EARTH: THE APPLE OF OUR EYE

Concept: Farmland is an essentially nonrenewable resource which we depend upon for our food.

Objective: A visual demonstration illustrates the limits on farmland, making the importance of conservation clear.

Grade Level: Upper elementary

Subjects: Math, science, social studies

Skills: Dividing, observing, deducting, problem solving

Introduction: Over time, better farming has made it possible to feed many of the world's people. But, with a limited amount of land and a growing number of people to feed from that land, each person's part becomes smaller and smaller. Protecting our land resources is therefore very important.

ACTIVITY 15

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Materials:

1 apple for a teacher demonstration or enough apples for the class if students slice their own
1 knife for a teacher demonstration or enough knives for the class if students slice their own apples
1 napkin for a teacher demonstration or enough napkins for the class if students slice their own apples

Note: Some teachers prefer to make this activity truly "hands-on" by having each student cut his or her apple according the teacher's instructions. If you feel comfortable with students using knives in the classroom, you may want to consider this option. Otherwise, you can demonstrate the apple cutting at the front of the class.

Procedure:

As you go through this brief demonstration, ask the students the questions which are in quotation marks before revealing the answers noted in italics.

1. Show the apple to the class. "For this exercise, this apple represents our planet."
2. Slice the apple into quarters.
3. Hold out three of the quarters. "What does this part of the apple represent?" *They represent the oceans of the world.*
4. "What fraction is left?" $^1/_4$
5. Slice this section in half. Hold up one of the pieces.

   "This portion represents the areas where people can't live: the polar areas, deserts, swamps, very high or rocky mountains."

   Set this piece aside.
6. Hold up the other piece. "What fraction of the whole apple is this?" $^1/_8$

   "This piece represents the land where people can live, but not all of the soil is good for growing food."
7. Slice the $^1/_8$ piece into four equal sections. Hold three of the sections in one hand and one section in the other. Hold out the single section. "What fraction of the apple is this?" $^1/_{32}$

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8. Hold out the three sections in your left hand. "These $^{3}/_{32}$ represent the areas too rocky, too wet, too cold, too steep, or with too poor soil to actually grow food. They also contain the cities, suburbs, highways, shopping centers, schools, parks, factories, parking lots and other places people live, work, or use in other ways, but can no longer grow food."
9. Carefully peel the $^{1}/_{32}$ slice of Earth. Hold this peel out so they can see it. "This tiny bit of peeling represents the surface, the very thin layer of the Earth's crust upon which people grow food. It is less than five feet deep. It takes 100 years for one inch of this topsoil to form."
10. For dramatic effect, you can eat the small piece of apple, saying, "If we don't take care of this land, it will be gone."

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Discussion Questions: (if applicable)

1. What things cause land erosion?

   One example is deforestation. Branches and leaves shelter the soil from the force of rain and wind. So when the trees are cut down, the soil is blown and washed away. Another example is overgrazing. When cattle eat grass, they pull it out of the ground by the roots, taking some soil with it. Each bite leaves a patch of ground uncovered, exposed to the wind and the rain. Also, these animals have sharp hooves that tear up the surface a little with each step.

2. What is overfarming?

   Overfarming occurs when we ask too much of the land. We used to practice crop rotation, which means we divided farmland into sections, and grew a different crop in each section. Each year, the kind of crop grown in each section would be changed, and one section would be left unplanted, to let it rest for a year. Each kind of crop takes certain elements from the soil. If the same crop is grown in the same place for too many years in a row, the soil has no chance to renew itself. Eventually all of that particular element will be gone, and that soil will be unable to grow anything.

3. What are some ways we could help preserve farmland?

   By choosing not to build anything on land that could be used to grow food; by eating lower on the food chain; by working to reduce pollution, etc.

4. Where else does food come from beside farmland?

   Oceans. Remind students, though, that overpopulation also leads to overfishing and the dumping of pollutants into the waterways.