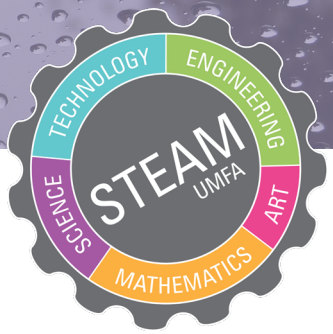
UMFA
UTAH MUSEUM OF FINE ARTS

LESSON PLAN:

Visually Recording Precipitation Data

by Katie Seastrand



After discussing precipitation and the different types of rain, students will observe the precipitation for the week and track/share their data artistically.

Objectives:

Students will...

- define and discuss precipitation and analyze how it's seen in an artwork.
- carefully observe a demonstration showing how rain falls when the cloud gets heavy.
- discuss the different elements that affect the type of precipitation that falls (heavy, light, drizzle, snow, etc.).
- create an artistic tool to gather data about the precipitation they see for a whole week.

Grade level:

3rd

Duration:

40 minutes and then a few minutes each day for a week

Materials:

- Image of Gilmore Scott's *The Monsoons Dazzle Over the Bears Ears,* UMFA2022.10.1 – found on the UMFA Website – Art – Collections
- A clear glass
- Water
- Shaving cream
- Food coloring
- Eye dropper, syringe, ¼ tsp, or straw

Materials cont:

- Paper
- Pencils
- Coloring utensils

Vocabulary/Key Terms:

- Precipitation: any liquid or frozen water that forms in the atmosphere and falls to Earth. It is one of the three main steps of the global water cycle. – National Geographic
- Cloud: a large collection of very tiny droplets of water or ice crystals. They are so small and light that they can float in the air. – Weather Wiz Kids
- Water Vapor: a dispersion, in air, of molecules of water, especially as produced by evaporation at ambient temperatures rather than by boiling (compare with steam) – Dictionary.com
- Rain: the liquid form of water that falls from the sky in drops. – Britannica Kids
- Snow: Tiny crystals of ice that fall to Earth are called snow. A crystal is a solid substance that has flat surfaces and sharp corners. Snowfall is made up of both single ice crystals and clumps of ice crystals. The clumps are called snowflakes. – Britannica Kids

Activity

Part 1 | Precipitation Discussion

- Share Gilmore Scott's *The Monsoons Dazzle Over the Bears Ears* and talk about how the artist is showing rain.
    - What are the differences between these two rain clouds? They are showing two different types of rain (*include the artwork's background information to highlight these concepts).
    - What do you think it would feel like to be standing under the pink purple cloud? What about the black and gray cloud?
- Clouds form from water vapor that gather into bigger and bigger droplets. When clouds get heavy with water, they release it as precipitation.
- What are the different types of precipitation we can think of?
- In addition to how heavy the clouds are, other things impact the type of rain that falls. What are some other natural factors we can think of? Examples:

Part 1 | Precipitation Discussion cont.

- Temperature: If it's cold enough we get snow, hail. If it's a warmer place, the atmosphere can hold more water vapor which results in more precipitation. Monsoons are often found in warmer or tropical places.
- Pollution: can contaminate the water droplets and is called acid rain (makes lakes and streams more acidic).
- Wind: affects where the rain falls, and also how forceful it is. Thunderstorms are created when strong winds hold the water in the clouds for a longer time. These updrafts allow time for the droplets to get bigger before they fall, creating a heavy rain vs. a light drizzle.

- Looking at the artwork, what are the natural factors for each rain cloud?

Part 2 | Demonstration: Shaving Cream Rain Clouds

- Fill a clear glass 2/3rds full of water.
- On top of the water, spray a generous amount of shaving cream to act as a cloud! Add a couple drops of food coloring on top of the "cloud". (see examples below in Additional Resources)
- Using an eye dropper, syringe, ¼ tsp, or straw add drops of water onto the shaving cream.
- Pay close attention: as you add more and more water the cloud gets heavy. The water and the colors will move through the cloud and start to disperse into the glass. Just like how the water in the air saturates into clouds and produces rain!
- Discuss the students' observations and how this connects with the previous conversation.

Part 3 | Artistic Data Collection

- Each student will collect and display precipitation data visually. This data will include the chance of precipitation for each day of a chosen week and the student's own observations of precipitation. See the example in "additional resources" for reference.
- Select a week for students to gather data about precipitation.
- Let's start by preparing our papers to gather data. Each student will need a paper, pencil, and coloring utensils.

1. At the top of their paper have students write "Precipitation the week of (chosen dates)."
2. Underneath, write out the days of the week that they'll be recording (Saturday and Sunday optional) with spaces between them to make columns. This can be done across the top or bottom of the page.
3. As we will be gathering two different types of data, have the students pick out a symbol for the predicated chance of precipitation and another for what they personally see of precipitation. The symbols should be drawn for each day and in the day's column.

Part 3 | Artistic Data Collection cont.

