


# The CONSERVation Kid

## Teacher Reference Document | Grades 6-8

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### Pre-Documentary Mini-Lesson

(10 MINUTES)

Use the grades 6-8 Pre-Documentary Mini-Lesson slides to help students prepare for *The Conservation Kid* documentary.

- **Slide 1:** *The Conservation Kid* documentary is about one kid's efforts to clean up the Tennessee River. Before we begin the documentary, we will answer the following questions: What is a river? Where do rivers form? Why are rivers important?
- **Slide 2:** Showing slide 2, ask students "What is a river?" After taking a few student answers, show the following two slides and share the definition.
- **Slide 5:** Before showing slide 5, ask students "Where do rivers form?" After taking a few student answers, show the slide and share the answer.
- **Slide 7:** Ask students "What is an ecosystem?" After taking a few student answers, show the slide and click the indicated area to share the definition.
- **Slide 10:** Before showing slide 10, ask students, "How would you decide if a river was healthy?" After taking a few student answers, show the slide and share the answer.
- **Slide 12:** Introduce the documentary.

## **Documentary Screening**

(12-24 MINUTES)

Students should answer the grades 6-8 video questions while watching the [\*The Conservation Kid\* documentary](#). We recommend playing the video twice if time allows.

## **Documentary Discussion**

(6-8 MINUTES)

Discuss the video questions together as a class.

### **ANSWER KEY**

**1. What inspired Cash Daniels to clean up the Tennessee River?**

**A:** Cash loves animals, especially ocean animals. He wants to reduce the amount of trash that flows into the ocean from rivers.

**2. Cash shares that \_\_\_\_ % of ocean trash comes from rivers?**

**A:** 80

**3. How old was Cash when he started cleaning up the Tennessee River? How old was Cash at the time of the documentary?**

**A:** Cash shared that he was 7 years old when he started and he has been cleaning up the river for 6 years. This means he was 13 years old when the documentary was filmed.

**4. Cash shows various awards he has won around his room. What can we infer about Cash's success?**

**A:** We can infer that Cash has been recognized for his conservation efforts and raising awareness about river cleanups.

**5. How has Cash expanded his reach beyond his local Tennessee community?**

**A:** Cash partnered with another young conservationist, Ella, to collect one million pieces of trash in a year.

## **Documentary Discussion - Continued**

**(6-8 MINUTES)**

**6. How does Erin Daniels, Cash's mother, support his efforts?**

**A:** She drives him to conservation-related activities.

**A:** She helps manage his email and phone calls.

**A:** She advised him to think of ways to self-fund his conservation efforts and grow his business-minded thinking.

**A:** She helps him collect and transport aluminum recycling.

**7. Why does Cash prioritize recycling aluminum cans?**

**A:** Cash earns money from recycling aluminum and uses that income to help fund his other conservation efforts.

**8. What is a problem that Cash noticed with fishing lines and how does he address it?**

**A:** Fishermen often leave fishing lines all over the riverbank, even hanging on trees.

**A:** Cash makes fishing line recycling receptacles (monofilament bins) and installs them by common fishing spots to collect used/broken fishing lines.

**A:** Cash checks the monofilament bins and sends the disposed finishing lines to a fishing supply company to be recycled and repurposed.

**9. Plastic trash in rivers breaks down into microplastics (very small fragments of plastic). What percent of microplastics sink down into the river bed?**

**A:** Cash says 60-70% of microplastics sink.

**10. Why does Cash enjoy speaking to schools and groups of other youth?**

**A:** Cash thinks it's more relatable for youth to have someone else their age talk about nature instead of an adult.

## **Water Pollution and Plants Experiment**

(55 MINUTES)

### **STUDENT GROUPS**

We recommend organizing students into groups of 3 to 4 students. Make sure each group will have ample tabletop space to work together comfortably.

### **MATERIALS**

The materials listed below are what each group will need.

1. 4-pack of water-based food coloring.
2. 6 of the same white flower.
  - We recommend buying white tulips by the dozen fresh on the day of the experiment to maximize results.
3. 6 clear containers.
  - We recommend reusable plastic or glass 250 mL beakers.
  - If you do not have beakers, alternate containers should be able to hold ~ 8 fl oz or 1 cup of liquid.
4. 4 fl oz or a ½ cup of vinegar.
  - A 32 fl oz bottle of vinegar would serve 8 student groups.
5. Water source.
  - Each group will need 8 half cups (4 fl oz) of water
6. Scissors.
  - The scissors should be of sufficient quality for cutting flower stems.
7. Half cup measuring tool.
8. Ruler.

## **Water Pollution and Plants Experiment (Continued)**

(55 MINUTES)

### **PREPARATION**

1. Obtain enough materials so each group can have their own set.
2. This experiment will be connected in two days.
  - Students will set up the experiment on day one and observe the results on day two.
  - Designate an area of the classroom for each group to store their experiment overnight. The flowers must still have access to sunlight.
3. Print day one and day two experiment packets for each student. Staple these packets separately.

