

Georgia Performance Standards

SCIENCE
GRADE 4

S4E3: Students will differentiate between the states of water and how they relate to the water cycle and weather.

- a. Demonstrate how water changes states from solid (ice) to liquid (water) to gas (water vapor/steam) and changes from gas to liquid to solid.
- d. Explain the water cycle (evaporation, condensation, and precipitation).
- e. Investigate different forms of precipitation and sky conditions. (rain, snow, sleet, hail, clouds, and fog).

THEATRE ARTS

GRADE 4

TAES4.3: Acting by developing, communicating, and sustaining roles within a variety of situations and environments

National Standards

SCIENCE

NS.K-4.4: As a result of activities in grades K-4, all students should develop understanding of:

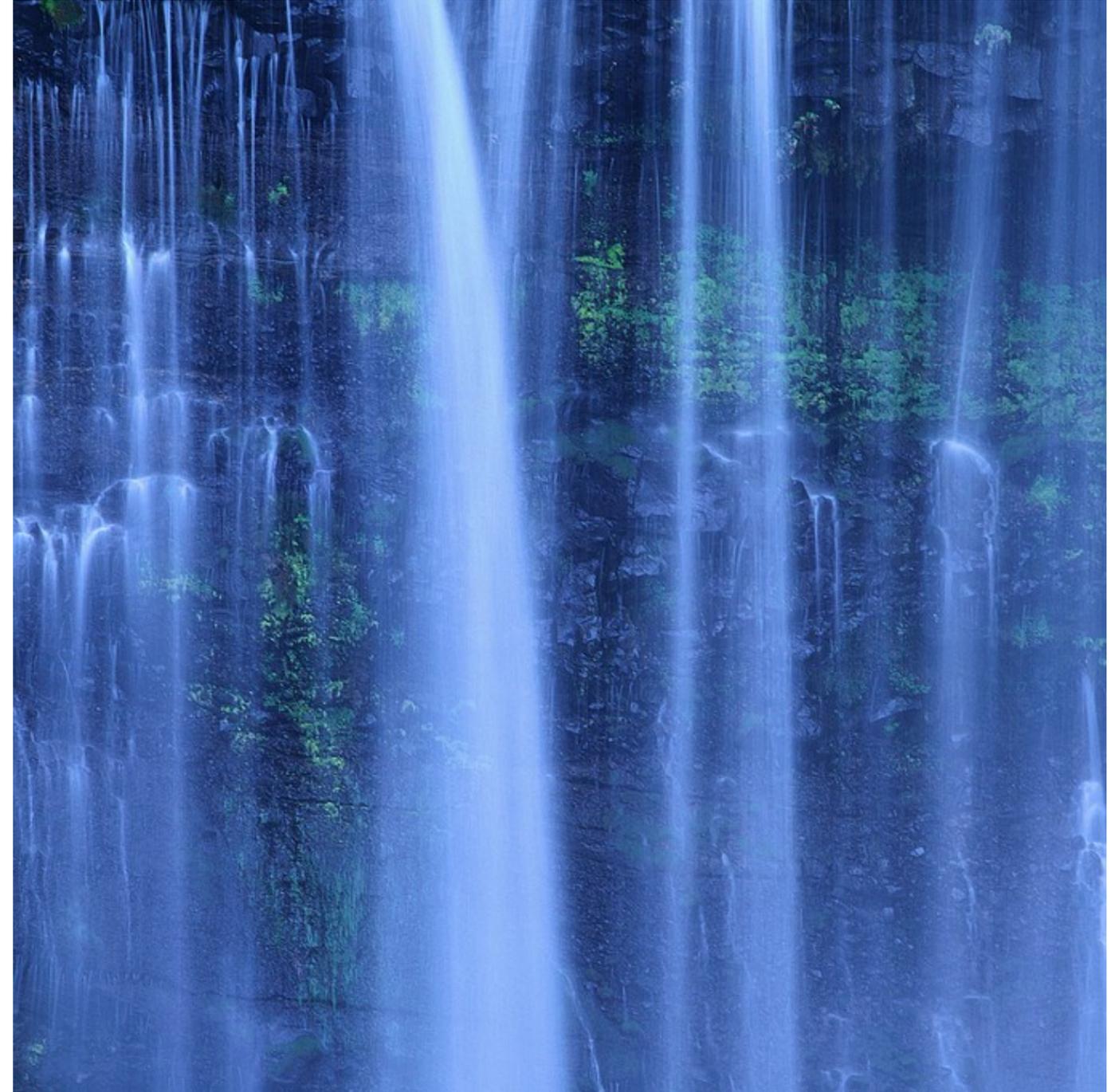
- Changes in Earth and Sky

THEATRE ARTS

Standard 2: Acting by assuming roles and interacting in improvisations

Standard 5: Researching by finding information to support classroom dramatizations

