



INKSMITH

DESIGN THINKING WITH 3D PRINTING
MINI LESSON SERIES

CHALLENGE #1

CABLE CATASTROPHE!

Using the design thinking process, you're going to design a 3D printable tool for organizing charging cables!



DESIGN THINKING PERSONA

Meet Tammy! She's studying to get her PHD at the University of Waterloo and does research at the Perimeter Institute. For her experiments, Tammy uses many different technology tools at her desk and there are too many cables to keep it organized easily.

"I want to keep the cables together, but I'm also changing equipment constantly so they need to be easy to switch out."



DESIGN THINKING ACTIVATE!

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Step 2 - Use TinkerCAD to 3D model your solution and create a virtual “Prototype.”

Step 3 - Visually “Test” your 3D modelled “Prototype and make improvements.

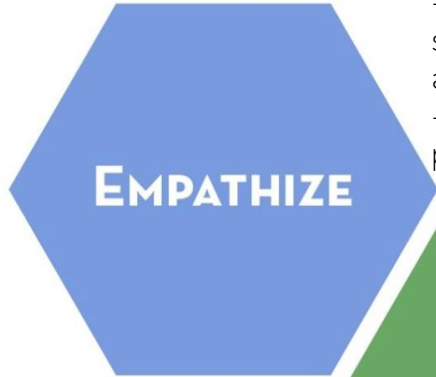
Step 4 - With these adjustments made, 3D print your final prototype for testing in the real world.



LESSON INSTRUCTIONS

Follow these steps to complete this design thinking exercise!

USING DESIGN THINKING



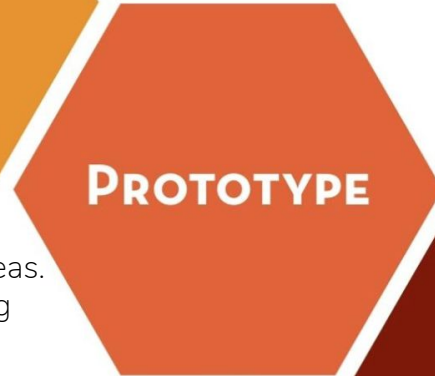
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- What emotions can you attribute to this?
- How does your user feel?
- Is there anything you don't know?



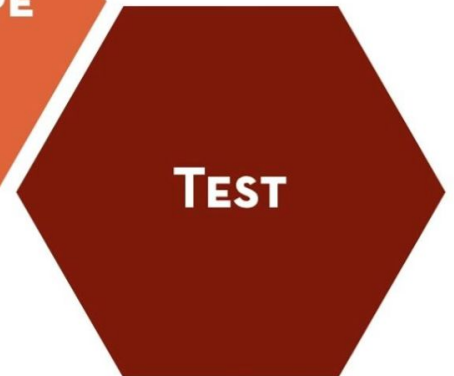
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- What does your solution need to achieve?
- Can you break this problem into parts?



- Document your ideas.
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- 3D model your solution in TinkerCAD
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Create a Sway Presentation or Flipgrid Story to share what you've learned! Your story should capture:

