

Slide on Over

Science Enhanced Lesson – Grade 3



TOPIC

Water Cycle

SCIENTIFIC AND ENGINEERING PRACTICES

- 3.1** The student will demonstrate an understanding of scientific and engineering practices by (a.) developing and using models.
- Use models to demonstrate simple phenomena and natural processes
 - Develop a model (e.g. diagram or simple physical prototype) to illustrate a proposed object, tool, or process

- 3.1** The student will demonstrate an understanding of scientific and engineering practices by (b.) obtaining, evaluating, and communicating information.
- Communicate scientific information, design ideas, and/or solutions with others

EARTH AND SPACE SYSTEMS

- 3.7** The student will investigate and understand that there is a water cycle and water is important to life on Earth. Key ideas include (a.) there are many reservoirs of water on Earth and (b.) the water cycle involves specific processes.

BACKGROUND INFORMATION

In this lesson, students will explore three phases of the water cycle: evaporation, condensation and precipitation. The water cycle explains what happens to water as it heats, cools and moves around.

Evaporation occurs when the warmth from the sun causes water from lakes, rivers, oceans and other water bodies to heat. As the water heats it turns from water droplets into a water vapor (or gas) and rises to

the sky.

Condensation occurs as the water vapor starts to cool down. When the water vapor cools, droplets come together to form clouds.

Precipitation occurs when water droplets get big and fall from the clouds. The water droplets can come in the form of rain, snow, sleet and hail.

MATERIALS FOR TEACHER

- 1 copy of the water cycle graphic

VOCABULARY

Water cycle, evaporation, condensation, precipitation, waterbody, recreation, reservoir

MATERIALS FOR STUDENTS

For students (all materials listed are needed for every group of 3 - 4 students)

- 5 plastic straws
- 1 roll of masking tape
- 1 pair of scissors
- 1 yard of Reynolds Wrap
- 1 plastic cup
- 1 disposable aluminum baking pan (9x13 or larger) – can replace with cookie sheet or other tray with a lip
- 2 paper towel or toilet paper rolls
- 8 oz. bottle of water
- 1 set of water cycle labels
- 1 Lego figure, or something similar

AVAILABLE HANDOUTS

- Water Cycle Graphic
- Water Cycle Labels

STUDENT/TEACHER ACTIONS

TEACHER LESSON INTRODUCTION:

- Ask students if they have ever thought about what happens to water after it rains. Allow a few minutes for students to share their thoughts.
- Ask students, “Did you know that raindrops are recycled?” Tell them, “Water that falls from clouds today is the same water that might have fallen last week or even last year.”
- Share, “Today I am going to introduce you to the water cycle. The water cycle explains the journey a drop of water takes from a waterbody, like a river or reservoir, to the sky and back to a waterbody.”
- Using the provided water cycle graphic as a guide, draw the water cycle on the board or display the image. Explain each phase of the water cycle as described in the lesson background.
- Have the students name some local water bodies in the community that collect water. Have them share out loud.
- Share with the students that the water found in local water bodies is recycled. This is the water people in the community rely on for everyday living. Have the students share some ways they use water.
- Now, ask students to think about local businesses. Have them share ways local businesses use water.

TEACHER ACTIVITY INTRODUCTION:

- Share with the students that a local water park is one business that relies a lot on water for its slides, pools and splash areas.
- Tell the students the water used at the park is pulled from a local waterbody.
- Tell the students that in today’s lesson they are going to assist a local water park with a new waterslide design. The design will also help the students remember the phases of the water cycle.

- Share with the students the water park wants to build a new slide called, “The Water Cycle.” The park wants the slide design to represent the journey a drop of water takes to and from a waterbody, like a river, through the phases of the water cycle: evaporation, condensation and precipitation.

