Lesson 1: Natural Resources on Earth

Lesson Snapshot

Overview

Big Idea: Earth offers many natural resources that help us to live.
Teacher's Note: Big ideas should be made explicit to students by writing them on the board and/or reading them aloud.

Purpose of Lesson: This lesson introduces students to the natural resources that help plants grow.

Lesson Duration: A total of three hours, which may be spread over several days.

Activity Highlights

Engagement: Students work in small groups to explore natural resource items. Groups list the items on a worksheet and record their importance to humans. The teacher leads a discussion to determine the importance of these items to humans.

Exploration: The teacher guides students through a booklet about the natural environment. Students read, discuss and illustrate. Students observe and answer questions about seeds. Students also read, discuss and illustrate a booklet about seeds. Students observe and answer questions about plants. Students also read, discuss and illustrate a booklet about plants.

Explanation: Students verbally identify natural resources that help seeds and plants grow. Students identify plants that provide food for humans.

Extension: Students can also create a shoebox scene, short play, song, story or factual cartoon.

Evaluation: Rubrics guide and assess:

- Poster/mobile
- Assessment

Lesson 1: Overview

Lesson Duration

- Three hours.

Standards/Benchmarks

Technology: Standards for Technological Literacy (*STL*) *(ITEA, 2000/2002)*

- Students will develop an understanding of the characteristics and scope of technology. (ITEA/*STL* 1)
  - The natural world and human-made world are different. (ITEA/*STL* 1A)

Science: Benchmarks for Science Literacy (AAAS, 1993)

- Plants and animals have features that help them live in different environments. (AAAS 5A)
- Magnifiers help people see things they could not see without them. (AAAS 5C)
- Most living things need water, food and air. (AAAS 5C)
- Plants and animals both need to take in water, and animals need to take in food. In addition, plants need light. (AAAS 5E)
- People need water, food, air, waste removal and a particular range of temperatures in their environment, just as other animals do. (AAAS 6A)
- Raise questions about the world around them and be willing to seek answers to some of them by making careful observations and trying things out. (AAAS 12A)

Science: National Science Education Standards *(NRC, 1996)*

- All students should develop an understanding of properties of earth materials. (NSES – Earth and Space Science)
- All students should develop understanding of personal health and types of resources.
- Resources are things that we get from the living and nonliving environment to meet the needs and wants of a population.
- Some resources are basic materials, such as air, water and soil; some are produced from basic resources, such as food, fuel and building materials; and some resources are nonmaterial, such as quiet places, beauty, security and safety.
- Earth materials are solid rocks and soils, water and the gases of the atmosphere. The varied materials have different physical and chemical properties, which make them useful in different ways, for example, as building materials, as sources of fuel or for growing the plants we use as food. Earth materials provide many of the resources that humans use.

Social Studies: Expectations of Excellence *(NCSS, 1994)*

- Social studies programs should include experiences that provide for the study of people, places and environments, so that the learner can consider existing uses and propose and evaluate alternative uses of resources and land in home, school, community, the region and beyond.

English Language Arts: Standards for the English Language Arts *(NCTE, 1996)*

- Students read a wide range of print and non-print texts to build an understanding of texts, of themselves and of the cultures of the United States and the world; to acquire new information; to respond to the needs and demands of society and the workplace; and for personal fulfillment. Among these texts are fiction and nonfiction, classic and contemporary works.
- Students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

- Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
- Students adjust their use of spoken, written and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.
- Students use spoken, written and visual language to accomplish their own purposes. (e.g., for learning, enjoyment, persuasion and the exchange of information).

Learning Objectives

Students will learn to:

1. Identify natural resources on Earth.
2. Identify the natural resources that help seeds/plants grow.
3. Identify plants that provide food for humans.

