

Joseph Ye

12th Grade

Union High School

Oklahoma

### **What Drives Me**

The engineering design process has 5 steps.

Define the problem: not a single student-led engineering club at the freshman academy or high school.

Imagine possible solutions: start my own engineering club to spark STEM interest among peers

Create a prototype: charter the first Technology Student Association Chapter

Test prototype: Gauge member engagement levels during club projects

Improve prototype: Build social presence to attract/retain members

Over the past year, I've used this process to help expand my TSA chapter from a struggling club of 4 to a force of over 40 engineers, leading my team to the 2021 Oklahoma TSA State Conference. As President, I teach my peers the fundamentals of the engineering design process by incorporating hands-on STEM projects like ping-pong launchers and self-powered rubber band boats in my club meetings. Being both an educator and a competitor has allowed me to institute STEM as a lasting medium for exchanging ideas at my school.

Also, as part of the Tulsa Regional STEM Alliance Teen Advisory Council, I have helped brainstorm and develop various ways to spread awareness of different STEM opportunities, scholarships, and resources in the community. Last year, the TRSA TAC created a free virtual summer STEM camp where campers could experience the daily lives of many careers — Forensics, Meteorology, Physics, Life Sciences, Computer Science— and meet professionals from various STEM fields. This year, we hope to create something different. We are currently designing a Khan Academy-like website where we will upload short STEM lessons in the form of videos and supplementary practice exercises and materials. My team and I hope this website will give teachers in Oklahoma an opportunity to implement an all-in-one study resource that will help to further educate the budding STEM youth.

The engineering design process has also carried into venues outside of my STEM circles. Having been elected as Key Club Lieutenant Governor of Division 25S/31, I've learned to 'improve my prototype' by attentively listening to member feedback and valiantly voicing my own ideas. However, just pitching ideas isn't enough. The 'create' step has taught me how to transform my proposed solutions into concrete actions. As President of Interact Club, I've used the managerial and social skills I've developed as an engineer to spearhead a club-wide initiative to help pack and deliver over 300 lbs. of medical supplies to developing countries such as Togo, Madagascar, Mexico, and Venezuela, helping save countless lives across the globe.

The lessons I've learned from the engineering design process will be fundamental to my future work as an engineer and entrepreneur, both of which call for the ability to confront

problems critically and effectively articulate complex ideas. What drives me is further developing these skills, as they will be instrumental to me becoming a first-class contributor in the future marketplace of ideas. The Jiffy Lube Scholarship will help position me one step closer toward perfecting my soft skills.