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Literacy and Discourse Practices in STEM

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Designing with a Discourse Practice

This is a lesson that will be centered around the water cycle and patterns we can identify in weather. One of the big cross cutting concepts in Kindergarten is for students to be able to identify and observe patterns in the natural world around them. It will focus on the four main parts of the water cycle, (accumulation, evaporation, condensation, and precipitation.) The idea is that students will be able to identify the pattern or flow between these different parts in order to help them gain an understanding of different types of weather and how patterns effect that.

For an anchoring event I plan on focusing on the evaporation and condensation components. At the beginning of the school day, I will place a mug filled half way up with water into a large plastic bowl. Then I will cover the bowl with plastic wrap and a rubber band, and place the bowl in direct sunlight. Coming to the end of the day, I will bring the bowl in and showcase how there are water droplets along the plastic wrap cover as well as the bottom of the bowl, however the cup should be near if not already empty. The anchoring questions will be; “What do you think will happen to the water when it sits in the sun all day?”, “How was the water able to get out of the cup?”, “What caused the water to not only move from the cup but fall back down from the plastic wrap as well?” This anchoring event along with the questions should help students gain curiosity as to what is actually happening with the water and why.

The NGSS standards covered in this unit will be,

- K-ESS2-1 Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.]
- Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.
- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)
- Construct an argument with evidence to support a claim. (K-ESS2-2)
- Scientists look for patterns and order when making observations about the world. (K-ESS2-1)
- ESS2.D: Weather and Climate- Weather is the combination of sunlight, wind, snow or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time. (K-ESS2-1)
- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (K-ESS2-1)
- Systems in the natural and designed world have parts that work together. (K-ESS2-2)

The discourse practices that I am planning to implement within this unit are modeling and note taking. After the anchoring event I want to give students a paper with three boxes. I want them to use illustrations to show what the mug looked like before it was stuck in the sun, what it looked like when we brought it in before we removed the plastic wrap, as well as what it looked like once we removed the plastic wrap. I want them to use the illustrations as well as colors to model their thinking and understanding of what happened. I will also have them share and discuss their model with a partner to gain further understanding of their knowledge. As for note taking, I want to use sketch notes. Once we've learned about the four components of the water cycle, I want to give students a piece of paper with the sides folded and cut into fourths. On the outside flaps I want them to either write the vocabulary word or the first letter for each stage as well as arrows demonstrating a "cycle." Then I want them to open each flap and use pictures/key words to draw

what each stage of the cycle looks like, as well as arrows again. Using both of these discourses will help my students to not only learn the parts of the water cycle, but actually gain an understanding of the world around them and how it can be affected. Having them model their understanding of the anchoring event provides me with a sense of what students already know, while also providing them a chance to construct their own arguments/understanding. The sketch notes will help students to develop their own diagrams of what the water cycle looks like and how it flows in a continuous order. It allows them to apply their knowledge rather than just look at a diagram on the wall. *Examples of the model paper and sketch notes are attached below.

Name: _____

Water Cycle Wisdom

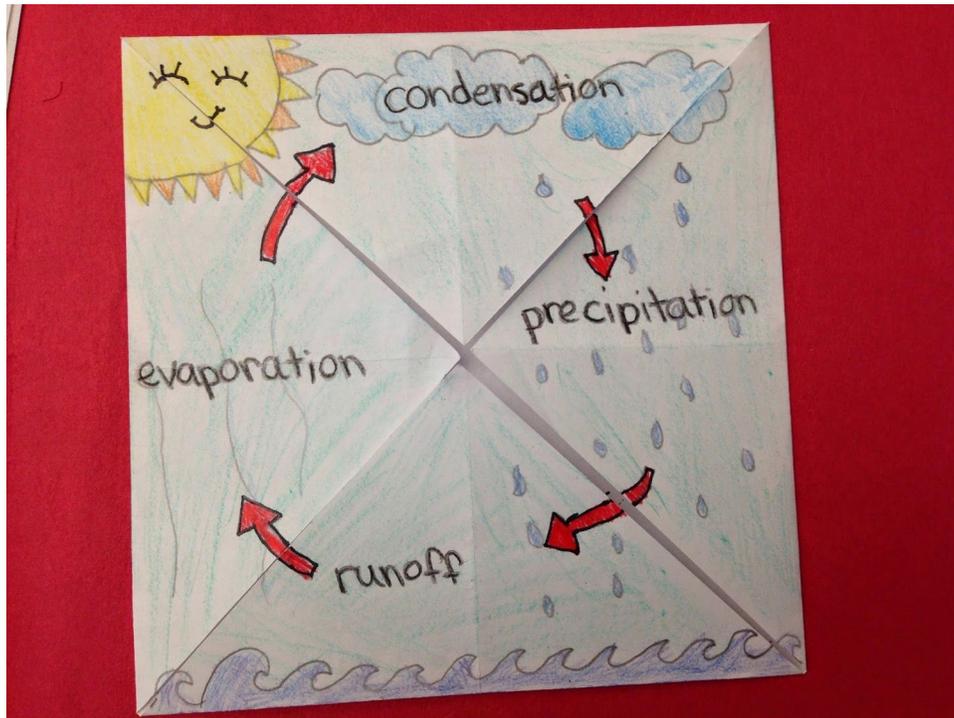
Draw a picture of each stage of the water to model what happened.

Stage 1:

Stage 2:

Stage 3:

Sketch note example:



Picture credit- Pinterest 😊