Student Assessment Tools and/or Methods

1. Rubric for Natural Environment Booklet

Category	Below Target – 0	At Target – 1	Above Target – 2
Illustrations	Illustrations are incorrect.	Illustrations are correct.	Illustrations are correct with many details.
Labels	Labels are incorrect.	Most labels are correct.	All labels are correct.
Application –Question 1	Student did not apply what he/she knows about natural resources to answer the question.	Student partly applied what he/she knows about natural resources to partially answer the question.	Student applied what he/she knows about natural resources to correctly answer the question.
Organization	Explanation is incomplete, unorganized and not logical.	Explanation is somewhat complete, well-organized and/or logical.	Explanation is complete, well-organized and logical.
Conventions	Many errors interfere with the meaning and confuse the reader.	Some errors, some of which interfere with the meaning and confuse the reader.	No errors; the reader can read easily.
Application –Question 2	Student did not apply what he/she knows about natural resources to answer the question.	Student partly applied what he/she knows about natural resources to partially answer the question.	Student applied what he/she knows about natural resources to correctly answer the question.
Organization	Explanation is incomplete, unorganized and not logical.	Explanation is somewhat complete, well-organized and/or logical.	Explanation is complete, well-organized and logical.
Conventions	Many errors interfere with the meaning and confuse the reader.	Some errors, some of which interfere with the meaning and confuse the reader.	No errors; the reader can read easily.
Teacher Comment			

2. Rubric for Poster/Mobile

Requirements	Requirement Achieved
Title/Heading	1
Name	1
Four or more facts	1
Words spelled correctly	1
Neat	1
Colorful	1
Score:	6

Above Target	6
On Target	4-5
Below target	0-3

3. Rubric for Assessment

Requirements	Requirement Achieved
Question 1	3
Question 2	4
Question 3	4
Score:	11

Above Target	10-11
On Target	7-9
Below target	0-6

Resource Materials

Print Materials

1. Berger, M. (1992). *All about seeds*. New York: Scholastic.
2. Berger, M and Berger, G. (2004). *Seed to plant*. New York: Scholastic.
3. Royston, A. (2003). *My world of science, natural and man-made*. Chicago: Heinemann Library.
4. Spilsbury, L. (2006). *How do plants grow?* Chicago: Heinemann Library.
5. Spilsbury, L. (2006). *What is a plant?* Chicago: Heinemann Library.
6. Spilsbury, L. (2006). *Where do plants grow?* Chicago: Heinemann Library.

Audiovisual Materials

1. Burrud, J. & Soto, R. (Producers), & Burrud, J. and Josephson, D. (Directors). (2005). *All about natural resources* (Video). Wynnewood, PA: Schlessinger Media.
2. Commisso, V. (Producer), & Bastien, C. E. (Director). (2001). *The magic school bus gets planted* (Video). New York: Kid Vision.
3. Giakoumis, H. (Producer), & Jacobs, L.. (Director). (1995). *The magic school bus goes to seed* (Video). New York: Kid Vision.

Internet Sites

1. Sample, S. (NASA Official). (December 1, 2004). *Fun and games: The earth*. Retrieved April 14, 2007, from http://science.hq.nasa.gov/kids/earth.html

Lesson 1: 5-E Lesson Plan

Engagement

1. The teacher organizes the students into groups of two to four and gives each group the following items: cup of water, bag of air (the students should focus on what is inside the bag, not the bag itself), cup of soil, rock, picture of an animal or a jar with a worm or bug in it and a plant.
2. Each team receives ***Natural Resources on Earth 1***. Students complete this worksheet.
3. Groups discuss their answers. The teacher asks students: *Where can we find all of these items*?

Exploration

1. Each student receives the booklet, Natural Environment (***Natural Resources on Earth 2***). (Students only complete Pages 1–11 at this time.) The teacher explains to the students that they are going to explore natural resources that are on Earth. The students read page 1, discuss the information on the page and draw pictures. The teacher guides the students through each page in the same manner, allowing time for the students to cut their pages in half and staple the booklets.

