

# STEM Activities for Kids

## Cloud in a Jar

Materials Needed:

- A clear glass jar with a screw-on lid (like a mason jar)
- Warm water
- Ice cubes
- Hairspray
- Optional: Food coloring to make the cloud more visible

Experiment Steps:

1. Prepare the Jar: Fill the jar with about 1-2 inches of warm water. You can add a few drops of food coloring to make the cloud more visible.
2. Create Smoke: Hold the jar upside down and spray a short burst of hairspray into the jar. The hairspray will create tiny particles in the jar, simulating dust or particles in the atmosphere.
3. Seal the Jar: Quickly seal the jar with the lid to trap the hairspray particles inside.
4. Cool the Jar: Place a few ice cubes on top of the sealed jar. The cold temperature from the ice will cause the warm, moist air inside the jar to cool rapidly, leading to condensation and the formation of a cloud.
5. Observe the Cloud: Watch as a cloud forms inside the jar. You can see the cloud more clearly if you hold the jar against a dark background.
6. Discuss and Learn: After observing the cloud, discuss with children the science behind it. Talk about how clouds form in the sky, where warm, moist air rises and cools, causing water vapor to condense into tiny water droplets that form clouds.

This method demonstrates the cooling and condensation process that happens in the atmosphere to form clouds without the need for fire. It's a safe and engaging way to introduce kids to basic meteorology and cloud formation.

## **Jelly Bean Building**

Building structures with jelly beans and toothpicks is a fun and creative activity that can be enjoyed by both kids and adults. It's a great way to explore engineering concepts and unleash your imagination. Here's a step-by-step guide on how to get started:

Materials Needed:

- Jelly beans (various colors)
- Toothpicks
- A flat, stable surface to build on
- Optional: Small containers for sorting jelly beans by color
- Optional: A ruler or protractor for measuring and planning

### **Step 1: Gather Your Materials**

Assemble your jelly beans and toothpicks. If you have various colors of jelly beans, consider sorting them into small containers by color to make it easier to select the colors you need for your design.

### **Step 2: Plan Your Design**

Before you start building, take a moment to think about the structure you want to create. You can design simple shapes or more complex architectural models. Planning can be an important part of the creative process.

### **Step 3: Begin Building**

- Select a jelly bean to be the cornerstone of your structure.
- Insert a toothpick into the jelly bean to create a stable base.
- Add more toothpicks and jelly beans to build your structure. You can create geometric shapes, bridges, towers, or anything your imagination comes up with. Be mindful of balance and stability as you build.

### **Step 4: Experiment and Create**

As you build, you may need to experiment with different angles and connections to make your structure stable. Toothpicks can be used to connect jelly beans at various angles, and you can create trusses, frames, or even multi-story buildings.

### **Step 5: Be Creative**

Feel free to get creative with your designs. Use different colors of jelly beans to add visual appeal to your structure. You can also challenge yourself by building taller or more intricate designs.

### **Step 6: Learn and Have Fun**

Building with jelly beans and toothpicks is not only a creative activity but also an educational one. It allows you to learn about engineering principles such as balance, load-bearing, and structural integrity while having fun.

### Step 7: Display Your Creations

Once you've finished your jelly bean and toothpick structures, you can proudly display them. Use them as decorations or simply enjoy the satisfaction of your creative endeavors.

This activity is a fantastic way to encourage imaginative play, problem-solving, and STEM (Science, Technology, Engineering, and Mathematics) learning. It's a delightful and tasty way to explore the world of construction and design.

## **Erupting Volcano**

Creating a volcano at home is a classic and exciting science experiment that can be a lot of fun for both kids and adults. Here's a step-by-step guide on how to make your own homemade volcano:

### Materials Needed:

- An empty plastic bottle (such as a 16 oz soda bottle)
- Baking soda
- Vinegar
- Dish soap (optional)
- Red food coloring (optional)
- Modeling clay or playdough
- A tray or container (to catch any overflow)
- Safety goggles (recommended)

### Step 1: Prepare Your Workspace

Choose an outdoor area or a large, easy-to-clean workspace indoors. Place a tray or container on your work surface to catch any spills or overflow.

### Step 2: Build the Volcano Shape

Take your empty plastic bottle and place it upside down in the center of your workspace. This bottle will serve as the "core" of your volcano. Now, use modeling clay or playdough to build up the shape of your volcano around the bottle. Mold it into a cone shape, creating a volcanic mountain around the bottle. Be as creative as you like with the design.

