



## **A Problem Based Learning Unit on Environmental Stewardship**

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Bain Elementary School

This curriculum unit is recommended for Kindergarten through Second Grade, Literacy and Science Education

**Keywords:** problem-based learning, nature, environment, Dr. Seuss, *The Lorax*, community, recycling, environmental stewardship

**Teaching Standards:** See [Appendix 1](#) for teaching standards addressed in this unit.

**Synopsis:** This unit will integrate standards from science and social studies to have students learn about how people impact their environment and steps that can be taken to reduce that impact in their own community. Students will begin by analyzing the Dr. Seuss story *The Lorax*, noticing how the environments change in the book with the actions of the characters. This study will help students to think deeply about how the characters interact with the environment and the consequences of their decisions. Students will then take an in depth look into our natural resources, regarding how they are used and how they are replenished. Students will study how their resources take years to replenish and what we can do to reduce the amount we use. Experts from different community management areas will be invited to speak with students about how the community handles issues such as waste management and recycling. Students will explore ways these issues can be improved upon. Students will present their findings to an audience at the conclusion of their study. We will be utilizing many problem-based learning strategies and protocols to analyze their projects and to prepare for presentations. Students will be using their science notebooks to document their progress with their projects, with a specific focus on using Write to Learn strategies. These integrated activities may be adapted for later grades.

*I plan to teach this unit to approximately 18 students in my first grade class in the spring. This unit will be shared with the other grade level appropriate teachers at my school. I would like the opportunity to teach each class the lab activity in our school science lab if possible.*

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# **The Lorax: A Problem Based Learning Unit on Environmental Stewardship**

*Elizabeth Kerr*

## **Introduction**

As a teacher of young elementary students, I realized early on the best way to excite students about reading was to integrate reading strategies with science instruction. Nothing excites students more than discovering their world and science experiments. I find those qualities mirrored in my own experiences as an adult learner.

This particular topic interested me because of its STEAM (science, technology, engineering, math and art) applications. My first degree was in Dance Education, so I appreciate the artistic value of science and nature. These topics lend themselves well to both.

Nature is something that students interact with every single day, but how often do they think about what nature is or how to protect nature? What would our environment be like if a similar situation, as what happened in *The Lorax*, happened in our community? Participating in the seminar “Climate Science and Solution Strategies” led by Brian Magi has been such an experience in exploring nature, natural resources and how to help our students interact with both. This seminar has focused on different aspects of environmental science and climate change.

## **Rationale**

In this first grade specific unit, students will be studying natural resources and environmental stewardship based on the book *The Lorax* by Dr. Seuss. Students at this age are able to appreciate nature in simple ways and understand basic things that can be done to take better care of our environment.

Also, woven through this unit will be several ways for students to incorporate “Write to Learn” strategies that will focus on guiding students’ thinking through the learning process. These “Write to Learn” tasks will be simple, low-stakes tasks that will show how student understanding has grown through the unit.

Students will be performing several lab activities that explore the importance of our natural resources and analyzing what would have to be done without those resources. We will also look at how polluted resources affect entire ecosystems and what happens to natural plant and animal life that is in a polluted ecosystem.

On the literature side of the equation, we have our main text which can be interpreted in several different ways. Students will analyze each character in the story and each character’s choices. Connections will be made from choices to consequences and students will be asked to supply different versions of the story based on possible choices the characters could have made.

Students will also analyze the author's use of illustrations in the text. The illustrations from the beginning of the text change greatly with the increase of The Once-ler's production of Thneeds (you know, the things everyone, everyone, EVERYONE needs!). The beginning of the text shows a veritable utopian paradise and as the story moves on, the bright colors fade away and move dark overtones enter the artwork. By the end of the story, the illustrations are rather dreary, clearly showing the effects of pollution.

Next, students will focus on the effects of the declining availability of natural resources that occurs through the story. What happens to each group of animals as the resources they need to survive are taken away? The birds are affected when the air is polluted. The fish have to leave their habitat due to the dirty water. The brown barbaloots are losing their food source and shelter due to the amount of trees being chopped down. All groups are affected in different ways because of The Once-ler's actions. This will lead to the four major natural resources that students will study in this unit: trees, air, water and soil.