Embodying Science • Community • Water Cycles •



Idea Contributed by Susie Spear Purcell

2013 - 2014 © ArtsNow
100 Edgewood Ave, Suite 100
Atlanta, GA 30303
Phone: 404.688.2480
Fax: 404.688.2424
www.artsnowlearning.org

Water Cycles Activate

Students will examine the parts of the water cycle. After a group of three students demo the water cycle with sounds and movements, the class will break up into groups to enact each part of the cycle as well as attach vocabulary inherent to each section. The room will buzz with the water cycle coming to life as the students learn facts in a kinesthetic fashion.

Essential Question: How can the process of acting increase comprehension in other subject areas?

Process:

PROCESS

Cycle & States of Matter:

CYCLE - something that happens over and over again in the same way

States of Matter - Gas/Liquid/Solid

Liquid – water in liquid form is water

Solid – water in solid form is ice

Gas – water in gas form is water vapor. It's invisible

Water Cycle Review:

(make sure to give each of the 4 parts a sound and movement that you do every time you say the word.)

Have you ever seen rain?

What's another word for rain? precipitation

Where does rain come from?

How does it get into the cloud?

The water we have now is the water we had at the beginning of time. Water forms, dissipates, and forms again in a cycle called the water cycle.

The water cycle is the continuous movement of water between Earth's surface and the air, changing from liquid to gas to liquid. Being a cycle, there is no beginning or ending.

Water from the surface of the ocean **EVAPORATES**, while water given off by plants

TRANSPIRATES. This water enters into the atmosphere, cools and **CONDENSES** into clouds, and falls back to the earth's surface as **PRECIPITATION**. Precipitation that falls as rain, hail, dew, snow, or sleet is important to all living things.

When water falls back to earth as precipitation, it may fall back in the oceans, lakes or rivers or it may end up on land. When it ends up on land, it will either soak into the earth and become part of the "ground water" that plants and animals use to drink or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts again. This is called **COLLECTION**.

EVAPORATION – *(make sure to do movement with this explanation)*

the process by which water changes from liquid form to a gas. When the sun comes up and heats up the water and it turns into vapor or steam.

Transpiration – when plants, trees and land help to add vapor because they lose water too, by sweating.

CONDENSATION - *(make sure to do movement with this explanation)*

When vapor in the air gets cold it changes from gas back into liquid to form clouds. This is called **condensation**. Those clouds get heavy and we start all over again.

PRECIPITATION – *(make sure to do movement with this explanation)*

When there is so much water in the air that it can not hold onto it anymore. It will rain, snow, sleet or hail. Any form of water that falls from clouds and reaches Earth's surface. It fills up our lakes, streams and oceans on the surface of the earth.

COLLECTION – *(make sure to do movement with this explanation)*

When water falls back to earth as precipitation, it may fall back in the oceans, lakes or rivers or it may end up on land. When it ends up on land, it will either soak into the earth and become part of the "ground water" that plants and animals use to drink or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts again.

The earth also soaks up some of the water, storing it in the ground until it is needed. This storage in the ground is called an **aquifer**. Many people pump water directly from an under ground aquifer and use it for their drinking water.

Movement vocabulary:

Evaporation –

“E” – arms out like a body of water circled in front of belly (water)

“vap” – fingers intertwined and rolling like a body of water (liquid)

“por” – palms flat out like the sun's rays (sun)

“a” - fingers wiggles up in front of face (vapors)

“tion” – fingers wiggle up above head to disappear (gas)

Condensation – (clouds, gas to liquid)

“Con” – wiggly fingers above head (gas)

“den” – shiver and hands above heads shake (cold)

“sa” – hands grasp together above head (cloud)

“tion” – arms make a cloud above head (cloud)

Materials

- 10 sets of photos of the 4 stages in the water cycle (Condensation, Evaporation, Precipitation, Collection). These should each have two holes punched in top corners and a string through it so that students can wear each photo around their neck to allow their hands and body to move freely.