### Step 3: Prepare the Eruption Ingredients

Inside the bottle, add about 1-2 tablespoons of baking soda. If you'd like to create a more realistic "lava," add a few drops of red food coloring and a small squirt of dish soap.

### Step 4: Create the Eruption

When you're ready to create your volcanic eruption, place your volcano (with the bottle inside) in a safe and visible spot on your work surface. Stand back and put on safety goggles if you have them.

Now, pour vinegar into the bottle, which contains the baking soda and other ingredients. As the vinegar reacts with the baking soda, it will create a fizzing and bubbling eruption that simulates a volcanic explosion. The addition of red food coloring and dish soap makes the "lava" look more authentic.

#### Step 5: Observe and Enjoy

Watch and enjoy the volcanic eruption. You can repeat the experiment as many times as you like by adding more vinegar and baking soda.

#### Step 6: Cleanup

Be sure to clean up any spills or residue, especially if you've used food coloring or dish soap, to prevent staining.

Creating a homemade volcano is not only a fun and educational science experiment, but it also provides a great opportunity to learn about chemical reactions. Kids, in particular, will be excited to see the volcanic eruption in action. Remember to do this experiment in a well-ventilated area, especially if you're using vinegar.

## Slime

Making slime at home is a popular and fun activity, especially for kids. Here's a simple recipe for making basic slime:

#### Materials Needed:

- Elmer's white or clear glue
- Liquid laundry detergent
- Food coloring (optional)
- Mixing bowl
- Mixing spoon
- Airtight container (for storing the slime)

#### Step-by-Step Instructions:

1. Prepare Your Workspace: Cover your work area with a plastic tablecloth or newspapers to make cleanup easier. Make sure your hands are clean before starting.

#### 2. Pour Glue Into a Mixing Bowl:

- For a basic batch of slime, use about 4 ounces (120 ml) of white or clear school glue. You can adjust the amount based on how much slime you want to make.

#### 3. Add Food Coloring (Optional):

- If you want to add color to your slime, put a few drops of food coloring into the glue and stir it well until the color is evenly distributed.

#### 4. Mix in Liquid Laundry Detergent:

- Slowly add liquid laundry detergent to the glue while stirring continuously. Use a 1:1 ratio, meaning you add an equal amount of detergent as the glue. You may need to add detergent gradually until the mixture starts coming together as slime.

#### 5. Stir and Knead:

- Continue to mix and knead the slime. At first, it might be sticky, but keep kneading it and adding small amounts of detergent until it reaches the desired consistency. If it's still too sticky, you can add a little more detergent.

#### 6. Check for the Right Consistency:

- The slime should be stretchy, smooth, and not stick to your hands. If it's too rubbery, add a little more glue and mix it in. If it's too runny, add a bit more laundry detergent.

#### 7. Play with Your Slime:

- Once you have achieved the desired consistency, your slime is ready to be played with. Stretch it, squish it, and enjoy the sensory experience.

#### 8. Storage:

- Store your slime in an airtight container when you're not using it to keep it from drying out. Properly stored slime can last for a few weeks.

#### Tips:

- Be careful with food coloring, as it can stain surfaces and hands.
- If you find your slime is too sticky, you can add a bit more detergent or a pinch of borax powder while kneading.
- If your slime gets too hard or loses its stretchiness, you can revive it by adding a small amount of warm water and kneading it back to the desired consistency.

Remember that making slime is a fun and creative activity, but always supervise young children, especially if they are using small objects like food coloring or handling potentially messy materials. Enjoy your homemade slime!

Thank you for taking a look at our list of fun and creative STEM activities to do with your children! If you're interested in spending quality time with your girls and creating new memories, we encourage you to explore Girl Scouts of Colorado. Visit our [Website](#) and find a troop near you to get involved in all sorts of exciting adventures.

If you happen to be in the Denver metro-area, stop by the Girl Scout DreamLab, 63 N. Quebec St., which is open to everyone. It's a makers-space, STEM lab, performance zone, bouldering wall, and boutique all rolled into one. Check out the scheduled DreamLab events. (link <https://www.eventbrite.com/cc/girl-scout-dreamlab-1653829>)  
Compiled by Girl Scouts of Colorado