### **School Demographics**

Bain Elementary School is in the Charlotte-Mecklenburg School System. This system is one of the largest in North Carolina, serving approximately 146,000 students. Bain Elementary, located in the district's Southeastern Learning Community, serves approximately 928 students in grades Kindergarten through Fifth, the fourth largest elementary school in the district. Approximately 64% of the student body is Caucasian, approximately 15% African-American with approximately 20% of students as Hispanic, Asian, Pacific-Islander and other races.

According to the 2017-2018 NC Schools Report Card for Bain Elementary, approximately 24% of students are economically disadvantaged. The school received an "A" grade in math with growth met and a "B" grade in reading with growth exceeded.<sup>1</sup>

I currently teach in a first grade classroom with 18 students. This unit will be an integrated literacy and science unit and taught in the spring. Standards are based on the NC ELA standards, NC Social Studies and NC Science Standards. This unit will teach students to follow the scientific process and to think about literature critically.

## Content

### *The Lorax*

*The Lorax* was published in 1971 not long after the first Earth Day celebration. This is a story about an idyllic paradise full of color and wonderful animals. Then, into this Eden, comes The Once-ler. The Once-ler is a very profit driven character and wastes no time in using the forest's natural resources to create the newest "must-have" product, thneeds..."Thneeds are something that everyone needs." In his hurry to produce more, and in bigger and better fashion, the Once-ler pollutes the forest, making the area uninhabitable to the animals. The Lorax, a crusty, ancient type of character, tries to no avail to curb The Once-ler's plan. The forest is left empty and ruined. The Once-ler realizes the mistakes he made and places his hope in the young boy to whom he is relating his sad tale. The Once-ler leaves the boy with the word "Unless." This story has been one of my favorites since my own childhood. Now, as an adult I clearly see the future implications Dr. Seuss meant to impart in this story.

It is said that Seuss wrote this story on a trip to Africa to get over some writer's block. Then, after being able to observe nature, the story came very quickly to Seuss.<sup>2</sup> It also seems that being surrounded by the environment in his home, La Jolla, California was an inspiration also.

### Earth Day and the Environmental Protection Act

The 1960's were beginning to bring environmental issues to forefront of our country. Author Rachel Carson wrote a bestseller on the effects of pesticides in the country sides and a fire in Chicago were making people more aware of pollution. By 1969, Senator Gaylord Nelson was determined to make Americans more aware of the issues in their environment.<sup>3</sup> Therefore, Earth Day was born.

After Nelson spoke of the concept at a conference, word services ran with the announcement, which caught on like wildfire.<sup>4</sup> The idea was immensely popular and served to educate Americans on environmental awareness. The following year, several key pieces of environmental legislation were passed: the Clean Air Act, the Water Quality Improvement Act, the Endangered Species Act, the Toxic Substances Control Act and the Surface Mining Control and Reclamation Act. This year also saw the establishment of the Environmental Protection Agency.<sup>5</sup> It would seem that Seuss' story came about at just the right time!

Today, Earth Day is a global celebration and April 22, 2020 will mark its 50<sup>th</sup> anniversary. People all over the world plant trees and strive to educate others on environmental issues. This unit will help students explore that close to home.

## Increasing Student Awareness in Nature

Now, with more and more children choosing to stay inside and use their free time on their devices, the question becomes, “How do adults impart a sense of empathy and responsibility to nature?” Danielle Cohen, writing for the Child Mind Institute, states that children spend on average about 4-7 minutes in outdoor, unstructured play and 7 hours in front of a screen a day.<sup>6</sup> So, how do we teach students about nature and how to respect it if they won’t go out?

The article gives a name to this growing worry that many parents face, Nature Deficit Disorder. She goes on to state the many benefits of having children play outside.<sup>7</sup> Many of the benefits she noted involved building a child’s self-esteem, creativity and imagination. Being in nature also helps to teach children responsibility. Living things don’t live forever and children will get a first-hand opportunity to observe this while being outside. Also, being outside provides more stimulation and activates more senses at once than playing video games.

So, if parents can encourage their children to spend more time outside for the above reasons, Educator David Sobel says that can lead to the necessary empathy and respect for the environment in his article, “Beyond Ecophobia.” He suggests that just letting students be outside to observe nature and animals will help lead them to be people who appreciate and respect the environment.<sup>8</sup> Sobel writes about studies that have shown the environmentally aware adults began that journey just by being outside. Here they can observe our natural resources in action!

