iQSmartparent- Episode 704

The Messy Show

**DIY Lava Lamps**

**Ages 4+**

**Description:** Make your own mesmerizing and calming lava lamps with every day, household materials! This is a great activity to do at the kitchen table or outside on a warm day. This science activity is safe, easy, and the perfect amount of messy!

**Materials:**

* Clean, Clear bottle, jar, or vase
* Water
* Vegetable Oil
* Food Coloring
* Glitter (optional)
* Alka Seltzer Tablets

**Instructions:**

1. Fill the bottle, jar, or vase 1/3 of the way with water.
2. Add 4-5 drops of food coloring and glitter and give a quick stir. Get creative with this step!
3. Fill the bottle, jar, or vase until almost full with vegetable oil, leaving room at the top for the reaction to take place.
4. Break Alka Seltzer tablets into halves or quarters.
5. Drop one piece of Alka Seltzer tablets into the bottle, jar, or vase. Watch the magic!

**Safety Tip!**

Make sure to not cap or cover the top of the container when adding the Alka Seltzer tablet. Pressure inside the container will build up and may cause your container to explode!

**Messy Tip!**

Cover table or work surface with newspaper or craft paper for easy clean up.

**The Science at Work:**  This is a lesson in density. Because water is heavier, denser, than oil, it will sink to the bottom when the two are put in the same container. The Alka-Seltzer causes carbon dioxide gas bubbles to form when it reacts with the water in the bottom of the container. The water & gas combo is lighter, or less dense than the oil, so they rise to the top of the container. At the top, the gas bubbles pop and escape into the air, allowing the dense water to sink back to the bottom again causing this mesmerizing reaction.

**Naked Egg Drop**

**Ages 5+**

**Description:** Try this creative spin on the classic egg drop challenge to bring out the creative engineer in your child! Children must use household materials provided to design, build, and test **Egg Catchers, to prevent a “naked” egg from breaking when dropped.**

**Materials**:

* At least 1 raw egg (depending on how many times you would like to test)
* Scissors
* Tape and/or white glue, hot glue (optional)
* Options for materials for building the egg catchers:
  + Cardboard
  + Construction paper
  + Masking tape
  + Glue
  + Bubble wrap
  + Sponges
  + Straws
  + Paper plates
  + Cotton balls
  + Balloons
  + Rubber bands
* Tarp, newspaper, or craft paper to ease clean up
* Optional: ladder

**Instructions:**

1. Gather materials
2. Develop a plan
3. Build your egg catcher
4. Test egg catchers! If testing outside, test on a hard surface such as a driveway. Do not test on grass because it will absorb too much of the impact.
5. Optional: Makes changes to design after first drop and test again. This can be done as many times as you wish. Have fun with this step!

**Safety Tip:**

* If you test outside and wish to try different heights, an adult may drop the egg from a ladder.
* Assist younger children with hot glue to prevent burns.

**Messy Tips:**

* Save this activity to do outdoors! A tarp or newspaper can be placed under catchers to assist in clean up.
* If outdoors is not an option, try testing indoors in your bathtub!
* You can also contain some egg mess by testing egg catchers in a large plastic storage tote.

**The Science at Work:** This is not only a engineering challenge, but also a physics lesson. When gravity pulls down on the egg, this potential energy it has gets converted to kinetic energy, or movement energy.  When the egg hits the ground or any surface, that energy has to be transferred to another form of energy either sound energy (a loud splat), heat energy (the egg heating from friction of hitting the ground), or continuing kinetic energy (cracking the egg).  This is true because of the law of conservation of energy that says energy cannot be created or destroyed.

**Scribble Machines**

**Ages 5+**

Lesson From this Resource: <https://www.exploratorium.edu/sites/default/files/pdfs/scribbling_machines.pdf>

**Description:** Begin exploring circuitry and the basics of a robot with common household objects and recycled containers.

**The Science at Work:** Anelectric circuit is a complete loop that allows electrons to flow. To have a complete circuit, there must always be three things: 1. A source or supply of voltage (a battery), 2. The load which uses the voltage (a motor, light, etc.), and 3. The path of conductive material (wires).When we make scribble machines, we can see how the we can create a circuit that results in a basic robot that can make some neat doodles!

**Get Creative!-** Try using sidewalk chalk instead of markers to scribble outside.