

# From Puddle to Cloud to Puddle Again

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Grade 3

## Overview

**Topic:** Earth Science, Hydrology, Water Cycle, and Scientific Investigation. The purpose of this lesson is to distinguish the four different parts of the water cycle. Prior to beginning this lesson, students have experienced all aspects of the water cycle. This lesson summarizes the water cycle and should be used as a concluding activity of an entire water cycle unit. Students will compare and contrast their previous knowledge of how the water cycle works while conducting a culminating experiment. In this activity, students will use technology to retrieve, process, and communicate information as a tool to enhance learning. Students will demonstrate their knowledge through the construction of a water wheel and by the “making of rain”. This lesson includes a full PowerPoint presentation.

## Time Allotment

One 60-minute class period or two 30-minute class periods.

\*Note: The online portion of this activity is most successful when accessed by the teacher from a projected workstation.

## Media Components:

- [Water Cycle Power Point Presentation](#) – Click to download.
- Short movie from Brainpop - Water Cycle  
(Note to the teacher: Anyone may watch two movies at no cost. The teacher may also subscribe for a small fee to brainpop.com and become a registered user.)
- Computer with Internet capabilities and speakers
- Video downloaded from United Streaming: Weather Smart: The Water Cycle and Clouds, clip - Water Vapor: Clouds, Dew, Frost and Precipitation
- Access Waterwheel-top and Waterwheel-bottom URLs:

<http://www.scienceteacher.org/k12resources/lessons/lesson3/wk3a.htm>

<http://www.scienceteacher.org/k12resources/lessons/lesson3/wk3b.htm>

Print the files. Photocopy the prints onto tag board or construction paper, one set for each class member to use. This is an AIMS activity that can be found in the AIMS water book.

## Learning Objectives:

The student will be able to:

- \*Explain the movement of water on Earth by evaporation, condensation, and precipitation, which is called the water cycle.
- \*Actively develop science investigation, reasoning, and logic skills in the context of the water cycle.

- \*Construct and interpret a model of the water cycle by “making it rain” in a small group activity.
  - \*Plan and conduct an experiment in which predictions and observations are made.
  - \*Demonstrate knowledge of the water cycle through the construction of a water wheel.
- (This lesson addresses Va SOL Science K.8, K.9, 1.7, 2.7, 3.8, 3.9, 4.7, and 5.7)

### Materials:

Ice (2 cups per group)  
 Kettle (1 per group)  
 Cookie sheet (1 per group)  
 Copies of the water cycle wheel for each student  
 Metal brad fasteners for each student  
 Experiment log paper to draw the components of “Making It Rain”

### Teacher Preparations:

- [Download Powerpoint presentation](#). (Website and streaming clip are already included with the PowerPoint presentation)
    - \* If you do not download the PowerPoint, you will need to bookmark the website [www.brainpop.com/science/ecology/watercycle/index.weml?&tried-cookie=true](http://www.brainpop.com/science/ecology/watercycle/index.weml?&tried-cookie=true) or go to [www.brainpop.com](http://www.brainpop.com), click on Science movies, and scroll to Water Cycle.
    - \* If you do not download the PowerPoint you will need to download the video segment named **Weather Smart: The Water Cycle & Clouds -- Water Vapor: Clouds, Dew, Frost & Precipitation** from the United Streaming website, <http://www.unitedstreaming.com>, into the 5<sup>th</sup> slide.
  - Divide student into three groups for the concluding activity with one adult helper for each group
  - Secure a number of cookie sheets and kettles equal to the number of groups (you may decide to “Make It Rain” as a whole group presentation rather than in small groups, therefore you would only need one cookie sheet and one kettle.)
  - Access Waterwheel-top and Waterwheel-bottom URLs:
    - <http://www.scienceteacher.org/k12resources/lessons/lesson3/wk3a.htm>
    - <http://www.scienceteacher.org/k12resources/lessons/lesson3/wk3b.htm>
- Print the files. Photocopy the prints onto tag board or construction paper, one set for each class member to use.

### Introductory Activity:

To get student interested in today’s lesson, they will construct a water wheel. This hands-on activity will help to illustrate and show again the concepts and the terms that the students have learned throughout their water cycle unit.

1. Have students color the pictures on the top circle.
2. The students should color one raindrop and one snowflake blue to see how they move through the water cycle.
3. Have students cut out both circles and also the cut out sections.

4. Attach the two circles together (one on top of the other, the circle with the cut outs goes on top) with a brad metal fastener through a hole in the center.
5. Using the tab on the circle underneath, turn the circle and watch the water droplet move through the stages of the water cycle.

As students finish this activity, move through the room and discuss the different parts of the water cycle while reviewing what concepts have been taught.

1. How is this water cycle wheel similar to the water cycle on Earth? How is it different?
2. What part of the water cycle is your water droplet in now?

### **Learning Activity:**

When students have finished constructing their own water wheel, focus the students to the power point presentation.

