

Chairman's Award - Team 2883

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2021 - Team 2883

Team Number

2883

Team Nickname

F.R.E.D (FIRST Robotics Engineering and Design)

Team Location

Warroad, Minnesota - 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.

F.R.E.D. BUILDS LEADERS ONE ROBOT AT A TIME by emphasizing professionalism, creative problem solving, and outreach. Each student is asked to train in all our areas and are encouraged to not isolate in just one. 100% of students that were a part of Team 2883 have graduated, 86% have gone into fields that are STEM related. Our alumni have helped shape our team to who we are today. 22% of our 22 currently registered mentors are alumni that have graduated within the last five years.

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

F.R.E.D. has introduced STEM to our community, and in doing so, attracts students from diverse and underrepresented populations. 24% of team members identify as 2 or more races. Our outreach efforts have increased participation in STEM: We stage many robot demonstrations in our area; we bring EV3 robots to local daycares; host a weeklong STEM camp for 6th-8th graders; visit the local Senior Living Center, and offer "What's Brewing with F.R.E.D?,"-totaling 20+ outreach events per year.

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 the 2020 season we beta-tested our newest initiative, Professionalism 101, to teach soft-skills. Students attend sessions where we work on active listening, eye contact, verbal and non-verbal communication; essential soft skills that are needed to not only to spread the message of *FIRST*, but to be a successful leader. These exercises have strengthened our teams capacity to spread the message of *FIRST*, are scalable, and can be easily reproduced with other teams.

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

We coordinate 3 *FIRST* LEGO League teams and a Jr. team. Our students are academic leaders in the classroom - for the last 6 years, the class valedictorian has been on F.R.E.D. Collectively, 2883 students log the most community service hours, earning top recognition by our district. When our state went into a lock-down, one of our team members took home two 3-D printers. She printed COVID-19 masks from March to July, 2020.

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

We focus intensely on assisting teams. In Winnipeg, Manitoba, we helped start Team 7532 Gophertronics (2019), and helped start 8225 Robodog, Rolla, ND (2020); both teams have arrived with a kit of parts and leave our shop with a working robot. We sent a veteran mentor to lead/revitalize FRC 2654 (Roseau); 2 recent alumni (2018 and 2019 grads) have started their own teams where they attend college: Team 7532 Gophertronics (Rookie year 2019) & Team 8188 Grand Force (Rookie year 2020).

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?

Because of the work of FRED and strengthening our CTE area, our school administration changed the graduation requirements so that every student has to take a technical education course in order to graduate. We now have project based STEM learning by grade level, LEGO WeDo kits in the classrooms, and an elementary school STEM Club, and new in 2020 was an Innovation Fair we helped coordinate. Young kids talk about being excited to join FRED when they are older, just like any varsity sport.

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

The University of Minnesota's Department of Biomedical Engineering reached out to our team to start building ventilator boxes. FRED enlisted the help of Marvin's and Polaris to help us fabricate a design. Our team assembled all 24 ventilator boxes. We sent out 22 of them around the state, while 2 of them were kept within Roseau county.

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

Our most recent startup in 2020 was the FLL team Lao Pow. This team consisted of all Lao members, a first for our region. FUN FACT: Lao members on our FRC team increased by 400% in 2020.

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

91% of the students that "graduated" from Lego League have chosen to join our FRC team. Our Lego League teams are our feeder programs. We have worked hard to establish a shared database with detailed records of events, contact names, etc... to prevent the loss of institutional knowledge with each graduating class.

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

Active partnerships working together on ventilator boxes in recent months have definitely strengthened our connections with our sponsors. Marvin also partnered with us to injection mold visors and our team came together to assemble the visors in shifts so we stayed socially distanced.

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

We need to push each other out of our comfort zones more. We see that students tend to find one area they like and they don't try anything else. We are trying to make sure that everyone rotates to try out different project areas and that we all come together for Professionalism classes that benefit the whole team.

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

It's a privilege to spread the message of *FIRST* and get more people involved with what we have because we know it is a 'life-changer.' We have started six teams, continue initiatives in Manitoba, and Rolla, ND while sustaining *FIRST* through our school & community. We prepare our students for the world, increasing their technical skills, while developing their communication and presentation skills. F.R.E.D. builds leaders one robot at a time.