## Nature Journaling

To record their experiences in nature, students can begin using a nature journal. Author Kelly Johnson states that nature journals can be used with children as young as 2 years old. This author states that journals should be used to just allow students to record their notices and wonders, as a spot to record their thinking.

This tool is rising in popularity among educators as it helps the student to assimilate the experiences in nature. Both the experience and the time for reflection are critical.<sup>9</sup>

## Natural Resources in North Carolina

### *Forests*

It was surprising to me to learn that most of our state’s natural resources are counted through forests, as tourist attractions and through forestry. North Carolina is home to four major forests – the Nantahala, Pisgah, Uwharrie and Croatan – covering about 1.25 million acres. Other forests help to make manufacturing of forestry products one of our biggest industries.<sup>10</sup> North Carolina has a total of around 18.6 million acres of forests, covering about 61% of our state. About 85% of those forests are privately owned.

This industry contributes billions of dollars to the state's economy. Therefore, it is crucially important that these resources are managed effectively under the purview of the North Carolina Forestry Service.<sup>11</sup>

North Carolina has been working to ensure its growth/removal rate remains at a sustainable level.<sup>12</sup> If you have read *The Lorax*, you are aware that the greedy Once-ler thinks nothing of chopping down every last Truffula tree! All that was left of the Truffula forest was one seed. At least, North Carolina is carefully monitoring its forests and how those resources are used.

### *Water*

Water is important to all life. If there is no water, there is no life. People and animals have usually been able to go without food longer than without water. Wherever you live, you live in a watershed. Watersheds are areas that drain all of their water to a specific lake or river.<sup>13</sup> North Carolina has 17 watersheds.

It is always concerning when pollution is found in the water supply. The most recent incident involves the Haw River and the PFA's (per- and polyfluoroalkyl), 1,4 dioxane and excessive bromides that have been detected there. However, the response to this incident has been less than expected following another incident involving GenX in the Cape Fear River basin that contributed to pollution in Wilmington's water supply.

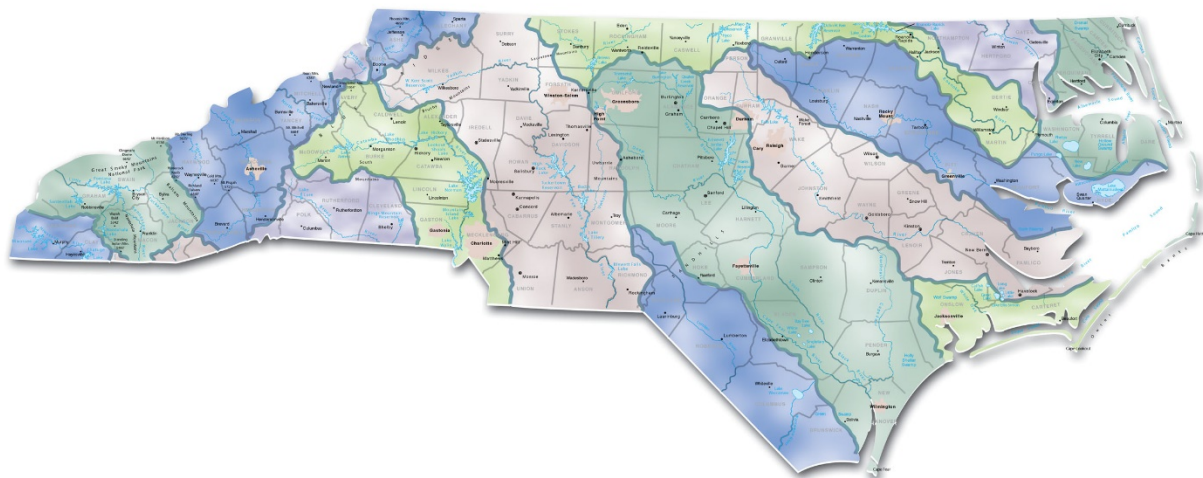


Fig. 1 Map of North Carolina Watersheds<sup>14</sup>

After the GenX incident, the state allotted \$5 million to set up water testing network. It is expected that more situations will be found similar to the situation with the Haw River in Pittsboro.<sup>15</sup>

Another water concern in North Carolina are algal blooms. Algae are naturally occurring in water environments, but under the right conditions can turn in major problems. Animals and pets can become ill or die from drinking contaminated water. It is not too healthy for people either.<sup>16</sup> So, what causes algal blooms?



