

Chairman's Award - Team 4593

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2022 - Team 4593

Team Number

4593

Team Nickname

Rapid Acceleration

Team Location

Rapid City, South Dakota - 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.

Over the last three years, 100% of our team has graduated and over 80% of them have pursued majors in STEM, including two alumni at MIT. Of our current seniors, 100% plan on majoring in STEM. Currently, we have three team members and two mentors mentoring FLL and FTC teams and an additional three alumni are mentoring FRC. Many alumni are so inspired by their time on the team that they stay involved with FIRST by supporting or mentoring other teams at their schools and in their community.

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

South Dakota, a state whose main economy is agriculture and tourism, leaves little funding and support for STEM and education; our state spending per student is ranked 44th in the country. These circumstances create a challenge for our team but also provide a great opportunity for us to get creative with our outreach, such as bringing our robot on the ice at local hockey games. We love opportunities to spread the word about FIRST, positively impacting young minds in 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?

Our team has done many community events, career fairs, STEM nights, and FLL events over the past 6 years where we take the opportunity to talk about the importance of STEM in students' futures. With the addition of creative fundraising through community engagement, we promote the team and our values. We measure our team and FIRST's growth by comparing our team metrics from year to year like roster numbers, fundraising amounts, community events, number of local FIRST teams, mentors, and sponsors.

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 strive to promote our team as one of the best role models in FIRST. We mentor and guide FLL and FTC teams by sharing the knowledge that we have gained over the years. We create the desire for younger students to continue pursuing knowledge because of our mentorship within the FLL community. Within our team, veteran members are responsible for teaching rookie members various skills that are not only important to our team but are also important later in life.

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

In the last three years, we have started two FLL-E and five FLL-C teams. We mentored eight FLL-C teams and assisted with two more. Our biggest accomplishment this preseason was starting two FTC teams in the state and assisting another. This started by sparking interest in nearby districts that wanted an option for students who wish to continue in a FIRST program after FLL. We have also laid the groundwork for three more to start next fall as well as an FRC team in Pine Ridge.

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?

At every outreach event, we make a point to feed the curiosity of young minds who wonder what and who the team is. We show them our robot, let them drive, and do multiple hands-on activities with Mindstorm robots. In the past few years, this has increased the interest for FLL in our area; additionally, we created an FTC presence in the state. We have become the go-to STEM group in this area, with our events tripling in the last few years.

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 have created many partnerships with local organizations, some of which include local school districts. In one district, we kick-started FIRST, and in another, we became the first lettered academic activity. We also began to work with a local chiropractor to design a mechanism to create a safer work environment and reduce workmen's compensation claims. Finally, we collaborated with the Rapid City Rush hockey team to help promote STEM and FIRST to a more extensive audience.

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

Within the last 3 years, the number of women we've had as part of the team has increased. Multiple have taken on leadership positions, including our current team captain and head mentor. We have been working to increase this number by going to WISE, an event that shows young girls how to be a part of STEM. Our team has also been working on promoting social diversity by working with an underrepresented population on the Pine Ridge Native American Reservation by helping form a FIRST team.

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

We ensure our efforts will continue by recruiting and including new members. Every year, during our preseason, we spend countless nights going over useful information our team has learned in the past. This helps new members gain knowledge and helps us continue to grow. We also support our initiatives by having rookie and veteran members volunteer to ensure continuing success. One example is how we support existing FLL teams year after year by hosting scrimmages and project days.

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

We are proud of the close relationships we have with all of our sponsors. The personal contacts we keep with them ensure a sustainable relationship, which has turned into internships for many students. To show how important what we do is, we take our robot to these businesses and explain what the game is and what we are doing in the community. In addition to this, we send personal thank you's to each sponsor expressing our gratitude and what successes we have had.

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

Currently operating in three small rooms in a condemned building falling down a hill, our team struggles with sustainability. In an effort to create a long term form of income and a way to help sustain the team, we have been working with a local entrepreneur to develop "Fit to Lift". This device will be used to help to create a safer work environment and gauge the strength of employees. Once this is being utilized, we can work towards getting our own space and ensure we are sustainable.

