



VOCATIONAL AND CAREER EDUCATION

MAY 11TH - MAY 15TH 2020

These are general Engineering activities. Please make sure you are checking your BPS e-mail and Microsoft TEAMS for updates from your teachers. They will be sending you other activities that are specifically designed for your class.

Design and Build the Ultimate Bubble Maker

Feeling cooped up in the house? Getting on everyone's nerves? FUSION 360 not working the way it should?? Then I have a solution for you.

Anyone can make bubbles in fact I have included a simple but very good recipe for making BUBBL SOLUTION. Your mission is to design and build the ULTIMATE Bubble Making Machine!!

- **The Problem** – You will need to design and build a Bubble Making Machine that will produce millions, ok thousands, ok more than one or two, bubbles at a time.
- **Constraint** -You are not to buy any materials just use what you have around the house.
- **Research** – The internet is at your fingertips – go crazy
- **Brainstorm** – You must come up with 5 different possible designs
- **Evaluate** – Evaluate each of your designs for their Strengths and Weakness chose the best design or develop a new design with the best features
- **Prototype** – Build and test your design Report on what worked and why and what failed and why. WHAT CAN YOU DO TO IMPROVE YOUR DESIGN?
- Build a new prototype and test it!!

Super Bubble Solution

Follow this recipe using a "secret" ingredient to get stronger and better bubbles! Compare this recipe with any mixture of soap and water.

What You Need:

- Liquid dish soap (Joy or Dawn brands work best. Try to find one that doesn't say 'Ultra')
- Distilled water (tap water is okay, but distilled water makes the best bubbles)
- Clean container with lid
- ONLY IF YOU HAVE SOME - [Glycerin](#) or **light corn syrup**

What You Do:

1. Measure 6 cups of water into one container, then pour 1 cup of dish soap into the water and slowly stir it until the soap is mixed in. Try not to let foam or bubbles form while you stir.



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2. Measure 1 tablespoon of glycerin or 1/4 cup of corn syrup and add it to the container. Stir the solution until it is mixed together.
3. You can use the solution right away, but to make even better bubbles, put the lid on the container and let your super bubble solution sit overnight. (**Note: If you used "Ultra" dish soap, double the amount of glycerin or corn syrup.**)
4. Dip a bubble wand* or straw into the mixture, slowly pull it out, wait a few seconds, and then blow. How big of a bubble can you make? How many bubbles can you make in one breath?

What Happened:

The soap mixture on the outside of a bubble is actually made of three very thin layers: soap, water, and another layer of soap. This "sandwich" that is on the outside of a bubble is called a soap film. A bubble pops when the water that is trapped between the layers of soap evaporates.

The glycerin or corn syrup mixes with the soap to make it thicker. The thicker skin of the glycerin bubbles keeps the water from evaporating as quickly, so they last longer. It also makes them stronger, so you can blow bigger bubbles.



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After completing your own Bubble Maker, take a picture and/or video of your project and write a reflection of what happened. Save this work to your Office365 OneDrive and feel free to share it with your teacher!



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