## **Day One Procedure**

(30 MINUTES)

- Organize students in groups of 3 to 4 before passing out the day one experiment packet.
- Black font indicates instructions that are also in the student day one experiment packet.
- Additional teacher notes are in blue font.
- *Answers to student questions are in italicized green font.*

## **Introduction**

(1 MINUTE)

In the *The Conservation Kid* documentary, we learned that Cash loves ocean animals, and that's why he wants to reduce the amount of trash that flows into the ocean from rivers. Pollution of local rivers not only harms animals, but it also harms plants.

## Student Turn-and-Talk

(2 MINUTES)

**QUESTION:** What are sources of water pollution?

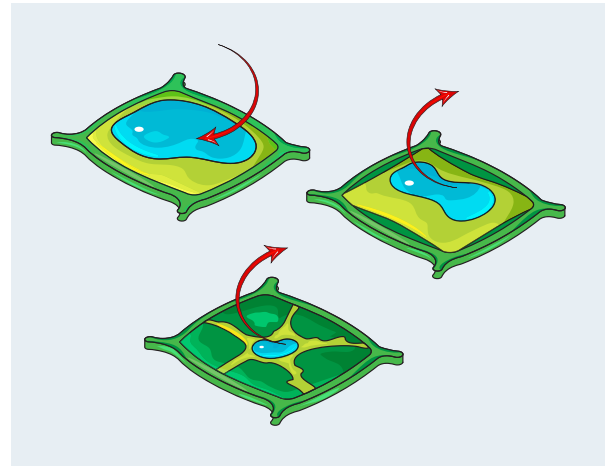
**ANSWER:** *Trash, microplastics, sewage runoff, oil spills, chemical waste from factories, waste from large ships, air pollution that becomes acid rain.*

## Activating Previous Knowledge

(2 MINUTES)

Plants need sunlight, nutrients, air, space and water to live and grow. The process by which plant roots absorb water from the soil is called *osmosis*.

This is the natural movement of water across a semipermeable membrane from an area of *high* concentration to an area of *low* concentration.



## Student Turn-and-Talk

(1 MINUTE)

**QUESTION:** What happens if a plant's water source is polluted?

**ANSWER:** *Plant roots will still absorb the polluted water and it may harm the plant.*

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In today's Water Pollution and Plants Experiment, we will explore what happens if we affect the water source.

### Form A Hypothesis

(2 MINUTES)

Students should write their own hypothesis. Although the “correct” hypothesis is shared below, do not discuss it with students.

- If we put food coloring in a plant's water source, I think  
*the roots will still absorb the water and the flowers will turn colors.*
- If we give a plant vinegar instead of water, I think  
*the plant might be harmed since vinegar is not plain water.*

### Your Group Will Need:

- 4-pack of water-based food coloring
  - 6 of the same white flower
  - 6 clear containers
  - Vinegar
  - Water
  - Scissors
  - Half cup measuring tool
  - Ruler
- Share instructions with students about how to gather their group's materials. (5 minutes)
  - Once each group has all their materials, instruct them to work together to complete the following steps. (15 minutes)

## the CONSERVATION Kid - Grades 6-8

### Step 1

Measure a half cup of water into **four** of your containers.

### Step 2

Place **six drops** of food coloring into each container. Each container should be a different color. Label each container with the appropriate color.

### Step 3

Measure a **half cup of water** into another container. No food coloring will be added to this container. Label this container as “water only.”

### Step 4

Measure a **half cup of vinegar** into your last container. No food coloring will be added to this container. Label this container as “vinegar.”

### Step 5

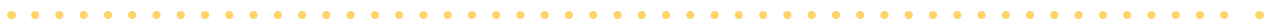
Carefully using scissors, cut all six flower stems to the **same length**. Leave about two inches of stem above the top of the container. Carefully remove any extra leaves from the stems. All six flowers should look identical.

### Step 6

Place one flower into each of your six containers.

### Step 7

Let your teacher know you have completed the experiment setup.



Direct each group to a designated place to leave their experiment overnight.  
(2 minutes)

**Tomorrow, they will observe the results!**



## **Day 2 Procedure**

(25 MINUTES)

- Have students get in the same groups from yesterday before passing out the day two experiment packet.
- Below, black font indicates instructions that are also in the student day two experiment packet.
- Additional teacher notes are in blue font.
- *Answers to student questions are in italicized green font.*

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Your group's flowers have had 24 hours to absorb the liquid in the container.  
**Let's see what happened overnight!**

## **Materials**

(5 MINUTES)

Instruct students on how/when to gather their group's experiment from its designated area and bring it to their table.

## Observe the Results

Carefully observe the containers and the flowers. You may take the flowers out of the containers (one at a time so you don't mix them up) to observe the flower from head to stem.

