

# OUR WATER

## WATER INSTRUCTIONAL UNIT GRADE K



“Our Water” is a unique, hands-on unit that provides students with instruction in physical science, earth science, and the engineering design process. Based upon the South Carolina Academic Standards and Performance Indicators for Science, the lessons focus on the importance of water, its properties, and its conservation. The inquiry-based activities provided are designed to foster critical thinking, scientific interest, and engagement among the students. In implementing this unit, we hope to create fun, memorable experiences for students that reveal the real-world application and relevance of science education.



*“Water is life, and clean water means health.” ~ Audrey Hepburn*

## Focus

*Water as a Natural Resource*

## Focus Questions

*Why is water important to me?*

*What is a natural resource?*

*How can I describe water?*

## South Carolina Science Standards and Performance Indicators Addressed

*K.P.4A.1-3*

## Learning Objectives

*Students will be able to describe the observable properties of water.*

*Students will be able to explain the difference between natural and human-made resources.*

*Students will be able to explain the importance of water to humans.*

## Materials Needed

*Our Water PowerPoint*

*Jug of clean water*

*Clear Jars(2)*

*Toilet Paper*

*Large Spoon*

*Plastic Drop Cloths*

*Clear cups*

*Water bottles*

*Vegetable Oil*

*Twig*

*Flushable Wipes*

*Catch bins*

*Trash bags*

*Paper Towels*

*Coffee Filters*

*Spoons/ Utensils (metal)*

*Coffee beans*

*Empty soda can*

*Toy food*

*Construction Paper/ Balls*

# Lesson 1

## Water, Water Everywhere

*In this lesson, students will discover the vital importance of water as a natural resource as well as water's specific observable properties.*

## Key Words and Concepts

*Natural Resource, Water, Human needs, Salt Water, Fresh Water, Polar Ice Caps, Glaciers, Scientific Observation, Opinion, Properties, Five Senses, Sink, Float, Human made, Weight*

## Prior Knowledge Required

*None*

## Cross-curricular Connections

*English-Language Arts*

## Background Information

### Engage

Begin the lesson by asking the students, “*Who has seen a Teenage Mutant Ninja Turtles cartoon?*” Several students are likely to raise their hands. If there are many students who are unfamiliar with the characters, you can show a picture of the cartoon (a picture is included in the *Our Water* Power Point). Then, ask the students, “*Do you know where the turtles live?*” Students should respond that the characters live in the sewers. Next, ask, “*What else is in the sewer system?*” You are likely to get various answers. If necessary, ask leading questions that will allow students to come to the conclusion that water is a major component of the sewer system.

From here, begin to discuss the importance of water to humans. Pose the question, “*Why is water important to you?*” You will receive a variety of answers. Based upon student answers, ask the following questions to continue the discussion:

- *Do you think the earth is made of more land or water?*
- *Do you have water in your body? How much?*
- *What do people use water for?*
- *Can we make water? Where does it come from?*

You can use the Our Water PowerPoint as a visual guide during your discussion. Be sure students know the following:

- *The earth has more water than land, but most is salt water and is, therefore, undrinkable.*
- *Most of the human body is water.*
- *Humans use water for many things (see list on PowerPoint).*
- *Humans cannot make water. It is a natural resource.*

## Explore

After your introductory discussion about water, ask students, “*Do you know what your five senses are? Can you name them?*” Be sure they know all five: *Sight, Smell, Hearing, Touch, and Taste.* After this, continue by asking, “*Using your five senses, how can you describe water? How does it look, smell, sound, feel, and taste?*” Further the discussion by telling students how scientists use observations. You could say something like the following: “*When you tell me about water using your five senses, you are acting like scientists! Scientists use their five senses to observe and learn about the world around them. Scientists can observe properties of objects like size, shape, color, texture (how something feels), weight, flexibility, magnetic attraction, sinking, and floating. Also, scientists use many tools to make observations like magnifiers, rulers, balances, and magnets. Now, we are going to practice being scientists! We are going to observe different objects using our senses!*”

Next, separate the students into groups. Give each group a few pieces of toilet paper, a paper towel, a cup/bottle of water, a flushable wipe, an empty plastic cup/bottle, coffee beans/grinds, a metal spoon, soda can, and twig. Be sure students know the appropriate, safe ways to use their five senses in observing (waft odor, don't taste without permission, touch gently, etc). Also, be sure to put a drop cloth under the students as this can get messy.

