

# **Soda Bottle Bridges:**

**The Wonderful World of  
Recycling**

# Introduction

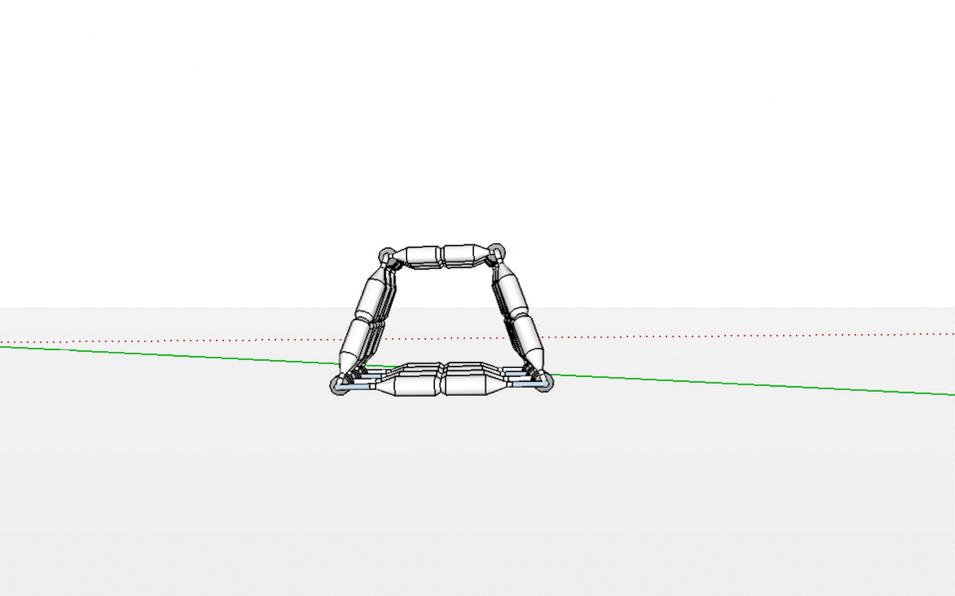
- Plastic is a major pollutant in the world and something new needs to be done as an effort to recycle it.
- TrussFab is an AutoCAD software that allows engineers to digitally create and test structures before building anything.
- The on-site tools allow the user to test the structures and export the connector hubs to be rendered and 3D printed.
- This experiment is a good solution to the problem of pollution because it is tested digitally before anything is physically built.

# Problem & Predictions

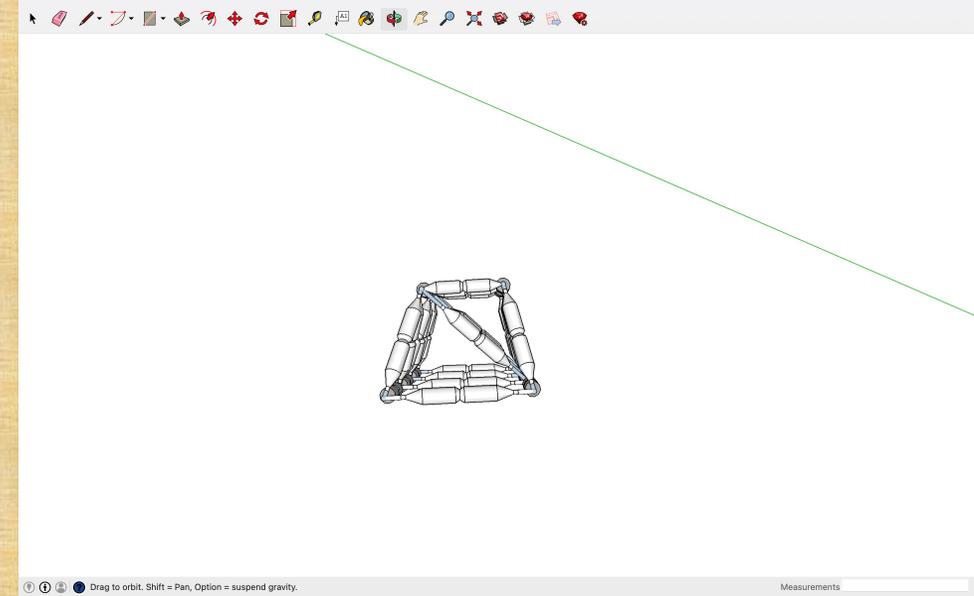
- The problem my project is concerned with is whether a new solution to recycling plastic bottles can be created.
- My hypothesis states that if I used an AutoCAD software to digitally create truss bridges, I could test them digitally to see if building them is a smart idea.

# Procedure

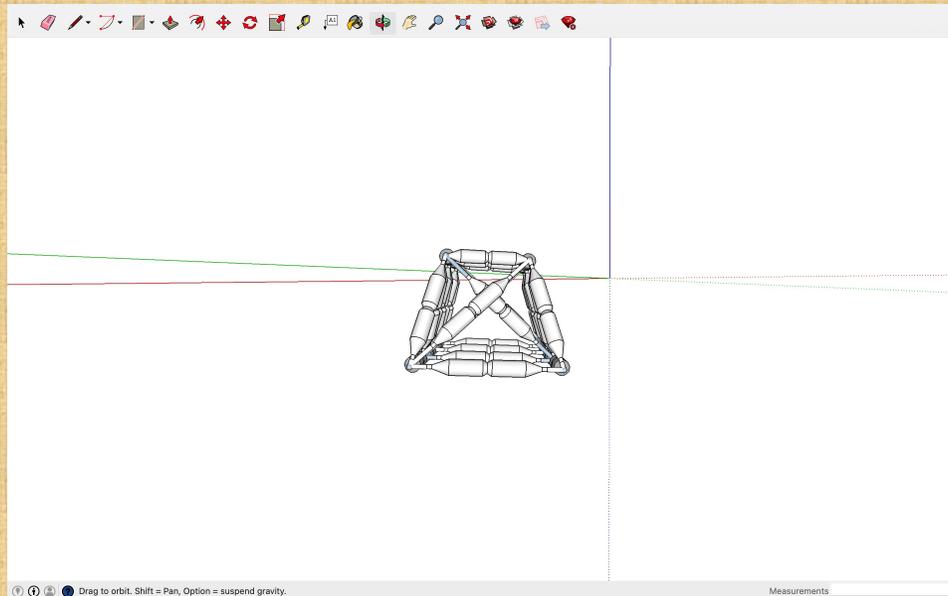
- First, I downloaded SketchUp, an animation software that allows engineers to build objects.
- Then, I installed TrussFab and began using TrussFab through SketchUp.
- Then, I created truss bridges, each with more interior support and then tested each one using the tools provided in TrussFab.



Bridge 1. One support



Bridge 2. One support



Bridge 3. Two supports

# Results & Data Visualization

- My results showed that the bridge with no support held no weight, the bridge with one support held 72kg, and the bridge with two supports held 72kg.
- The first bridge contained 72 bottles, the second used 82, and the third used 84.
- Table 1. Amount of weight held by each bridge before collapsing.

Bridge	Weight Held (kg)
1	0
2	72
3	72

- Table 2. Number of bottles contained in each bridge.

Bridge	Number of Bottles
1	72
2	82
3	84

# Discussion & Interpretation

- My results show that the bridge with one support was able to hold the same amount of weight as the one with twice the support and required less bottles.
- So, I know it is feasible to build the bridges and test them to see how accurate the software is.

# Implications for Future Research

- Now that I know the idea of building bridges using plastic bottles is possible (since I used an AutoCAD software to digitally test them first), I will proceed to build the bridges and see how they compare to the results provided by the software.

# References

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