each with specific approaches. Our written procedures and sponsor spreadsheets keep information organized and is easily passed on.

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

One way in which our team could improve is to get full team participation in the off-season. Generally, we have a large number of people in our robotics lab during the season, but during the off-season, we have light participation. We are taking multiple approaches to fix this. Our main way is creating more small projects that are exciting and accessible to all skill levels. We have also started taking attendance and using it as a factor for final grades.

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

We've found that our core values undoubtedly align with *FIRST*'s. We strive to make an impact by being educators through our STEM camps & workshops with community partners. Innovation and discovery is made through our members' enterprise & experimentation, which led to our ivy pulls, Indonesia STEM presentations, and outreach programs. Our focus on inclusivity has been realized through our Unified and all-girls camps. Most of all, the hard fun of this cooperation is the reason we're all here.

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.

Team 7034 has grown from rookies to a team averaging 40, participating in a variety of projects, with nine camps hosted

to a multitude of outreach projects throughout the community and greater Oregon. Our recent focus has been environmental sustainability; creating a plastic recycling program to shred plastics for post-consumer uses, and the installation of solar panels on our building to allow for battery recharging for the lab and future expansion to the environmental sciences classrooms.

Essay

Since the fall of 2017, Team 7034 has had a mission to be "determined to inspire students in science, engineering, and technology while developing individual skills and character." While in a global pandemic, staying true to our core values of being community partners, educators, innovators, and inclusive has never been more imperative. Our robot never touched the carpet in 2020, but we pushed through with a mindset of determination and growth which allowed our exhilarating team atmosphere and forward momentum to continue.

Team members' individuality and teamwork abilities have evolved during COVID-19. Quickly pivoting our plan for the season, our team started CADing and prototyping PPE parts such as constructing face shields and delivering them to frontline workers to states throughout the country to help slow the spread of COVID-19. By collaborating with our established partners such as our local library, school district, and the West Linn city council and creating new alliances with MakerForce PDX, FRC Teams 1425 and 2471, and local individuals, we've been able to procure the grants, 3D printers, and filament required to provide our community with PPE. Over 7,000 pieces of PPE, 3,000 of which were face shields, were constructed and distributed to our school district's staff, our corporate and small business sponsors, and community members in need. Beyond providing aid to numerous individuals and organizations, we've also created lasting relationships with those who support our objective.

In previous years, presenting our robots at West Linn's annual Old Time Fair has proved to be a great way to inspire a diverse group within our community. In the summer of 2020, our team was selected to be the fair's Grand Marshall; this honor was a testament to our team's involvement around West Linn and beyond. The city chose us to lead the community into the "roaring twenties" while promoting STEM and innovation. Although this and many other plans weren't able to continue, our team pursued out-of-the-box methods to keep our team members and community involved and excited about STEM.

Instead of our "Drive a Robot" days at the West Linn Public Library, we developed "Weekly STEM Challenges" which the library published via Youtube, allowing young students to have a creative outlet during a time of endless screens and google classroom schooling in the pandemic's early months. In place of the robotics showdown and coding celebration event that we've hosted the last three years for Hour of Code at West Linn High School, we've instead designed an Hour of Code website which was shared with our school and district. Although we weren't able to instruct lessons for the Portland Boys and Girls Club's summer camp in 2020, we have been working on developing virtual lessons at our own camps, and hope to implement this curriculum in our future partnership. The ingenuity of our team members and the passion to make an impact has not diminished, rather we have pivoted our methods to move our community further along in a way that both protects people from COVID-19 and ignites interest in STEM education in the next generation.

Quarantine has also required our various STEM camps to be reimaged. In 2020, our team had looked forward to our third annual "Summer of STEAM", an immersive camp designed to introduce incoming 8th and 9th graders into our lab space, and provide them with hands-on opportunities that would enable them to hit the ground running as they joined our team. Additionally, our team had laid the groundwork for younger students in our district (grades 1-5) to be acquainted with the engineering process and a variety of STEM immersion activities and investigations, such as flying drones and creating successfully-launching rockets. From 2018 to 2020, these camps pushed 2B Determined members to work with guest speakers, develop and teach lessons, gain comfort and awareness in social settings, organize camp administration, communicate with parents, students, and school district members, and design marketing and promotional materials.

