



## **Kitchen Table Watercycle**

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### **Objectives**

**Participating young people and adults will:**

- 1. Observing watercycle on a small scale**
- 2. Describe steps in watercycle**
- 3. Describe how energy from the sun drives the water cycle**

### **Youth Development Objectives**

**Participating young people will:**

- 1. Develop analytical skills**
- 2. Observe and acquire information about model and analyze**
- 3. Problem solving**
- 4. Build and use models**

### **Roles for Teen and Junior Leaders**

- 1. Assist with organizing materials and setting up activity.**
- 2. Photographer or recorder of events.**
- 3. Assist with clean up.**

### **Potential Parental Involvement**

- 1. See ARoles for Teen and Junior Leaders@ above.**
- 2. Collect data on weather, especially precipitation**
- 3. Identify activities that may influence the water cycle**

### **Evaluation Activities/Suggestions**

- 1. Youth label steps in water cycle on blank chart**

**Best Time:** as an introduction to water and watersheds unit.

**Best Location:** indoors

**Time Required:** 15-45 minutes

### **Equipment/Materials**

incandescent lamp or lamp (desk or table lamp, workshop light)  
large clear glass bowl or baking dish (preferably Pyrex)  
small saucer of water  
ice, ice pack or cold cloth  
paper towels or blotter paper  
tablet, notebook or journal  
easel pad & markers or blackboard

### **Safety Considerations**

glass bowl or dish should be pyrex or other material that can tolerate heat extremes. Caution should be exercised around the light, as it gives off heat. Extreme caution must be exercised when electrical appliances or items are near water. This can be a deadly combination. Outlets or extension cords with ground fault circuit interrupters (GFCI) should be used.

2. Youth describe steps in water cycle
3. Youth write narratives in fishing journal about path of a single water droplet as it moves through the water cycle

## References

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## Lesson Outline

### Presentation

- I. Steps in the water cycle
  - A. Precipitation  
Liquid or frozen water falling on Earth
    1. snow
    2. rain
    3. sleet & hail
    4. fog
  - B. Evaporation & Transpiration
    1. Evaporation: water vapor given off by non-living things
    2. Transpiration: water vapor given off by plants
  - C. Condensation

### Application

1. **Brainstorm** the steps in the water cycle

Results from cooling of vapor,  
forms clouds, fog

D. Run off

Liquid form moving on surface of  
Earth

E. Percolation

Liquid soaking into ground

F. All driven by energy from sun

II. Build model

III. Observe and record

IV. Ask youth to describe observations

V. Summarize observations

VI. Make comparisons to model

2. **Divide available materials** among groups of youth.

3. Fill saucer with water

4. Place bowl or baking dish over the saucer, with paper towels or blotter paper at opposite end of bowl

5. Place light above the bowl, directly over the saucer. Water in the saucer will increase in temperature and evaporate.

6. **Have youth record their observations.**

7. After several minutes cool the opposite side of the dish with either a cold cloth or ice pack.

8. At this point water vapor will begin to cool, condense and fall on paper. **Have youth record their observations**

9. After several minutes of Amaking rain@, turn off the light.

10. **Ask youth to summarize what they observed or noted.**

11. **Summarize** their observations on easel pad or blackboard.

12. **Ask youth to identify what components of this model cycle represent.**

Lamp=Sun

Saucer of water= oceans, lake, evaporation & transpiration

Ice pack, cold cloth=cooling effect in atmosphere, forming clouds

blotter paper=ground (percolation)

13. **Ask youth to identify human activities than can influence this cycle, list them.**

### Summary Activity

1. **Have youth label blank water cycle, or draw water cycle, with steps labeled**

## Lesson Narrative

The water cycle is very important to all of us. Each living creature needs water to survive. The way water moves throughout the Earth is called the water cycle. As water moves through this cycle it changes phases; liquid, vapor and solid. All the water in the Earth has been moving around the water cycle for as long as we know. There is a limited amount of water on the earth. It may take thousands to millions of years for a single waterdrop to complete the cycle, depending on where it ends up. For example water that forms polar ice caps or deep underground for example will remain there for thousands of years (if not longer). Water that falls on a sidewalk for example may evaporate as soon as the sun comes back out. This is an important concept to understand, as even slight influences on the cycle can have far reaching and long lasting impacts on other steps in the cycle.

The sun is what started this cycle moving, and keeps it moving to this day. Energy from the sun causes surface waters to evaporate or change from liquid to vapor form. This is the step that the vapor rises into the atmosphere (because warm air is lighter). When it reaches the atmosphere it cools and condenses or returns to its liquid form. Many water drops condense and collect to form clouds. When there are few clouds, the water stays in vapor state. Air at a given temperature can only hold so much water, much like a sponge. When the sponge can't hold anymore, rain falls. Rain can also fall when the air is cooled by mountains, colder winds or weather systems.

Rain, snow and fog make contact with the Earth. Some, pulled by gravity flows away from where it fell. This water gathers and collects in ditches, which gathers into larger streams and rivers. This is called runoff. Water that doesn't run off, may soak into the ground. This is called percolation. This water gathers and collects in soil and rock formations, and is called groundwater. Water may remain underground for very long periods of time. It may also emerge from underground in form of springs, rivers or streams.

Precipitation also lands directly on plants, such as grass, trees and flowers. Some of this water is used by the plant. The plant will also draw water from the soil. This water is used by the plant for important functions, for example important minerals are dissolved in the water. Water is also a by product of photosynthesis. Photosynthesis is when plants use sunlight to produce their own food. Plants give off excess water through special valves or cells on leaves. This giving off of water is called transpiration. Once again the sun is the energy driving this cycle.

In this way water falls to earth, is used by plants, soaks in or gathers. This water eventually evaporates or is given off by plants (transpiration). Evaporated water condenses and forms clouds. The clouds, when they can't hold anymore, give off precipitation and the cycle makes another trip.

## Exhibit or Sharing Suggestions

Display models.

Create narratives or drawings of the water cycle, and label steps, things that influence water cycle.

Give presentations where youth model or act out the steps in the cycle.

**Community Service and AGiving Back@ Activities**

Attend public meetings on issues that can influence the water cycle. For example paving prevents water from soaking in or percolating. Explore the impacts of this interference to groundwater, and other surface waters.

**Extensions or Ways of Learning More**

Visit local water authority to determine sources of community drinking water. Water for human use comes from surfacewaters or wells. Explore how the water cycle can influence the amount of water available for us to use in our homes.