GIRL POWERED CHALLENGE 12J - POTOMAC SCHOOL









The phrase "girl-powered" defines the way we approach robotics. Last year, our four-person team was entirely new to robotics; we started off clueless to the difference between nuts and bolts, but with some help from our mentors, we quickly became ardent robotics members. In discussing why we had waited so long to join an activity we were all passionate about, we came to one conclusion: stereotypes regarding STEM. It isn't always easy being an all-girls robotics team, but it's a challenge we face head on.

Despite multiple setbacks, we had a successful season sophomore year, qualifying for states and nationals and becoming confident in our abilities. At the end of last season, we gained a skillful new team member, Jun-Young.







OUR TEAM



Anna Takis joined robotics because of her overall interest in the STEM field, creativity, and organizational skills. These skills aid her in designing and building the robot, meticulously journaling our progress, and organizing our judges interviews. She has been both a driver and drive coach. Last year, one of Anna's biggest takeaways was the importance of practice. From driver control, to building, to judges interviews, practicing is essential to the robotics process, and our team continues to realize this every day.

Eleanor Nuechterlein started out our only programmer, as the only one who had taken computer science sophomore year. Since then, we've all learned to code, either in a classroom or on our own. Eleanor is a drive coach for our team, helps code our programs, spends hours journaling, and has been an integral part of each of our service initiatives. As someone often shy around new people, the VEX process of scouting, alliance building, and interviewing has been challenging and rewarding.





Whitney Bowen is our team captain. An art student, she uses her creative side to design and build the robot and to look at the field in an innovative way when programming and driving. She carefully journals, detailing inventive diagrams, and spends her free time crafting ambitious community service programs. As someone who struggles to accept failure, Whitney had to change her mindset going into robotics last year. We've had our fair share of failures in the robotics room, a mix of bad designs and bad luck. Along with the rest of our team, Whitney has accepted that we won't win every tournament, regardless of our hard work and effort.

Jun-Young Hong is our most experienced teammate. When she first joined 12J, she had to adapt to our team dynamic. She quickly found her place as an essential designer, strategizer, programmer, and friend; she brings a fresh perspective and positive attitude to the room. With her experience, Jun-Young is able to provide helpful advice to the rest of the team. Because of the precision required in "In the Zone," she has learned to be patient while programming autonomously.





Hollis Cutler joined robotics because of her strength in critical thinking; she constantly brings her mathematical abilities to the table. Harnessing what she has learned in geometry, algebra, and physics classes, Hollis designs aspects of the robot working with speed and precision. Along with Whitney and Eleanor, Hollis is an AP Computer Science student: therefore a helpful programmer. When she joined robotics, Hollis dreaded public speaking; her experience in robotics, presenting to groups upwards of 300 people has revolutionized her confidence, and she now goes on stage without hesitance.

Our team is made up of five diverse personalities and minds. This is a powerful asset, and one which only helps our team, giving us five different opinions every step of the way. Because diversity is such a positive asset, our team has also focused on increasing the inclusion of women and other underrepresented groups in STEM to bring new and unique perspectives to the field.

VISAS FOR TEAM AFGHANISTAN

Over the summer, Anna sent a text to our team, attaching an article about an all-girls Afghan robotics team which was denied entry to America for a tournament. Saddened by the story, we were determined to get involved. We focused the next few weeks on obtaining visas for the Afghan team.



After extensive research, we decided to launch a petition on the White House's "We the People" site; within the day, we had drafted and published a petition. For our petition to be presented to congress, we had thirty days to get 100,000 signatures. Though at first the number seemed daunting, they became more realistic with the far-reaching capabilities of social media. We contacted reporters, sent emails to feminist platforms and STEM organizations, made twitter accounts, posted on Facebook and Instagram, and texted friends and family (examples below). A few days after we had launched our petition, President Trump granted the girls visas; whether or not our petition was directly linked to his intervention, Trump did state that "social media backlash" was a key factor in his decision.

Petition: https://www.facebook.com/wethepeoplepetitions/posts/649466395248858



In the few days it was live, our petition received over 1,000 signatures. A feminist platform, "Women 2.0", reached out to our team and published an article on our efforts.

Article Link: <u>https://www.women2.com/2017/08/24/meet-the-girls-robotics-team-that-stood-up-for-their-afghan-count</u> <u>erparts/</u>

A few weeks later, a reporter from a prominent Afghan newspaper sent our team a video, titled "Afghan Robotics Team Sends Out A Message Of Thanks." The Afghan girls thanked the public for their support, ending the video by shouting out our team, as they said "I thank all the people who helped make this happen... and most importantly other robotics team, such as the Potomac School in Virginia for their petition."

We later spoke about our efforts to a few different groups, including Potomac's Intermediate school, Middle school, and to a smaller group of sixth-grade-girls focused on embracing identity.





FOUR

The work which we did for team Afghanistan inspired us to do more for girls in STEM. In the aftermath of this project, we realized not only the severity of the STEM gender gap, but the magnitude of impact which we could make.

WHAT WE'VE DONE

FEM 'N STEM

Entering a male dominated field as an all-girls team opened our eyes to the lack of female representation in STEM. Investigating the reason behind the gender gap, we realized that as girls get older, societal pressures push them towards "feminine" activities. It took most of our team until sophomore year to try robotics, partially because of these stereotypes; we constantly discuss our passion for robotics, and how much we regret not joining earlier. As a result of this, at the beginning of this school year, Whitney, Hollis, and Eleanor founded a club called Fem 'n Stem with the intention of furthering gender equality in STEM.



Every week, our club, roughly 30 people, meets for an hour to confront gender issues, participate in STEM activities, and engage with speakers. Additionally, we communicated with head of the Lower, Middle, and Intermediate school divisions to start an integrated program with our high school club, aiming to give younger girls the opportunity to pursue their passions without judgement. Our club presented in front of the 7th and 8th grades, talking about the importance of following your dreams, no matter what people say. The following week, we hosted an activity in 7th grade, where we ran fun science experiments with a group of girls and boys. We received positive feedback and had a great time.

OTHER COMMUNITY SERVICE



Our school's robotics program participates in our town's MPA Art Fest. At this event, we set up a table and work with young kids on small robots and creative projects.





We taught kids about our robots at our school's fair, Fall Frolics.

All the members of our team spoke at the Microsoft Girls in Technology Conference. We talked to girls interested in STEM about our own experiences in Robotics.

OUR ROLE MODEL

Mary Muldowney Jarratt is our coach and role model. She worked at Texas Instruments as a high ranked engineer, and knows firsthand the challenges of being a woman in STEM. She inspires us to pursue our passions, in and out of the robotics room, every day, and is truly an exemplary leader.

A "GIRL-POWERED" TEAM

In our first tournament, we partnered with two all-boys teams, and received backlash for it. We were told we "flirted our way to the top." As scared sophomores, we didn't stand up for ourselves. Since then, we've grown as a team, trying every day to embody our girl-power. We no longer cower in the face of criticism, but stand up to it. Despite stereotypical comments, we learned to be confident women in STEM and accept our successes as our own. It was a long and difficult road to reach our current state, made possible by Mrs. Jarratt's encouragement, which has lifted us from self-conscious sophomores to emboldened leaders. Her faith in us has shown the striking impact which one person can make. We spend each day trying to pay it forwards.

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