When we realized that Summer of STEAM 2020 would not be feasible due to the pandemic, rather than wait for next year, our team ambitiously created a fully virtual model of Summer of STEAM that still featured 100% student-developed curriculum, as well as presentations from industry professionals such as a police evidence tech and software engineers. The necessity of forethought proved more vital than ever with the creation of this camp, especially without the ability to be in the same room. From maintaining exciting group energy and interaction through zoom games to delivering materials to households, our innovation and problem-solving made this all possible. The fantastic 15 hour camp week with 15 campers proved to be well worth it for everyone involved. The success of a virtual Summer of STEAM inspired us to continue these camps with "Full STEAM Ahead", a five-session camp for 4th-7th graders. Through continual refinement of our camp procedures, our team identified a need to specifically support the female youth of West Linn and is excited to create our best camp yet with "Changing the SySTEM." This camp will feature lessons taught by all the girls on our team as well as female guest speakers, and we can't wait for the adventurous three-week experience in April and May. Our team wants to ensure that STEM is a safe and welcoming environment for all of our students, especially our female team members and campers.

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Our emphasis on spreading STEM to all extends to our other outreach programs. We are proud to be among the first Unified Robotics teams in Oregon and to provide a space where robotics students, special education students, as well as general education students from our school's Unified club, can all come together to engage in robotics exploration. A team members' friendships with special education students in her English class led to the creation of our Unified Robotics program. Now during COVID, we are continuing our Unified meetings virtually. While these present challenges in creating quality content for all to learn from and enjoy, much less organization and involvement, our Unified meetings provide a sense of normalcy for our special ed peers as well as students on our team. Some of the best memories from Unified Robotics come from building marshmallow towers and learning the "Cotton Eyed Joe" dance with everyone. This is the same creative enthusiasm we hope to provide to all at our Unified meetings. Additionally, we are setting up the Unified program for success by ensuring underclassmen are leading in activities such as teaching Scratch coding lessons. As we transition back into competitions and build seasons, we will bring our Unified classmates along, and make sure they are determined to influence everyone in their love of STEM!

Beyond our outreach events, our team felt it important to ensure development for our members within Team 7034. Our new members, 20% of the team, have yet to "turn screws" in person at our lab. We recognized the importance of supporting these new members, so our leadership team created "Pandemic Pindown", a mock game to release for our students and other teams in the state of Oregon. Through this game, students were able to focus on specific skills through their subgroups, understand their important individual responsibilities and impacts, learn the brainstorming and engineering process, gain a sense of the FIRST community, and feel connected at a distance.

During a time of physical restrictions, our team has become more inclusive. Members have honed not only their leadership in outreach and robotics events but also found ways to strengthen team community. Over the summer, we participated in socially distanced hot dog roasts after our park ivy-pulling volunteer events and had days to kayak together. From exercising to volunteering, we've found ways to bond as a team in a way that's good for our community and our members' well-being. Our inviting team atmosphere allows all members to thrive as learners, competitors, and people, no matter their race, education type or level, sexual orientation, team role, religion, or background. These diverse individual viewpoints have led us to select our ongoing projects such as the development of our outreach robot, swerve drive, and CAD lessons, as well as delve into some non-traditional projects like our plastic recycling and solar panel programs, which we've been developing in our 8 meetings every week.

Without initial funding or experience, Team 7034 started with little more than determination going into our rookie year. While our name initially served as a placeholder in a roster, we soon realized that determination defined our enthusiastic and originative spirit. We are still early on in our journey as a fourth-year team, but with the strong core values we've established, we've been able to build a base for sustainable initiatives that make differences in our community. The success of our team isn't measured solely from the awards and competitions we've won, but from seeing the faces of students that lit up at our camps, dancing with Unified students whilst building Lego, boosting our members' confidence over time. If COVID-19 has taught us anything, it's that the future is 2B Determined. The unexpected challenges we've faced have reaffirmed our spirit of perseverance, adaptability, and determination. While we have settled on our name, the work we have yet to accomplish is far from complete.