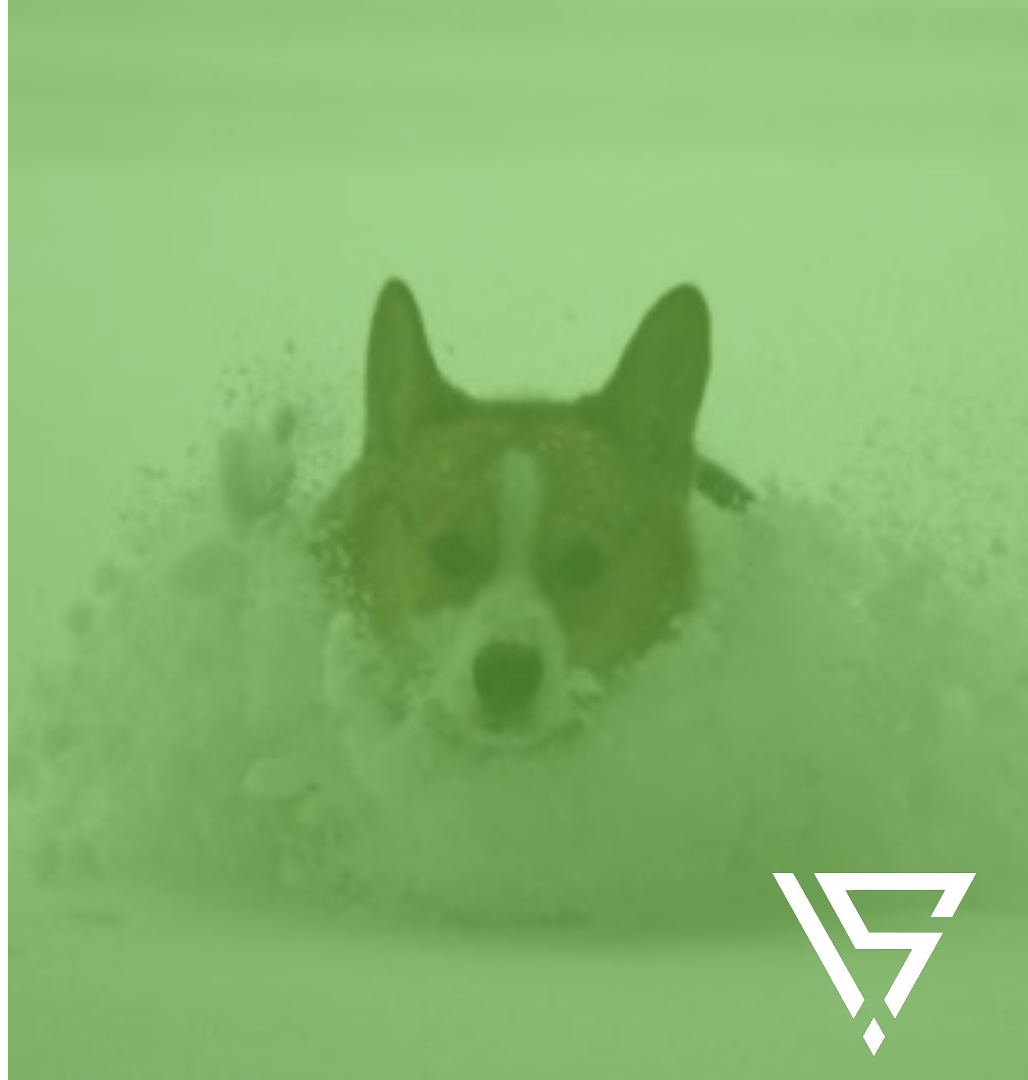
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CHALLENGE #2

CORGI CONUNDRUM!

Using the design thinking process,
you're going to design a 3D
printable prosthetic for Willow!



DESIGN THINKING PERSONA

Meet Willow! Willow is an emotional support dog for seniors with homecare. She was born with a partially formed hind left leg. Willow can walk for short periods without problem, but her job requires a lot of moving around, and she gets tired!

Where Willow's leg ends, it is about 4.5cm around and 3cm long past her hip.