Photo by Colleen Karl<sup>17</sup>

This photo shows water contaminated by algal blooms. A number of factors are contributing to the rise of algal blooms in North Carolina's water. An increase in nutrients in the water, nitrogen and phosphorous, and warm temperatures make the perfect feeding ground for this type of HAB (harmful algal bloom). Obviously, nothing can be done about the warm temperatures. However, residents can work to reduce the use of fertilizers (or follow directions for application carefully) and make sure to remove their pet waste appropriately.<sup>18</sup>

The North Carolina Riverkeepers report from 2016 was also quite disheartening. Riverkeepers work to investigate and document the status of the state's waterways. The organizations across the state found several violations of environmental protection laws from various industries, from animal waste management to mining.<sup>19</sup> Who wants a drink of water?

### *Soil*

Tied directly into water quality is soil management. Soil needs to be managed properly to ensure that it can absorb rainwater. Improperly managed soil leads to rainwater runoff which carries sediment. Sediment is the biggest water pollutant in North Carolina.<sup>20</sup>

To combat sedimentation and erosion, the USDA-NRCS has adopted 4 practices that should help maintain soil health:

1. Keep the soil covered as much as possible.
2. Disturb the soil as little as possible.
3. Keep plants growing throughout the year to feed the soil.
4. Diversify as much as possible by using crop rotation and cover crops.<sup>21</sup>

Had farmers in the 1930's had this information, the effects of the Dust Bowl may not have been so devastating. This is a prime example of the effects of soil mismanagement. Not only was the land rendered useless for decades, the air was polluted as well.<sup>22</sup>

### *Air*

Two main factors are looked at when configuring air quality: ground-level ozone levels and particle pollution. Each of these can be harmful, especially to those with respiratory illnesses.

Ozone is gas comprised of three atoms of oxygen and can be harmful or helpful, depending upon its location. Ground-level ozone is created when pollutants from cars, chemical plants, refineries, etc. react with sunlight. It is typically higher on hot, sunny days and can be carried by the wind to more rural areas.<sup>23</sup>

Breathing in ozone can cause a variety of health problems, mainly increasing the effects of bronchitis and emphysema. It reduces lung function and can cause many respiratory irritations.<sup>24</sup>

However, stratospheric ozone is what protects the Earth from the damaging effects of ultra-violet radiation ("the hole in the ozone layer"). Through international efforts, the effects of using ozone depleting substances is being reversed. Scientists expect the hole to be healed by 2065.<sup>25</sup>

Particle pollution is the other factor to consider when regarding air quality. Particle pollution, also called particulate matter, can comprise dust, dirt, soot, smoke, or drops of liquid. Breathing in larger particles can cause coughing and other irritations. Breathing in smaller particles is actually more dangerous. These particles can get into lung tissue and your bloodstream.<sup>26</sup>

In its 2019 State of the Air Report, the American Lung Association gave Mecklenburg County an "F" for ozone pollution and an "A" in the levels of particle pollution. Eighteen orange level ozone days were recorded in the previous year. While significant decreases have occurred in the past twenty years, it is still hazardous for residents with respiratory problems.

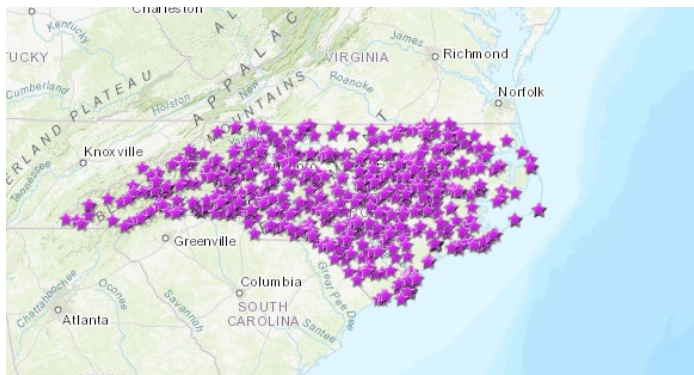
How can residents combat the ozone problem? The American Lung Association says to drive less and use less electricity. The EPA also mentions keeping your tires properly inflated, making sure your gas cap is fastened securely, and mulching/composting your yard waste.<sup>27</sup>



## Recycling

Recycling seems to have actually begun in the early 1930's and 40's during the war years. Citizens simply couldn't afford to buy new goods. However, as prosperity returned following the war, recycling seemed to have faded the collective consciousness. The idea returned in the 60's and 70's, coinciding with the beginning of the Earth Day celebrations.<sup>28</sup>

One of the biggest benefits of recycling is reducing the amount of land needed for landfills. As you can see on the map below, there are quite a few landfills (or prior landfills) in North Carolina.