   The teacher asks the following questions:
   - What are natural resources?
   - How do people use natural resources?
   - Could we survive without natural resources?
   - Which resource do you think is the most important? Why?
   - Who can recall the objects we looked at before reading the booklet?
   - What are all of those objects called?

2. The teacher shows the students a packet of seeds. The teacher asks the following questions:
   - What are these?
   - What can these seeds produce?
   - Do you think seeds are important to people? Why or why not?
   - Are seeds a natural resource?

3. Each student receives the booklet, Seeds on Our Earth (***Natural Resources on Earth 3***). The students read page 1, discuss the information on the page and draw a picture. The teacher guides the students through each page in the same manner, allowing time for students to cut their books out and staple them.

   The teacher asks the following questions:
   - Where can we find seeds?
   - Why are they important to people?
   - What do seeds need in order to grow?
   - What would happen to a seed if we didn't give it water, air or warmth?

4. The teacher shows students a lima bean seed and the tiny plant inside of it. *Suggestion*: Allow the students to use magnifying glasses.

   The teacher asks the following questions:
   - What do we need to do to this seed to help it grow?
   - How is this baby plant getting its food?
   - What will this seed become?

5. The teacher gathers the students in a circle and places a variety of plants in front of them.

   The teacher asks the following questions:
   - What is the same about these plants?
   - What is different about these plants?
   - Are all plants the same?
   - Where can you find plants?
   - Why do you think there are plants on Earth?
   - Are plants important to people?
   - How do people use plants?
   - What do you think plants need in order to grow?

6. Each student receives the booklet, Plants (***Natural Resources on Earth 4***). The students read page 1, discuss the information on the page and draw a picture. The teacher guides the students through each page in the same manner, allowing time for students to cut their pages out and staple them.

   The teacher asks the following questions:
   - What natural resources do plants need in order to grow?
   - Why are plants important to people?
   - What do people get from plants?
   - Why do most plants need soil?
   - Why do most plants need light?
   - Why do plants need water?

7. The teacher asks the students to close their eyes and picture all the plants that provide food for them to eat. Students complete Food From Plants (***Natural Resources on Earth 5)***. Students share their answers. The teacher writes all responses on a piece of chart paper.

   The teacher asks the following questions:
   - How do people benefit from plants?
   - What would happen if Earth did not have plants?

8. Students explore new terms and concepts by reading selected books or listening to the teacher read.
9. Students explore new terms and concepts by viewing selected videos.
10. Students explore new terms and concepts by viewing selected Internet sites.

Explanation

1. Students verbally name the natural resources we have on Earth that help plants and humans.
2. Students identify natural resources needed for seeds and plants to grow.
3. Students verbally contribute to a list that identifies plants that provide food for humans.

Extension

1. Students may create a poster, mobile, shoebox scene, short play, song or story pertaining to Earth's natural resources.
2. Students respond to questions on a written assessment, Seeds and Plants on Earth. (***Natural Resources on Earth 6***).

Evaluation

Rubrics guide and assess:

1. Student poster/mobile of Earth, containing all the natural resources.
2. Students written assessment to Seeds and Plants on Earth. (***Natural Resources on Earth 6***).

Teacher Note: Remember a seed only needs warmth, water and air to begin its growing process. It does not need light in order to germinate. Plants have different needs than seeds do in order to grow. They need more natural resources to survive (soil, sunlight [light], water, air).

Enrichment

1. Students can write a report about Earth.
2. Students can create a skit about the natural resources and the importance of them.
3. Students can make an ABC book about seeds and plants that provide foods for people. They can read it to younger children.
4. Students can research which seeds germinate quickly and/or slowly.
5. Students can research the plants that produce foods that are very nutritious.

Lesson 1: Lesson Preparation

Teacher Planning

1. Gather all the items listed in the "Tools/Materials/Equipment" section so that there is enough for four to five groups of students.
2. Make copies of the worksheets/assessments:
   a. Natural Resources on Earth ***(Natural Resources on Earth 1)***

   b. Food From Plants ***(Natural Resources on Earth 5)***

   c. Seed and Plants on Earth ***(Natural Resources on Earth 6)***

3. Make copies of the booklets:
   a. Natural Environment ***(Natural Resources on Earth 2)***

   b. Seeds on Our Earth ***(Natural Resources on Earth 3)***

   c. Plants ***(Natural Resources on Earth 4)***

Tools/Materials/Equipment

Group work:

- Cups of water
- Bags of air
- Cups of soil
- Rocks
- Pictures of animals or worms/bugs in jars
- Variety of plants or pictures of plants
- ***Natural Resources on Earth 1***

Other work:

- Variety of Seeds
- Dry lima beans
- Magnifying glasses
- Chart paper
- Marker
- Natural Resources on Earth ***(Natural Resources on Earth 1)***

- Natural Environment ***(Natural Resources on Earth 2)***

- Seeds on Our Earth ***(Natural Resources on Earth 3)***

- Plants ***(Natural Resources on Earth 4)***

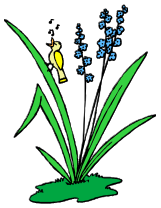
- Food From Plants ***(Natural Resources on Earth 5)***
- Seeds and Plants on Earth ***(Natural Resources on Earth 6)***

Classroom Safety and Conduct

Students are expected to follow normal classroom and school safety rules.

Natural Resources on Earth

Name _____



On the lines below, list your group's items.

_____

_____

_____

_____

_____

_____

Explain why each of these items is important to people.

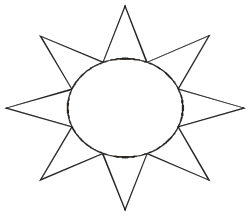
_____

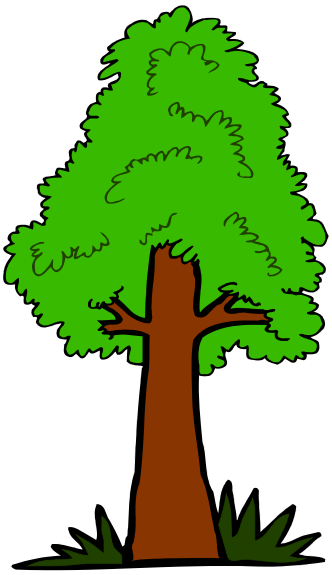
_____

_____

_____

Where can you find all of these items?





Natural Environment

Name _____

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physical features	weather

soil	vegetation (plants)	animals

Our Earth is a special place. It has many **physical features,** such as mountains, beaches, plains, deserts, islands, peninsulas, oceans and rivers. The **weather** can vary each day and from place to place. There are different types of **soil** and **vegetation** (plants). Many **animals** roam around Earth. All of these things make up our natural environment.

Natural Resources

water	air	soil
minerals	animals	plants

The natural environment provides many **natural resources** for people. Natural resources are always found in or on Earth. The basic natural resources are **water**, **air**, **soil**, **minerals**, **animals** and **plants**.

2

Which natural resources do you use?

3

People drink water to keep their bodies healthy.

Water is used to cook some foods.

Water

Water is used to clean our clothes and bodies.

People water plants.

4

People breathe air so they can live.

Air

People use moving air (wind) to make wind turbines spin. The turbines make electricity for people.

5

Soil

People use soil to grow plants.

