SCIENCE, TECHNOLOGY, ENGINEERING & MATH

Curiosity, Problem-solving, and Family Engagement

Pre-K/Kindergarten (ages 3-5)

Easy Natural Play Clay Recipe

Let's make our very own play clay! When you squeeze it, pinch it, and roll it, your fingers are getting a workout. Strong fingers help you hold your crayons, draw awesome pictures, and even button your clothes all by yourself. How cool is that?

Materials:

- 1 cup flour
- ½ cup salt
- ½–¾ cup warm water
- 1 tbsp vegetable oil
- Optional: natural colors (beet juice = pink, turmeric = yellow, spinach = green, cocoa = brown)

Instructions:

1. Mix flour + salt.
2. Add oil and warm water slowly.
3. Knead until soft (add flour if sticky).
4. Divide dough and knead in natural colors, if desired.

Elementary (ages 5-11)

Candy Color Explosion

Have you ever seen candy make a rainbow? Watch what happens when we put colored candy on a coffee filter and add a little liquid. The colors start to move, some zoom fast, some go slow. It's like a tiny color race! Be a detective – determine which colors move first and which move the farthest. Ready to watch your candy burst into color? Let's Go!

Materials:

- Colored candy (Skittles, M&Ms, or similar)
- Coffee filters
- Water (rubbing alcohol and peroxide are other options)
- Clear cups or small bowls
- Spoon or dropper
- Pencil (for labeling)
- Paper towels

Instructions:

1. Label the Product (Candy used) and the additive (water, peroxide or rubbing alcohol) used to track the differences and rate of reaction.
2. Place coffee filter in cup or bowl.
3. Group the same colored candies together and place in filter.
4. Add a few drops of water, peroxide, or rubbing alcohol directly onto the candy.
5. Watch as the liquid travels and the colors begin to separate.
6. Remove the paper once the colors have spread and let it dry.
7. Observe and compare the color patterns and which additive was most reactive. Record what you see.

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Middle School (ages 12-14)

Elephant Toothpaste

Are you ready for science in action? We're going to mix things together and watch what happens. Will it fizz, bubble, or change? What if we add a little more or a little less — does it go faster or bigger? Let's look closely, make guesses, and discover what happens when things react!

Materials:

- ½ cup (120 mL) hydrogen peroxide (3%)
- 1 tablespoon dish soap
- 3–5 drops food coloring (optional)
- 1 packet (2¼ tsp) dry yeast
- ¼ cup (60 mL) warm water
- Plastic bottle or small cylinder
- Tray or tub to catch foam
- Safety goggles

Instructions:

1. Put on your safety goggles and place the bottle on the tray.
2. Pour the hydrogen peroxide into the bottle.
3. Add the dish soap and food coloring, then gently swirl to mix.
4. In a small cup, mix the dry yeast with warm water and let it sit for 30 seconds.
5. Pour the yeast mixture into the bottle.
6. Step back and watch the foam erupt!
7. Observe and write down what happens.

High School (ages 14-18)

The See-Through Egg: A Chemistry Adventure

This is egg-citing! We're going to put an egg in vinegar, water, and Karo syrup and watch what happens over the next few days. Will the shell change? Which liquid works best? Look closely—does it feel different, get bigger, or turn a little see-through? Let's observe and see how our egg transforms!

Materials:

- 4 raw eggs in shell
- White vinegar (½–1 cup per egg), Karo syrup, Distilled water and another liquid of your choice
- 4 clear jars or glasses
- Paper towels
- Notebook or lab sheet

Instructions:

1. Have your child touch and observe a raw egg in its shell.
2. Place one egg in each of the glasses. Fill one with vinegar, one with Karo syrup, one with distilled water and one with a liquid of your choice.
3. Observe changes, smell, and reactions in the eggs.
4. Leave on the counter for several days, observing and gently touching daily.
5. Pour off liquids, rinse eggs, and return them to their glasses. Note changes.
6. After a few more days, rinse and compare all eggs. At least one should be completely translucent with egg yolk visible. What do you see? How does it feel?