Instruct students to use their five senses to observe the properties of each object. Ask questions like the following:

- *Which objects are similar? Why?*
- *Which objects are different? Why?*

Also, you can have the students physically move the objects into groups based on similarity. Explain that scientists classify things based on similarity all the time.

Next, explain to the students that objects are made of different materials. These materials have different properties and uses. Objects can be made of wood, plastic, cloth, paper, metal, etc. Have students answer the following questions about their objects:

- *What materials are each of your objects made of ?*
- *What are these objects used for?*
- *How are each of these objects made (natural or human-made)?*

Next, using two different clear jars, fill each jar with clear water. Place a flushable wipe in one jar and toilet paper in the other. Have students predict which one will break down/dissolve completely in the water (wipe, toilet paper, or both)? Students should verbalize the reason for their prediction. Let the jars sit for the remainder of the lesson (stir them occasionally with a large spoon). Explain that scientists always investigate the world, try to answer questions, and make predictions.

## **Explain**

*Possible Misconception:* Students sometimes confuse scientific observation with opinions. You may need to explain that scientific observations are always the same no matter who is making the observation whereas opinions may differ from person to person (ex: flower is yellow vs flower is pretty).

Summarize the exploration activity. Ensure that students understand the following:

- *All scientists observe their world using their five senses to describe the properties and uses of various objects.*

- *Observable properties include size, shape, color, texture (how something feels), weight, flexibility, magnetic attraction, sinking, floating, and material make-up (wood, plastic, cloth, paper, metal, etc.).*

Next, refer back to the two jars created earlier. Ask students questions such as “*Which one dissolved more? Which one would be better to put in the toilet when you use the restroom? Why?*” Students should observe that the toilet paper dissolved much more efficiently than the flushable wipe. Once they understand this, explain that this is the reason we do not put anything except toilet paper in the toilet. Everything else can get stuck.

When it comes to what goes in the toilet, follow the three P’s:

*Poop, pee, and paper!* (Students love this!)

### **Elaborate**

Referring again to the objects that the students observed in the explore section, ask the students which items they believe were solid and which were liquid. Have them explain their reasoning. Also, you can ask students to predict whether or not you can mix several of the items and then separate them again. Examples of mixtures include the following:

- *Water and sand*
- *Water and oil*

Ask students “*Which mixture would be easier to separate again? Why? How would you separate them?*” If you wanted to take it a step further, as a demonstration, create the two example mixtures and use student suggestions to try to separate them again.

Ultimately, students should realize that a mixture of oil and water is much harder to physically separate than water and sand. Therefore, when you pour oil (anything other than water) down the sink, those things stay in our pipes and clog them. When it comes to oil, fats, and grease in the kitchen: “*Cool it, can it, and trash it!*”

## Evaluate

As an informal check for understanding, there are two games students could play. For the first game, you will need two large containers of some kind (buckets would work well). You will also need toy food items, objects to represent poop and pee (you can use brown/ yellow balls for this or balled up pieces of yellow/ brown construction paper), and toilet paper. One bucket should represent *trash*, and the other bucket should represent the *toilet*. During the game, instruct students to throw the objects in the correct bucket. In other words, food goes in the trash, and poop, pee, and toilet paper go in the toilet.

As a second game or activity, you can have students gather the toy food and whatever other objects that you wish (other toys, blocks, etc. that you may have in your classroom). Then, have the students sort the objects into groups based on various properties such as color, size, shape, etc.

## Resources

“Support Guide 3.0 for Kindergarten.” South Carolina Department of Education Office of Standards and Learning, June 2018.

## For More Information and Feedback

We value your feedback on this lesson, including how you use it in your formal/ informal education settings. Please send your comments to:

## Acknowledgements

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