

On the Iron Patriots, we're doing more than building robots - we're forging a community of STEM. Through our multitude of FIRST programs, emphasis on inclusion, and extensive outreach efforts, we have made an unprecedented and sustained impact on our community.

FLL

Chairman's is about "exemplifying the true meaning of FIRST through measurable impact on participants, school, and the community at large...through FIRST programs". Team 4131 takes that message to heart, especially through our work starting and mentoring FLL teams. As of this year, the Iron Patriots have created 84 FLL teams, spanning 19 schools. This is our proudest achievement and the best example of how we continue to have an unparalleled impact on our community through FIRST programs. Out of the 84 teams that we have started, 4131 personally mentors 38 of them and has assisted with an additional 28, partnering with other local FRC teams to help mentor the rest. Over the past year, we have impacted over 770 kids, accumulating over 500 hours of mentoring FLL teams. 80% of the elementary schools in our district have at least four FLL teams. We've grown from only 10 teams in 2017-18 to 84 teams in 2019-20, a growth of 740% in just three years. For the past two years, we have had the opportunity to run and host our very own FLL competition, the FLL Eastside Qualifier. We had 100% of our students and mentors volunteer at the competition this year, hosting 31 teams, with 250 kids competing, and 500 attending.

Other FIRST Endeavors

We have impacted over 100 FIRST teams in the past three years. While FLL was our most successful and most demanded FIRST program that we started, we also started FTC and Jr. FLL teams. We have started eight FTC teams at local middle and high schools, five of which we continue to mentor, along with an additional three. One of the teams that we started and mentored was our own FTC team at Liberty High School, FTC 16942 The Minutemen, dedicated to only our rookie members. We have also started two Jr. FLL teams in the past year, both in Port Townsend. We have worked with local rookie FRC teams in the past year, including FRC 7461, to which we loaned electronics parts. We also enjoy working with other FRC teams within our school district, including 1318 and 2976, to whom we have opened our shop. 4131 also supports FIRST competitions, with our members and mentors volunteering over 751 hours at FLL, FTC and FRC competitions, not including the FLL competition that we ran, which amassed 528 hours, for a total of 1,279 hours.

Unified Robotics

The Iron Patriots believe that all students should be able to have the life-changing experience of robotics, regardless of their ability level. With that in mind, we created our school's first Unified Robotics (UR) teams, which operated under Special Olympics. Our Unified teams don't just benefit the athletes participating, they exist to impact both the athletes and partners alike. We have three Unified Robotics teams currently, composed of five athletes and three partners. This is the second year that our teams have

competed, and the most successful so far. At the Seattle UR Championship, our teams won the Perseverance, Innovation in Construction, and Sportsmanship awards. As a whole team, we were honored to receive the Foster Award, which celebrates the efforts of the entire school to develop a cultural norm among everyone in the community. We have also been given the opportunity to be the ambassadors for Unified Robotics, which involves our team spreading the word about UR to other FRC teams at FIRST competitions and emphasize the importance of inclusion. Liberty High School was also recognized as a National Unified Champion School in 2018, “[a school that] has demonstrated commitment to inclusion by meeting 10 national standards of excellence”; we’re one of only ten in WA, and 394 nationally.

Three Year Plan

As part of the larger Renton community, we seek to make a lasting positive impact on those around us. Four years ago, we created our Three Year Plan, outlining our past, present, and future goals. Our plan is updated at the end of every year after reflection on which of the goals we have met and which, if any, we need to focus on for the next year. Our goals for this year were to host a LEGO Mindstorms event, host a STEM Night for the students of our school district, mentor additional teams for UR, work with FIRST WA to bring robotics across Yakima Valley, and continue with our current outreach, including NW Harvest and STEM events. We accomplished all of those goals and improved on our plans for a STEM Night by planning two WOWS (Wonders of Women in STEM) Nights for girls, and our LEGO Mindstorms event

expanded into a four-week long duration of summer camp volunteering. Our goals for the 2020-21 season are to start Unified Robotics teams outside of our high school, contact our local government offices to increase funding for FIRST programs in our region, publish more resources for new FLL teams, and increase our work towards starting FRC teams.