This map marks sites that are pre-regulatory sites.<sup>29</sup> Now many of these locations are parks or even well-known motor speedways! Today, 32% of trash is diverted from the landfill to a recycling facility. That is almost 60 million tons of trash!<sup>30</sup>

There are economic impacts as well. However, issues are starting to arise. In Charlotte for example, the Charlotte Observer has reported that the county has had to pay to have bales of recycling removed. Then the countries that take them may simply put them in their own landfills. China is no longer accepting the US's recycling and homeowners often put in items that contaminate an entire shipment.<sup>31</sup> The market for recyclable materials also seems to be stagnant or decreasing. What is to be done?

Some surrounding counties have simply stopped their recycling programs. The Observer article states it costs twice as much to recycle a ton of materials as it costs to place it in a landfill.<sup>32</sup> But as space becomes scarce, that does not seem to be long term solution.

Another recent article in The Charlotte Observer talks about a new recycling initiative to identify the county's worst offenders and tag them into a new recycling program to help educate citizens on what can be recycled. This program is scheduled to go through May 2020.<sup>33</sup>

## The Human-Environment Balance

In summary, *The Lorax* supported the idea of environmental stewardship at just the right time and still continues to be a powerful example of what mismanagement of our natural resources can lead to. It is important in today's times to teach students that our resources are finite.

This can be done by firstly teaching children to appreciate nature and their environment. Let your students explore. Give them time to discover things that are important and wonderful to them. Teach them to document what they see and observe using a nature journal.

Next, help students to study the changes in the environment. How does the changing landscape affect all aspects of a community? How is the decline of wooded areas in your community affecting the amount of trash collected? The amount of recycling collected? The amount of cars traveling on the roads? Have your students think of ways to combat the effects of these changes and put their plans into action!

“**Unless** someone like you cares a whole awful lot, Nothing is going to get better. It's not.”

-Dr. Seuss, *The Lorax*

### **Begin with the End in Mind: Unit Goals and Outcomes**

While teaching this unit, students will:

- study our natural resources and their uses.
- research how their community waste management and recycling programs work.
- create a presentation to increase awareness of this data in their community.
- present their findings to an audience of their peers and other trusted adults.

After teaching this unit, students should understand:

- how their actions affect their environment.
- how to appropriately dispose of trash or recyclable materials.
- how pollution affects various ecosystems.

### **The Plan: Instructional Implementation**

Materials needed to implement this unit are as follows:

- *The Lorax* by Dr. Seuss
- notebook for nature journal
- images (smoky city vs. rainforest) in Appendix 2
- *Trees* by Precious McKenzie (available on Epic! Online Library)
- index cards or petri dishes
- Vaseline
- microscopes or magnifying lenses
- *Why Do We Need Air?* by Kelley Macaulay

- 4 jars
- cone shaped paper coffee filters
- *Why Do We Need Soil?* by Kelley Macaulay
- one 2-liter soda bottle
- plastic cup
- 1 cup of each: soil, gravel, 1" rocks, sand
- pin
- modeling clay
- water
- labels
- 1 bottle of food coloring
- 1 pair of scissors
- 1 ruler
- 1 8 ounce cup

Additional Readings:

1. *Where Do They Go When It Rains?* by Gerda Muller
2. *I Took a Walk* by Henry Cole
3. *House in the Woods* by Inga Moore
4. *Red Sings from Treetops* by Joyce Sidman
5. *Trees* by Lemniscates
6. *Today and today* by Kobayashi Issa and Brian Karas
7. *The Garden in the City* by Gerda Muller
8. *Mapmaking with Children* by David Sobel
9. *Trees: A Compare and Contrast Book* by Katherine Hall

The Lorax original video: <https://youtu.be/8V06ZOQuo0k>.

## **Two Weeks Before Unit Implementation, Beginning the Nature Journal**

Students will need to begin their nature journal. Take about 10 minutes to take students outside. Let them explore their surroundings. Have them record anything they wish to write about in their journal. Students may collect leaves or items. If devices are available, students may also wish to photograph their findings. Repeat this process several times to have students start thinking critically about their observations.

