Trees, a Renewable Resource

Grade: 3-5
Time: 1-2 class periods

Lesson #3C:

How do we use forest resources?

Overview:
Students simulate consumption, recycling, renewal, and conservation of wood products in a game using lima beans.

Essential Questions:
How do we use renewable resources wisely?

Contents:

Source: Alaska Resource Education Forestry Module, fu4, Trees, a Renewable Resource.

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Overview:
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Essential Questions:
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Assessment
Can students:
Describe the terms renewable, nonrenewable, recyclable, and biodegradable resource?
simulate the concepts of renewable and nonrenewable resources

Vocabulary

- natural resources
- renewable
- nonrenewable
- biodegradable
- recyclable

Alaska Standards

Addressed:

Science GLEs

The student demonstrates an understanding of the processes of science by:
[3] SA1.2 observing and describing their world to answer simple questions.
[4] SA1.2 observing, measuring and collecting data from explorations and using this information to classify, predict, and communicate.
[5] SA1.2 using quantitative and qualitative observations to create their own inferences and predictions

that solving problems involves different ways of thinking, perspectives, and curiosity by: [3] SE2.1 identifying local tools and materials used in everyday life.

Teacher Information and Procedure

Prior knowledge for students: none

Materials needed:

- large bag of lima beans or other dried beans
- paper bags - 1 per student

What to do in advance: Collect materials.

What to do during the lesson:

Gear up:

Ask the students:
Are there any resources, things from the earth that can be replenished as people consume them, so that they will always be available? If so, what are these and how would we be able to use them indefinitely? What are some of the non-renewable natural resources that could eventually run out?

Explore:

1. Divide the class into teams of 4. Give each team a paper bag of beans (at least 100). Explain to the students that they will be given 10 seconds to collect as many lima beans as they can, picking one bean at a time from the bag. After the round, the beans will be counted and anyone who has at least 5 will be able to continue the game.

2. Say “GO!” and count to ten, allowing students to collect as many beans as possible. Count and calculate who is still in the game. (Should be everyone).

3. Explain that the beans represent trees. Review that trees are a renewable resource. However, discuss that a tree may take 100 years to grow to a size that would be worth using.

4. (Optional, for older students: Ask students to calculate how many people would be born to a couple in 100 years if each person lived to be about 80 and each couple had 3 children at age 25. After 100 years, how many people would there be? In 100 years, one tree grows to replace the one that was cut. In 100 years, a couple would turn into 184 people. Every American uses one 100 foot tree per year in paper and lumber.)

5. Explain that the students will be consuming trees for 4 generations, or 100 years. (For younger students you may want great-grandma to go first, then grandma, then mom, then child to reinforce the concept of 4 generations). Each generation will be called a round and students will be given 10 seconds to collect their beans. After each round, each student must have collected at least 5 beans. Anyone who has not is out.

6. After each round, ask the students if they want to recycle their trees. If they say yes, give them 1 bean for every 10. Ask them if they want to replant a tree to use for the future, give them 1 bean for every 1. Have them put the given beans back into the pot.

7. Play 4 rounds. Calculate and discuss.

8. Play again. This time, explain that 100 beans is not realistic and give each team 30. Ask the students why 30 instead of 100? (Because trees are limited resources, the entire earth isn't covered with trees).

9. Play round one and calculate who is still in the game. Tell them in these 4 rounds no one can recycle or plant. Play out the 4 rounds and see if anyone is left. Did any team conserve their resources for the next generation? What happened to everyone? Is it true that there are limited resources in the world, especially if they can't be replaced? Ask them if trees can be replaced. If trees can be replaced they are considered a renewable resource.

10. Play 4 rounds again. This time, give each group 30 beans and tell them after each round they can recycle or replant. After each round, give the team any additional lima beans. At the end, calculate who is still in the game. Discuss.

Generalize:

Ask the students the following questions:
a) Do you think trees are renewable resources? Why or why not?
b) Do you think trees are an unlimited resource? (In other words, do you think there will always be trees no matter what we do?) Why or why not?
c) Do you think there will always be trees available for future use? Why or why not?
d) Do you think there is anything that could be done to ensure that there are trees available for future use? If so, what?

Assess:

Ask students to draw and/or describe ways that trees can be conserved for future use

Extensions, adaptations, and more resources:

1. Start a school recycling program.
2. Plant a tree or trees in the school yard.
3. Start a compost pile and determine how long it takes different wood products to decompose such as paper, newsprint, cardboard, toothpicks, Popsicle sticks, cellophane, and rayon.

Background

Wood (from trees) is a natural resource; something we get from the earth that helps meets our needs and wants. Alaska provides many other natural resources including fish, oil, natural gas, coal, and abundant wildlife.

Wood is a unique resource as it is renewable, biodegradable, and recyclable. Renewable means that it can be replenished through natural or manipulated processes. Trees can be harvested, replanted, and grown again for future use. Wood is also biodegradable, meaning that it decomposes naturally and is reabsorbed back into the earth. While wood is biodegradable, it should not be confused that all wood products are biodegradable as is the case with rayon or cellophane.

An additional benefit of wood is its ability to be recycled, meaning it can be broken down and used again. Wood, however, is not recyclable indefinitely as would be true of metals or glass. The fibers eventually become too short to bond into new products. This, however, does not diminish the need for recycling and reusing materials.

SPEAKING “SCIENCE”

natural resources

renewable…adj.

nonrenewable…adj.

biodegradable…adj

recyclable…adj.