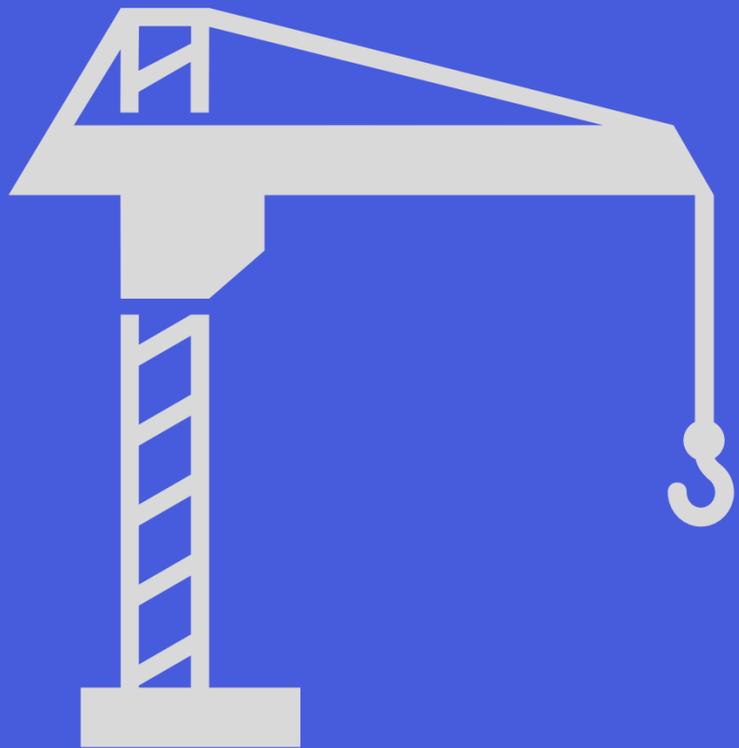


# CRAFTING CRANES AND ENGINEERS: A HANDS ON DESIGN EXPERIENCE



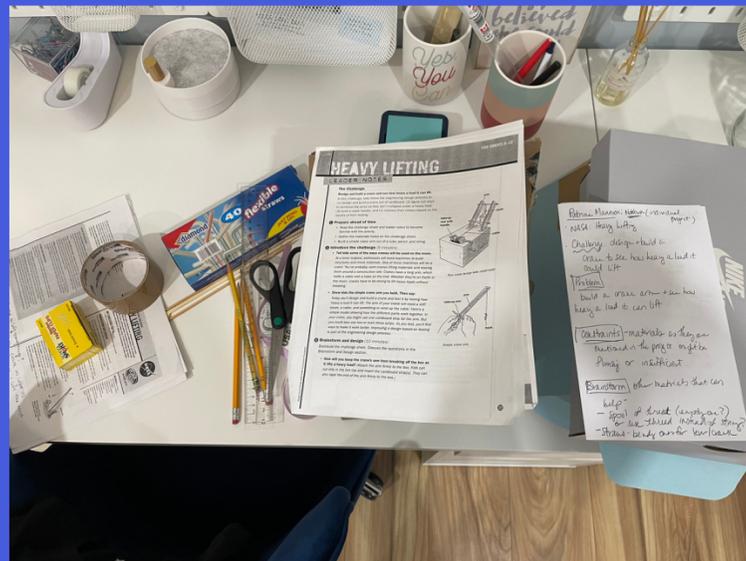
Major Engineering Project Part 2

Patty Mannion  
The “E” in STEM

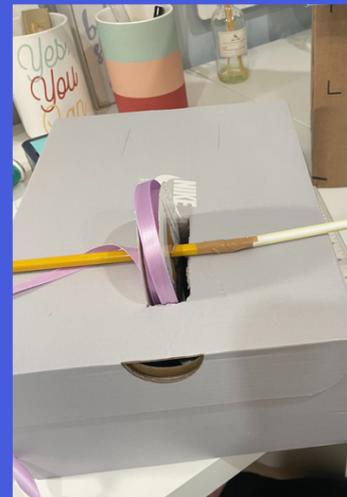
# GOAL: COMPLETE THE DESIGN PROCESS

## PROJECT: NASA DESIGN CHALLENGE: HEAVY LIFTING

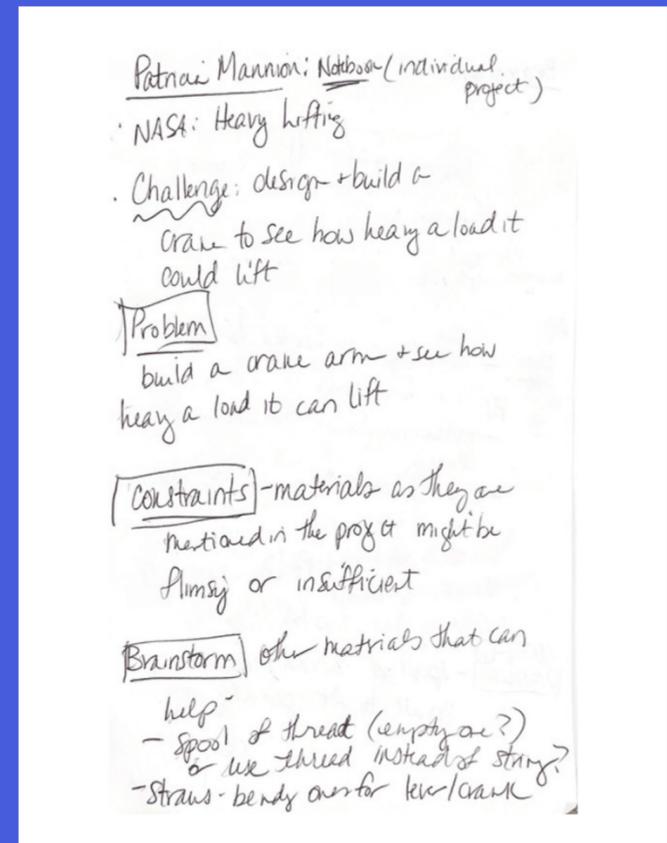
### My own experience using recommended materials



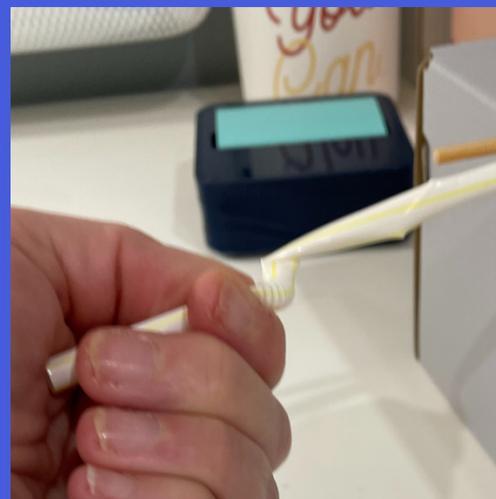
The Mission we chose to accept



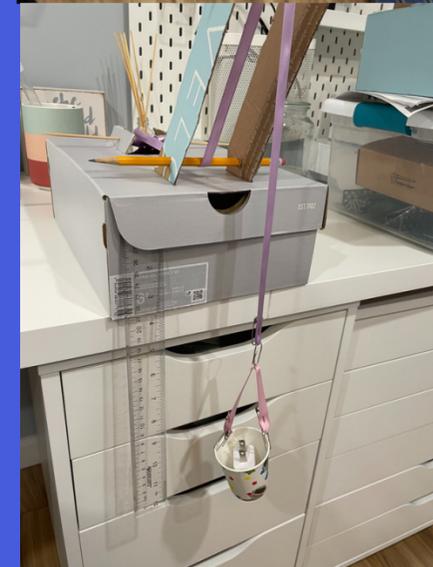
A tale of two pulleys...



Which take up reel?



