VRC GIRL POWERED ONLINE CHALLENGE Sponsored by Google Igniting a passion: Females in Stem Team 3631X dynamix



ELIZA REYNOLDS

⁶⁶ GIRLPOWERED A TERM THAT, IN OUR MINDS, PROMOTES AN ALL-INCLUSIVE ENVIRONMENT AND EQUAL OPPORTUNITY FOR WOMEN IN ENGINEERING FIELDS. WHY IS THIS IMPORTANT?

EVERY PERSON HAS INGENIOUS IDEAS THAT COULD POTENTIALLY BENEFIT OUR SOCIETY AND INNOVATE OUR FUTURE. JUST LIKE MALE ENGINEERS, WOMEN CAN MAKE THEIR OWN IMPACT.

WHY IS THIS IMPORTANT TO OUR ROBOTICS PROGRAM SPECIFICALLY?

THE CHS VEX ROBOTICS PROGRAM HAS GROWN FROM HAVING 7 GIRLS TO HAVING 16 SINCE LAST YEAR. THE NUMBER MORE THAN DOUBLED! IT CAN BE INTIMIDATING TO COME INTO A NEW CLUB FOR THE FIRST TIME, **ESPECIALLY IF YOU HAVE NO EXPERIENCE. BEING VETERAN MEMBERS OF THE ROBOTICS CLUB, ANES AND ELIZA STRIVE TO ENCOURAGE THESE GIRLS TO** CONTINUE IN THEIR STEM ACTIVITIES AND FUTURE JOBS. IF WE IGNITE OUR OWN PASSION FOR ENGINEERING IN THE NEW CLUB MEMBERS, OUR PROGRAM WILL CONTINUE TO GROW.

THIS SEASON, ANES AND ELIZA ARE WORKING WITH FOUR BOYS. THEY KNEW THAT IN ORDER TO SUCCEED, EVERY MEMBER HAS TO PROMOTE AN INCLUSIVE ENVIRONMENT FOR EVERYONE ON THE TEAM. IN ORDER TO DO THIS, WE MADE SURE TO FOCUS ON GROUP DYNAMICS, HENCE OUR TEAM NAME. WE THINK OF COMMUNICATION AS THE MOST IMPORTANT SKILL IN THE ENGINEERING FIELD, WHICH IS WHY WE MAKE SURE TO CLEARLY PRESENT EVERY IDEA TO THE TEAM CAREFULLY AND WITH DIVERGENT THINKING STRATEGIES IN MIND THIS WAY, WE ENSURE THAT EVERY MEMBER IS COMFORTABLE WITH SHARING THEIR IDEAS DURING BRAINSTORM SESSIONS, OR THROUGHOUT **REFINE STAGE IN THE DESIGN PROCESS.**

THIS INCLUSIVE ENVIRONMENT DOES NOT JUST EXTEND TO OUR TEAM ONLY, IT APPLIES TO EVERY MEMBER OF OUR ROBOTICS PROGRAM AT SCHOOL. WE WANT EVERYONE TO FEEL WELCOME AND **CONTINUE TO LEARN AND WORK TOWARDS THEIR OWN FUTURE. WE ACCEPTED A LOT OF** FRESHMEN THIS YEAR, SO WORKING WITH THEM **IS OUR MAIN CONCERN.** WE HOLD PROGRAMMING WORKSHOPS, AND OFFER **DOCUMENTATION RESOURCES AND DESIGN ADVICE ON A DAILY BASIS. THIS MOTIVATES MEMBERS OF THE WHOLE PROGRAM.**



CREATING THIS ENVIRONMENT DID NOT PROVE ITSELF TO **BE EXTREMELY DIFFICULT. ANES AND ELIZA ARE BLESSED** WITH A GROUP OF **GUYS WHO ARE ALL INSPIRED BY THE** GIRLPOWERED **MOVEMENT AS WELL.**

"WHEN I HEAR GIRL POWERED, I THINK OF THE WOMEN WHO BROKE PAST UNFAIR SOCIAL EXPECTATIONS SOCIETY PLACED UPON THEM AND STILL SUCCEEDED. IT INSPIRES ME TOO." - SHAKE

> "THE GIRLPOWERED MOVEMENT CREATES A MORE Accepting environment in Vex, which is Something everybody benefits from." - Craig

"THE MOVEMENT EMPOWERS WOMEN AND BRINGS MORE OF THEM INTO STEM-RELATED FIELDS, HOLDING BRIGHT FUTURES FOR THEM AND ESTABLISHING A MORE BALANCED WORKFORCE" - MANNAN

> "OUR GOAL IS THE SAME AS THAT OF THE GIRLPOWERED MOVEMENT: TO ELIMINATE THE DISADVANTAGE THAT FEMALE ENGINEERS ENDURE IN THE FIELD" - IAN

IN ORDER TO MENTOR AND MOTIVATE OTHER TEAMS IN NOT ONLY OUR PROGRAM, But our community and beyond, every member of our team has several skills. We begin to **cross-train** every team member at the beginning of the school year, so each person and job is flexible.