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.

We are largely a Hockey town as well as small and secluded. Igniting a shift in Warroad is a difficult challenge, but not one we couldn't handle. F.R.E.D. is changing the way our town thinks of STEM. Our team influenced our school administration changed the graduation requirements so that every student has to take a technical education course in order to graduate. STEM is now thought of as essential for our students to be exposed to. We are exposing our small town to more STEM than ever before.

Essay

The Warroad school district is the northernmost school district in the contiguous United States. We are small, yet mighty. Isolated, yet connected. We are determined to make FIRST an integral part of our town's culture. Our FRC 2883 family extends beyond our town's population of approximately 1,800 people. The 37 high school students that comprise F.R.E.D. spread the message of FIRST in our school, our community, and internationally.

F.R.E.D. BUILDS LEADERS ONE ROBOT AT A TIME by emphasizing professionalism, creative problem solving, and outreach.

F.R.E.D. is more than coding and building robots. New in 2020 is Professionalism 101. Students attend sessions to work on active listening, eye contact, verbal and non-verbal communication, and confidence building. These essential soft skills are needed to be an effective communicator and a successful leader. These exercises strengthen our team's capacity to spread the message of FIRST, are scalable, and can be easily reproduced with other teams.

F.R.E.D. IS A FAMILY. Our shop area is where we try new things, challenge each other, and inspire each other. It's our home. Our families bring in meals for the whole team each weekend and our younger siblings play in the shop with us. Our alumni come back because it's their home, too. We also invite other teams into our home. We are equal and equally cool.

We are largely a Hockey town, it is actually the trademarked name of our community, "Warroad-Hockeytown, USA". We have a fierce and well-documented rivalry with a town to our west, Roseau, written up by The New York Times and NBC News. Yet, in 2020, we sent one of our most seasoned and respected mentors to lead the Roseau FRC team. A revitalized Roseau team now makes full use of our shop, our program, and our resources. We are as proud of this collaboration as our hockey teams are rivals. We know we are better together, no matter the color of the team jersey.

F.R.E.D. has grown from seven male members in 2009, to 37 students, with 40% females in 2021. In this same time period, we inspired Warroad Schools administration to expand STEM opportunities both inside and outside classrooms. Our shop underwent a \$5 million renovation in 2019; there is now a project based STEM learning by grade level, LEGO WeDo kits in the classrooms, an elementary school STEM Club, new curricula, and new in 2020, an Innovation Fair. On March 12, 2020, FIRST announced that all further competitions were suspended until further notice. Not long after, all schools in Minnesota were shut down and we had to continue our studies online. Instead of backing down to these new found challenges, our team took this as an opportunity to give back to the healthcare workers in surrounding communities. The University of Minnesota's Department of Biomedical Engineering reached out to our team to start building and assembling ventilator boxes. FRED enlisted the help of Marvin's and Polaris to help us fabricate a design. Several of our team members assembled all 24 of the ventilator boxes. Once the boxes were complete, we sent out 22 of them around the state, while 2 of them were kept within Roseau county.

Our high school has added STEM classes for college credit including engineering and drafting classes. A robotics class, focused on FIRST programs, is now integrated into the curriculum. This class is open to all students, regardless of their participation in FIRST. F.R.E.D. has been awarded nearly \$762,000 in outside funds that have purchased new CTE equipment that benefits all students. These classes get students involved with STEM and help them explore different careers that incorporate their newly acquired skills. Due to our efforts to bring more STEM into our school, our district added a technical education course to graduation requirements.

100% of students that were on F.R.E.D. have graduated; 86% are in STEM fields due to 2883. Our alumni inspire us to dream a bit bigger and continue to shape our team. 22% of our current mentors are 2883 alumni that have graduated within the last five years. Two recent alumni (2018 and 2019 grads) have started their own teams where they attend college: Team 7532 [Gophertronics] Rookie year 2019 and Team 8188 [Grand Force] Rookie year 2020.

