



Cloud Clues

Determining a Cloud's Opacity

Clouds play an important role in maintaining Earth's temperature. One of the ways clouds regulate the amount of light (energy) coming from the Sun is their opacity. Learners will explore a variety of materials to determine how much light passes through, experiencing first-hand the differences between opaque, transparent, and translucent.

Purpose

The purpose of this activity is to assist learners with determining a cloud's **visual opacity** or the ability for light to pass through it. The terms **transparent**, **translucent**, and **opaque** describe how much light travels through a cloud. These categories will be used to describe a cloud's visual opacity.



Transparent Clouds



Translucent Clouds



Opaque Clouds

Time

20 - 30 minutes

Materials

- Tissue paper
- Cotton balls
- Aluminum foil
- Resealable bags
- Paper towel
- Flashlights (one per group)
- Cloud Clues Activity Sheet (included below)

Safety

Remind learners not to shine their flashlight into anyone's eyes.

What to Do

1. Introduce learners to the concept of cloud opacity. Explain the terms transparent, translucent, and opaque.
 - a. *transparent* - light easily passes through, things on the other side can be seen clearly
 - b. *translucent* - light passes through, things on the other side can't be seen clearly
 - c. *opaque* - little or no light passes through, cannot see things on the other side
2. Provide each group with a set of materials. Learners will devise a way to determine whether the items are transparent, translucent, or opaque.
3. On the Cloud Clues activity sheet, they will describe their method for testing visual opacity and then sort the materials into transparent, translucent, and opaque categories.
4. Each group will then share their method for testing items and their visual opacity results.

Questions for Review

1. Were any items difficult to categorize? Why?
2. What other items might you test and what visual opacity category do you think they would be in?

Key Words

Translucent: light easily passes through, things on the other side can be seen clearly

Transparent: light passes through, things on the other side can't be seen clearly

Opaque: little or no light passes through, cannot see things on the other side

Visual Opacity: a material's ability to let light pass through

Extension

Have the groups go outside and observe clouds. Determine the visual opacity for each type of cloud the group observes. Remind learners not to look directly at the sun.

Cloud Clues Activity Sheet

Materials have lots of different properties; one is called visual opacity, which means how much light passes through the material. There are three different ways to describe visual opacity:

Transparent – light passes through the material/object; things on the other side can be seen clearly. (Example: plastic wrap)

Translucent – light passes through the materials/object; things on the other side can't be seen clearly. (Example: wax paper)

Opaque – little or no light passes through the materials/object. (Example: paper bag)

Directions:

1. Come up with a way to test the visual opacity of different everyday items.
2. Describe your test. You can draw your setup, if needed.

Describe:

Draw:

3. Test your materials and sort them. List the results below:

Transparent	Translucent	Opaque