TRB 4:2 - Investigation 1 - Clouds

Summary

Students will observe and record different types of clouds.

Group Size

Individual

Materials

- Cloud chart of pictures of the three types of clouds
- One-fourth sheet blue construction paper (6"x9")
- White crayon
- Lined paper
- Student sheet "What Type of Clouds Can You Find in the Sky?"
- Pictures of clouds from magazines, the library, Internet, or digital camera
- Blue construction paper - 12"x18"
- Glue
- Cotton balls
- Markers to color the underside of the stratus clouds
- Glitter for rain and lightning

Additional Resources

Newspapers:

Students can bring in newspapers with daily weather maps and forecasts.

Videos:

Check district media centers for videos about clouds.
There are also commercial weather videos available.

Background for Teachers

Certain conditions must exist for clouds to form - water vapor in the air, temperature change, and particles in the air for the water vapor to condense on. As warm, moist air rises, it begins to cool and condense on dust particles forming water droplets. These water droplets form clouds. They will not fall to Earth because they are too small.

Clouds take different shapes depending on the amount of water vapor available and the speed and direction of the moving air. Clouds are classified according to how they are formed. Below are the main types and their descriptions.

- Stratus clouds
  are low, flat, gray clouds that look like sheets covering the sky. They are the closest clouds to the ground. They form as low as surface level (fog) to about 6,500 feet above the ground. They can produce rain, drizzle, snow, or mist.
- Cumulus clouds
  are puffy and white-like cotton balls. They form from 2,000 to 20,000 feet above the ground. They usually indicate fair weather. Sometimes they grow very large and become thunderheads. As these clouds gather they create thunder and lightning and produce precipitation in the form of rain and hail.
- Cirrus clouds
  are thin, curly, wispy clouds. They are sometimes referred to as mares' tails. They form between 25,000 to 40,000 feet above the ground. They are so high in the atmosphere that the water droplets freeze into ice crystals. They often indicate an incoming storm or weather change.

There are cloud charts that you can buy to show what these clouds look like. However, most cloud charts will have more than these basic clouds. They use the prefixes “alto” and “nimbo” to tell more about these three basic clouds. If the prefix “alto” is used, it means middle, referring to the position of the clouds in their respective areas. If the prefix “nimbo” is used, it means water and these clouds will often bring rain.

Intended Learning Outcomes

1. Use science process and thinking skills
2. Manifest scientific attitudes and interests
3. Understand science concepts and principles
4. Communicate effectively using science and language and reasoning.

Instructional Procedures

Pre-Assessment/Invitation to Learn

Pass to the students the prescribed sheet of blue paper. Ask the students to draw a cloud they have seen in the sky. Have several students show pictures of their clouds to the class. Have some draw their clouds on the board. Discuss how their drawings are alike and different. Tell students they may have all drawn different looking clouds because clouds come in all different shapes and sizes. Tell them there are three main categories that scientists use to classify clouds. With the use of a cloud chart, discuss the three cloud types and see if students can identify the clouds they drew.

Instructional Procedure

Activity 1 - Looking at Clouds

Present information about the basic cloud types - stratus, cumulus, and cirrus. Be sure to discuss the kind of weather that is associated with each type of cloud. You may want them to record this information in their journals.

Tell the students that meteorologists look to see how much of the sky is covered by clouds. The phone number for present weather conditions is 801-975-1212 or 801-467-8463.

100% would be that the sky is completely covered by clouds.
75% would be that most of the sky is covered by clouds.
50% would be that half the sky is covered by clouds.
25% would be that some of the sky is covered by clouds.
0% would be a clear sky.

Give the students the Types of Clouds Sheet found on the following page. Tell the students they will be looking at the sky for several days and doing the following observations/predications:

Tell the types of clouds that are in the sky.
Estimate the percentage of sky that is covered by the clouds.
Tell what the weather is like today.
Make a prediction of what the upcoming weather will be.
Take the students outside to record the cloud cover for this day and repeat every day for several days. Each day the students should check the forecast they made the previous day and compare it with the current weather conditions.

Activity 2 - Constructing Clouds

Review with the students what they learned about clouds. Have them look at pictures from magazines, the library, an Internet site (www.askjeeves.com), or pictures you have taken with a digital camera of the three types of clouds. There are many poetry books that have been written about weather that include poems about clouds. Read a cloud poem to them as they are looking at the pictures.

Give students the prescribed blue construction paper, some cotton balls, and glue. Have black markers available for them to color the underside of the stratus clouds and glitter for rain.

Divide the construction paper up into three parts as a tri-fold (see next page).
Name the cloud in each tri-fold.
Make each of the clouds with cotton balls, glue, markers, and glitter. Glitter is used for rain and lightning in cumulus clouds.
In the center of each tri-fold, have the students write each cloud description and what type of weather that is associated with each cloud.

Cirrus clouds are thin and wispy; precede storms
Cumulus clouds are white and puffy; shows fair weather
Stratus clouds are low, flat, gray; often bring rain

At the bottom of each tri-fold have the students write poems about each type of cloud. The poems should contain one or two facts about each cloud. The poems can be written in any form you wish. Give students enough time to work, or allow them to finish later.
Have students read their poems to the class or display them on a bulletin board.

Cirrus
Cumulus
Stratus

Extensions

Fine Arts/Visual Arts-

Have students look at outdoor pictures in magazines. Cut them out and glue them on paper. Have them write what type of clouds they are. *(Standard III, Objective 2)*
By putting your class into groups, have the students make a collage of cirrus, cumulus, and/or stratus clouds. *(Standard III, Objective 2)*
Have students create a cloud animal using art paper and chalk or cotton. Be sure they use only the three types of clouds. Give them pictures of animals to look at to create their animals. They can get into groups and share their animals and tell the types of clouds they used for the different body parts. *(Standard III, Objective 2)*

Fine Arts/Music-

Create a rhyming sentence to a beat about clouds. Example: To the tune of "We will, we will rock you." "Rain clouds, thick clouds - stratus." "High clouds, wispy - cirrus." "Puffy, cotton balls - cumulus." *(Standard III, Objective 2)*

Technology-

Look on the Internet to observe clouds as a class and individually at www.askjeeves.com. Ask for the types of clouds you want to observe. If you want all types, ask for clouds. *(Standard V)*

Language Arts-

Have students make some analogies about clouds. Examples: "High is to cirrus as low is to stratus." "Puffy is to cumulus as thin is to cirrus." *(Standard VIII, Objective 6)*
Make a matching game with pictures of clouds with the definitions. Example: high, wispy clouds - cirrus. *(Standard VI, Objective 3)*

Homework & Family Connections

Students with Internet connections at home can be asked to visit weather websites.
Students can be assigned to watch the evening weather forecast on one of the TV news channels.

Students could demonstrate information about clouds as part of a school science fair.

Assessment Plan

Response Questions

- What are differences between how cirrus, cumulus, and stratus clouds look?
- Which clouds are located high in the sky, in the middle of the sky, and low in the sky?
- Which clouds are connected with what type of weather?

Check the student journals for accuracy of recorded information.

Observe their cloud charts when completed. Listen to students tell their poems to make sure their information is correct.

Authors

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