

3rd Grade Earth Science Unit B

Grade level: 3rd

Unit: Using Natural Resources

Time Frame: October

Unit Essential Questions:

- **What are the costs and benefits of using materials from the earth?**
- **What are natural resources?**

Big ideas:

- Students will identify the natural resources in the community around them as well as in other parts of the world. They will determine how the natural resources are used in their home, in their school, and in the community around them (e.g., construction, heating, transportation, farmland, etc.). Students discover how we are dependent on natural resources and how this dependence impacts (positively and negatively) the natural environment.

Essential Concepts/Skills/

GLCE's:

Earth Systems

- **K-7 Standard E.ES:** Develop an understanding of the warming of the Earth by the sun as the major source of energy for phenomenon on Earth and how the sun's warming relates to weather, climate, seasons, and the water cycle. Understand how human interaction and use of natural resources affects the environment.
- **E.ES.E.4 Natural Resources-** The supply of many natural resources is limited. Humans have devised methods for extending their use of natural resources through recycling, reuse, and renewal.
- **E.ES.03.41** Identify natural resources (metals, fuels, fresh water, fertile soil, and forests).
- **E.ES.E.5 Human Impact-** Humans depend on their natural and constructed environment. Humans change environments in ways that are helpful or harmful for themselves and other organisms.
- **E.ES.03.51** Describe ways humans are dependent on the natural environment (forests, water, clean air, earth materials) and constructed environments (homes, neighborhoods, shopping malls, factories, and industry).
- **E.SE.E.3 Using Earth Materials-** Some Earth materials have properties that make them useful either in their present form or designed and modified to solve human problems. They can enhance the quality of life as in the case of materials used for building or fuels used for heating and transportation.
- **E.SE.03.31** Identify Earth materials used to construct some common objects (bricks, buildings, roads, glass).
- **E.SE.03.32** Describe how materials taken from the Earth can be used as fuels for heating and transportation.

NGSS: ***Note the Oakland Units do not address these standards at this time. Resources have been added to UA for teachers to teach these to students.*

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. [Clarification Statement: Examples of data could include average

temperature, precipitation, and wind direction.] [Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change.]

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.* [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]

ESS2.D: Weather and Climate

>Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. (3-ESS2-1)

>Climate describes a range of an area's typical weather conditions and the extent to which those conditions vary over years. (3-ESS2-2)

ESS3.B: Natural Hazards

>A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (3-ESS3-1) (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)

PRE-PLANNING CONSIDERATIONS

Misconceptions that need to be addressed:

- Students may think paper or other products are renewable resources.
- Students may think renewable resources has the same meaning as products that can be recycled.
- Students may think that recycling and renewing are the same.
- Students may think products are the actual resources.
- Students may think that all resources are renewable
- Students may think that resources can be replaced right away. (Trees are renewable resources, but they take years to grow back.

Vocabulary

<ul style="list-style-type: none">● Earth Materials● boulder● rock● clay● sand● gravel● soil● water● metal	<ul style="list-style-type: none">● mineral● oil● natural resources● renewable resources● Non-renewable● fuel● forests● fresh water	<ul style="list-style-type: none">● constructed environment● natural environment
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Supplies to gather or things that need to be done:

Materials for Engineering Project:

- Water basin for testing student filter systems

- Supply of “muddied water” which can be made by taking a quart of drinking water and adding two tablespoons of dirt.

One set of materials for each group of students:

- Two cups of “muddied water”
- Plastic or paper cups
- straws
- cardboard
- cotton balls
- sand
- aluminum foil
- rubber bands
- tape
- toothpicks
- paper towels
- plastic wrap
- aquarium or other small rocks
- cornmeal
- flour
- tape
- other materials that may be helpful with this project

Additional Resources

ENGAGE:

Nature Walk

Take the third graders on a walk around the neighborhood or playground. Have them look for natural resources on the walk, using clipboards to take simple notes. When you return to school, have students review their notes and then draw and label pictures about the resources they saw. Then have them write a paragraph about the natural resources they saw on the nature walk and how those resources are used in the community. Use the illustrations and paragraphs to create a science display in the classroom.

