



# Hydration Heroes: Why Water Matters

## Duke Farms Lesson Plan

Elementary School:  
Kindergarten–First Grade

Age Range: 5–7

## Standards

### Next Generation Science Standards

#### K-2-ETS1: Engineering Design

- ETS1.1: Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.
- ETS1.2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.





# Hydration Heroes: Why Water Matters

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## Guiding Questions

- Why is water important to life?
- How can we use the scientific process to find problems and start thinking of solutions?

## Learning Goals

### Objectives

Students will be able to

- Make observations about the world around them.
- Understand and explain why water is important for life.
- Ask questions about how too much water or not enough water can be a problem.

## Materials

- Lesson plan
- Observation Sentence Stems and Example Questions handout
- Problem Drawing Handout
- Map of Duke Farms with locations for this activity highlighted

## Background Information

In this activity youth learn the importance of water.

Our planet is mostly made up of water and people are more than 3/4 water. Water helps digest our food and regulates our body temperature. It even makes up most of our blood. When we drink water it helps our bones, teeth, and our mood.

So many things depend on water. It's the snow we play in, the water we wash in, and it helps us grow our food. We should understand how important it is so that we can take care of it the way it takes care of us.



Duke Farms

For this and other lesson plans, go to:  
[dukefarms.org/education-resources/](https://dukefarms.org/education-resources/)

# Teaching This Activity

## Preparing for your trip to Duke Farms

- Print or save a copy of the Map of Duke Farms with locations for this activity highlighted.
- Make copies of the handouts for students to use while at Duke Farms.
- Bring pencils or crayons for each student to use.

## Engage in the Classroom

- Introduce the topic of the importance of water to the students.
  - Give the examples listed in the background information for how important water is to our lives.
- Play a water song for students. Ask students to pay attention to what else makes water important.
  - Sesame Street, "[The Water Song](#)"
  - Scratch Garden, "[The Water Cycle Song](#)"
- Ask the class to name all the ways we use water every day, some of which are listed in the song.
  - If needed, remind students of the different forms water can take—water, ice, water vapor—and that the sun warms water and it turns into vapor (evaporates), water high up in the atmosphere cools and turns into clouds (condenses), and water then falls as rain (precipitation).
- Discuss:
  - Why water is important for life and what happens when living things don't have enough water?
    - What happens to plants that haven't been watered enough?
    - What happens to animals when they don't have enough water?
    - What happens to people if we don't have water to drink?
    - How do you feel when you don't have enough water?



- Discuss (continued):
  - Why water is important for life and what happens when living things don't have enough water?
    - What happens to plants that haven't been watered enough?
    - What happens to animals when they don't have enough water?
    - What happens to people if we don't have water to drink?
    - How do you feel when you don't have enough water?
  - Have students ever experienced a time when there was too much water (flooding, storms, puddles on the playground, benches being wet after a heavy rain)?
    - What is that like?
    - How did you feel when there was too much water?
  - Why is it important to protect and collect water?
    - How do people collect water?
    - How do people protect and save water?
    - How do people share water with animals and plants?
- Help students get ready for their visit to Duke Farms.
  - Tell students that you'll be going on a trip to Duke Farms. Explain that the property is a special place that protects nature and provides spaces for children to learn about nature while in nature.
  - Let them know that on the visit to Duke Farms, they will have a chance to learn more about how important water is to all living things.
- Duke Farms also provides a place where children can learn to be scientists and practice the scientific process. Older children sometimes even help the staff at Duke Farms to study the plants and animals there!
  - During the visit to Duke Farms, they'll be able to make observations about what they see and hear and feel, ask questions, come up with some ideas that might answer the questions (hypotheses), and then observe some more (gather data).
  - Then after the trip, they'll use their observations and their data to think about a problem living things might have from either too much or too little water.
- Be sure to tell the students that it will be fun and exciting to see different grasses, plants, leaves, flowers, and trees, but it's very important that they learn to be good observers, or lookers with their eyes. To be good protectors of nature, we don't want to pick any flowers or plants. And we definitely don't want to touch any birds or animals.







## Teaching This Activity (continued)

### Explore at Duke Farms

#### Orientation

- Gather at the Orientation Center. Remind students that Duke Farms is a special place that protects nature and provides spaces for children to learn about nature while in nature.
- Remind students they'll be using the scientific process today. And today's assignment will be to observe and ask questions about how important water is to all living things.
- Remind the children about being good observers with their eyes. And that while it's exciting to see different grasses, plants, leaves, flowers, and trees, to be good protectors of nature, we don't want to pick any flowers or plants. And we don't want to touch any birds or animals.