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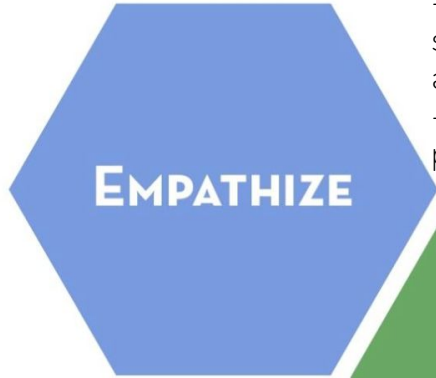
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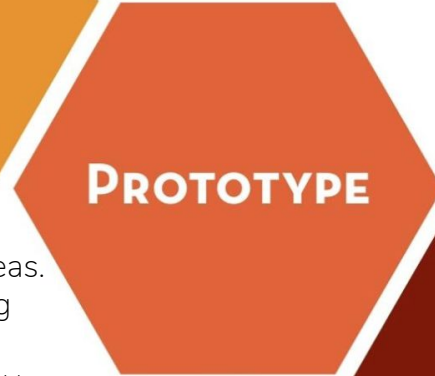
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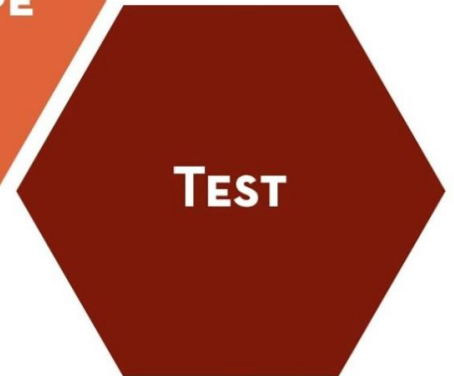
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A green speech bubble with a white shadow, containing the word "Flipgrid" in white, bold, sans-serif font.

Flipgrid

CHALLENGE #3

PENCIL PALACE!

Using the design thinking process, you're going to design a 3D printable organizer for your desk!



DESIGN THINKING CHALLENGE

Your job is to create a 3D printable organizer for all of the items you keep in your desk and pencil case.

Make sure that your solution can neatly organize;

- Pencils and Sharpener
- Pens
- Erasers
- Ruler
- Calculator
- Protractor
- USB stick



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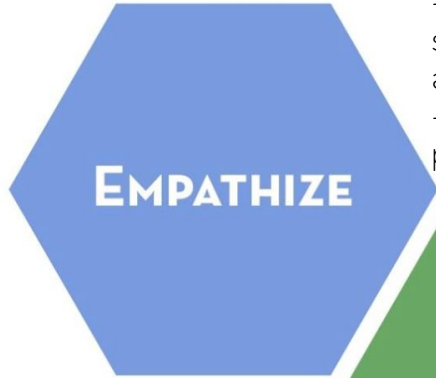
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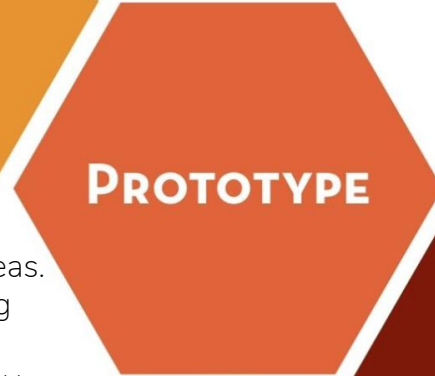
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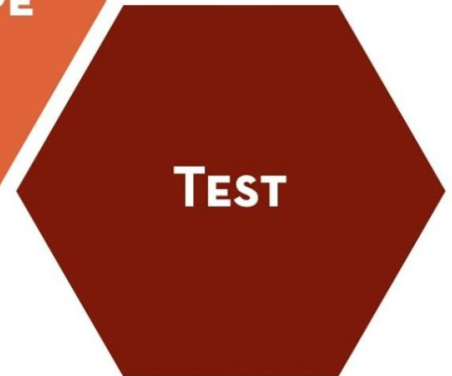
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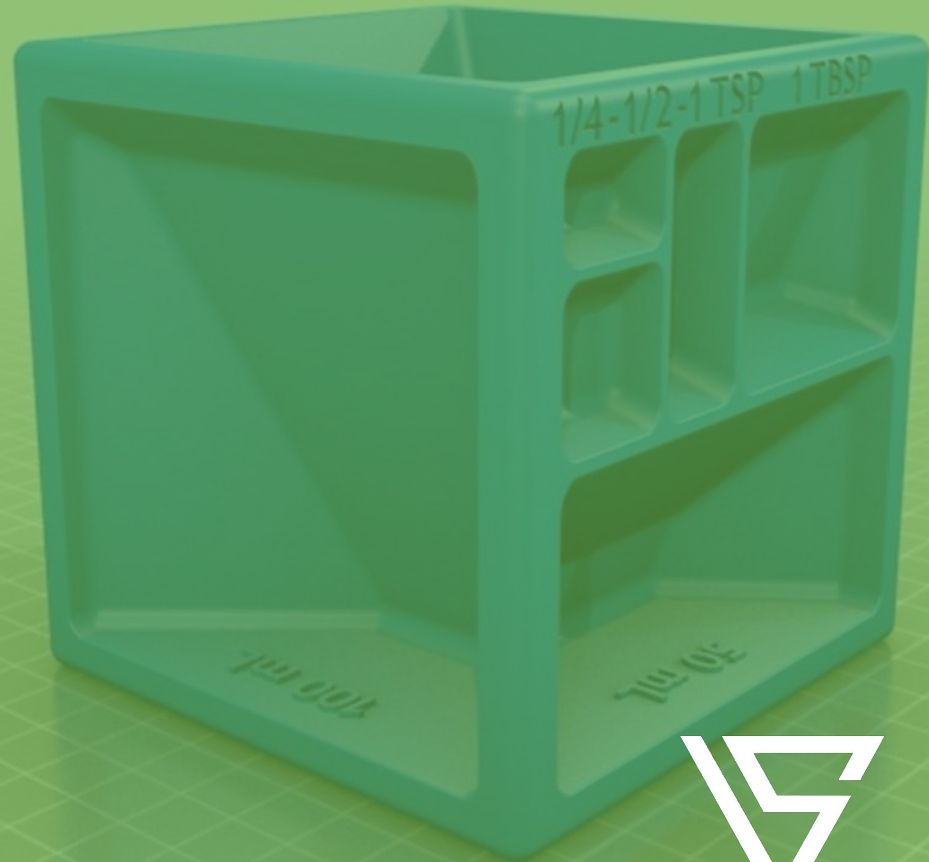
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CHALLENGE #4

