

The Challenges – Teacher Resources

Water Cycle in a Bag

Objective

Students will observe and describe the three major phases of the water cycle and explain how temperature and sunlight affect each phase of the water cycle.

Materials

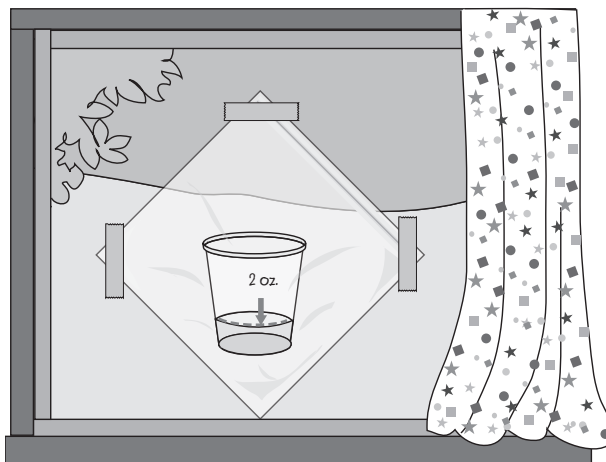
- Self-seal plastic quart-size bag
- Small clear plastic cup
- Permanent marker (dark)
- Measuring cup
- Water
- Masking tape
- Observation journal

Procedure

1. Introduce and discuss the term “cycle.” Students should understand that in a cycle, the same complete set of events happens over and over in the same sequence. Refer to natural cycles that exist in our life, such as those of plants and animals. Recall the three main components of the water cycle (evaporation, condensation, precipitation) and have students explain the process of each.
2. Divide students into small groups of two or three. Have members of each team work together to create a miniature water cycle in a bag.

Directions

- Pour 2 ounces of water into the plastic cup.
 - Mark the water line on the outside of the cup, using a permanent marker.
 - Tape the cup inside the plastic bag in the lower right-hand corner.
 - Holding the bag at an angle, tightly seal the bag. Be careful not to spill the water in the cup.
 - Tape the bag at an angle, similar to a baseball diamond, on the designated wall (or window) outside the room (in a sunny location).
3. Ask students to predict what will happen with their water cycle over a period of three days and to record their predictions in the observation journal. Observe the bags early each morning and afternoon and record the observations.
 4. Share student observations while addressing the following questions:
 - During what phase of the water cycle is the water invisible? (evaporation)
 - Why are the waterdrops invisible during the evaporation process? (The waterdrops become a vapor.)
 - What causes evaporation to take place? (energy from the sun)
 - When did you notice the most evaporation occurring? (during the warmest part of the day — the afternoon)



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- What causes condensation to take place? (The temperature and water vapor cool.)
 - At what time of day did you notice condensation in your water cycle bag? (mornings or cooler, darker hours, such as night)
 - When many drops of water condense inside the bag, what forms? (a “cloud”)
 - What represents precipitation in your bag? (droplets of water in the bottom of the bag)
 - What caused the precipitation to occur in the bag? (The condensed water droplets gathered together and cooled.)
 - Does the bag contain the same amount of water as it did three days ago? (Yes, unless the bag was not tightly sealed.)
 - If the bag remains tightly sealed, how much water will remain in the bag after one month? (2 ounces)
 - What might happen if your water cycle bag were placed in a cool, shady area instead of a hot, sunny area? (The rate of evaporation would be much slower.)
5. Remind students that the water cycle is continually happening, although we can't see it. Emphasize that we have the same amount of water on Earth as we have had for perhaps millions of years.