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

The mission of FIRST is to not only inspire kids about STEM, but also provide valuable life skills like communication and leadership. Our team is a safe space for students to share their ideas, and we encourage students to be unafraid to ask questions and seek knowledge. As students grow older, they gain confidence in their skills and take on leadership positions to teach new members. Our team provides the space and opportunities for students to flourish as leaders and use these skills in life.

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 pride ourselves on the fact that we are more of a family than a robotics team. Our team members have good

relationships with each other and bonding goes beyond the lab. Students have said, "I wasn't the most likable or nice kid but I found a home with this team," or "I like coming everyday because it is a safe space and I have fun when I'm here." We make sure that everyone feels comfortable and is included, and we are proud that as our team continues to grow, we also grow closer as a family.

Essay

Walt Disney once said, "We don't look backward for very long. We keep moving forward, opening new doors, and doing new things, because we're curious and curiosity keeps leading us down new paths." Rapid Acceleration is always moving forward and finding new ways to better our team, our state, and the world. Our team has grown and transformed through the steps outlined below.

Step One: Recognize Adversity

South Dakota is home to team 4593, and while it has its wonders like Mt. Rushmore, we face adversities everyday. South Dakota's economy is mostly agriculture and tourism, and education is not a forefront priority. Only \$9,913 is spent per student, and a majority of the funds go to textbooks and facilities. This causes elective programs to be underfunded, leaving little for a lone robotics team trying to make a difference.

Without a priority for academic electives, our small meeting space within the school district is limited, making it difficult to work with field elements. We also worry about losing this space as a portion of our building has been condemned due to foundation issues, which could lead to us losing it completely.

Historically, our area has left STEM underrepresented and undervalued. This has left students deprived of the experiences STEM creates. As a team, we strive to change this narrative.

Step Two: Create a Passion

Before our team increased the presence of FIRST in our community, there was one FLL team. We successfully became the driving force by creating a passion through hosting and attending outreach events to impact students.

We've supported 8th grade career fairs, Women in Science and Engineering (WISE), numerous STEM nights, and STARBASE CAD training. The 8th grade career fair is a chance for upcoming high schoolers to see career fields of interest, as FIRST can be a path to a career in STEM. We are proud to participate in WISE because we value diversity on the team. We know it is important for young women to be in STEM. One of the team's favorite events is bringing our robot to elementary and middle schools for STEM nights. We also support STARBASE with their eight-week engineering design challenge. The students, who we mentor, use CAD to create a design project. The designs are then 3D printed and tested, which is a great opportunity to see the challenges engineers face.

Our FIRST Robotics night with our local professional hockey team, Rapid City Rush, is an exciting event including all levels of FIRST. Last year was the first year we attended, and we took our robot on the ice and talked to the crowd about our team and how people can get involved. It is now an annual event and we love being able to share our love of FIRST with hockey fans.

Moving forward, we plan to expand what we do and are in the process of kicking off multiple camps and opportunities in the next few years. Two of these are female oriented: Girls Inc Robot Days and Girls Who Code. The others include a school-wide Hour of Code, Destination Challenge, and Robot Days. These events are crucial to creating a passion for FIRST, because when kids are excited about the opportunities STEM provides, it opens up a new world for them.

Step Three: Fulfill a Need

Through all of these outreach and recruiting events, we continue to see results across all levels of FIRST. While COVID slowed our overall team progress, we can say confidently that we have continued to fulfill needs within our community. We're also proud of getting the FIRST curriculum incorporated into the Meade County School District. To do this, we spent years communicating and presenting to their school board about its incredible benefits. Once approved, our team helped find funding for 5 new FLL teams and began working with their mentors to start two FTC teams in their schools next year. Starting this curriculum was an important step in our quest to expose young minds to STEM outside of our county.

Altogether, Rapid Acceleration has helped over 40 FLL teams. In the last three years we have mentored eight FLL-C teams, five of which we started, and assisted with two FLL-C teams. Annually since 2017, we have hosted a scrimmage for FLL teams, which is anticipated by all local teams. This year, in addition to the scrimmage, we hosted an FLL Project Day. Even though COVID shut down our state qualifier, we were able to provide an opportunity for teams to present their work.