**What do you notice? Note observations in the chart below.**

Container Label	Observations
Water Only	<ul style="list-style-type: none"><li>• Flower absorbed water</li><li>• Head and stem still look the same</li></ul>
Color A	<ul style="list-style-type: none"><li>• Flower absorbed the color A water</li><li>• Bottom of the stem and the white part of the flower is now color A</li></ul>
Color B	<ul style="list-style-type: none"><li>• Flower absorbed the color B water</li><li>• Bottom of the stem and the white part of the flower is now color B</li></ul>
Color C	<ul style="list-style-type: none"><li>• Flower absorbed the color C water</li><li>• Bottom of the stem and the white part of the flower is now color C</li></ul>
Color D	<ul style="list-style-type: none"><li>• Flower absorbed the color D water</li><li>• Bottom of the stem and the white part of the flower is now color D</li></ul>
Vinegar	<ul style="list-style-type: none"><li>• Flower absorbed the vinegar</li><li>• Head of the flower looks the same</li><li>• Bottom of the stem is now curved and looks a shriveled up</li></ul>

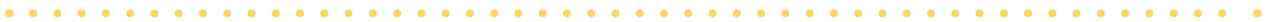
## Analysis

1. A control variable is an element of an experiment that is kept the same for each sample. What are things that we kept the same for each of our six samples?
  - *Amount of liquid put in each container (half cup).*
  - *Same type of flower.*
  - *Cut flower stems to the same length.*
  - *Kept the containers in the same place overnight.*
2. What is one thing that we did change for each sample?
  - *Type of liquid in the container.*
3. Why is it important to keep most elements of an experiment the same and only change one element?
  - *If you have more than one element that is different, you can't be sure what caused a specific change (or experiment result).*
4. In every experiment, you must have a control sample where no elements are changed. Having a control sample gives you a point of comparison for the samples that were changed. Which flower container was our sample?
  - *The flower in the container with water only (no food coloring).*
5. If adding the food coloring to the water of four containers did not harm the flower, why did we try it?
  - *Using food coloring allowed us to actually see proof that the flower absorbs water. It also shows us that things in water can be absorbed into a plant and change it.*

## THE CONSERVATION KID - Grades 6-8

6. Vinegar is a liquid made of water and acetic acid. Acetic acid is what gives vinegar its color and odor. What can we learn from the sample with the flower in vinegar?

- *The flower in the vinegar water is the only one that had a damaged stem.*
- *The stem curved and became shriveled. We can conclude that high acidity negatively affects plant roots.*
- *Vinegar represents polluted water and the damage it presents to plants in nature.*



## Conclusion

At the end of an experiment, it is important to share:

1. If your hypothesis was correct or incorrect  
Student answer should state "I was correct" or "I was not correct."
2. Summarize what you learned  
Student answers should summarize 2-3 things learned.

**Optional Extension Activity:** Leave the flower samples for one more night and have students observe changes on day 3.

## **Make It Local Activity**

**(30+ MINUTES)**

You may assign the research portion of the activity for students to complete as a homework assignment or have the students complete it independently during class.

Whether at home or in class, students need access to iPads/tablets/chromebooks/laptops to complete the research portion. The Make It Local Activity may be duplicated and assigned electronically on Google Classroom or printed out for students. To extend the activity, you may have students prepare to share their completed Make It Local plans in small groups and determine a check in day for updates at the end of the month or school term.

**Introduction Script:** Towards the end of the documentary, Cash says “Even though kids may be a small part of the population, they are 100% of the future.” Through speaking to students at schools and encouraging kids to join cleanup efforts, Cash hopes to inspire more young people to care about their local bodies of water and the environment. During this final activity, we will learn about issues affecting our local environment, discover local heroes already addressing these matters, and plan how to get involved.

## **Additional Activity:**

### **Reading Comprehension**

**(25-35 MINUTES)**

Teachers may direct students to read and complete article questions independently and/or read and discuss as a class. Since there are two suggested articles, students could complete one science article assignment, then read and discuss a second article as a whole class.

#### **Option 1 – Using [Readworks.org](https://www.readworks.org)**

Teachers who already have a Readworks class account or who would like to create a free account may access the following assignments to assign electronically or print out hard copies for students. Readworks articles have accompanying comprehension questions and vocabulary terms. When assigned electronically, students may take advantage of audio narration, interactive vocabulary, and real-time feedback on submitted responses.

- [Earth's Water: Rivers and Streams](#) | **Grade 6**
- [Rivers and the Landscape](#) | **Grade 6**
- [Importance of Fresh Water](#) | **Grade: 7**
- [How Water Loss Affects Biodiversity](#) | **Grade 7**
- [The Hydrologic Cycle](#) | **Grade 8**
- [Zebra Mussels and the Hudson River](#) | **Grade 8**

#### **Option 1 – Using [Newsela.com](https://www.newsela.com)**

Teachers who already have a Readworks class account or who would like to create a free account for [Newsela Lite](https://www.newsela.com), may access the following assignments to assign electronically or print out hard copies for students. Readworks articles have accompanying comprehension questions and vocabulary terms. When assigned electronically, students may take advantage of audio narration, interactive vocabulary, and real-time feedback on submitted responses.

- [Scientists: Colorado River flow is slowly shrinking due to warm weather](#)
- [How clean is the Bronx River? Snapping turtles help scientists figure it out](#)
- [Meet the 11-year-old on a mission to clean up the Seine river in Paris](#)
- [The ecological cost of Brazil's mining disasters](#)