

Grade 4	Lesson: 1-4 Changing Water	Reference to English
Standard(s): 1.OA.1		Domain:
Content Objective(s):		Language Objective(s):
Investigate and record temperature data to show the effects of heat energy on changing the states of water. Construct a model or diagram to show how water continuously moves through the water cycle over time.		Describe the processes of evaporation, condensation, and precipitation as they relate to the water cycle.
Essential Understanding:		Academic Vocabulary for Word Wall: Listen: Read: Write: Speak:
Materials: <ul style="list-style-type: none"> • “My Water Cycle Book” (1 per student) • 3 Clear Cups • Water • Ice Cubes(2 per student and several more) • Hot Plate and Pan • 3 Thermometers • Ziploc Bags (1 per student) • Stop Watch 		Additional Lesson Vocabulary: Sentence Frames:
Lesson: Changing Water		Instructional Time:

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Opening: (10 minutes)

Introduction:

T: Water is amazing! It can change its form from solid to liquid to gas. Record these three forms in their "My Water Cycle Book."

T: Water can be a solid.

- Have the students help you think of and record examples such as:
 - ice
 - snow
 - frost
 - hail
 - icicles
 - ice on a skating rink

T: Water can be a liquid.

- Have the students help you think of and record examples such as:
 - water that is coming out of the faucet or drinking fountain
 - when it rains
 - running in a river
 - in a swimming pool

T: Water can be a gas.

- Have the students help you think of and record examples such as:
 - steam
 - water vapor in the air

Introduction to New Material (Direct Instruction): (7 minutes)

Changes:

T: Water changes form. How does this happen? Record the answers in their "My Water Cycle Book."

- Solid to Liquid = (melting)
- Liquid to Solid = (freezing)
- Liquid to Gas = (evaporation)
- Gas to Liquid = (Condensation)

Guided Practice: (10 minutes)

The Temperature of Change:

T: Let's see how the temperature of the water changes as it changes form.

T: First, let's look at ice. Fill a clear cup with ice. (Note: Crushed ice will melt faster, but ice cubes will also work.) Place a thermometer in the cup.

T: Now, let's look at liquid water. Fill a clear cup with water. Place a thermometer in the cup.

T: Finally, let's look at gas. We'll make our own water vapor by boiling water. Fill a clear cup with water and pour it into a pan. Place the pan on a hot plate set to high. Place a thermometer in the pan.

T: What will happen to the ice? (It will melt.) How do you think the temperature will change as it melts?

T: What will happen to the liquid water? (Nothing. Eventually, it will evaporate, but our experiment won't last that long. This cup is a control to show the students what happens to water without any heat added.)

T: What will happen to the water in the pan? (It will boil and evaporate.) How do you think the temperature will change as it evaporates?

- Watch the experiments and record the temperatures every 10 minutes. Record the results in their "My Water Cycle Book."

Ice Race:

T: Our cup of ice is just sitting there. What is heating it up? What is causing it to melt? (the heat from the room)

T: What could we do to make the ice melt faster? Brainstorm a few ideas.

- Have students estimate how many minutes they think it will take for the cube to melt. (How fast do they think they can get it to melt?)
- Give each student a Ziploc bag with an ice cube inside. Have them do whatever they would like (within reason) to make their cube melt the fastest while the teacher times the activity with a stop watch.
- As their cube melts, have them record the time at which it melted, and record that they did to get the cube to melt faster.
- Discuss the experience. What worked well to make the ice cube melt faster? What didn't work well? Why? How did heat and temperature affect how quickly it melted? Why?

Assessment:

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