

Learning Objectives

- 1) Recognize that water is the most abundant liquid on earth. Earth is called the “water planet”. Water covers seventy percent of the earth’s surface.
- 2) Know that water is present above ground in rivers, streams, lakes, and oceans. However, water is also present under the earth’s surface in underground streams, known as ground water.
- 3) Understand that water is also present in the atmosphere. Water insulates the earth by protecting it from the sun’s heat and by preventing heat from being lost too quickly.
- 4) Realize that water can exist in a liquid, solid, or gaseous state.
 - a) **Water as a liquid:** Rain, puddles, ponds, lakes, streams, rivers, oceans, and ground water are examples of water in its liquid state.
 - b) **Water as a solid:** This includes sleet, frozen rain, snow, and ice.
 - c) **Water as a gas:** This invisible gas is known as water vapor.
- 5) Understand the parts of the water cycle.
 - a) **Evaporation:** First, water is heated by the sun. This heated water is converted into water vapor. The conversion of water from a liquid to gas is known as evaporation. Evaporation occurs all the time, and all over the world. However, most evaporation occurs over the oceans.
 - b) **Condensation:** Once the water evaporates, it cools and forms on tiny particles of dust and pollen. This process is known as condensation. Condensation creates the clouds we see in the sky.
 - c) **Precipitation:** When the clouds become too large and too full of water, the water falls to the earth in the form of precipitation. Rain, sleet, snow, hail, and drizzle are all forms of precipitation. After the water falls to the ground, the cycle begins again.
- 6) Know that all living things require water for their survival.
 - a) Plants are the only organisms that can synthesize their own food, but they need water to do so. Plants return water to the atmosphere through transpiration – water evaporates from their leaves.
 - b) Animals, including people, require a lot of water. In fact, seventy five percent of the human body is composed of

water. Animals use water to digest food, to carry nutrients to the cells, and to carry off waste products.

- 7) Understand that people use water everyday. Drinking, preparing food, and bathing are all human uses for water. Water is also used for transportation. For example, we ship the rice we grow to Japan by boat. In addition, water is used for recreational activities like swimming, skiing, and snowboarding.
- 8) Know how we obtain water for human use. We get water using reservoirs, wells, pipes, and irrigation.
 - a) Reservoirs slow or stop the natural movement of water. This is usually done by building a dam. Once the water is stopped or slowed, a reservoir is created from which people can get water.
 - b) Wells are holes dug into the ground that allow people to bring groundwater to the earth’s surface.
 - c) Pipes carry water from reservoirs or wells to people’s homes.
 - d) Irrigation is the use of water to grow crops. Ditches or canals direct water from a river, stream, lake, or reservoir to fields of crops.
- 9) Realize that water is required for food production. Crops and livestock require food for growth.
- 10) Know that water provides us with two types of energy: stored energy and moving energy.
 - a) Stored energy is water that is waiting to become moving energy. Water held behind a dam is stored energy.
 - b) Water that has been released is moving energy. Moving water can be used to spin turbines that create energy.

Suggested Activities

- 1) **Before viewing the video:**
 - a) Anticipatory Set: Tell students you are going to put a dab of water on their cheeks. They are to raise their hands when their cheeks no longer feel wet. Use a paper towel or cotton ball to apply water. How did it feel? (cold) Where did it go? (evaporated)
 - b) Two Open-ended Webs:
 - i) What you know about water.
 - ii) How we use water.
 - iii) Draw 2 circles on board; write one title in each. Radiate lines from circle to each fact given by the class.

2) **After viewing the video:**

- a) Specific Activities
 - i) **Making a Water Cycle:** Materials needed: self-heating tea kettle or hot plate & teakettle (with water), 1 cookie sheet, 1 sheet 12” X 18” green paper, ice cubes, 2 large blocks, boxes or chairs. **Setup:** Put cookie sheet across 2 blocks. Leave a wide space between blocks. Put green paper (grass) under sheet. Heat up water in advance and put kettle where steam will hit underside of sheet. Put ice on the sheet. **Representations:** Steam from kettle is evaporating water. Cold sheet is upper atmosphere. **Facts:** When heated water rises, it hits cold upper air and condenses into drops of water. When the water becomes heavier than air, it falls to the ground as rain. When this water evaporates again the water cycle continues!

Vocabulary

Cloud — Millions of droplets of water that have condensed on small particles present in the atmosphere

Condensation — Water vapor cools and forms into droplets of water

Evaporation — Heat converts water to invisible water vapor

Flood — When water rises and covers the surrounding land

Irrigation — The use of water for growing crops.

Liquid — Normal state of water, like rainwater or the water that flows from our faucets

Precipitation — Water particles in clouds fall to the earth in the form of rain, snow, sleet, hail, or drizzle

Reservoirs — Bodies of water made by slowing or stopping the natural flow of water

Solid — Water that does not flow. Ice cubes, snow, and hail are all forms of solid water

Steam — Water that is heated and turned into water vapor