A few years ago, Rapid Acceleration introduced FLL-E to the state of South Dakota. We started two teams, which has grown to more than six, and we managed the first unofficial Explore Expos in the state. The local affiliate for FLL noticed our initiative and started to promote FLL-E, which spurred the creation of more teams in South Dakota. Helping all of these FLL teams is important to us because FLL-E is the start of the FIRST pipeline.

After establishing FLL teams, we turned our attention to creating an FTC presence. There was one FTC team in South Dakota before last year, and that team was over six hours away. We laid the groundwork and are thrilled to say that we now have three teams in our region alone, with another three on the horizon.

Rapid Acceleration filled a void in local and surrounding areas. For many teams, establishing a few dozen FLL teams and a couple FTC teams may not be a big deal, but for us it is an outstanding achievement.

Step Four: Growth

Despite accomplishing so much already as a team, we are continuing to grow and expand our presence.

Last year, amidst COVID, we overcame the stereotype that only sports can letter. Our robotics team became the first official lettered academic activity by petitioning the school board and emphasizing the importance and value of our team and mission. We showed them examples of lettered teams in Minnesota, where robotics makes an incredible difference in their lives. After months of persistence, we succeeded in making robotics a lettered activity.

In 2019, we planted the seed to start an FRC team on the nearby Native American reservation. From our work with STARBASE, we showed the Bureau of Indian Education (BIE) the value of FIRST and sparked their interest in the program. We're working with teachers and advisors in the area to help establish one of the only teams located within the BIE. The nearby Native American population faces severe social disparity and is one of the most underrepresented populations, along with being below the poverty line. Unfortunately, they couldn't get off the ground this season due to COVID, but we are working to get the team fully-functioning by next year.

Step Five: Fueling the Passion

Each and every member has taken away so many life skills and opportunities that go beyond building a robot or writing Chairman's essays. Team members have said that our team provides a "conductive atmosphere to develop personally and technically at a level incomparable to other aspects and experiences in life," and "coming to robotics is the highlight of my day because of how much fun I have while I'm learning". FIRST inspires us to be better people for our own future, the future of our community, and STEM in general. This program has given our team moments that we can look back on forever.

Moreover, we make sure to engage as many rookies as possible. Every year, we pair rookies with veterans to teach new students what we are doing and engage them in aspects beyond just building a robot. We've been creating and implementing a preseason curriculum to help students learn about different parts of the team.

Step Six: Sustainability

Rapid Acceleration understands that in order to run effectively in the future, we must have stable funding. We've created lasting relationships with our sponsors by developing personal connections through conversation. Thanks to these relationships, our donations have increased this year, and on top of that, we have portioned some of them towards starting more FLL teams and buying robotic kits for future summer camps.

Last year, a local entrepreneur contacted our team with an opportunity to help our community. He's a chiropractor who has a concept to measure the amount an individual can lift at certain heights called "Fit to Lift." His ultimate goal is to provide companies the ability to prevent workplace injuries caused by muscle strain. He asked us to help design and build a prototype, which has many benefits for us and potential investors. In addition to helping a variety of businesses, it could serve as a source of sustainable income due to shared Intellectual Property, while promoting our team and FIRST robotics.

Throughout this entire process, we are learning about the many sides of running a business. We are also learning about the complexities of working with multiple parties in a business environment. This project will ensure that our team exists for years to come, as it will provide revenue and learning opportunities to team members. Within the next year, we are expected to produce 10 units that will be put in the field. The next phase will be to mass produce these units for commercial sales, providing an income to sustain the team. This has laid the foundation for future seasons as our team continues to manage the design and business plan. We're glad to carry over knowledge from FIRST and apply it to this opportunity.

Step Seven: Facing Down Adversity

Rapid Acceleration has proven that we turn adversity into opportunity. We've persevered and been dedicated to helping our STEM community grow. Even though we lost our meeting space during COVID, we were able to meet in person at the warehouse of one of our sponsors. Additionally, we made time for Zoom and coffee shop meetings because we wanted to continue working whenever we could.

We've proven we can spark interest, inspire, educate, and most importantly, make a difference. By always moving forward, opening new doors, and doing new things, we are making an impact in our little corner of the world. We are Rapid Acceleration 4593, and we are here to stay.