CATALYST VOLUNTEER ROLE AND PROFILE:
Automation & Robotics

***Please note**: The volunteer role and responsibilities may be modified based on the discretion of the classroom teacher.*
Click here to see how volunteers will contribute to the entire Project Lead The Way (PLTW) course unit.

COURSE OVERVIEW: Students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, automation, and computer control systems. Students use the VEX Robotics® platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms.

IN THIS PROJECT: Students work through a series of 10 "missions" that mirror real-world challenges, taking on the and discuss who will assume the primary responsibility for the engineering jobs. Everyone on the team will take part in all phases of the design process, but one person will be primarily responsible to see that the job gets done. Each team member is expected to complete and submit a problem sheet for each task. Each student has the opportunity to experience all three types of roles (Mechanical Engineer, Electrical Engineer, Computer Engineer). Students must track their progress along the way on the problem check-off sheet. Students document their design process in notebooks and complete the problem sheets provided. In some classes, teachers may require students to use a CAD program to create a model at least one of your solutions.

Areas of Focus: Automation, Fabrication, Robotics, VEX components, CAD, Mechanical Engineering, Electrical Engineering, Computer Engineer

VOLUNTEERS NEEDED:
Since students take on roles of 3 types of engineers, we are interested in finding professionals with varied skills including mechanical engineers, electrical engineers, and computer engineers, particularly with skills in robotics (especially with sensors and motors and ROBOTC programming language (VEX). Industry professionals with experience in robot sensing and control systems will be able to share relevant, real-world experiences with students to help their projects come alive!

VISIT 1 - Volunteers will:
- Introduce themselves and share a relevant story about their career pathway/experience.
- Share examples of drawings they use regularly in their work (Orthographic and Isometric Drawings, CAD examples).
- Support students to successfully build their solutions and support students who are stuck (without just giving them the answers or fixing challenges for them).
- Share visuals/examples of their work that emphasizes the role they play on a team.
- Support on conferences with groups before they are approved to build.
- Support small groups to participate in their first group work and remind students of troubleshooting strategies.

VISIT 2 - Volunteers will:
- Review new sketch ideas and provide feedback on quality of work.
- Share examples of strategies for troubleshooting or collaboration used in their careers with examples of when they have worked with team members on a single product.
- Show examples and describe features of manufacturing systems they have worked with, including images of any physical equipment and drawings etc. they use in real life.
- Review and provide feedback on the documentation students notebooks for each group, summarize the feedback at end of class and when students are collaborating effectively or documenting their problem solving effectively.
- Prompt students/groups who are stuck and encourage them to use classroom resources and peers to support.

VISIT 3 - Volunteers will:
- Encourage full team participation, help troubleshoot problems, and review notebooks.
- Debrief /support and scaffold reflection and documentation process for students' accomplishments, problems, and goals for next sessions as they work to complete their projects more independently.
- Review new sketch ideas and provide feedback on quality of work in their notebooks.