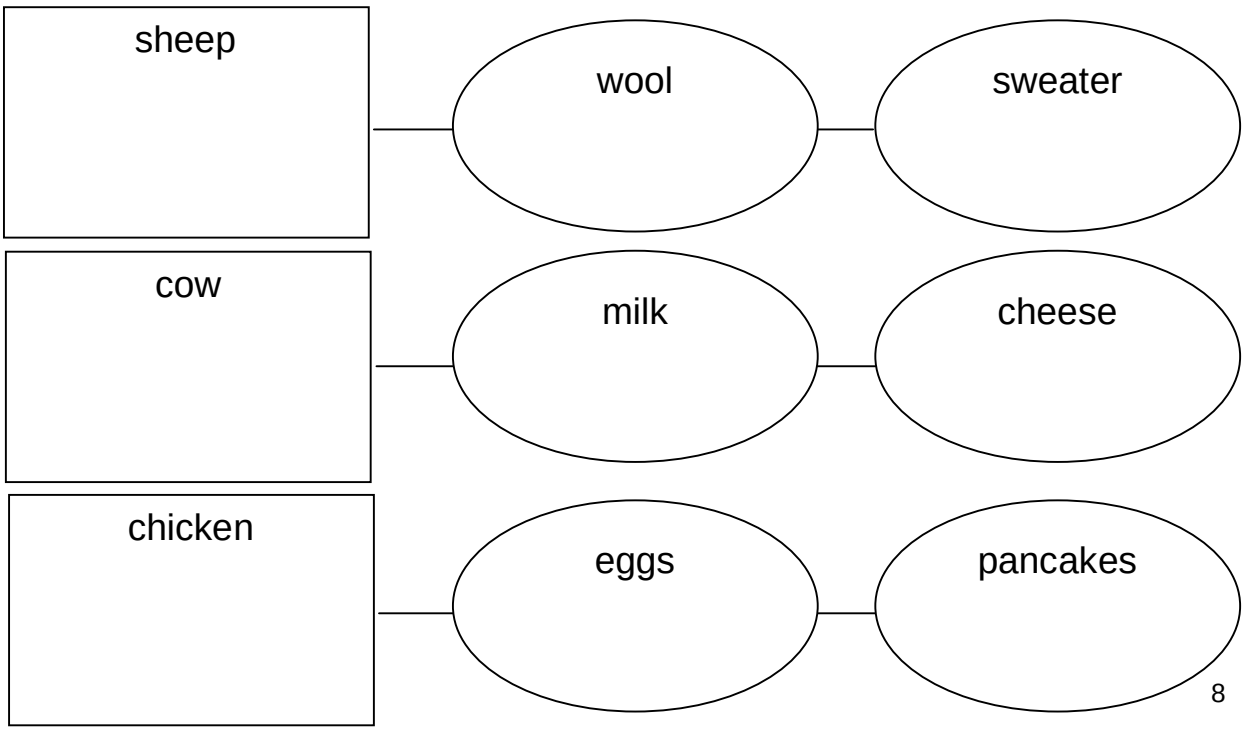
Minerals

Copper is a mineral. Pennies are made from copper. Plants take copper from the soil to help them make food.

Calcium is a mineral found in soil. Calcium helps make plants strong. People need calcium for strong bones and teeth

