

Touching the Clouds

Activity Guide



Purpose

- Provide a mental representation of each cloud type
- Create a tactile cloud identification chart

Overview

Individuals will construct and touch a tactile model of common types of clouds to learn how to describe the clouds based on their shape and texture. They will compare their descriptions with the standard classifications using the cloud types identified in the **GLOBE Clouds Protocol**.

Time: 45 minutes to 1 ½ hours, depending on individual's age

Level: All

Materials (per person)

- One large sheet of cardstock (18" x 12")
- Tape
- One set of Braille labels for each cloud type and/or markers
- One small feather
- A layered piece of blanket or soft fabric (eight 1' X 1" pieces)
- Cotton balls of varied sizes
- One tissue
- Organza or a similar material, cut into pieces, one layered 1" x 1" piece
- Pillow stuffing, one 1" x 1" piece
- A tsp of sand
- Three paper clips
- Liquid glue
- Scissors
- Baby Wipes

Preparation

Use tape to divide the large cardstock sheet in four sections: one for the cloud title at the top and three for the altitudes: using a portrait layout, place three pieces of tape horizontally, from side to side of the sheet.

1. 1" off the upper edge of the sheet
2. 8" off the upper edge of the sheet

Steps

What to do and how to do it: Making A Tactile Cloud Identification Chart

1. Discuss that clouds come in three basic shapes: cirrus, stratus and cumulus.
 - a. Feel of the 4" feather and describe it; discuss that these wispy clouds are high in the sky and are named cirrus.
 - b. Feel of the layered pieces of blanket/fabric and describe what you feel. Discuss that layered clouds are known as stratus, they can be at middle or low altitudes and some may produce precipitation.
 - c. Next feel of the largest cotton ball and describe it. Discuss that puffy clouds are known as cumulus, they can be at middle or low altitudes and some may produce precipitation.

2. Discuss that the basic shapes of the clouds can combine to produce different types of clouds. For example, a cloud can be puffy and at the same time layered; or a cloud can be wispy and at the same time puffy. Have them predict the names of these clouds; for example, say "If a layered cloud is known as stratus and a puffy cloud is known as cumulus, what do you think the name is for a layered and puffy cloud? (Stratocumulus)". Add that sometimes aircraft leave a trail of condensed water coming out from the engine's exhaust, forming line-shaped clouds that we know as contrails.

3. Build your own cloud identification chart: (For each model stick the Braille label and/or write the name under the model.)
 - a. Place the Braille label for "Cloud Identification Chart" at the top (above first tape) of the cardstock sheet AND/OR have them write the title "Cloud Identification Chart" with a marker.
 - b. Using one medium cotton ball shape it as a line to build a contrail model. Glue the contrail model on the top of the second section of the cardstock sheet. Stick the "contrail" Braille label and/or write the word "contrail" under the contrail model. Discuss that contrails are line-shaped clouds produced by aircraft that happen at high altitudes, around 7,500 to 12,000 m.
 - c. Discuss that high clouds occur above 6,000 m and ask them if they notice anything about their names (they are designated by the word "cirrus" or the prefix "cirro-": cirrus, cirrocumulus, cirrostratus).
 - d. Next build models for these three cloud types and glue them on the bottom of the second section, therefore, plan for three models to fit on that space of the cardstock sheet.
 - e. One small feather will represent the cirrus cloud. Glue the small feather on the bottom-left side of the second section of the cardstock sheet and label.
 - f. Build a cirrocumulus model using a few small cotton balls. Discuss what this cloud would be like (layered and puffy). Make very small cotton balls that will be glued in layers so that you can feel ripples, place this on the bottom-center of the second section of the cardstock sheet, to the right of the cirrus model. Stick the "cirrocumulus" Braille label and/or write the name "cirrocumulus" under the model.
 - g. Glue the layered 1" x 1" layered piece of organza on the bottom-right of the second section of the cardstock sheet, to the right of their cirrocumulus model and label.
 - h. Discuss that middle clouds occur between 2,000 and 6,000 m and ask them if they notice anything about their names (they are designated by the prefix "alto-": altocumulus and altostratus).
 - i. The models for these two types of clouds will be placed on the third section of the cardstock sheet. Have them describe what the altostratus model should be like (consist of layers) what the altocumulus should be like (puffy). Explain that as clouds appear closer to the ground, they tend to be heavier, therefore the altostratus will be layered like the cirrostratus, but it will be thicker so you will use a thicker kind of fabric to represent it; the altocumulus will be puffy but also heavier and so the cotton balls will be bigger for this model, making for a patchy feeling.
 - j. To build your altostratus model, glue two layers of 1" x 1" thicker fabric. Glue the model on the left side of the third section of the cardstock sheet and label.
 - k. Using a few small cotton balls build an altocumulus model. Glue the small cotton balls, so that you feel a patchy cloud that represents an altocumulus cloud, to the right of the altostratus model and label.

- l. Next discuss that low clouds occur below 2,000 m and the models for these clouds will be placed on the fourth section of the cardstock sheet so they will have two rows of three clouds each.
- m. Discuss what the stratus cloud should be like (layered). The stratus cloud is closer to the ground than the altostratus cloud and is heavier, so while you used two layers of fabric to represent the altostratus cloud, you will use three layers of fabric to represent the stratus cloud. Use three 1" x 1" pieces of fabric and glue the model on the top-left of the fourth section of their cardstock sheet and label.
- n. Next you will place the model for the stratocumulus cloud. Discuss what this model should be like (layered and puffy). You will use pillow stuffing to represent this cloud. Glue a piece of pillow stuffing on the top-center of the fourth section of the cardstock sheet and label.
- o. Build a model of the cumulonimbus cloud using two or three large cotton balls. This cloud tends to cause thunderstorms, predict the size of this cloud (very big; it is heavy). You will use sand and a couple paper clips to represent rain and thunder. Glue the model on the top-right of the fourth section of the cardstock sheet and label.
- p. Next build the nimbostratus model. Discuss what this model will be like (if cumulonimbus caused precipitation then the name *nimbostratus* indicates this cloud also produce precipitation; also, this should be a layered cloud; and, since it is closer to the ground, it should also be thicker than the cirrostratus and the altostratus).
- q. Use a three 1" x 1" pieces of fabric and sand to make a model of a layered cloud that produces precipitation, gluing the model on the bottom-left of the fourth section of the cardstock sheet and label.
- r. Use pieces of tissue to represent fog, which is a cloud very close to the ground. Glue pieces of tissue on the bottom-center of the cardstock sheet and label.
- s. You will complete the chart by placing a model of a cumulus cloud. Discuss what the cumulus model should be like (puffy) and describe how the cumulus should feel in comparison to the altocumulus (heavier, larger puffy mass). Glue the model on the bottom-right of the fourth section of the cardstock sheet and label.

Using A Tactile Cloud Identification Chart to Make Cloud Observations

Possible support needed for visually impaired and/or blind individuals when making cloud observations:

- Sighted individuals can describe the clouds they see with common vocabulary to help individuals that are blind and/or visually impaired identify the cloud types and help make their own cloud observations.
- Sighted individuals can name the clouds they observe by their scientific name and based on the scientific name have the blind and/or visually impaired individual describe what they think sighted students are observing.

Everyone should keep track of their observations on a journal.

Adaptations for younger and older children:

- Younger children can make a simplified cloud identification chart that focuses only on three types of clouds: cumulus, stratus and cirrus.
- Older children can engage in research projects by associating different combinations of clouds types present in the sky, with different kinds of weather.