FOR EXAMPLE, SHAKE BEGAN TO TEACH IAN HOW TO USE THE ROBOTC CODING SOFTWARE WE USE FOR OUR ROBOT. THIS WAY, IAN WOULD BE ABLE TO CHECK OUR OWN CODE, AND EVEN MENTOR **OTHER TEAMS THAT NEED HELP WITH THEIR** PROGRAMS. ANES, GIFTED IN CODING, ALSO STEPS IN TO HELP BUILD AND WIRE THE ROBOT. USUALLY, A LOT OF BUILD PROJECTS ARE Completed at once, so anes being able to build just Continues to multiply the efficiency of our team.

> MUCH LIKE ANES, SHAKE VOLUNTEERS HIS Extra time to building and designing Parts of our robot. Both he and anes are Able to offer build advice and assistance to other teams as well.

BOTH MANNAN AND CRAIG ARE TRAINED TO DRIVE THE **ROBOT AS WELL. THIS ENSURES THAT IF SHAKE IS NOT** ABLE TO MAKE IT TO A COMPETITION, WE WILL STILL HAVE A DRIVER FOR OUR ROBOT. ALTERNATE DRIVERS **ARE ESSENTIAL TO EVERY TEAM, AND TEACH MEMBERS** TO STRATEGIZE AND THINK QUICKLY.

ELIZA IS ALSO TRAINED TO PROGRAM, BUT HAS **RECENTLY TAKEN IT UPON HERSELF TO IMPROVE HER BUILDING SKILLS. EVERY PERSON ASSESES THEIR** WEAKNESSES AND LEARNS MORE TO BENEFIT THE TEAM **AND THEMSELVES IN THEIR FUTURE OCCUPATIONS.**



// deadzone for \ if(abs(ve Y1 = vexB



else Y1 = 0:

//deadzone for X2/Ch1 if(.65*abs(vexRT[Ch1]) > thresh X2 = vexRT[Ch1];

else

X2 = 0;

//drive control SetMotor(frontRight, Y1-X2-X1); SetMotor(backRight, Y1-X2+X1); SetMotor(middleRight, Y1-X2+X1)





CONCERNING OUR TEAM'S DOCUMENTATION SKILLS, ELIZA TRAINS EVERY SINGLE TEAM MEMBER ON HOW TO CREATE **A SUCCESSFUL ENGINEERING NOTEBOOK. THIS IS AN ESSENTIAL ASPECT TO ANY ENGINEERING POSITION, AND** TAKES TIME TO DEVELOP SKILLS FOR. **EVERY TEAM MEMBER IS EXPECTED TO TAKE DETAILED** NOTES AND PICTURES ON WHAT THEY WORK ON DAILY, WHICH ELIZA TRANSCRIBES INTO OUR ENGINEERING NOTEBOOK. THIS IMPROVES OUR NOTEBOOK BY PROVIDING **A VARIETY OF PERSPECTIVES, AND IMPROVES THEIR EXPERIENCES IN DOCUMENTATION.**

EXPANDING ON OUR DIVERSITY OF PERSPECTIVE, EVERY MEMBER OF OUR TEAM IS EXTREMELY DIFFERENT.

WE ARE DIFFERENT RACES, ETHNICITIES, AND GENDERS. WE ARE IN DIFFERENT CLASSES, CLUBS, AND SOCIAL GROUPS. WE ALL HAVE EXPERIENCE IN DIFFERENT TYPES OF ENGINEERING.