POTENT POTIONS!

Using the design thinking process, you're going to design a 3D printable measurement tool!



DESIGN THINKING CHALLENGE

Meet Dr. Sarah Silver! She's a Chemistry professor at the University of Ottawa. Sarah is always mixing new formulas for her experiments, but sometimes loses the smaller beakers.

"I really need an all in one tool for helping me to measure my solutions without worrying that I'll misplace it."

Sarah needs to be able to measure mixtures in the following volumes;

- 50ml
- 80ml
- 175ml



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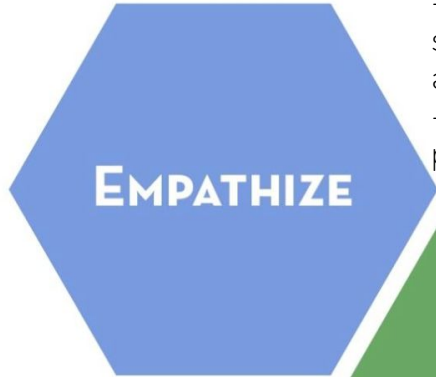
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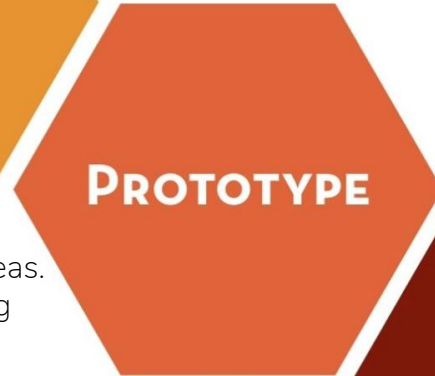
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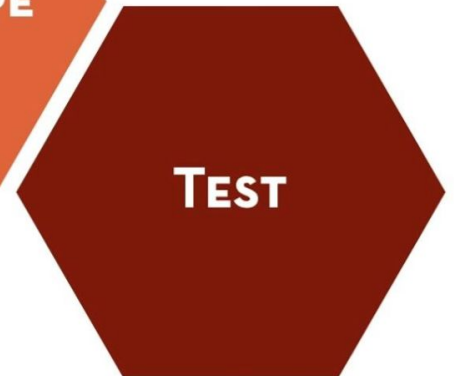
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CHALLENGE #5

INSANE INSTRUMENTS!