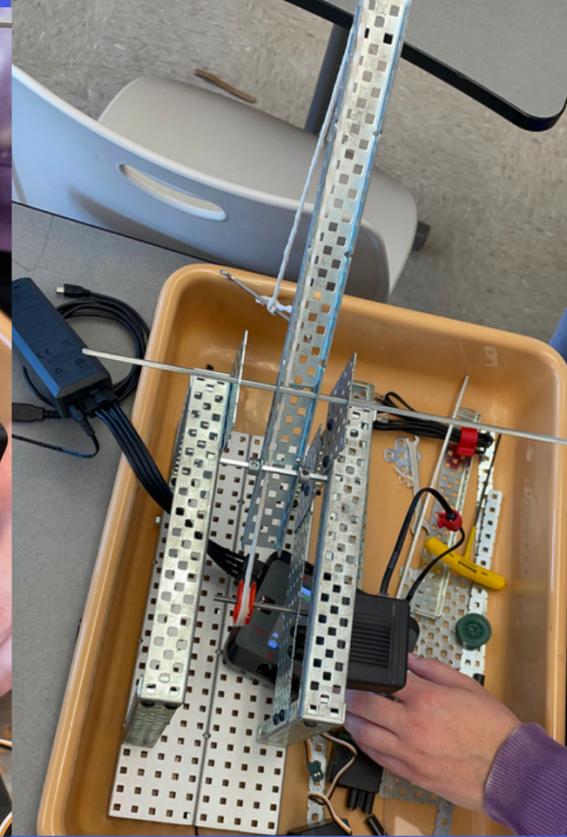
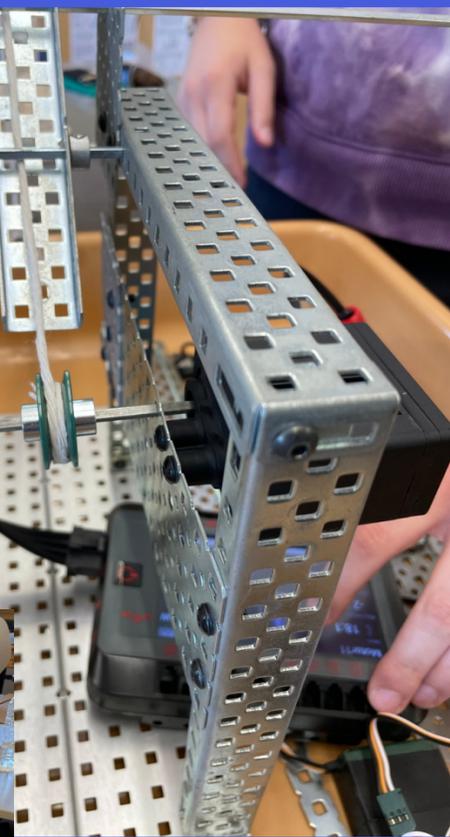
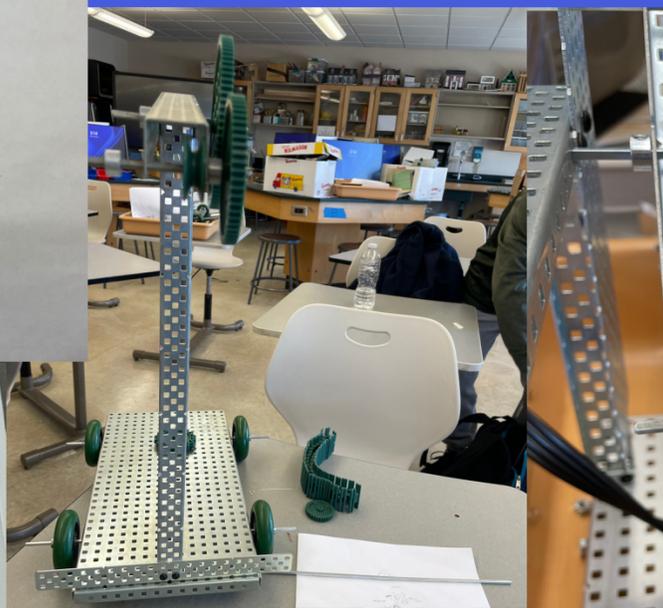
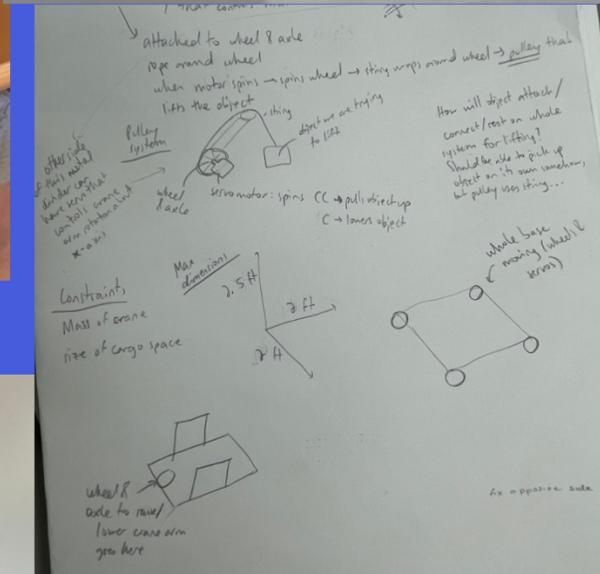
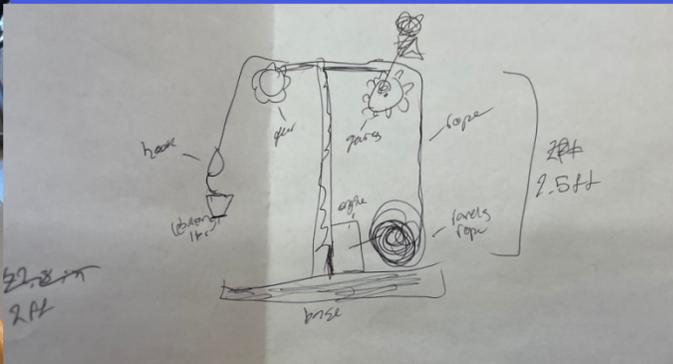
Then there's the crank issue...



# GOAL: COMPLETE THE DESIGN PROCESS

## NASA DESIGN CHALLENGE: HEAVY LIFTING

### With the Engineering Club and VEX



Lofty Goals

Constraints

Mass of crane  
Size of cargo space  
max + min dimensions (L, W, H)  
1 x 7 x 2.5

Goal

get to the moon

today: Brainstorm

• mass  
• movable  
• rotate  
• how do we...

Sample Notebooks

A couple of prototypes and a LOT of lessons learned

Brainstorming

# Videos of the two outcomes

