

Learning Objectives

- 1) Realize that weather is dependent on air, water, and heat from the sun.
- 2) Understand that the earth as a whole is composed of solids liquids, and gases. An atmosphere, composed of gases, surrounds the earth, much of which is covered by water.
- 3) Observe that as the earth turns, parts of it become exposed to sunlight; this sunlight heats the area and causes the temperature to rise. The temperature on earth can range from very cold, where areas have little exposure to sunlight, to very warm, where areas receive an abundant amount of sunlight.
- 4) Understand how the sun's heat causes the air currents that rise and fall through the atmosphere. As the air in an area is heated, the molecules that make up the mass of air spread apart; therefore, fewer molecules are present to fill up the given space. This lack of molecules causes the air to become lighter and it rises higher into the atmosphere. When air is high up in the atmosphere, it cools, becomes heavy, and falls. This rising and falling of air masses is a continual process and is known as the air currents.
- 5) Know how variations in air temperature cause the wind. As air rises, due to increased temperature, cooler air flows in from the side to replace the warmer air that has ascended high into the atmosphere.
- 6) Understand the water cycle and how it contributes to the weather. First, the wind and the sun's heat evaporate water from the oceans, lakes, and rivers. Then the water vapor that is formed rises high into the atmosphere and cools, which causes the vapor to condense into water droplets that form together to create a cloud. Finally, precipitation

occurs, in which the water in the clouds falls as rain, snow, sleet, or hail.

- 7) Know how the various aspects of weather are measured.
 - a) Temperature is measured with a thermometer.
 - b) Wind speed is measured using an anemometer.
 - c) Wind direction can be observed using a weathervane or windsock.
 - d) The amount of rain can be measured using a rain gauge.

Suggested Activities

1) Before viewing the video:

- a) Ask the class what the weather is like today. Take the students outside to check the sky, the wind, and the temperature. Based on these observations, come to a consensus on a "weather report." Is it Cloudy or clear? Windy or calm? Hot or cold? Wet or dry?

2) After viewing the video:

- a) Make a simple water cycle. Collect the following materials: a hot plate and teakettle, water in the kettle, an aluminum skillet, and ice in the skillet. Seat the class in a semi-circle. Put the heated kettle away from any children for safety. The heat will represent the sun; the heated water represents evaporation; the cold skillet represents the higher, cold atmosphere where the drops form clouds. As the water heats, it evaporates into an invisible gas at the spout. Then, as the evaporated water meets the cooler air, a cloud of steam forms. The moisture hits the cold bottom of the skillet condensing even further to form drops on the skillet. As more drops are formed they grow larger and larger, eventually falling to the floor. Hold the skillet over the heads of the students so they can see the precipitation. Return the skillet to its position above the kettle. After a

while, more drops will fall. When it rains naturally, the drops of water continue to form and grow larger until they are heavier than the air and fall to the earth.

- b) Teach the class the following rhyme to help them remember the water cycle: Evaporation, condensation, precipitation in the air. It is called the water cycle and it happens everywhere. Have the class draw a picture of the water cycle, showing the sun, water evaporating from a lake or ocean, the clouds forming, and the rain falling back to the lake or ocean where the cycle begins again.

Vocabulary

Atmosphere – The mass of air surrounding the earth

Condensation – The phase of the water cycle when water vapor cools and forms back into drops of liquid water

Cloud – A grouping of many water droplets in the atmosphere

Evaporation – The phase of the water cycle when water droplets turn into water vapor

Precipitation – The phase of the water cycle in which water droplets fall from the clouds to the ground

Temperature – How hot or cold something is

Water Cycle – A continual process that involves the evaporation, condensation, and precipitation of water

Wind – A side to side air flow

