



Lab: Ecosystem Services—Supporting Service (Water Cycle)

Introduction

Today we will be talking about the Water Cycle!

- The water cycle includes all of the Earth's water in all forms, including ice, surface water (like oceans and lakes) and groundwater

Water Cycle Song

- Everyone knows the Itsy-Bitsy Spider Song, right?
- Have everyone sing Itsy-Bitsy Spider
- This song tells us a little about the water cycle
- Now we're going to learn the Water Cycle Song! (To the tune of Itsy-Bitsy Spider)
- The little water vapor evaporated high (raise your hands) Into a cloud, it condensed by and by. (form a circle with your hands) When the cloud was full, it precipitated rain, (wiggle your fingers down) Down fell the water, to start the cycle again! (make a circular motion with your hand)

Water Cycle Relay

Materials

- Three buckets or containers
- Big sponge
- Turkey baster
- Food coloring

Instructions

- Set up the three buckets in a triangle
- One bucket should be full of clear water, one empty except for the sponge, and one full of "polluted" water dyed with food coloring
- The cycle goes in four stages, so have two students at the first bucket, one at the second, and one at the third. They can rotate after each full cycle
 - The first student will act as "evaporation" and "condensation" by collecting clear water from the first bucket with the turkey baster and transport it to the second, pouring the water onto the sponge
 - The second student will act as "precipitation," taking the full sponge to the third bucket and squeezing it in there
 - The third bucket should already be full of dyed water, which is acting as the pollutants
 - The student here will dunk the sponge into the pollutant, acting as "runoff" and will run the sponge to the fourth student waiting at the first bucket
 - This student will then act as "collection" by squeezing the polluted sponge back into the clear, clean "ocean" water
 - This can be repeated with the students switching positions

- The students should see not only how the water cycle actually works but also how our ocean gets polluted as runoff collects pollutants on its way back to surface water sources

Discussion

- The water cycle occurs in four stages: evaporation, condensation, precipitation, and collection
- Water evaporates from the land and the ocean and is transported up into the sky where it forms clouds
- From there, it falls back to the ground as precipitation
- On the ground, water flows downhill. Some of it returns to rivers and oceans and some of it seeps down through the soil into groundwater in a process called collection
- Then the cycle restarts
- The ocean is very important in the water cycle as it is a source for much of the water involved throughout the process
- Furthermore, the water cycle is important to the ocean
 - As the water flows downhill to collect in the ocean, rivers, lakes, and groundwater, it collects trash, chemicals, and other pollutants along the way
 - These pollutants affect the quality of our oceans and can harm marine life

Rain Cloud Activity (Precipitation)

Materials

- Vase or mason jar filled with water
- Shaving cream
- Eye dropper
- Blue food coloring
- Extra bowl for mixing

Instructions

- Fill a mason jar or vase $\frac{3}{4}$ of water
- Squirt a fluffy, puffy shaving cream rain cloud on top of the water in your vase or jar
- Mix up blue water in the separate bowl
- Use the eyedropper to squeeze the colored water into the shaving cream cloud
- Keep adding rainwater and watch the storm take shape

Discussion

- Although the shaving cream kind of looks like a cloud, the shaving cream is much thicker than an actual cloud.
- Clouds are made up of water vapor, kind of like the steam coming off of a shower
- The water vapor collects together way up in the sky in Earth's atmosphere and form a cloud
- Clouds keep collecting water until they get so heavy that they can no longer hold the water and it rains
- This is called Precipitation. Precipitation is when water falls from the sky in the form of rain, snow, sleet, or hail