Students may share their observations during Morning Meeting, Science or Literacy Block. Teachers may use the rubric in Appendix 2 to record any anecdotal notes about students' journaling.

Also, begin preparations for the Day Three study on Air. Place petri dishes or index cards covered in Vaseline in various places on campus or in your own neighborhood. Particles from the air should get trapped in the Vaseline and the students can observe the results.

## Day One, Introduction to Unit

### Explore

Show images of cities with a smoggy landscape, pictures of a rainforest or clean land (examples in Appendix 2). Ask students to talk about what thoughts they had when viewing the pictures. Ask questions such as: Where would they rather live? Why? What do you observe about these pictures?

### Learn

Read *The Lorax*. Discuss with students. What similarities did they notice between the book and the pictures? Answers should include observations on how the illustrations changed in the story.

### Apply

Analyze the problem in the story. Record on chart paper. What was the problem? What caused the problem?

Let students know it will be their job during this unit to learn about natural resources and how to protect them. This is called stewardship. Students will present their findings to a group of their peers, trusted adults or town officials (teacher discretion).

### Assess

Day One Exit Ticket in Appendix 2.

## Day Two, Trees

### Explore

Show National Geographic 360° video, Climbing Giants, available on YouTube ([https://youtu.be/f7wTolIK\\_s](https://youtu.be/f7wTolIK_s)) to begin today's discussion on trees as natural resources. Discuss what they noticed in the video. What were their notices and wonders?

### Learn

Trees are an important natural resource. Review vocabulary "natural resource." What does that word mean? Come up with a class working definition. Read *Trees* by Precious McKenzie (available on Epic! online library). After, have students complete the chart in Appendix 2 on how trees are used. Focus on how trees provide shelter for animals, food, products and oxygen.

### Apply

Now, have students explore the classroom. What materials in the classroom are made from trees? What products at home could be made from trees? Make a list. What would we do without trees to make these products?

Reiterate the importance of trees in cleaning the air. Revisit *The Lorax* and show the pictures from the story of when all the trees were cut down. Show smoky city picture from Day One. What is missing in the picture? There are not many trees in the area to help clean

the air. What happened to the animals in the story once there were no more trees? The barbaloots were hungry, the swomee swans couldn't sing due to the dirty air.

Assess

Day 2 Exit Ticket in Appendix 2.

### **Day Three, Air**

Explore

Yesterday, students learned how trees help to clean the air. Pose the question "Is air a natural resource?" Collect the index cards or petri dishes for observations. Have students use microscopes or magnifying lenses to observe what particulate matter was trapped in the Vaseline. Remind students these particles are in the air we breathe.

Learn

Read *Why Do We Need Air?* by Kelley Macaulay. Talk about Air Quality and show a website that tells air quality for where you live. Discuss the two factors in calculating air quality, particle pollution and ozone concentration. Discuss where the pollutants come from (Ozone is created when the sun's heat reacts with gases in the atmosphere. Particle pollution comes from dirt, smoke and soot from factories and cars). Show air quality for that day.

Apply

Now, students can complete one of two tasks: brainstorm ideas on how to reduce air pollution OR come up with another way to alert citizens with breathing problems to that day's air quality.

Assess

Day Three Rubric in Appendix 2.

**\*\*Prepare 4 water samples from various sources: tap water, creeks or streams, bottled water and rain water.\*\***

### **Day Four, Water**

Explore

Using the 4 water samples, complete the activity from Education.com.<sup>34</sup> Using the paper coffee filters, strain the water and then examine the particles that are left behind.

Learn

Read *Why Do We Need Water?* by Kelly Macaulay. Discuss the story. Talk about water pollution. Even though in *The Lorax* the pollution was clear to see, sometimes pollution can not be seen. Review why water is an important natural resource.

Apply

Have students make a poster to show ways to conserve water.

Assess

Day Four Rubric in Appendix 2.

## **Day Five, Soil**

Explore

Review the importance of water as a natural resource from the previous lesson. Next, have students create their own aquifers, referencing the activity from the Aquarium of the Pacific organization.<sup>35</sup> See materials list. Have students predict which soil type holds more water. Then, discuss what happens when water is polluted (it can leach into the soil).

Learn

Read *Why Do We Need Soil?* by Kelley Macaulay. Discuss reasons why soil is important. Guide students to understand how saving one resource helps to protect the others (having clean water helps to have clean soil, saving trees protects the soil also).