- These symbols will need to be drawn fairly large and only an outline that will be filled in later.
- Examples: chance of precipitation could be a raindrop, cloud, etc. For what they see it could be an umbrella, a sun, cloud, eye, etc. These two symbols need to be different, but it is up the student to make their creative choice.

4. Make a key for your symbols in one of the corners or any empty spaces to show what the data is representing.

- Now that their papers are all set up it's time to gather and record data!

1. Share with students the chances of precipitation for the chosen week and have them fill in the appropriate symbol to coordinate with the percentage for each day. Example: if it's 50% chance of rain or snow on Tuesday, you'll color in half of your symbol for that day.
2. Either at home or in class, have students record the precipitation they saw for each day by filling in the appropriate day's symbol. Encourage them to use their creativity to add artistic details that tell what type of precipitation or how heavy or light it was.

Part 4 | Final Discussion

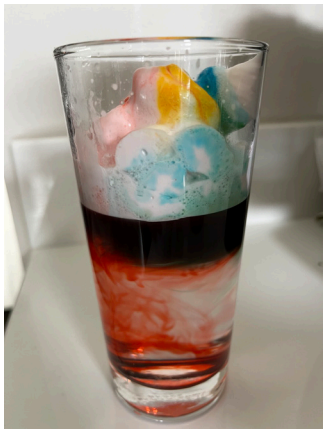
- Once they are finished, have students discuss their data collection with a partner. Did they see any patterns? Were there any surprises?
- Bring the class together to talk about their data and the experience. Ask how a visual representation can be helpful to understand the information instead of just numbers.

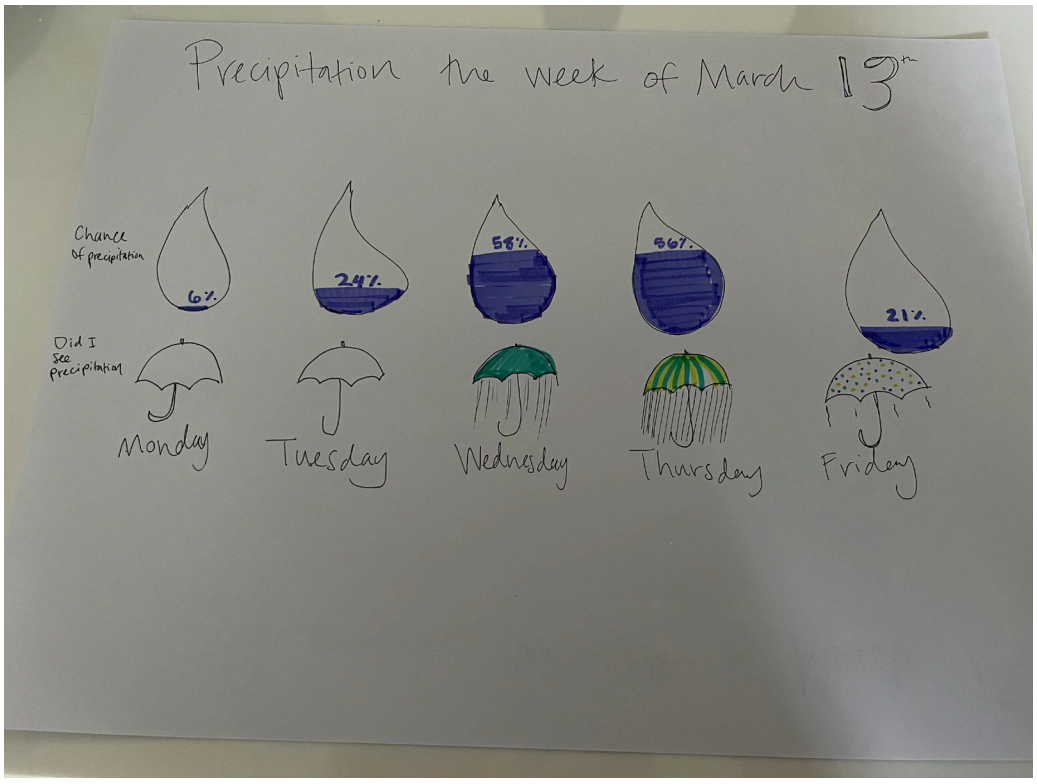
Methods for Assessment:

- At each stage assess understanding from student responses and work.
- Review the students' data collection: look for student understanding and careful, thoughtful, creative work.
- Afterwards, have students write a short paragraph explaining their data.

Additional Resources

Example images:





Additional Resources cont.

State Core Links:

Science Strand 3.1: Weather and Climate Patterns: Weather is a minute-by-minute, day-by-day variation of the atmosphere's condition on a local scale. Scientists record patterns of weather across different times and areas so that they can make weather forecasts. Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over a long period of time. A variety of weather related hazards result from natural processes. While humans cannot eliminate natural hazards, they can take steps to reduce their impact.