* [Hungry Mice Link](#) Play the Hungry Mice Game - Eat up the non-renewable energy on earth. (Possible Promethean Board Activity)

EXPLORE/EXPLAIN:

Natural Resource Flip Charts, Lessons, and Weblinks

Lesson Title::

Where did that pencil come from? The study of Natural Resources.

(This is a Promethean Planet Weblink)

<http://www.prometheanplanet.com/en-us/Resources/Item/200345/where-did-that-pencil-come-from-the-study-of-natural-resources#.U8v8QpRdVJ1>

This lesson can also be found at the following site:

<http://www.econedlink.org/lessons/index.php?lid=303&type=educator>

Lesson Description:

Students will list the goods that can be made using natural resources; identify which natural resources contribute the production of a particular good; and identify natural resources located in selected map's physical features.

Lesson Title:

Conserving the Arctic National Wildlife: Decisions and Debate

(Promethean Flipchart)

<http://www.prometheanplanet.com/en-us/Resources/Item/43580/conserving-the-arctic-national-wildlife-refuge-decisions-and-debate#.U8v9pZRdVJ0>

Lesson Description:

Essential Question: Who should decide whether to preserve ANWR in its natural state? This flipchart is a companion to a complete lesson plan on the Arctic National Wildlife Refuge Debate whether to open the protected area of the refuge to drilling. The flipchart contains the PDF lesson, visuals, ACTIVote questions for discussion, and background on different individuals and groups that are stakeholders in the ANWR decision.

Lesson Title:

Natural Resources - How Do We Use Them?

http://www.prometheanplanet.com/en-us/Resources/Item/44485/natural-resources-how-do-we-use-them#.U8v_ipRdVJ0

Lesson Description: This flipchart contains a lesson on Natural Resources. It walks students through allocating natural resources in an ever changing world. Flipchart includes writing prompts at the end of the lesson. Lesson taken from TeachersDomain.org. Written in Inspire.

Lesson Title:

People Use Natural Resources

<http://www.calrecycle.ca.gov/Education/curriculum/ctl/k3module/unit1/lesson2.pdf>

PURPOSE

- Students will be able to trace objects to the category of natural resources from which they were made. They will identify some of the natural resources that people need in order to live.
- Students will work in groups to make mobiles that represent the kinds of natural resources humans need in order to live.

ELABORATE:

Engineering Project:

3rd Grade Earth Science Engineering Project Provided by TryEngineering - www.tryengineering.org

Design a water filtration system to improve the quality of drinking water.

Click the link: [Filtration Investigation](#)

Time Needed: Two to three 45 minute sessions

Summary:

Filtration systems solve many problems throughout the world. One big issue filtration takes on is to improve the quality of drinking water. Students will work in teams to design and build a filtration system to remove dirt from water. They will use everyday items to build their filter. They will then test it and present their findings to the class.

Engineering Connection: Engineered filtration systems have impacted the availability of safe drinking water around the world. Students will learn about engineering design and how to plan and construct a filtration system using everyday material.. They will learn the importance of teamwork and working in groups.

Click the link below and follow the steps in the lesson provided.

<http://www.tryengineering.org/sites/default/files/lessons/filtration.pdf>

[Energy Kids Link](#) Learn about renewable energy.

EVALUATE:

1. Research and analyze given samples of earth materials for possible use in construction. Select an earth material and write a letter to a construction company explaining the advantages and disadvantages of building on or with that type of material (E.SE.03.32, E.ES.03.51, E.SE.03.31, S.RS.03.16, S.RS.03.14).
2. Create a graphic organizer listing natural resources, how they are used, and how their use affects the natural world (E.ES.03.41, S.RS.03.18, E.SE.03.32).
3. Working in pairs, research one natural resource and trace its cycle, focusing on its collection, its processing, products derived from it and their uses, and any opportunities for conservation (E.ES.03.41, E.SE.03.32, E.SE.03.31, S.RS.03.16, S.RS.03.18, S.RS.03.14).