**RoboDragons Girl Power** 



Barack Obama once said, "The future belongs to young people with an education and the imagination to create." Our creativity and problem solving play a huge role in robotics. After all, the purpose of robotics is you are constantly thinking up solutions to problems. In robotics, we need to think of realistic solutions for our robot whenever we come across problems at anytime, including during tournaments. We work together as a team when we come across these

problems. We also feel that more girls should be in robotics to help create a stronger and more innovative world in the future.

# Our Team

Our team is 985E the RoboDragons. We are an all girls team from Mary Our Queen School in Omaha, NE. Although our team works well together, we have diverse minds and experiences when it comes to robotics. Emily is our most experienced engineer since she has been in robotics for several years. Riley is our second most experienced member since she has done robotics for a year. Sophie is our newest member since she only joined this year. Though there was already diversity in our experience, everyone was welcoming to an inexperienced member. With our different experiences and questions we bring up new problems to fix that could have an effect in the future.



We also have a mascot because we all like to be creative and diverse from all the other teams. Our mascot is a dragon named Emerald.



# Meet The Team

<u>**Emily**</u> - I'm in eighth grade and have been doing robotics for four years now. I have been interested in the different parts of STEM in robotics for most of my life. In robotics I like to program, design, and build. To me, Girl Power is encouraging other girls to be open to the idea of expressing their love for STEM by doing robotics.



<u>Sophie</u> - Girl Powered is so inspiring to me. For a long time, it was thought that women couldn't be engineers because people believed they could never be as smart as men. Not only having my teammates, but also being on an all-girls robotics team is huge for me. I only started doing robotics this year, but it's been a great experience! My problem solving skills have improved and now I use the engineer design method where I follow the steps until I come to the best possible solution for my problem. This new skill has not only helped me in robotics, but everywhere else too. This has also brought me a whole different way of creative thinking. I love art, and I practice it all the time, but that is a free spirited way of thinking. Robotics teaches you a logical way to think creatively and it has extremely helped me. I'm so happy I joined robotics and had the chance to be on an all girls team. It is an experience I will remember for a long time.



<u>**Riley**</u> - I'm in seventh grade and this is my second year doing robotics. This has been my best year and I think that is because I'm on an all-girls team. Last year, I was on a team with only boys, and I felt really left out. I love to notebook and build. I feel like I can learn more about

STEM with robotics, but also use my other skills as well. Robotics has taught me a different type of art with designing and building. To me, Girl Powered is not only teaching girls, like our group, about what they can accomplish, but also helping us embrace our love for it.



#### Robot

Our robot is a four wheel base powered by two motors with both an elevator and four-bar. On both the elevator and four-bar, there are claws to pick up cubes. Our strategy for the game is to move the red and blue cubes. We wanted to be able to help get the most points possible and we thought that most people would go for the green cubes because they are worth more points. Our first lift was just a four-bar, but we found that the cubes could slip down the arm and end up caught even with different claws. We now have a longer four-bar and elevator on different sides because we were just too wide with two cubes on the front of our robot. With the longer four-bar, we can now reach the lower green platform as well as drag the blue and red cubes. We decided on the elevator because we wanted to challenge ourselves to learn something new.



Our current robot



Our first robot

## **Tournaments**

We love going tournaments to see how our robot and driving skills have improved. We also like to see some robotics friends. We have won three design awards. The judges say we won our design awards because of our notebook. We have a system for figuring out what we want to use. We define our requirements and possible solutions, then make a matrix. We all provide our input on each solution, and decide based on how well it fits the requirements.



#### **STEM**

The different parts of STEM are science, technology, engineering, and math. This is what they mean to us and how we use then in robotics.

<u>Science</u> - Due to the limit on the number of motors for our robot, we only wanted to use two motors on our base, so we had to find a way to keep all four wheel turning. We did this by using a gear train. This gear train allows us to put the motors in the center of the base and not have to change the motors to turn fast by using a one-to-one ratio.



<u>Technology</u> - We have had to learn how to program the robot because none of knew how. At first, some of us felt that it was a pain and would never work, but after some trial and error, it did.

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<u>Engineering</u> - This is one of the biggest and most obvious parts of robotics. That because engineering is designing and building things, like our robot.



<u>Math</u> - Although we like our math classes, it is hard to find a place in real life to put into action everything we learned. Robotics is that place that almost everything you learn in math can be put into practice, with skills like measuring and finding the circumference of a wheel for programing.



### STEM Role Model



Our role model that we've chosen to share with you is Mrs. Tara Peterson. She is our vice principal and the head of the Mary Our Queen robotics program. Mrs. Peterson is a great example of a dedicated and passionate robotics coach. She pays full attention to the students and their robots as well as offers constructive criticism to help them improve. She prepares for our tournaments and asks us how the tournament was and what we think we can accomplish to improve for the next one.

Mrs. Peterson has always been open to letting us, the students, make our own decisions to help us better our teams and us as people. She never stops us if we have a strong idea and plan.

Mrs. Peterson not only makes a huge impact on Mary Our Queen School, but in all of Omaha. She has helped start up countless robotics programs and if there's any sort of robotics tournament she's there. By giving up big chunks of her life for robotics, she has inspired us to also help within the robotics community. We have helped with robotics camps at the library and a Girl Powered day at the zoo.





We also try to help mentor younger teams, especially other all girl teams. Here we are at our first tournament helping 70S, the youngest all girl team in Omaha.







## Closing

We feel that girls should be in robotics to help make a stronger and more creative future. Building and problem solving are skills that more students will need to learn for the future. The world needs more creative women to help shape the future, and we think robotics can help with that. The world needs creative minds for the future, and we are the future.



# **<u>Credits</u>**

Title: RoboDragons Girl Power Team members: Emily, Sophie, and Riley Team Number: 985E