

Bubble Wand Babysitting

Name: _____

Student Journal



The Problem

Your 3 year old cousin is coming over and you are the babysitter! Bubble blowing would keep his attention for some time. You need to create a bubble wand to help your cousin stay entertained.

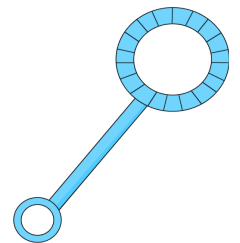
The Challenge

Design a bubble wand that will entertain your cousin. It will need to have structural integrity, and be able to blow bubbles with the shapes you have used.

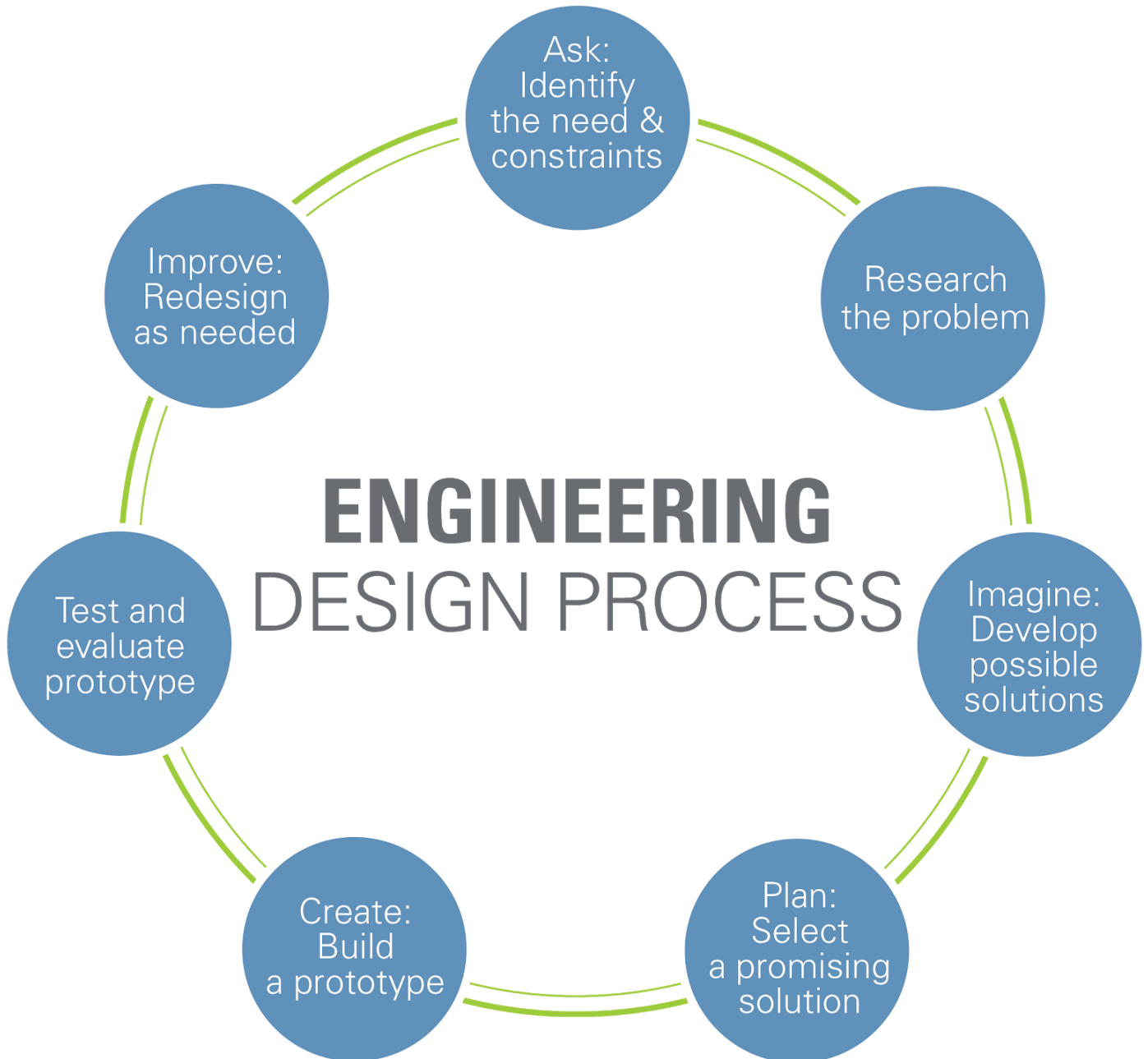
Criteria and Constraints

- The 2D design must be included with labels and measurements.
- The bubble wand needs to have structural integrity.
- The bubble wand needs to be designed with 3D printing software and printed on the 3D printer.
- You will have 3 minutes to present your product.

Bubble Wand Samples

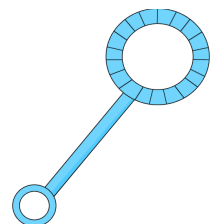


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¹ <https://www.teachengineering.org/k12engineering/designprocess>



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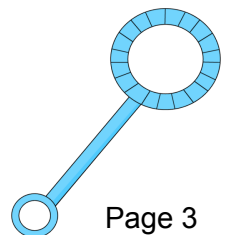
Imagine: Develop Possible Solutions

It's time to start brainstorming solutions. Take some time to sketch out some different ideas. Don't just settle for your first.

Plan: Select a Promising Solution

Choose one solution that you brainstormed, or take pieces from multiple solutions.

When you have an idea, sketch it out here. Please label each shape you used in your design, label any lines of symmetry you may have, and then you can submit your final proposal!



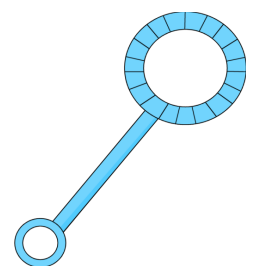
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Create: Build a Prototype

So, you've proposed your plan and brainstormed some solutions.

Now, it's time to start trying out the solutions. Use TinkerCAD to make a 3D model of your prototype.

Use the space below to draw notes and make schematics.



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Test and evaluate prototype²

Simulate your environment and test it. Use the resources in the classroom to test different scenarios that your design might face.

- What worked?

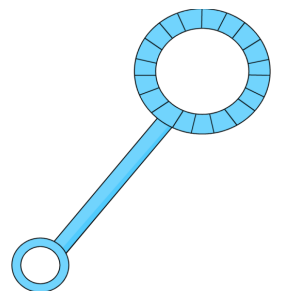
- What didn't work?

Improve: Redesign as needed

Now, your bubble wand may not have worked perfectly in every scenario. Remember **persistence**, these are opportunities to improve our design.

Use the space below to draw notes and make schematics, update your TinkerCAD model and print a new prototype.

² Print multiple copies of this page for multiple iterations of the test, evaluate and redesign process



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Communicate Results

Now you are on your last prototype generation. Hopefully you feel like the bubble wand is working well, but there may still be problems that need solving. That's OK! We will be able to suggest future improvements to our peers and professionals.

You can suggest future improvements for:

- More time
- More funding
- Future technology
- Highly skilled labor

