

RENEWABLE AND NONRENEWABLE RESOURCES

Grades:

3 – 4

Time Allotments:

Teacher preparation: 15 minutes

Lesson and activity: 45 - 60 minutes

Vocabulary:

Conservation

Natural Resources

Nonrenewable Resources

Renewable Resources

Integrated Curricular Areas and Corresponding Core Curriculum Content Standards:

Career Ed., Consumer

Family & Life Skills **9.2** (G4) A1, 2 & 4, D2 & 3

Social Studies: **6.6** (G4) E2

6.5 (G4) A4

6.2 (G4) A1

Science: **5.10:** (G4) A1 & B1

Mathematics: **4.5:** A2-3, B1 (depth of student work may not include math)

Language Arts: **3.4** (G3) A1 (G4) A1, B3

3.3 (G3) A1-4 B2, C1 & 3 (G4) A1-3, B3-6, C2 & 3

3.2 (G3) B4

Content Objectives: Students will be able to –

1. Identify the earth's "natural resources and explain their nature and characteristics;
2. Describe what "renewable resource" means and identify resources that are renewable;
3. Describe what "nonrenewable resource" means and identify resources that are nonrenewable;
4. Describe what "conservation" means and how it applies to the management of natural resources;
5. Identify components of an effective rule;
6. Identify rules for using and distributing resources while practicing conservation; and
7. Provide examples for how natural resources are used by people to produce goods or provide services.

Process Objectives: Students will –

1. Work cooperatively in a group to develop a set of rules; and
2. Relate outcomes from a simulated activity to real-life applications.

Materials:

- Gather enough “small items” for twice the size of the class (two items per student). These items should be small, expendable and replaceable, such as paper clips, stones, pieces of cut wood, buttons, pieces of cut straws, bottle tops, etc. Or, they can be consumable, such as various pieces of wrapped candy. The items represent different types of nonrenewable resources. For example:
 - Paper clips can represent bauxite
 - Buttons or plastic straws can represent crude oil and fossil fuel
 - Stones or pebbles can represent coal
- One paper, cloth or plastic bag (shouldn't be able to see through it)
- One box (shoe box size)
- Copies of the “Renewable and Nonrenewable Resources” worksheet – one copy per student
- Pencils – one per student

Anticipatory Set:

- Distribute copies of the worksheet to each student and have them complete it individually then turn their pages over and hold on to them until everyone is finished.
- Ask students the following questions:
 - *What do you think the earth's “natural resources” refers to?* (Air, land, water, minerals).
 - *Of these, which do you think are nonrenewable?* List responses on chalkboard or flipchart (metals, minerals, oil, coal and natural gas).
 - *Which do you think are renewable?* List responses on chalkboard or flipchart (solar, wind, water and trees/forests).
- Have students review their responses to the worksheet and make any corrections – discuss the correct answers when everyone is finished.
- Explain that the lesson includes a short game that students will play to learn more about how natural resources are used by people.

Teacher's Presentation or Modeling:

- In preparation, count out the items so that there is exactly one item per person in class in the bag. Put the remaining items aside in the box. There should not be equal amounts of each item (or resource) in the bag but there are no specific counts for each for this activity.
- Explain to students that they will participate in an activity where they will each remove “natural resources” (items) from a bag circulated among them. (No rules or guidelines for the activity should be provided. Without these, the lesson presumes that all of the items will be taken before the bag reaches some of the students but do not reveal this to the class.) Explain to them that the activity will be discussed after it is completed.

Guided and Independent Practice:

- Ask students to circulate the bag to each other and to remove items from the bag. Allow each student to take any number of items they want. Also, they do not need to expose the # of items that they removed from the bag.
- While the bag is being passed around occasionally add 1 or 2 items (from the box) to it but do not explain why you are doing so. Do not add more than 4 items during the entire activity. It is predicted that the bag should be empty before it reaches all of the students.

Closure:

- Ask students the following questions after the activity is completed:
 - *For those of you who have items - what did you think about when the bag came to you and you removed an item(s)? How many items did you take? Why did you select certain items and not others that were in the bag?*
 - *For those students who do not have items – how do you feel? What do you think about the actions of the students who have items?*
 - *Did the items in the bag represent renewable or nonrenewable resources? (Nonrenewable resources.) Why?*
 - *Why do you think I occasionally added a couple pieces to the bag? (These items represented the occasional replenishment of a nonrenewable resource over a long period of time.)*
 - *There was one item in the bag for each student. Why do you think the bag was empty of items before some students were able to remove at least one? (Because demand for each resource was greater than the supply that was available and the resources were not managed. No rules were provided regarding the use and distribution of these resources.)*
- Ask the class if anyone can explain what the term “conservation” means. Clarify the meaning of this term with them.
- Explain that they will be divided into small groups to develop “natural resource conservation rules” for the activity they just participated in. The goal of the activity now is to conserve the quantities of natural resources (the items in the bag) for as long as possible and for many generations of people. Explain that their rules should consider the human use and conservation of renewal natural resources in addition to the nonrenewable resources.
- An explanation for “a rule” should be provided. Based on the state’s Core Curriculum Content Standard for Social Studies Civics (6.2, A1, Grade 4), an effective rule “achieves purpose, is clear, fair, protects rights and the common good, etc.).
- Allow time for group representatives to share their group’s rules with the class.

Assessment:

- Responses to items on the worksheet;
- Participation in group discussion and in the activity;
- Participation in a group while developing the natural resource conservation rules; and
- The comprehensiveness, quality and depth of the group’s conservation rules.

Extensions:

- Have students research the types of products that are made from nonrenewable as well as renewable resources or how specific products are developed or manufactured from certain nonrenewable or renewable resources; or
- Have students write a narrative about why and how solid waste management would relate to how people use natural resources and why natural resources need to be managed.

Safety and Clean Up:

- Use lab safety procedures for this activity and make sure that all items are returned to the bag and/or box when the activity is over.
- If candies are used and students are allowed to consume them make sure there are no students with food allergies, that the candies remain wrapped throughout the activity, and that the wrappers are disposed of properly.

Worksheet: *Renewable and Nonrenewable Resources*

Student: _____

Directions: Each material or item on this list is a renewable or nonrenewable natural resource or is produced directly from a renewable or nonrenewable natural resource. For each item mark whether it is, or is made from, a “renewable natural resource” (RNR) or a “nonrenewable natural resource” (NNR).

Water



Coal

Oil



Trees



Wind

Plastics

Bauxite (Aluminum)

Natural Gas

Ice Cubes



Sunlight



Salt Water

Gold Jewelry



Lumber

Iron

Paper

Soda Can

