

## 1. Essential Element

**Activity/Lesson Title:** Human Impacts on the Environment

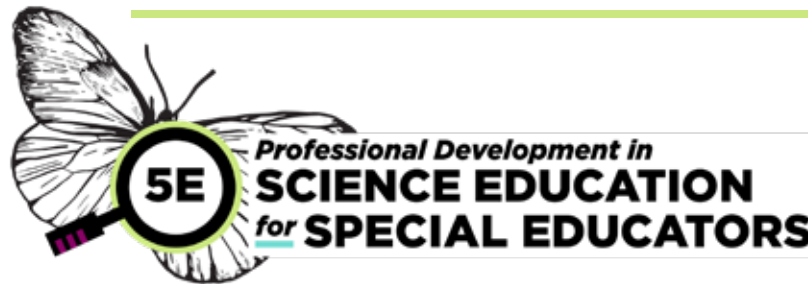
**EE.5.ESS3-1:** Use information to describe how people can help protect the Earth's resources and how that affects the environment.

**Teacher:** Tim

**Grade Level:** Elementary (Grades 3-5)

**Student:** Taylor

**Level:** Initial



## 2. Science and Engineering Practice

**SEP 8: Obtaining, evaluating, and communicating information.**

**SEP description:** Supports students as they obtain and communicate scientific information from appropriate texts and/or other reliable media to explain scientific phenomena or solutions to problems.

## 3. Disciplinary Core Idea

**Human Impacts on Earth systems**

**Core Idea description:** Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

## 4. Crosscutting Concept

**Systems and Models**

**Concept Description:** A system can be described in terms of its components and their interactions. A system is a group of related parts that make up a whole and can carry out functions its individual parts cannot.

## 5. Linkage Level Descriptors

**Initial:** Identify one way to protect a resource of Earth.

**Precursor:** Compare two methods people can use to help protect the Earth's resources.

**Target:** Use information to describe how people can help protect water and how that affects the environment.

## 6. Student's Typical Accessibility Supports

- Textile cards
- Written instructions, graphic organizers, or picture supports along with oral instructions

## 7. Student Prior Experiences, Prior Knowledge

- The student has a natural interest in science and questioning concepts.
- The student loves to listen to stories and can answer who/what questions.
- The student's family owns a farm.
- The student has prior knowledge of recycling and reusing, but they did not study ways to conserve resources.

## 8. Phenomenon to Explore

**Questions:** Why do we need to conserve water, and how can we do it?

## 9. Possible Alternative Conceptions

- Some students may think (incorrectly) that
- Water will never run out.
- Bottled water is always healthier than tap water.
- Their individual actions are too small to make a difference.

## 10. UDL Options and Solutions to Potential Barriers

- Use appropriately complex phenomena and questions.
- Use textile cards or objects to represent words and ideas.
- Use media and technology (e.g., videos, interactive whiteboards to display a graphic organizer).
- Use the appropriate academic language and model less complex vocabulary using the students' communication system (e.g., changes and dissolves).
- Use an appropriate area of the classroom that allows the students to have full engagement in the activity.
- Use personal communication devices to share ideas and opinions and answer questions during a lesson.
- Use graphic organizers and templates to organize and display information about conserving resources.

## 11. Engage

### Think

- How can I make sure to access a student's prior learning?
- How can I use the CCC to connect everyday language with the scientific language of the phenomenon?
- How can I support student participation by scaffolding the SEP?

### Teacher Will

- Read a book with students about water conservation.
- Ask students why they think it is important to conserve water.
- Make a chart of what students know and would like to know about conserving water.

### Students Will

- Participate in shared reading.
- Share what they know about conserving water as the teacher completes a KWL ("what we know, what to know, what we learned") chart.
- With teacher support, ask questions and share what they are curious about regarding water usage.

## 12. Explore

### Think

- What is difficult or inaccessible about the phenomenon, and how can I make it more accessible in the Explore phase?
- How can students collect data in a way that helps answer a scientific question?
- How can I stress students' careful observation and asking good questions vs. looking for only the "right answer"?

### Teacher Will

- Organize online student resources (texts and scientific articles at appropriate reading levels) in a digital folder.
- Help students choose appropriate texts and read for information that addresses why and how to conserve water so that they can complete a KWL chart.
- Assist students in completing an online "water footprint calculator" to see how much water they use at home.
- Use information students find to complete the KWL chart.

### Students Will

- Access the digital folder and choose a text that interests them about water conservation.
- Choose texts to read that are appropriate and interesting (e.g., Tarheel Reader "[We Use Water](#)").
- Answer questions about the importance of conserving water and how it can be done.
- Complete the online "water footprint calculator" activity.
- Complete the KWL chart.

## 13. Explain

### Think

- How can I help students connect science topics, phenomena, data, and everyday experiences? How can I help my students differentiate everyday language from scientific language? What reasoning helps students see or explain the invisible?

### Teacher Will

- Complete a graphic organizer (e.g., a bubble map) of ways people conserve water using the resources they read.

### Students Will

- Complete a CER statement

**Claim:** It is important for people to take action to help conserve water.

### Evidence:

- » I read books about water and how it can be conserved.
- » I did a water calculator to show how much water I use each week.

**Reasoning:** People's actions, even if small, make a difference in conserving water.

## 14. Elaborate

### Think

- How can I enrich or extend student ideas? Are there related science concepts or processes that would support student learning?

### Teacher Will

- Look for additional examples to encourage students to apply or extend the concepts and skills in new situations.

### Students Will

- Add to the existing bubble map using the resources read and the results of the water footprint activity.
- Compare two different ways to conserve water using a graphic organizer to record strategies.
- Read appropriately leveled books about other ways that people help conserve Earth's resources.

## 15. Evaluate

### Think

- What do I need to see or hear from my students that assures that they have learned the science content? What information do I need to gather to inform my teaching as I move through the lesson?

### Teacher Will

- Monitor students' responses to questions during the lesson; adapt the lesson as needed to address student ideas; administer a summative assessment.

### Students Will

- Complete the bubble map, complete the KWL chart, and write a note to their families about one way their families could change their footprint at home to conserve more water.