(Slide 1 is the title page of the power point presentation)

1. FOCUS: Slide 2 reads “How do clouds form?” FOLLOW UP: Discuss this with the students by using their prior knowledge of the water cycle.
2. FOCUS: On slide 3 have the students read aloud the points on the slide.  
FOLLOW UP: “What are the similarities and differences between dew and rain?”
3. FOCUS: Slide 4 states “Where does water vapor come from?” FOLLOW UP: Use the students’ prior knowledge to discuss. “Does it come from the air, from the clouds, or from the ground?”
4. FOCUS: Slide 5 states “Where can you see condensation?” Say to the students, “While watching this short video clip, focus on these two questions at the top of the slide. (Click on the picture of the buildings to view the clip) VIEW: the videostreamed clip titled Water Vapor: Clouds, Dew, Frost, and Precipitation (The entire clip is about 2 minutes long in its entirety.) FOLLOW UP: Ask the students “How does condensation form?” or “Where do you see condensation?” “Is water vapor a solid, liquid, or a gas?” If students cannot answer the questions, replay the video clip again.
5. FOCUS: On slide 6 discuss with the students what precipitation is. The teacher can read the slides to the students, or he/she can choose students to read the slides. FOLLOW UP: Ask the students “Is precipitation a solid, liquid, or a gas? What type of precipitation occurs when it is cold? When it is warm?”
6. FOCUS: “What are the final two stages of the water cycle? Show slide 7 and read the points on the slide. Ask the students “Can you think of any other places that Storage or Collection takes place in the water cycle? Can you compare the different sources of water storage?” Refer again to the waterwheel they made and focus on the one-drop that they colored and examine how this same drop of rain moves through the water cycle over and over again.
7. FOCUS: Say to the students “As we watch this short video, see if you can notice all four stages of the water cycle and also what we can do to keep our water clean.” Show slide 8 and click on the hyperlink. VIEW: the website (The movie is about 2 minutes long followed by a short quiz) FOLLOW UP: Move through the Brainpop quiz and discuss the different answers with the students. If the students have trouble with the quiz, stop the quiz and focus their attention on the video clip. Then replay the Brainpop video, pausing where the correct answers

may be found. You may then proceed with the quiz again. “Why do you think it is necessary to keep our water clean? Why do we need to conserve our water? How can you conserve water at home or at school?” (Note to the teacher: Anyone may watch two movies at no cost. The teacher may also subscribe for a small fee to brainpop.com and become a registered user.)

### **Culminating Activity:**

1. FOCUS: “Is it possible to make a water cycle in the classroom? Do you think your teacher can make it rain?” (At this point the teacher can conduct the experiment as a whole group presentation or the students can be separated into three groups with one adult per group.) Record predictions about “Making It Rain” on the experiment log.
2. Break the students into three groups or proceed as a whole class with teacher demonstration. (Note to the teacher: The steam is VERY hot as it comes out of the kettle. The adult with each group should handle the steam and discuss with the students the safety needed to avoid scalding.) Begin by heating up the water in the kettle. Place the ice on top of the cookie sheet. As you are waiting for the steam, ask the students “What part of the process represents the storage and what part represents the cloud?” Place the cookie sheet directly above the steam (water vapor). After a few minutes, water droplets will form on the bottom of the cookie sheet. Ask the students, “What part of the experiment is like condensation” As the water droplets get larger, “rain” will begin to fall. Discuss with the students “Why is ice needed to conduct the experiment? Would it work if there were no ice on the cookie sheet? How does the cold ice correlate to the atmosphere on the Earth?”
3. FOLLOW UP: Ask the students to fill out the experiment log by drawing a picture of the cookie sheet water cycle and labeling with the four parts of the water cycle they have learned about.

### **Assessment:**

Students should be able to correctly draw the “Making it Rain” activity and also label the four parts of the water cycle and how they mimic the water cycle in nature. The teacher can also make some assessments based on student participation and group involvement.

### **Community Connection:**

Have students take a field trip to the water treatment facility to focus on how water is recycled and used over and over again. How does this emphasize the fact that the same water on Earth today is used repeatedly?

### **Cross – Curricular Extension:**

Language Arts: Have students write a story entitled “If I Were A Raindrop”. Students can explore the idea that the same water goes through the water cycle and may fall anywhere on Earth. Example; you could land on a pyramid in Egypt, you could land in the President’s coffee at the white hose, you could land on an alligator’s head, you could be slurped up by a elephant.

Art: Have students create artwork with watercolors. Discuss with the students where the water goes when the piece is dry.

Math: Have the students prepare a graph about how much rainfall occurs throughout the year. Make predictions according to the season and show their conclusions and data on a graph. The EPA has a great website that has students track how much water their household uses in a day. They could graph it for a week. The website is: [www.ga.water.usgs.gov/edu/sq3.html](http://www.ga.water.usgs.gov/edu/sq3.html).

Science: Students can conduct an experiment that shows how much water they use at home. This will involve making a hypothesis, gathering data, and presenting that data to the class. This activity will also bring in ways that we can conserve water.

### **Adaptations:**

For accelerated students: These students may want to learn more about how precipitation differs and what makes different precipitation form. Arrange a visit with a meteorologist to discuss with these students the science involved in making accurate predictions.

For younger students: Focus the discussion on ways that we use water. Have the students brainstorm the many places they see and use water everyday.