- 10 sets of strips of paper with the following words on each strip: Condensation, Evaporation, Precipitation, Rain, Snow, Sleet, Hail, Aquifer, Transpiration, Vapor, Clouds. Each strip should have Velcro on the backside so that they can be attached to the pictures above.
- Index cards with the conservation methods written on them. One method for each card.

Vocabulary

Water Cycle

The continuous movement of water between Earth's surface and the air, changing from liquid to gas to liquid.

Condensation

The process by which a gas changes to a liquid during this stage water cools in the air and forms clouds.

Evaporation

The process by which water changes from liquid form to a gas

Precipitation

Any form of water that falls from clouds and reaches Earth's (rain, snow, sleet or hail)

Collection

When water falls back to earth as precipitation, it may fall back in the oceans, lakes or rivers or it may end up on land. When it ends up on land, it will either soak into the earth and become part of the "ground water" that plants and animals use to drink or it may run over the soil and collect in the oceans, lakes or rivers where the cycle starts again.

Rain

Most common form of precipitation liquid water

Sleet

Frozen rain

Snow

Precipitation in the form of ice crystals

Water

The most abundant compound on Earth's surface, covering about 70% of the planet. In nature, water exists in liquid, solid, gaseous states

Clouds

Collections of particles of water or ice suspended in the air that are visible above the earth's surface

Water Vapor

When the sun heats water and turns it into a gas

Aquifer

Water storage in the ground

Transpiration

How people, plants and animals give off water (sweating)

Conservation

Using resources wisely

Sun

Source of energy that drives the water cycle

Fog

Droplets of water vapor suspended in the air near the ground

Precipitation –

“Pre” – arms circled above head like a cloud

“ci” – wiggles fingers down like rain in front of face (rain)

“pi” – hands blink open, closed like snowflakes (snow)

“tation” – Punch right fist down then left fist (hail)

Collection –

“co” – arms out in front like a lake

“llec” – hands out like waves

“tion” – hands scooped and mouth drinking out of it like an animal

Activating The Water Cycle Demo:

- Ask 4 students to come to front of the room and acting out the three parts of the water cycle.

- Have students wear the photo that correlates with their part of the cycle.

Suggestions:

- The water cycle is not linear, so the students should not be standing in a line
- The water cycle is not two dimensional, encourage up and down variations
- There is no proper beginning or ending – it's a cycle.
- Ask other students to come up and Velcro the appropriate vocabulary word to the appropriate part of the cycle where it belongs.
 - Evaporation – (vapor, gas, transpiration)
 - Precipitation – (rain, sleet, snow, hail, solid, liquid)
 - Condensation – (clouds, fog, gas to liquid)

All Water Cycles in Motion:

- Split the class into groups of 4.
- Give each group the photo visuals and ask each person to wear one part of the cycle.
- Then have them attach the appropriate vocabulary to their part.
- Have groups show their cycles to the rest of the class.

Water Conservation Station: (extension)

- Do you think that we will have water forever? Water does keep cycling but we can misuse and overuse water and some places get in danger of drought.
- Water is one of our most important resources. We use water to produce food, provide energy, and manufacture and transport goods. Water is essential for the life of every organism on our planet. We use reservoir water for recreation and irrigation before it is cleaned and use it to produce hydroelectric power as it is drained from a reservoir. We use clean water in our homes for drinking, cooking, cleaning our bodies, dishes, and laundry. As individuals, we use large amounts of water.
- It is estimated that the average American uses around 180 gallons of water a day.

Conservation – using resources wisely

The following is a list of water conservation ideas:

1. Avoid watering the lawn or garden between 10 am and 6 pm.
2. Take shorter showers.
3. Wash your car over the lawn instead of the driveway.
4. Turn off the water when brushing teeth.
5. Use waste water from cooking to water plants.
6. Run the dishwasher and clothes washer only when full.
7. Keep water in the fridge for cold water.
8. Fix leaky faucets and hoses.
9. Do not use the toilet as a garbage can.

Water Conservation Charades:

- Have students come up one at a time and pick a card.
- The cards list the above conservation methods.
- Ask students to act out the method without using sound or words.
- Have other students guess.

Assessment

- Students should accurately identify the key components of the water cycle
- Students should accurately match vocabulary words with steps of the water cycle
- Students should state why water conservation is important in relation to the water cycle.
- Students should demonstrate an understanding that water conservation is an act of stewardship for the Earth.