TEACHER ACTIVITY INSTRUCTION:

1. Break students up into groups of three to four people.
2. Give each group the identified activity materials. Make sure they have a flat surface to work with, such as a table or desk.
3. Give students 15-20 minutes to design a waterslide using provided supplies. The waterslide design should include the following things:
 - A design element that represents the evaporation phase, or the climb water takes from a waterbody on the ground to the clouds. For example, this could be represented by a water slide ladder.
 - A design element that represents the condensation phase, or the time water spends in the clouds. For example, this could be represented by a platform or the top portion of the waterslide design.
 - A design element that represents the precipitation phase, or water’s drop from the sky to the ground. For example, this is the actual drop in the water slide design. Kids can get creative with this portion of the design.
4. Tell students that the entire design should be able to fit inside the provided pan.
5. After student groups design a waterslide, have them label each portion of their design with the phase of the water cycle represented.
6. Once designs are complete, have students test out their waterslides, while reviewing the water cycle.
7. Fill each group’s aluminum pan with a little water, no more than a quarter inch is needed. The water is necessary to represent a river or reservoir. In a water park, the water would represent a pool that the waterslide discharges into.
8. Have the students stand their Lego figure in the aluminum pan, at the base of the ladder. Tell students the pan represents a local waterbody, like a river. The Lego figure represents a drop of water in the waterbody.
9. Have the students move their Lego figure up their designed ladder. Ask the students what phase of the water cycle is represented when water rises from a

waterbody to the sky. Share that the rise of water from a river to a cloud represents evaporation.

10. Have the students rest their Lego figure on the platform, or design at the top of their ladder. Ask students what phase of the water cycle is represented when water is held in the clouds. Share that condensation occurs when water rises, cools and is held in the clouds.
11. Have students place their Lego figure at the top of their designed slide. Once at the top, have students slowly pour water behind the figure to move it to the bottom of the slide. Ask students what phase of the water cycle is represented when rain falls from the clouds. Share that precipitation occurs when water droplets get big and fall from the clouds. The water droplets can come in the form of rain, snow, sleet and hail.
12. Have students observe the location of their Lego figure when it lands at the bottom of the slide. The Lego figure should be in the pan of water. Point out that it returned to the same body of water it started from. Remind them that water is recycled.

TEACHER ACTIVITY CONCLUSION:

1. Remind the students the water found in local rivers or reservoirs is water we use every day in our community. This water is used for things like drinking, bathing, cooking, cleaning and recreation.
2. For water to be safe and accessible for use, we rely on three main organizations to help us recycle and distribute the water.
3. For example, the water used at the local water park must be cleaned before it arrives at the park and cleaned after it is used at the park. It also needs to travel through pipes to get from the treatment plant to the park.
4. Fairfax Water cleans water found in local water bodies, like the Potomac River. Then Virginia American Water manages the pipes that carry the clean water from Fairfax Water to homes, schools and businesses (like Great Waves Water Park). After we use the water, Alex Renew cleans the dirty water before returning it to the river.
5. All these organizations come together to make sure you have fun days at the water park.
6. Did you know?
 - Virginia American Water sends Great Waves Water Park 1.3 million gallons of water every summer (June, July and August)! In three short months, they receive enough

water to fill about two Olympic-sized pools.

- Alex Renew Enterprises cleans the water used at the water park.
7. Thanks to these organizations we can use and reuse the water found in the collection phase over and over.

ASSESSMENT

QUESTIONS

- What are the phases of the water cycle?
- What businesses work together to recycle and distribute water?

JOURNAL/WRITING PROMPT

- Pretend you're a reporter for the news and write a story about the new waterslide your group designed and what it represents.
- If you were a drop of water, what phase of the water cycle would you enjoy the most? Why?

EXTENSIONS AND CONNECTIONS

- Share lessons learned and waterslide designs with local water/wastewater utilities.
- Invite a meteorologist to the classroom to present information about weather.
- Search the Internet for songs about the water cycle.

STRATEGIES FOR DIFFERENTIATION

- Have students create a poster or other model that represents the phases of the water cycle.