Duke Farms

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## Stop One: The South Gate Entrance

- Walk with students along the pedestrian path between the Orientation Center and the South Gate entrance. Find an area where students can sit comfortably, look around them, feel the grass, and observe nature around them.
- Warmup Think-Pair-Share:
  - Remind students, “We talked at school about how water is essential for life.”
  - Feel the ground around you. Does it feel wet or dry? What do you think that means?
  - What do you see around you that needs water to live?
  - Ask them, “Where do you think you’ll see water at Duke Farms? Where would you look?” Give time for students to brainstorm.
    - If your class uses a buddy system, have each pair tell each other their ideas and then share with the rest of the class.
  - Explain to the class that you’ll now walk to a brook, which is another word for a small river. This brook, which is called Dukes Brook, is the only natural body of water in Duke Farms. It feeds into a larger river.

## Stop Two: Dukes Brook - Becoming Nature Scientists

- Walk with students to the bridge across Dukes Brook. Tell them they are going to start practicing their observation skills. All scientists need to develop strong observation skills – which means they can look carefully at the things around them and describe what they see in lots of detail.
  - Give class time to observe the water and the area around it.
  - Ask students to describe what the brook looks like? Sounds like? Smells like?
- Tell students to look for different kinds of life in this area but remember not to touch.
- Point out wildlife that you see; consider taking photos of different trees, plants, birds, butterflies, etc., to bring back and post around the classroom.
- Give students the Sentence Stems and Example Questions handout to help them start asking questions. For classes that are more confident with exploring and asking questions, let their questions guide the next section on making observations. For classes that need more prompting, we’ve provided questions you can use to get them started.





## Explore at Duke Farms (continued)

### Making observations about water

- Encourage students to use the sentence stems handout to start asking questions about the water and how it is important. If needed, use the following questions to guide students' observations and discussion:
  - What do you see that tells you that this water helps things to live?
    - Students may point out any animals they see drinking the water
    - Students may point out plants living along the edge of the water
  - What can people do to collect, save, and use water so nature can live?
  - How might this water be dangerous? How can water sometimes become harmful? What could happen?
    - The brook could overflow after a storm or heavy rain. How might that affect animals or plants living very close to the brook?
  - What connections can you make to what we talked about in class?
  - What things can people do to protect water and use it to help keep living things alive?

### Stop Three: The Orientation Center, Parking Lot Area

#### A Design Challenge

- Walk with students back toward the Orientation Center and find another (or the same) area for students to sit.
- Tell students you have a design challenge for them. Give them each a handout and tell them to sit with a partner to come up with a problem people, animals, or plants might experience from either too much or not enough water.
- Have students draw their problem.
- Then have students draw something that could help the people, animals, or plants experiencing that problem.
- Give students time to think together and draw their ideas. Even though they are working in pairs, they can each do their own drawing.



## A Design Challenge (continued)

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- Tell students that now you're going to see some of the things that the staff at Duke Farms have used to make sure that there is enough safe water for the people, animals, and plants at Duke Farms.
  - Walk to the parking lot area.
  - Point out that Dukes Brook, where they just were, is to the north, across the street from the main entrance. Ask students which way rain or other kinds of water would go in this parking lot.
  - Show students how the parking lot was built in such a way as to make sure that, when it rains, rainwater would flow away from the brook.
  - Ask students why it might be important for water from the parking lot to flow away from the brook. Help them to think about and understand how that kind of design solution would help keep the water in the brook clean and safe for the wildlife in the park.





# Teaching This Activity (continued)

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## Elaborate and Extend Back in the Classroom

- Have students present their design problems and solutions to the class. Each pair should:
  - Describe the problem they are trying to solve.
  - Highlight whether this is a problem for humans, animals, or plants.
  - Explain how their design idea works.
  - Give time for other students to ask them questions.
- Make a list of what we're learning about why water is important to life and the ways we can help make sure people, plants, and animals have the water they need.
- Print photos of wildlife and post in the classroom with their designs.
- Ask students to share their favorite part about going to Duke Farms.
- Come up with a list of things you and your students can do at school and at home to conserve (or save) water so that we don't waste it and it is there when we need it.

## After This Activity

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### Measurement

- Student handouts, share outs, and participation in discussions.

### Feedback for Duke Farms

- Scan student handouts and/or take a photo of your classroom display wall to share with Duke Farms
- Complete feedback survey

# Observation Sentence Stems



I see

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here that needs water to live.

I see

---

living in the water.

I see

---

living near the water.

I can hear

---

so a bird must be nearby  
even if I don't see it.





# Example Questions for Observation



What might happen to the

\_\_\_\_\_

here if the brook got too high?

What might happen to the

\_\_\_\_\_

here if the brook wasn't safe to  
drink or swim in?

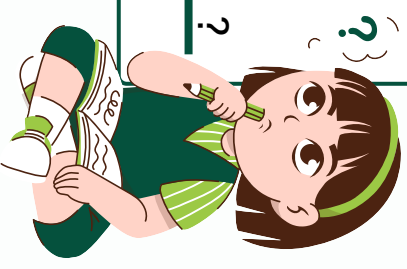
What might happen to the

\_\_\_\_\_

here if the brook got too low?

What can people do to make  
sure the brook

\_\_\_\_\_



# Problem Drawing Handout



Draw your problem here:



# Problem Drawing Handout



Draw something that could help here: