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**Water Cycle and Climate Change Lesson Plan**

**Science Unit:** Weather

**Lesson Objective:**

* Students will be able to understand and explain the water cycle.
* Students will be able to explain the impact of rising temperatures (climate change) to the Earth’s water cycle.

**Standard:** Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

**Materials:** Book (The Magic School Bus Wet All Over: A Book About The Water Cycle), sharpie markers, ziploc bags, water, small clear cups, food coloring (blue), spoons, scotch/painter’s tape, whiteboard/chart paper, dry erase markers/markers, climate reality project article, 2 large bowls, 2 mugs/2 small cups, saran wrap, rubber bands (for covering the bowls with saran wrap), hot water (not too hot- safety!), room temperature/cold water

**DAY 1**

**Intro:**

-          Gather students at the rug area.

-          Ask students about where water can be found (oceans, rivers, bathrooms, water for drinking, glaciers, rain, snow, etc.)

-          Explain to students that today’s science lesson is about the Water Cycle. Explain that in this lesson, students will find out where rain comes from and how it gets into the clouds.

**Development:**

-          Show students the book that you will read aloud today -- *The Magic School Bus Wet All Over: A Book About The Water Cycle*.

-          Read the book aloud. Make sure to emphasize condensation, evaporation, and precipitation. Write down each word on a whiteboard or chart paper and include a kid-friendly definition (e.g. condensation- opposite of evaporation; when water vapor in the air goes back into a liquid form, and leaves the atmosphere to return to the surface of the Earth). Also include illustrations and/or pictures that go along with the words.

-          Tell students that they will create a water cycle model using a ziploc bag. Review materials and partner/group work expectations. Then send students back to their seats and/or with their partner/group.

**Experiment:**

-          Pass out materials: Small clear cups filled a third of the way with water, sharpie spoon and ziploc bags (make sure they are not scratched and don’t have holes).

-          Model to students what they will write/draw on the front of the ziploc bags using a sharpie. As you are modeling, make sure to review the water cycle with students.

-          Have students create their own water cycle ziploc bag model.

-          Go around and put 2 drops of blue food coloring in each group’s cup of water. Have students stir the food coloring with the water to make it turn blue. Then have them carefully pour the blue water in the ziploc bags and seal them after.

-          Collect the water cycle bag models and tape them on your classroom windows.

-          Explain to students that they will use these bags to observe the water cycle in class.

**Practice:**

-          Students will complete the “Label the Water Cycle” worksheet. Students who are able to complete the worksheet quickly will log-in to MyON and read *The Water Cycle At Work* by Rebecca Olien (if available-district provided).

**Closing:**

-        Have students share out what they think they will see/observe happen with the Water Cycle models.

**DAY 2**

**Intro:**

-          Gather students at the rug area.

-          Ask students about what they learned about the water cycle so far. Have them “turn and talk” if possible.

-          Tell students that for science today, they will learn about the impact of climate change to the Earth’s water cycle.

**Development:**

-          Before showing the whole class experiment, explain to students that today’s experiment will demonstrate the water cycle again, but this time, you are going to control the temperature inside the model.

**Experiment (Students watch):**

-          Place one mug or small cup in the center of each large bowl. Fill one bowl with room temperature/cold water so that the water covers about ⅔ of the outside of the mug/cup. Then fill the other bowl with hot water so that the water covers about ⅔ of the outside of the mug/cup. Do not put water inside the mug/cup.

-          Cover both bowls with saran wrap and place a large band around them to secure the wrap.

-          Place them somewhere safe and where students can observe them in the classroom.

-          Let them sit for at least 15 minutes.

**Science Journal Writing:**

-          Have students write on their science journals. Students write what they predict will happen inside the bowls. Remind them to think about what they already know about the water cycle. Ask students: What do you think will happen in the bowl with the room temperature/cold water? What do you think will happen in the bowl with the hot water? Why do you think that? Explain your thinking.

**Observation:**

-          After about 15 minutes (or more if you want to give students more time to write), have students gather around or near the bowls.

-          Let the students observe the bowls before taking off the saran wrap. The wrap will have condensation and some of the condensation will have dripped into the mug/cup.

-          Take off the saran wrap from both bowls. The mug/cup inside the bowl with the hot water will have more water (precipitation).

**Reflection/Closing:**

-          Read all or part of this article by the Climate Reality Project: <https://www.climaterealityproject.org/blog/climate-change-impacting-water-cycle>

-        Give students the opportunity to share out their thoughts about what they learned.