AND MORE THAN ANYTHING, WE HAVE HAD DIFFERENT EXPERIENCES IN STEM AND ENGINEERING ACTIVITIES. SHAKE, IAN, CRAIG, AND MANNAN ALL UNDERSTAND THAT THEY WILL NOT EXPERIENCE THE SAME DIFFICULTIES AS ANES AND ELIZA DO IN A STEM FIELD. THIS MOTIVATES THEM TO CREATE AN EVEN BETTER ENVIRONMENT OF **INCLUSIVENESS AND ENCOURAGEMENT AT OUR SCHOOL.**

BECAUSE OF THEIR INCREASED MOTIVATION, WE DEFINITELY SEE THESE DIFFERENT PERSPECTIVES AS A POSITIVE OF OUR TEAM. SINCE EVERY TEAM MEMBER IS FLEXIBLE DUE TO OUR **CROSS-TRAINING METHODS, OUR TEAM EASILY WORKS TOGETHER AND ALLOWS ENOUGH TIME FOR OUR OWN TEAM** AND ROBOT ALONG WITH THE OTHER TEAMS THAT WE MENTOR. ALSO, WE REALLY JUST ENJOY BEING TOGETHER! WE ALL COME FROM A VARIETY OF CIRCUMSTANCES, AND LUCKILY FOUND UNITY IN STEM. NO FEELING IS BETTER THAN GOING **INTO A COMPETITION KNOWING THAT NO MATTER WHAT** HAPPENS, YOU WILL STILL BE WITH YOUR BEST FRIENDS.







THESE ATTRIBUTES HAVE DEFINITELY CONTRIBUTED TO THE **OVERALL SUCCESS OF OUR TEAM. AT OUR FIRST** COMPETITION, WE HAD A LOT OF PTC ISSUES, WHICH CAUSED OUR ROBOT TO BE IDLE FOR HALF OF MOST OF OUR MATCHES. THIS MEANT THAT WE NEEDED TO KEEP EACH OTHER CALM AND STRATEGIZE QUICKLY AS A TEAM. WE ENDED UP MAKING IT TO THE SEMIFINALS, AND LEFT WITH THE DESIGN AWARD. WE COULD NOT HAVE DONE THIS IF WE HAD NOT WORKED SO WELL TOGETHER. AT OUR SECOND TOURNAMENT, WE LEFT WITH THE EXCELLENCE AWARD, OUR TICKET TO THE STATE CHAMPIONSHIPS, BECAUSE OF THE OVERALL AMAZING **QUALITIES WE EXHIBIT AS A TEAM.**

OUR TEAM'S STEM ROLE MODEL DR. ELLEN STOFAN FORMER CHIEF SCIENTIST AT NASA CURRENT DIRECTOR OF NATIONAL AIR AND SPACE MUSEUM DR. ELLEN STOFAN RAN ONE OF NASA'S LARGEST FACILITIES **RESPONSIBLE FOR BUILDING ROCKETS AND PLAYED AN INTEGRAL ROLE IN NASA'S SPACE EXPLORATION PROGRAM.** SHE IS NOW THE DIRECTOR OF THE NATIONAL AIR AND SPACE **MUSEUM, AND HAD PUBLISHED SEVERAL PROFESSIONAL BOOKS AND RESEARCH PAPERS IN HER FIELD AS WELL.**

WHY DOES SHE INSPIRE US?

"DR. STOFAN MOTIVATES ME TO LITERALLY 'REACH FOR THE STARS.' NOT ONLY HER ACCOMPLISHMENTS, BUT JUST THE OCCUPATIONS SHE HAS TAKEN IN LIFE INSPIRE ME TO WORK TOWARDS BIG GOALS IN MY FUTURE, EVEN ONES THAT SEEM IMPOSSIBLE." - ELIZA

"DR. STOFAN'S STORY AND SUCCESS HAS TAUGHT ME TWO THINGS: EVERYONE HAS SKILLS, NO MATTER THE GENDER, AND THOSE SKILLS CAN BE PUT TO GOOD USE UNDER THE RIGHT **MANAGEMENT." - SHAKE**

"HARD WORK LEADS ANYONE AND EVERYONE WHO TAKES THAT PATH TO SUCCESS, WHICH IS SOMETHING DR. STOFAN'S LIFE CAN SHOW." - ANES





EVERY MEMBER OF OUR TEAM CONTRIBUTES TO OUR OVERALL SUCCESS. OUR DIFFERENCES DO NOT SEPARATE US, BUT MAKE **US EVEN STRONGER.**

WE ARE **GIRLPOWERED.**



TEAM: **3631X DYNAMIX**

MEMBERS: ELIZA REYNOLDS - 11TH GRADE - MEDIA // DOCUMENTATION **ANES KIM - 10TH GRADE - PROGRAMMING** MANNAN GOEL - 10TH GRADE - BUILD // DESIGN ABHISHEK "SHAKE" MENOTHU - 10TH GRADE - PROGRAMMING // DRIVING **CRAIG BOWLIN - 10TH GRADE - BUILD** IAN RAINEY - 10TH GRADE - BUILD

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