How to Make Oobleck

Oobleck is a fascinating non-Newtonian fluid made from cornstarch and water. When mixed together in the right proportions, it behaves like a liquid under low stress but can act like a solid under high stress. This unique property allows you to play with it as both a liquid and a solid, making it a popular science experiment and educational tool. The name "oobleck" comes from a sticky green substance in Dr. Seuss's book "Bartholomew and the Oobleck," which inspired its creation as a fun and educational material for children and adults alike

Here's a simple recipe:

Ingredients:

- Cornstarch
- Water

Instructions:

1. Start with a mixing bowl or a container.
2. Pour 1 cup cornstarch into bowl/container
3. Measure out ½ cup water
4. Add a few drops of food coloring to the water (If desired)
5. Slowly add the water to the cornstarch, stirring as you go. You may need to adjust the amount of water slightly to get the right consistency. (roughly 2 parts cornstarch to 1 part water)
6. Keep stirring until the mixture is well combined and has a gooey, thick texture. It should be easy to stir slowly but feel hard if you try to punch or squeeze it quickly.

How to Make Bubble Snake

Making a bubble snake is a fun and simple activity that you can do with just a few materials. Here's how you can make one:

Materials:

- Plastic Bottle (Water Bottle or 16 oz Soda Bottle work best)
- Sock or Hand/Baby Wipe or similar (feel free to test out items)
- Rubber Band
- Dish Soap
- Water
- Bowl or Container
- Scissors
- Food Coloring (optional)

Instructions:

1. **Prepare the Bottle:**
    - Take your plastic bottle and cut off the bottom part. You want to create a tube-like structure from the bottle.
    - If the edges are sharp, be careful or ask an adult to help smooth them out.
2. **Prepare the Sock or Cloth:**
    - Take your old sock or cloth and stretch it over the cut end of the bottle.
    - Secure the sock or cloth tightly with a rubber band or hair tie. You want it to be snug so that it doesn't slip off when you blow through it.
3. **Mix the Bubble Solution:**
    - In a container, mix some dish soap with water. The ratio can vary, but a good starting point is about 1 part dish soap to 3 parts water.
    - Stir gently to mix. You want the solution to be a bit bubbly but not too thick.
4. **Dip and Blow:**
    - Dip the sock-covered end of the bottle into the bubble solution so that the sock gets soaked with the solution.
    - Now blow through the mouthpiece (the open end) of the bottle. Blow steadily and gently.
    - As you blow through the bottle, a long tube of bubbles should start to emerge from the sock or cloth end.
    - Keep blowing steadily to create a continuous bubble snake. You can vary the speed and force of your blowing to see different effects.
5. **Experiment:**
    - Try different amounts of soap and water to see how it affects the size and length of the bubble snake.
    - Experiment with different sock or cloth materials to see how they affect the bubbles.

How to Make a Cardboard Mechanical Hand

Making a cardboard mechanical hand can be a fun and educational project, especially for demonstrating basic principles of mechanics and engineering. Here's a step-by-step guide to create one:

Materials Needed:

1. Cardboard (thick cardboard works best, like from a shipping box)
2. Straws (plastic or paper)
3. String (thin, strong string works well)
4. Tape (duct tape or masking tape) or Hot Glue (with adult supervision)
5. Scissors
6. Pencil or pen

Instructions:

1. **Cut Out Hand Parts:**
    - Trace your hand and a few inches of your wrist on a piece of cardboard. (trace the hand opposite of the one you want to use to work the finish product. If you plan to move the mechanical hand with your right hand, then trace your left hand on the cardboard)
    - Slowly cut out the traced hand (ask an older youth or adult for help as cardboard can be difficult to cut)
2. **Construct Finger/Thumb Joints:**
    - On each finger create joints by folding the cardboard slightly (think about how your finger naturally bends)
3. **Straw Attachment:**
    - Cut short bits of straw to fit between each finger/thumb joint
    - Using tape or hot glue attached the straws in between each joint (this will help guide the string)
4. **String Mechanism:**
    - Cut several pieces of string, each long enough to run from the tips of the fingers to a point where you can pull them.
    - Thread each string through the straws. This will act as tendons to pull the fingers when the strings are pulled.
5. **Assemble and Test:**
    - Assemble the cardboard hand by securing all joints and strings.
    - Test the movement by gently pulling on the strings. You should see the fingers and thumb bend at the joints.
6. **Refine and Decorate:**
    - Adjust the length and tension of the strings as needed to improve the movement.
    - Decorate your cardboard hand using markers, paints, or additional cardboard pieces to make it look more like a robotic hand.
7. **Experiment and Learn:**
    - Explore how different string configurations affect the movement of the fingers.
    - Try picking up small objects or performing simple tasks with your mechanical hand.

Tips:

- Be patient and take your time with each step to ensure the hand moves smoothly.
- Use sturdy cardboard to prevent the hand from bending or collapsing under the tension of the strings.
- Feel free to modify the design and add more features.

How to Make a Tongue Depressor Catapult

Making a tongue depressor catapult is a fun and straightforward project that you can do with basic materials. Here's a simple guide to make one:

Materials Needed:

1. **Tongue Depressors**: You'll need at least 9 tongue depressors for the frame and the catapult arm.
2. **Rubber Bands**: Several rubber bands
3. **Plastic Spoon or Bottle Cap**: Something to hold the projectile to be launched
4. **Hot Glue Gun or Craft Glue**: To secure the parts together.
5. **Small Projectile**: You can use small pom-poms, marshmallows, or other lightweight objects for launching.

Steps:

1. Stack 7 craft sticks together and secure at each end with rubber bands.
2. Glue a bottle cap (or other "launch pad") to one end of another craft stick. Let dry. (You can do this after assembling if you are using the glue gun).
3. Stack the craft stick with the bottle cap on it with another plain craft stick and secure at one end with a rubber band.
4. Place the stack of 7 stick inside the stack of 2
5. Secure with rubber bands. Use two rubber bands and crisscross them over to make sure it holds in place. (for an extra secure build wedge the bottom of the 2 sticks between the bottom two sticks in the 7 stack)