Community Impacts

Year-round, 4131 impacts people at a multitude of locations, from libraries to festivals, where we show off our team and educate our community about FIRST Robotics. 4131 has spent a collective amount of 4,147 hours in the past 3 years volunteering at events, with 2,073 hours in the past year alone. In the 2019-2020 season, we reached 15,475 attendants at 41 community events, making a total of 43,400 people impacted over 98 events in the past 3 years. One of our proudest accomplishments from the past year was our four weeks' worth of summer camp volunteering. Five of our members volunteered their mornings at one of our feeder elementary schools, Clark Elementary. We helped out with a LEGO Mindstorms EV3 camp, teaching and guiding 45 fourth and fifth graders in the designing, building, and programming of their robots. Mr. Nichols, the district lead for the camp, said "Your mentors were a blessing... Each one had a different way of teaching and getting the best out of my students". We've also shown off our robot and team to seven elementary school STEM events in the past year, inspiring over 900 future change-makers. Although the Iron Patriots focus our work on STEM-related events, we also actively find

other ways to impact our community. For the past two years, we've enjoyed working with Northwest Harvest, a local food distribution center. We send 4 team members per month, 6 times per year to help package and distribute food. This has added up to 44,315 pounds of food packaged - 32,479 meals for those in need. Another event that we have done for many years is creating and delivering Valentine's Day cards to retirement and veterans' homes in our community. This year, we sent 360 cards out, making a total of 760 cards over the past three years. A new event that 4131 added this year was a Walk-A-Thon for suicide prevention, through the volunteer organization VT SEVA. Team members showed off 4131 at a local park, and explained FIRST Robotics to attendants, along with showing our dedication to such an important cause.

Women in STEM

One of the things we find most important is our impact on girls in STEM. From last year to this year, we've seen an 85% increase of girls on the team, with 66% of our ASB officer positions being filled by girls. Over the past 4 years, we've had a woman president for 3 of them, and every year we've seen dramatic increases in the number of girls joining our technical subteams. This year, we will have hosted our first two annual celebrations of girls in robotics, held on February 11th, the International Day of Girls and Women in Science, and March 8th, International Women's Day. We've invited the girls from our FLL teams to attend, along with the girls at our feeder middle school and high school who may be interested in robotics or other aspects of STEM. Our goal is to educate them on how they can stay involved in robotics beyond FLL, at the middle and

high schools levels, by having girls on the Iron Patriots give a presentation about their experiences on 4131, along with exposing them to other opportunities and growing careers for women in STEM.

Our Team

The culture that comes from helping others doesn't stop when we get back to our home base, Liberty High School. To make an impact, a successful team starts with a reliable plan of inducting rookies and molding them into seasoned team members. We take pride in how we recruit, train, and prepare our rookies for the rigors of build season. We obtain new members in a variety of ways, including working with our teachers to make classroom visits and visiting feeder schools. This year, the addition of our rookie only FTC team has allowed our freshman to ease into the FIRST program and resulted in higher freshman retention numbers. From our rookie year in 2012, we have grown from ten students to 44, and from two mentors to seven. We have increased our membership across each subteam and created more officer positions. As FIRST is a life-changing experience, many members stay connected with the organization long after graduation from high school to check up on the team, relive the excitement of kickoff and competitions, and come back as mentors to advise FRC teams. In the past four years, 100% of our alumni went on to attend a four-year university, with the majority going into STEM-related professions.

Looking Forward

For the past eight years, we have grown not only in numbers but in our vision to further our impact. From the very first FLL team we started to our ambassadorship for Unified Robotics, we haven't stopped focusing on how we can truly serve our community. We have, and will continue to, sustain our growth and impact. We are proud of our team and what we have done, but we're not stopping here. As Yoda says, "Pass on what you have learned." Well, there's nothing we love more than passing on the spirit of FIRST and STEM to those around us.