We coordinate three FIRST LEGO League (FLL) teams and one Jr. team. 91% of the students that "graduated" from Lego League are now on our FRC team. Our most recent startup is FLL 44494 (Lao Pow), an all Lao team, a first for our region. This is our initiative to engage more of the Lao residents in Warroad, and bring them into FIRST. We also mentor FLL teams 34305 (Lego the Woods), 21848 (Warbotics) and our Jr. team 17043 (Stargazers). We share our work spaces with our FLL teams, making it easy to mentor these younger students and inspire a love of STEM beyond FLL. Warbotics (which competed at the Detroit World Championships in 2018), and Lego the Woods both qualified for the FLL 2020 state championship. While we are incredibly proud of the success that each team has had on a larger stage, sometimes the most fun is watching the small wins in our shop with them on a daily basis.

One of our initiatives, launched in 2018, puts LEGO WeDo kits in 3rd grade classrooms, teaching students how to build and program. WeDos are now an integrated part of the 3rd grade curriculum, and we've helped expand this project-based learning into the 5th and 6th grades. LEGO WeDo software is now included on every laptop, giving access to all. Our Community Family

Our sponsors are a part of our family as well. They support us in all that we do and check in on us throughout the season. One of our main sponsors, Marvin, offers internships for our students. The strength of the relationships with our sponsors like Marvin, built over time, has allowed us funding for entirely new programs in our school like Medical Terminology, Introduction to Healthcare Professions and expansion of our FLL teams.

F.R.E.D. gives back and stimulates people of all ages to support STEM by making robotics a major part of the Warroad community and beyond. Over the last century, Warroad has developed a distinct culture that revolves around hockey and fishing. However, the growth of FIRST programs in our community has ignited a shift with science and technology becoming an integral part of our town's lifestyle. Year-round, our team does presentations and robot demonstrations throughout Roseau county. These include the WHS Alumni Banquet, Polaris Industries, Warroad Public Library, Warroad Area Chamber of Commerce, and the Northwest Minnesota Manufacturer's Association. Team 2883 creates a float for the Warroad 4th of July and the Roseau County Fair Parade. We hand out team buttons and candy, do robot demonstrations, and our FIRST LEGO teams are included on our floats. In March 2020, one of our team members took home two 3D printers from the school to make N95 masks in her basement with visors. Marvin partnered with us to injection mold visors and our team came together to assemble the visors in shifts so we stayed socially distanced.

In June, we host a week-long STEM Camp for 6th through 8th graders. The students make projects, including a parabolic hot dog roaster and a rocket to launch on the last day. We are regular visitors to the Warroad Senior Living Center for robot demos, but it's our "What's Brewing with F.R.E.D.?" coffee talks that get even more attention at our local Caribou Coffee shop. These events generate excitement and serve to educate the local community members about the programs.

Our team is also very involved in volunteering both at FRC and FLL competitions. At FRC competitions, our team handles pit safety glass stations, resetting the field, as flag ninjas, and giving tours as student ambassadors. At FLL competitions, we volunteer as referees, judges' assistants, and table resetters.

Our Extended and International Family

FIRST is about helping others and spreading knowledge. Our team has chosen to exemplify these by volunteering at competitions and creating new teams. In 2020, rookie team 8225 (Robodogs) Rolla, ND came to our shop multiple times. In January, they arrived with a kit of parts and left with a working robot -- in one weekend. Prior to Covid, our team would cross the border north to Winnipeg, Manitoba to work with Team 7532-Gophertronics, the first-ever FRC team in the province. We established and sustain this team through regular work sessions, and an event called "We The North!," which has brought our teams together along with our LEGO teams.

As Hockeytown, USA, the biggest win we have is when we beat our neighbors the Roseau Rams. In Robotics, we are changing the narrative. Roseau Team 2654 is not a new team, but has had difficulties competing in recent years. In 2020, we brought the Roseau team into our workshop multiple times to provide assistance, utilize our programming, our mentors, and our resources. Their success is now our success.

It's a privilege to spread the message of FIRST and get more people involved with what we have because we know it is a 'life-changer.' We have started six teams, continue initiatives in Manitoba, and Rolla, ND while sustaining FIRST through our school programs, community events, and smaller-robot programs. We are more than robots, coding, or championships: We prepare our students for the world, increasing their technical skills, while developing their communication and presentation skills. Team F.R.E.D. is a growing family. Anyone can join and everyone has something to contribute. We help our "rivals" in the shop because we are better together. F.R.E.D. is a family drawing Canadians, North Dakotans, and people aged 2-102 together. F.R.E.D. builds leaders one robot at a time.