Cloud Journal

Grade Level: 2-5

Essential Questions
- What can we learn by observing the clouds?
- Is there a way to predict the weather based on the clouds in the sky?
- How many different types of clouds can you identify?

Standards
- **SC.2.E.7.1**: Compare and describe changing patterns in nature that repeat themselves, such as weather conditions including temperature and precipitation, day to day and season to season.
- **SC.2.E.7.4**: Investigate that air is all around us and that moving air is wind.
- **SC.3.N.1.3**: Keep records as appropriate, such as pictorial, written, or simple charts and graphs, of investigations conducted.
- **SC.4.N.1.1**: Raise questions about the natural world, use appropriate reference materials that support understanding to obtain information (identifying the source), conduct both individual and team investigations through free exploration and systematic investigations, and generate appropriate explanations based on those explorations.
- **SC.5.E.7.3**: Recognize how air temperature, barometric pressure, humidity, wind speed and direction, and precipitation determine the weather in a particular place and time.

Student Objectives
- This activity will teach students about the different types of clouds and how they can use the clouds to determine the weather.

Materials
- WeatherSTEM Cloud Journal
- WeatherSTEM Cloud Journal Activity Sheet
- Cloud Identification Chart:
  http://www.srh.noaa.gov/jetstream/downloads/cloudchart.pdf
- Pencil/Marker

Key Terms
- **Clouds** - A cloud is a large collection of very tiny droplets of water or ice crystals that are small and light that they can float in the air.

- **Cirrus** - clouds with a "wispy, feathery" appearance and made of ice crystals.
- **Cumulus** - clouds that look like "fluffy, rounded piles of cotton" are are usually associated with fair weather.
- **Nimbus** - clouds that are associated with any type of precipitation; typically a gray cloud.
- **Stratus** - clouds that form layers across the sky.
- **Alto** - means 'high' in Latin, but refers to clouds in the mid-level of the atmosphere (between 6,500 to 20,000 feet).
- **Water Cycle** - describes the existence and movement of water on, in, and above the Earth.
- **Evaporation** - the process by which water molecules in liquid water escape into the air as water vapor.
- **Condensation** - the process by which molecules of water vapor become liquid air.
- **Precipitation** - Any and all forms of water, liquid or solid, that falls from clouds and reaches the ground. This includes drizzle, freezing drizzle, freezing rain, hail, ice crystals, ice pellets, rain, snow, snow pellets, and snow grains. The amount of fall is usually expressed in inches of liquid water depth of the substance that has fallen at a given point over a specified time period.

Engage

Teachers will show the WeatherSTEM Sky Video to the students and utilize additional resources for clouds pictures and videos (Google, YouTube, etc.).

Explore: What is air?

Students will investigate the different videos (pre-selected) to identify the clouds and movement of the clouds throughout the day.

Explain

Students will share their findings with the class and be able to connect the data/analysis to what they are learning.

Elaborate

The main components of the Water Cycle will be either introduced or reviewed:

- Evaporation
- Condensation
- Precipitation

Evaluate

Will be done throughout the lesson through discussion and interaction with students.

General Procedures:

1. Pass out Cloud Activity Worksheet, Cloud Journal and Cloud Identification Charts to students.
2. Discuss how clouds form and give a general overview of the water cycle.
3. Show the students the WeatherSTEM Sky Video from the previous day. The link to the Sky Video is found on the WeatherSTEM station pages.
4. Discuss with students if any clouds were seen in the video and if they noticed anything interesting about the types of clouds, directions the clouds moved, or any additional topics that the students bring up during the discussion.
5. Go through the key words and talk about the four main type of clouds:
    a. Cirrus
    b. Cumulus
    c. Stratus
    d. Nimbus
6. Replay the WeatherSTEM Sky Video and see if the students are able to identify any of the cloud types.

Procedure for Grades 2-3:

1. Use the WeatherSTEM YouTube Channel (https://www.youtube.com/user/WeatherSTEM) to find Sky Videos for other days and/or from additional stations; should be done ahead of time for the teacher has the "answers."
2. Have the students write down their observations using the Cloud Journal.
3. Discuss what clouds the students identified and talk about any misconceptions.

Procedure for Grades 4-5:

1. Use the WeatherSTEM YouTube Channel (https://www.youtube.com/user/WeatherSTEM) to find Sky Videos for other days and/or from additional stations; should be done ahead of time for the teacher has the "answers." This will act as a review and direction for what the teacher expects from the students.
2. Students will be assigned predetermined and different WeatherSTEM Sky Videos to study.
3. Follow directions on the Cloud Activity Worksheet and work with students.
4. Discuss what clouds the students identified and clarify any misconceptions.

Additional Resources

- The Weather Around You:
  https://learn.weatherstem.com/modules/learn/lessons/49/index.html
- Water Cycle and Weather:
  https://learn.weatherstem.com/modules/learn/lessons/61/index.html
- Weather Lore:
  https://learn.weatherstem.com/modules/learn/lessons/72/index.html