- **Standard 3.1.1**

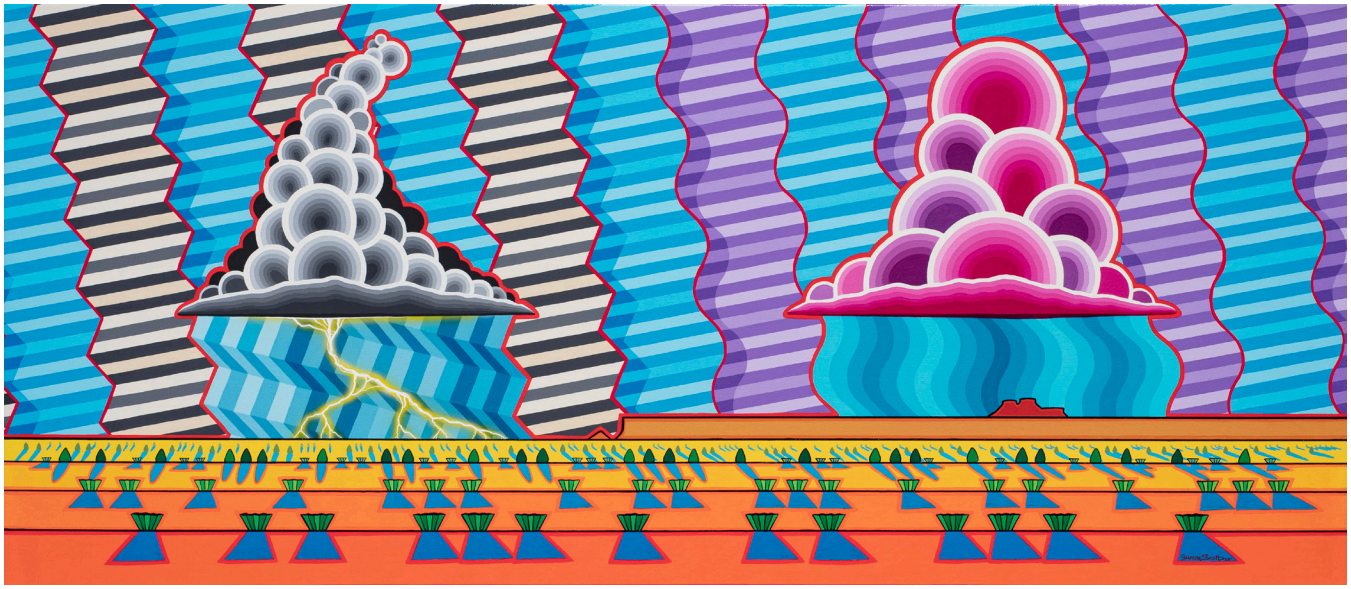
Analyze and interpret data to reveal patterns that indicate typical weather conditions expected during a particular season. Emphasize students gathering data in a variety of ways and representing data in tables and graphs. Examples of data could include temperature, precipitation, or wind speed. (ESS2.D)

- **Standard 3.1.2**

Obtain and communicate information to describe climate patterns in different regions of the world. Emphasize how climate patterns can be used to predict typical weather conditions. Examples of climate patterns could be average seasonal temperature and average seasonal precipitation. (ESS2.D)

Resources

- https://water.usgs.gov/edu/activity-howmuchrain-metric.html
- https://www.thenakedscientists.com/articles/questions/why-some-rain-heavier-other-rain
- https://wxresearch.org/how-does-wind-affect-precipitation/
- https://climas.arizona.edu/sw-climate/temperature-and-precipitation
- https://education.nationalgeographic.org/resource/precipitation/
- https://www.weather.gov/slc/snow_precip#



Artwork Spotlight:

Gilmore Scott, *The Monsoons Dazzle over the Bears Ears,* 2022, acrylic on canvas. Purchased with funds from the Phyllis Cannon Wattis Endowment Fund, UMFA2022.10.1

- Scott's paintings – their bright colors, geometric patterns, and subject matter – draw inspiration from his Diné (Navajo) heritage, particularly traditional stories, their diverse arts, and the landscapes of the Navajo Nation. His works are also informed by his art studies at Utah universities as well as his experience as a firefighter for the U.S. Forest Service.
- The Diné consider a thunderstorm with dark clouds, lightning, and torrential rain to be male. Female rain is a gentle, slow-moving rain that can be accompanied by low clouds and mist. In this painting, which storm do you think is male and which is female?
- The Bears Ears area featured in this painting encompasses more than 1.9 million acres in the southeastern corner of Utah. The Navajo Nation, Hopi, Ute Mountain Ute, Ute Indian Tribe of the Uintah and Ouray Reservation, and the Pueblo of Zuni all have ancestral ties to the region, which is rich with geological, ecological, cultural, spiritual, and archaeological diversity.

Contributer Bio:

Katie Seastrand is the Manager of School and Teacher programs at the Utah Museum of Fine Arts. After receiving a Bachelor's in Art History and a Master's in Museum Education, Katie began working at the UMFA in September 2019. She's passionate about arts integration and the power of art in learning and understanding complex ideas and concepts. In her free time, Katie likes to knit, bake, and read mystery novels.

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