6

Science Standard
6.6.c.

Teacher's Masters

California Education and the Environment Initiative

Made from Earth: How Natural Resources Become Things We Use

California Education and the Environment Initiative

Approved by the California State Board of Education, 2010

The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

Linda Adams, Secretary, California Environmental Protection Agency
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Andrea Lewis, Assistant Secretary for Education and Quality Programs, California Environmental Protection Agency
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Key Partners:

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Contents

Lesson 1 What a Resource!

None required for this lesson.

Lesson 2 From Natural Resource to Store Shelf

None required for this lesson.

Lesson 3 World Travelers

None required for this lesson.

Lesson 4 Meet the Extractors and Harvesters

None required for this lesson.

Lesson 5 The Effects of Consumption

None required for this lesson.

Lesson 6 What Does It Cost?

None required for this lesson.

Assessments

Made from Earth—Traditional Unit Assessment Master 2

Toy Showcase Instructions—Alternative Unit Assessment Master 5

Name: _____

Instructions: Draw lines to match these materials used in common objects to their natural (resource) origins. More than one common object can come from one resource. (2 points each)

1. aluminum
2. cardboard
3. leather
4. plastic
5. rubber (natural)

animals

fossil fuels

mineral ores

plants

Instructions: Name at least two products that are made from each of these natural or raw materials. (2 points each)

6. copper _____
7. cotton _____
8. petroleum _____
9. silica sand _____

Instructions: Place the following steps in the correct order.

10. These are the steps involved in the manufacturing of an iron pot. Put the steps in the correct order by numbering them from 1 to 4, 1 being the first step. (2 points each)

    _____ Pure iron is transported to a factory.

    _____ Iron ore is extracted from Earth by mining.

    _____ The iron is melted and poured into a mold in the shape of a pot.

    _____ Iron ore is heated and refined to extract pure iron.

Name: _____

Instructions: Read each question and circle the letter of the best answer. (2 points each)

11. Which method of transportation is used most by extractors, harvesters, and manufacturers to get materials and products from place to place?
    a. aircraft
    b. trucks
    c. trains
    d. ships

12. Which ecosystem is most likely to be a source of wood?
    a. a sawmill
    b. paper
    c. a forest
    d. a lake

13. Mineral ores are extracted _____.
    a. from Earth
    b. using feller bunchers
    c. from farms
    d. using ships

14. Which of the following is not harvested from plants to make products?
    a. fiber
    b. oil
    c. sap
    d. sand

Name: _____

Instructions: Answer the question below in one paragraph. (10 points)

15. How can making a surfboard affect natural systems? Be sure to give specific details about where the raw materials come from, and how their extraction, transportation, and use may affect the environment.

Name: _____

Instructions: As a new expert in how natural resources become products, your new job is to make a model or detailed blueprint of the toy that your new toy company is going to build.

Your models and blueprints are due at a Toy Showcase on _____.
(deadline date)

Models: If you are making a model of your toy, the model should be the actual size of the toy and include all of the toy's key parts.

Blueprints: If you are making a blueprint, your drawings should be done on chart-size paper, and use measurements to show the size of the actual toy. Like the model, the blueprint should show all key parts of the toy.

All models or the blueprints must be turned in with the following information:

- the name of the toy
- the **resources** and **raw materials** used for each part of the real toy
- the **ecosystems** where those resources and raw materials come from
- how those resources will be **extracted, harvested,** and **transported** to the factory where the toy is made
- how the making of this toy might **affect** natural systems
- how the user of this toy can recycle the toy, or parts of the toy, when done using it

Create tags to stick on your model or make typed labels for the blueprint that have this information on them. You may handwrite or word process the information on the tags and labels.

Use your **Manufacturing and Design Journal** to help you, and do not forget to bring your journal to the Toy Showcase along with your model or blueprint.

Your presentation at the Toy Showcase will be scored using the **Toy Showcase Scoring Tool,** shown on the next page.

Good Luck, Toy Maker!

Name: _____

Toy Showcase Scoring Tool

Criteria	3 points	2 points	1 point
Knows that goods produced by natural systems are used to make common objects and identifies their natural origin (ecosystem).	Identified the raw material/ natural resource used in each key part of the toy.	Identified some raw materials/natural resources for some of the parts of the toy; identified products on some parts, rather than raw materials.	Identified few raw materials/natural resources for parts of the toy; only named the parts and products they were made from (paper, aluminum, and other raw materials).
Can explain and describe methods used to extract and harvest the materials used to make common objects (usable products) from natural resources.	Clearly explained three or more of the basic steps in extracting or harvesting the raw materials/natural resources used in the toy.	Listed at least three of the basic steps used in extracting or harvesting the raw materials/natural resources used in the parts of the toy.	Partially explained a few basic steps in the extraction or harvesting processes for some of the raw materials/natural resources used in the toy.
Can describe the methods used to transport the materials used to make common objects.	Described how the materials used in the toy would be transported (by truck, train, plane, or ship), based on where the materials originated.	Described how the materials used in the toy would be transported, without mentioning or indicating where they originated.	Mentioned that the materials would be moved or transported, but did not say how (truck, train, plane, or ship).
Can explain how the methods used to extract, harvest, and transport natural resources and consume them (make usable products) affect natural systems.	Gave a clear explanation of at least three effects of the making of the toy on natural systems, using Key Vocabulary.	Listed at least two ways the toy might affect natural systems.	Mentioned that the toy uses natural resources, but did not explain how and/or mentioned that making the toy may cause air pollution, but did not explain why.
Organized presentation creatively.	Well organized and creatively presented.	Organized and presented clearly.	Presented, but could have been better organized.

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