Apply

Refer back to the aquifer experiment. Which soil type holds the most water? Which type of soil makes the best aquifer? Discuss the importance of groundwater.

Assess

Day Five Exit Ticket in Appendix 2.

## **Days Six through Ten**

During this portion of the unit, students should be working on their presentation. Some ideas for special guest speakers include your town or city's recycling manager, district recycling coordinator and representative from the power company for the district.

These experts should be prepared to discuss community and school specific data i.e. how much energy the school uses and peak times, how much trash is diverted to recycling and how much more trash could be recycled.

Students then analyze this information to present to their peers. Presentation format could be left to student choice. Students can make posters or digital presentations, but should include stating the specific issue the student wants to address and at least one alternative strategy for solving or improving the problem. Give students a choice to work in groups or by themselves.

Please see the rubric in Appendix 2 for assessment information.

## **Appendix 1: Implementing Teaching Standards**

### **Teaching Standards Addressed in this Unit**

#### **Day One**

CCR Anchor Standard R.1 – Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RL.K.1 With prompting and support, ask and answer questions about key details in a text.

#### **RL.1.1 Ask and answer questions about key details in a text.**

RL.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.

CCR Anchor Standard R.2 – Determine central ideas (RI) or themes (RL) of a text and analyze their development; summarize the key supporting details and ideas.

RL.K.2 With prompting and support, retell familiar stories, including key details.

#### **RL.1.2 Retell stories, including key details, and demonstrate understanding of their central message or lesson.**

CCR Anchor Standard R.3 – Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

RL.K.3 With prompting and support, identify characters, settings, and major events in a story.

#### **RL.1.3 Describe characters, settings, and major events in a story, using key details.**

RL.2.3 Describe how characters in a story respond to major events and challenges.

The main focus of this unit is for first grade, but applicable standards are listed for Kindergarten and Second Grade.

#### **Day Two**

CCR Anchor Standard R.1 – Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

**RI.1.1 Ask and answer questions about key details in a text.**

**1.E.2 Understand the physical properties of Earth materials that make them useful in different ways.**

**1.E.2.1 Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways.**

**1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.**

**1.L.1.3 Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there (e.g., reuse or recycle products to avoid littering)**

**1.G.2 Understand how humans and the environment interact within the local community.**

**1.G.2.1 Explain ways people change the environment (planting trees, recycling, cutting down trees, building homes, building streets, etc.).**

**1.G.2.2 Explain how people use natural resources in the community.**

The main focus of this unit is for first grade, but applicable standards are listed for Kindergarten.

Day Three

CCR Anchor Standard R.1 – Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

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**1.G.2.1 Explain ways people change the environment (planting trees, recycling, cutting down trees, building homes, building streets, etc.).**

**1.G.2.2 Explain how people use natural resources in the community.**

The main focus of this unit is for first grade, but applicable standards are listed for Kindergarten.

Day Four

CCR Anchor Standard R.1 – Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

RI.K.1 With prompting and support, ask and answer questions about key details in a text.

**RI.1.1 Ask and answer questions about key details in a text.**

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RI.K.1 With prompting and support, ask and answer questions about key details in a text.

**RI.1.1 Ask and answer questions about key details in a text.**

**1.E.2 Understand the physical properties of Earth materials that make them useful in different ways.**

**1.E.2.1 Summarize the physical properties of Earth materials, including rocks, minerals, soils and water that make them useful in different ways.**

**1.E.2.2 Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.**

**1.G.2.1 Explain ways people change the environment (planting trees, recycling, cutting down trees, building homes, building streets, etc.).**

**1.G.2.2 Explain how people use natural resources in the community.**

The main focus of this unit is for first grade, but applicable standards are listed for Kindergarten.

Days Six through Ten

CCR Anchor Standard W.4 – Use digital tools and resources to produce and publish writing and to interact and collaborate with others.

W.K.4 With guidance and support from adults, explore a variety of digital tools and resources to produce and publish writing, either in collaboration with peers or in a whole group setting.

**W.1.4 With guidance and support from adults, use a variety of digital tools and resources to produce and publish writing, including in collaboration with peers.**

W.2.4 With guidance and support from adults, use a variety of digital tools and resources to produce and publish writing, including in collaboration with peers

CCR Anchor Standard W.5 – Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

W.K.5 Participate in shared investigation of grade appropriate topics and writing projects.