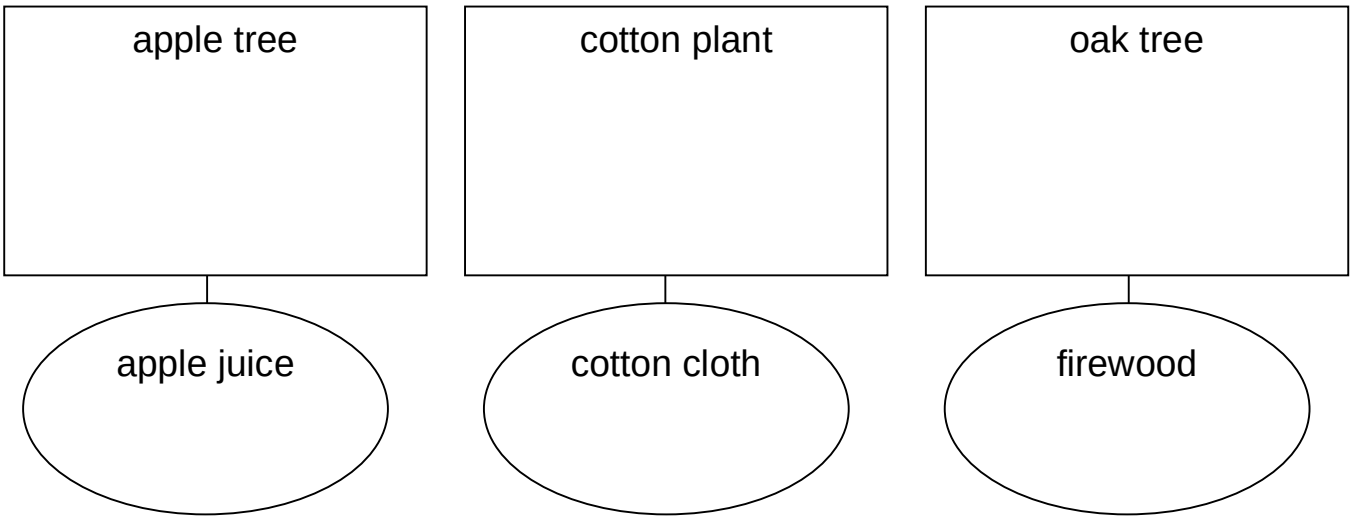
Animals

People use animals for food and clothing.



Plants

Many plants are used to produce food, clothing or fuel.



trees	coal

Some of our natural resources are limited. People need to use them wisely so the resources will be around for many years.

10

_____	_____

Draw and label two natural resources you use every day.

11

What natural resources can be found on the moon? Draw and label.

12

Do you think any of the natural resources would help plants to grow on the moon? Explain your answer.

Would any of the moon's natural resources be able to be used by astronauts to build a lunar growth chamber? Explain your answer.

13

Seeds on Our Earth

Name _____

Seeds are important to us because they give us different kinds of food.

1.

Many types of seeds are sent to factories to be made into food. Wheat seeds are ground to make flour. When you eat a peanut butter sandwich, you are eating crushed and ground peanut seeds.

2.

Some seeds are used in soups or desserts. The vegetable soup you eat may contain peas and corn. These are both kinds of seeds. Think about the cookies you eat with nuts in them. You are eating seeds!

3.

Have you ever eaten sunflower seeds, pumpkin seeds or popcorn? These are types of seeds that we enjoy.

4.

Apples, oranges, grapes, green beans, peaches, plums and pears all contain seeds.

5.

Seeds are unique because inside each seed is a tiny plant just waiting to grow. Each seed also has food inside to feed the tiny plant.

6.

Seeds need water, warmth and air to grow. Seeds do not need soil for food because seeds have food inside them. The sun warms the soil which helps seeds stay warm.

7.

Seeds are an important part of our Earth. They give us foods to eat and new plants.

8.

Draw and label at least four seeds you have seen.

9.

Plants

Name

_____

Seeds grow into plants.

A **seedling** is the first **sprout** that grows from a seed.

2

Seedlings need **soil, water, air** and the sun's **light** to grow into a plant.

3

Plants use the sun's light to make their own food. Plants take **nutrients** and **minerals** from the soil.

4

People use many different kinds of plants.

5

Many plants give us food. Strawberries, tomatoes, potatoes, lettuce and carrots all come from plants.

6

People use the leaves from basil, mint and oregano plants to season foods.

7

Some plants are used to make medicines. People use gel from Aloe plants for cuts and burns.

8

Some plants grow beautiful flowers to give color and more seeds to our Earth.

9

Plants are all around us. They help us live.

10

Why are plants important?

_____

_____

_____

_____

_____

11

Food From Plants

Name _____

Draw and label four foods that come from plants.

Which is your favorite food? Explain why this is your favorite food.

_____

_____

Seeds and Plants on Earth

Name _____

1. What is needed for these seeds to germinate on Earth? Illustrate and label.

2. What is needed for this plant to grow on Earth? Illustrate and label.

3. List the items from above that are Earth's natural resources.

_____

_____