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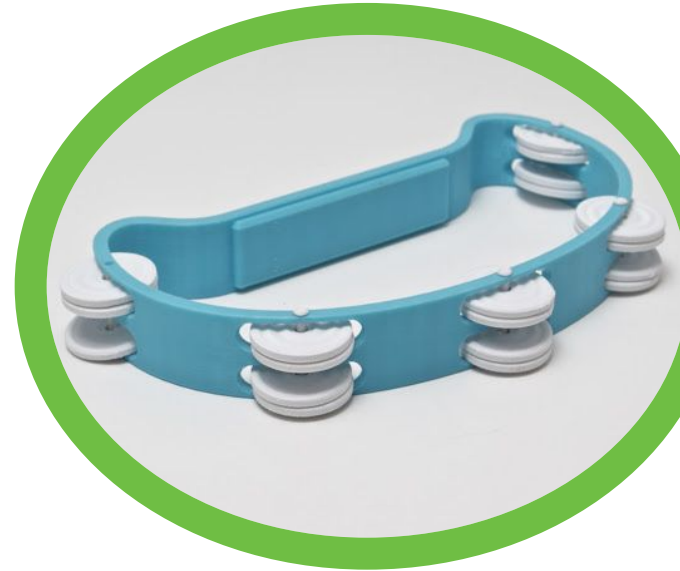


DESIGN THINKING CHALLENGE

Your job is to create a 3D printable instrument that can make three or more sounds.

This instrument should be use wind, percussion or both to make sounds!

Look at existing instruments for inspiration and make sure to limit your model size to make printing possible.



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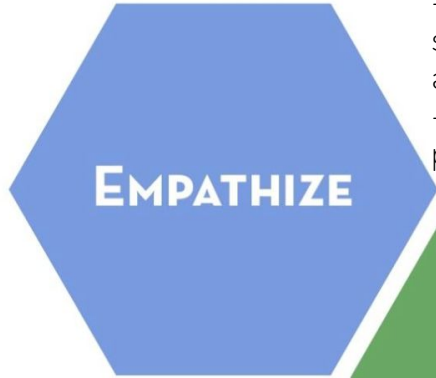
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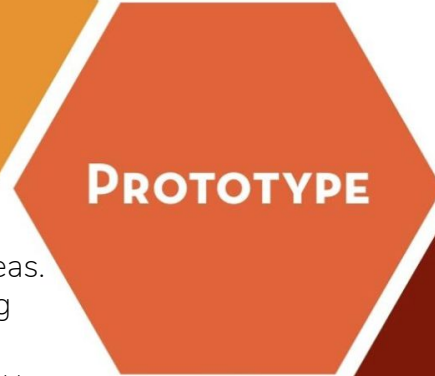
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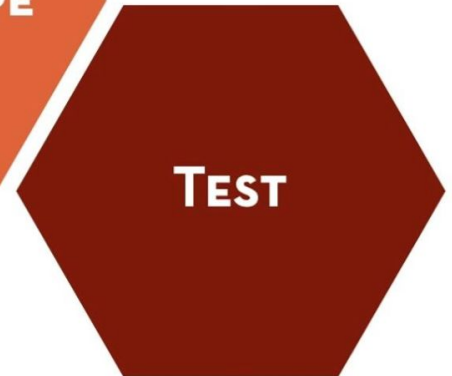
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