**W.1.5 Participate in shared research and writing projects.**

W.2.5 Participate in shared research and writing projects.

CCR Anchor Standard W.6 –Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

W.K.6 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.

**W.1.6 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.**







W.2.6 Recall information from experiences or gather information from provided sources to answer a question.

The main focus of this unit is for first grade, but applicable standards are listed for Kindergarten and Second Grade.

**Appendix 2**

**Rubric for Assessing Nature Journal**

The focus of the nature journal should be letting the students record their observations.

<b>Student recorded on observation for the assigned day.</b>			
<b>Student shows use of best effort in work.</b>			

**Day One Materials**



[https://c1.staticflickr.com/1/48/149794930\\_f30c28c956\\_z.jpg](https://c1.staticflickr.com/1/48/149794930_f30c28c956_z.jpg)



[https://farm1.staticflickr.com/14/14782257\\_cb2ea56ec0\\_b.jpg](https://farm1.staticflickr.com/14/14782257_cb2ea56ec0_b.jpg)

### Day One Exit Ticket

Name: \_\_\_\_\_

Write three adjectives to describe the Truffula Forest before the Once-ler came.

\_\_\_\_\_

Write three adjectives to describe the Truffula Forest after the Once-ler has built his factory.

\_\_\_\_\_

**Day Two**

Trees Chart

We Need Trees For...

Shelter	Food
Products 123	Environment

**Day Two Exit Ticket**

Name: \_\_\_\_\_

What happened when there were no more Truffula trees left in the forest?

\_\_\_\_\_





\_\_\_\_\_

Are trees an important natural resource?








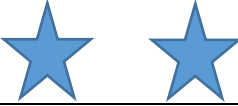

Yes

No

### Day Three Rubric

Student clearly stated one way that air pollution could be reduced.	
Student clearly stated more than one way air pollution could be reduced.	
Student clearly stated one way that citizens could be better informed of air quality,	
Student clearly stated more than one way citizens could be informed of air quality.	































### Day Four Rubric

Student clearly stated purpose of poster.			
Student stated ways water can be conserved.			
Student's work was neat and legible.			

### Day Five Exit Ticket

<p>Name: _____</p> <p>What are some ways that people can help to take care of the soil?</p> <p>_____</p> <p>_____</p> <p>What is one thing that people use soil for? _____</p> <p>_____</p>
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### Days Six through Ten, Project Assessment Rubric

Student/s clearly stated a problem.		 	  
Student/s clearly stated a solution.		 	  
Student/s clearly gave tips or information to solve the problem.		 	  
Student/s presented their solutions to an audience.		 	  
Student/s work reflects best effort.		 	  



## Annotated Teacher Resources

“360° Climbing Giants, National Geographic,” YouTube Video, 3:25, posted by National Geographic, March 4, 2017.

This 360° video shows scientists climbing and exploring through a forest. The 360° format allows students to see many different perspectives through the eyes of a scientist.

MacAulay, Kelley. *Why Do We Need Air?* Crabtree Publishing Company, Canada, 2014.

This story explains why air is a natural resource and how it can be polluted. It also outlines solutions to this problem.

Macaulay, Kelley. *Why Do We Need Soil?* Crabtree Publishing Co, Canada, 2014.

This book explains why soil is a natural resource. It goes into detail about how soil is created and how it is polluted. It also tells about how to stop soil pollution and erosion problems.

MacAulay, Kelley. *Why Do We Need Water?* St. Catharines, Ontario: Crabtree Publishing Company, 2014.

This book explores water as a natural resource, how it can be polluted and solutions to pollution.

McKenzie, Precious. *Trees*. Rourke Educational Media, 2018.

This book is a great resource for learning about trees. It talks about the parts of a tree and the jobs that each part does. It also relates how trees are important to the environment.

Seuss. *The Lorax: Dr. Seuss Collector's Edition*. Random House, 1971.

This is the story of The Lorax and his efforts to save his Truffula forest from the greedy Once-ler. This story presents a relatable story to young children about environmental mismanagement.

Sobel, David. *Mapmaking with Children: Sense-of-Place Education for the Elementary Years*. Portsmouth, NH: Heinemann, 1998.

This book explains map-making and geographical concepts for young learners by providing activities for students to experience. This book takes students through experiences that help them to develop place, scope and perspective.

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