PCS edventures!™
Experts in Hands-On STEM Education

Cloud in a Jar

Take cloud watching to the next level and make your own cloud! Inspired by the activities found in *BrickLAB STEAMventures*, this STEM freebie challenges students to create a cloud in a jar. Using an understanding of science, stages of the water cycle and how clouds are formed, it's their job to create their own cloud in a jar and observe the process that occurs in our own environment every day.

HANDS-ON STEM EDUCATION

For over 30 years, PCS Edventures has inspired students to develop a passion for Science, Technology, Engineering and Mathematics (STEM), focusing our efforts on making learning and discovery a fun and interactive process for grades K-12.

- Classroom
- After-School
- Home Learning

What are Clouds and How are They Formed?

From far away, these clouds can look like solid white shapes floating in the sky--kind of like soft serve vanilla ice cream. However, clouds are actually made of water drops or ice crystals. The sky is full of water, but you can't see it most of the time because it has turned into water vapor. Water vapor is water in its gas form. As the vapor floats higher in the sky, the air around it gets colder and colder. The cooler air causes the water droplets to stick to other things in the air such as dust, ice or sea salt.

Like snowflakes, no two clouds look alike. Some clouds can even look like your favorite animal. Scientists have classified clouds into different groups to help them study their effects on the weather.

How do Pilots Navigate through Clouds?

Pilots have many different instruments and tools that help them navigate through the air. Pilots first learn how to fly by using their sight to follow lakes, rivers and roads to get them from town to town. But what happens when it's cloudy and the pilots can't see the ground?

They use radio beacons, waypoints and airways, radio aids and satellite navigation to help them fly through clouds and at night. All these tools tell the pilots the direction of their destination and set a course for them to follow.

Create a Cloud in a Jar:

Materials:

- Transparent glass jar
- Warm tap water (not boiling)
- Metal tray or hard plastic frozen ice pack
- Ice
- Spoon
- Match
- Adult help

Steps will need to be done quickly so make sure you have all your materials ready to go!

Step-By-Step Instructions for a Cloud in a Jar:

1. Fill a glass jar with 2 inches (5 cm) of warm water and stir.

2. Ask an adult to light a match, blow it out and quickly drop it into the jar.

3. Immediately place an ice-filled metal tray or a hard-plastic frozen ice pack on top of the jar.

4. Observe the inside of the jar and watch as a cloud appears near the top.

Note: If you are having a hard time seeing the cloud, slightly lift the metal tray or ice pack from one side of the jar and look for wisps of cloud escaping.

5. Remove the metal tray or ice pack and record what happens.

Discussion Questions:

- How did the cloud form?
- How quickly did the cloud form?
- Describe how the cloud looked in the jar and what happened when you removed the metal tray or ice pack.
- Describe why it is important for pilots to have special tools to help them fly through clouds.

References:

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