

Listen to the Land

http://www.cce.org/resources/learning_centre/classroom_activities/listen_to_land.asp

In this section, students will discover how we use the land. There are many choices we make when we use the land. Some of decisions lead to better living conditions for all of us, while some choices are made without thought of the consequences. Sometimes this leads to great erosion and the loss of soil or the contamination of ground water we depend on for our drinking water. In this section, the student will gain insight into the way we use the land, both for benefit and consequence.

Activity 1: On Top of the Soil

Age level

7-9th Grade

Objectives

To help students understand the importance of soil and how easily it can be lost.

Time

50 minutes

Materials

- Copies of student worksheet
- Copies of topography map

Chapter 5 Outcomes

1, 2, 3, 4

As your students have already discovered in the first section of this packet, soil requires a number of factors to be present to form, and it does not form easily. Considering this, it would follow that we should take extra special care of our soil resources if they take so long to form. Unfortunately, this is not always true. Many times the value of the soil is overlooked as plans are made, whether they be plans for farming or business. The soil which took time to form is easily destroyed by man's carelessness. In this activity, students will learn how to 'listen to the the land' as they make decisions on how it should be used and the consequences of unwise use.

Begin the activity by explaining the use of topographical maps and how they are read. For the purposes of this activity, each line on the map has a value of 10 feet. Using the student worksheets, go through the first two questions with your students to make sure they understand how to read the map. When all of the students understand map reading, have them work singly or in groups of two on the remainder of the questions. Upon completion of the worksheets, have a discussion about the worksheet based on the students' answers. Have some of your students share their zoning of die area in question seven. Do the rest of the class members agree? Why or why not?

Follow up this activity with a look at your community. Bring in zoning and topographical maps. of your am and have the, students look at how the zoning engineers have laid out your community. Did they give thought to the topography? Are there areas where the runoff might affect the water supply? Are them places where erosion or flooding could be a problem to anyone building in that area?

After comparing the zoning and topographical maps, if your students have questions about how something was laid out% ask an engineer from your city or township office to come in

and speak to your class. Have your students find out why an area might have been set up as it was.

Activity 2: Where Has All the Soil Gone? (and where is it going?)

Age level

7-9th Grade

Objectives

To develop a stewardship of our soils by taking an active look at their loss and how to prevent it.

Time

2 class periods

Materials

- Topographical maps of your area
- Collection containers for water
- Masking tape (for identifying containers)
- Map pins
- pH testing paper

Chapter 5 Outcomes

1, 2, 3, 4

Activity one looked at how topography affects soil erosion and land use, but in real situations, how much soil is really lost? When erosion takes place, where does the soil go? This activity takes an active look at the problem of erosion and the effects it can have upon leaving its natural setting.

This activity requires your students to do some out of school collecting of water samples at different times. You may wish to collect the samples at a time prior to the actual week of the activity. Have your students collect samples from a creek, stream, river, or any flowing water source. The first sample should be collected at a time when there has been no rain for several days. The second sample should be collected on a day when it has rained. Have the students mark the collection jars as to where the sample was collected and on what date. The two samples should be taken from the same place.

Allow the two samples to settle for a few days, and then compare the amount of sediment in each of the samples. Which sample has more? What is the color of the sediment? Take a pH test of both samples. Is there a difference between the two? Using 4x topographical maps, try to determine the origin of the sediments found in the water samples. Is there construction or farming occurring somewhere upstream causing erosion of the soil? Do streets or parking lots drain into the creek during a storm? What effect might this have on the stream?

Land, Soil and You

Student Worksheet

To understand the land and soil which covers it, we must first have an understanding of the topography of the land. The shape of the land determines what uses the land has. Using, the topographic map and this worksheet, think of yourself as a land developer. How you decide to use the land could affect the way people will live many years in the future.

1. Begin by finding the highest point on your map. What is the elevation of this point?
2. What area of the map is the most level?
3. As a developer, you need to know what happens to the land during all seasons of the year. If you are not familiar with what will happen, the people you develop the land for may be very unhappy at a future time. With this in mind, if it were to rain on your map, what paths would the water take from the highest points to the lowest? Hint: Water follows the path of least resistance. Mark your answer on the map.
4. You have discovered through local sources that each spring the river tends to flood. If you were planning a housing development, what area(s) would you want to avoid? Mark these on your map.
5. You are looking for land which would be suitable for a farm. Which land would you choose? Would it matter how you tilled the land?
6. Another developer, not as concerned about the environment as yourself, has decided to build an expensive house on the steep hillside overlooking the river. However, before a lawn can be put in rainstorms enter the area for a span of two weeks. What do you think will happen to all of the topsoil at the building site? What will happen to the land around the house?
7. You have been elected zoning supervisor of your community based on your fine development skills. A new piece of undeveloped property has just been added to your area of supervision and you must decide on the zoning ordinances for the area. Using your wise judgment, lay out the zones for industry (A), business (B), residential (C), and agriculture (D). If you do not think your area can support all of these zones, it is not required. When you have finished, give the reasons for laying out your zones as you have (The town's people will surely want to know).

Problem Scenario #1

You are the president of a fairly large, democratic South American nation. Your people are very poor and have little to eat. After 10 years of effort, a new road has been built which opens up an entire rainforest area for development. Your people enter the rainforest in great numbers, cutting down trees to sell and clearing the land for farming. Your science advisors report the soil is so fragile that it can only be farmed for three years before it is so badly eroded that it can't support farming or the rainforest anymore. The farmers then move on and cut down more forest. Your science advisors also say the international community, which gives your country foreign aid, is becoming concerned because the rain forest makes a great deal of the earth's oxygen, and your people are destroying it. Your political advisors tell you that if you forbid people from entering the rain forest your government will be overthrown. Someone who will not object to the destruction of the forest will take your place.

Problem Scenario #2

You are the mayor of a small town. You have just been notified by your waste disposal section that the town landfill will be filled to its maximum level in one year at the present rate of usage. The only place with soil suitable for another landfill is the town's beloved park.

Problem Scenario #3

You belong to a group of kids who own ATVs (All terrain vehicles). After school and on weekends, you spend time riding around on trails you have created in a nearby wooded area. You notice several of the hillsides your group uses are no longer covered with grass and wildflowers, but are bare and eroding because of all the ATV traffic.

Problem Scenario #4

You have always been a good conservation minded farmer and used the best management practices on your land. You have worked hard all of your life and now, at 65 you wish to retire in style. A neighbor, who is not a good conservationist, offers to buy your land at the price you ask. Another neighbor, a conservation farmer like yourself, is also interested, but can only pay half your asking price. After a year on the real estate market, these are your only two offers.

Problem Scenario #5

You live in a suburban neighborhood overlooking a creek. Every year most of your neighbors have their lawns chemically treated to prevent weeds and insects from bothering them. However, this year you noticed after the spraying was finished that there were fewer birds, especially the insect eaters, using your bird feeders. In fact, as you walked through the neighborhood, you found quite a few birds lying dead along the sidewalks. Finally, the fish are not biting at all, when last year you had no problems catching your limit.