

Teacher's Guide Grade 5: The Water Cycle



TEKS 5.8 Earth and Space: The student knows that there are recognizable patterns in the natural world and among the Sun, Earth, and Moon systems. The student is expected to:

B) explain how the Sun and ocean interact in the water cycle.



Background Information: This unit reinforces the concept of recognizable patterns in the natural world. Students identify the significance of cycles and understand and recognize the various processes that govern the water cycle such as evaporation, condensation, precipitation and infiltration.

Students are able to visualize and model the interaction that occur between the Sun and oceans that is responsible for the processes that cause water to be continuously recycled on Earth. It also reinforces their understanding of how water changes state when heat is added or removed.



Prerequisite Knowledge: Prior to this year, students have learned that there are recognizable patterns in the natural world. Students know that the natural world includes the air around us and objects in the sky. They are able to describe weather changes and identify events that have repeating patterns including seasons and times of the day. Students are able to record, measure, and graph weather information including relative temperature, wind conditions, precipitation, and cloud coverage. They can also compare day-to-day weather conditions in different locations.

Students can descriptively illustrate that the Sun is a star that provides light and heat energy for the water cycle. They are able to describe and illustrate the continuous movement of water above and on the surface of the Earth through the water cycle and explain the role of the Sun as a major source of energy in this process.



Common Misconceptions: Students often focus on the properties of water and may think of the water cycle in terms of freezing and melting of water. In actuality the water cycle involves liquid water being evaporated and water

vapor condensing in the clouds and falling to the Earth in the form of precipitation.

Another misconception students may have is that water only evaporates from bodies of water such as oceans and lakes. Evaporated water comes from the leaves of plants, animal wastes, streams, rivers and ponds as well as the oceans.



Essential Questions:

- 1) How do we know that the water on Earth is recycled?

The total amount of water on the Earth remains constant. The water on Earth is continually being recycled through natural processes. Water is recycled through the processes of evaporation, condensation, and precipitation and is the same water that was present in one state or another when the Earth was formed. Otherwise, there would be no precipitation.

- 2) If most of the water that forms precipitation comes from water evaporated from the oceans, why isn't rain salty?

Only pure water evaporates from the surfaces of the oceans, which condense and to form clouds that produce precipitation. The salt that is dissolved in ocean water does not evaporate with the water, but remains in the oceans.

- 3) How does energy from the Sun interact with water in the oceans to cause the water cycle?

The Sun's heat causes water to evaporate from the surface of the oceans. This evaporated water rises into the atmosphere as water vapor, where the vapor cools and condenses on tiny dust particles forming water droplets. The droplets of water come together to form a cloud. When the water droplets become heavy enough, they fall to Earth's surface as precipitation.

- 4) How is the water cycle related to weather?

Weather and the water cycle are intimately related. Water evaporates from the Earth's surface into the air as water vapor, and the water vapor condenses and forms clouds. The water in the atmosphere then falls back to the ground as precipitation. This part of the water cycle produces various kinds of weather including, rain, sleet snow, hail, and floods. A lack of precipitation in the same area over a long period of

time causes drought. Too much precipitation at one time causes flooding or heavy accumulations of snow and ice.



Notes: