

lesson topic: **Soil Recipe**

objective

The students will learn:

- that soil is composed of many things, including living organisms, and will understand that time is important in the formation of soil.

materials

For this lesson, you will need:

- Small paper bags (one per pair)
- Chef's hat or apron
- Mixing bowl
- Wooden spoon
- Large index card
- Napkin large enough to cover the bowl
- Wristwatch
- Grocery bag containing a bottle of the herb thyme (real or pretend)
- Props or index cards to indicate:
 - Water
 - Nutrients
 - Earthworms
 - Sunshine
 - Bacteria

learning activity

- 1. Invite the students into your garden test kitchen** to make a special batch of soil. Explain that you have forgotten your recipe and you hope they can create a special class recipe for soil.
- 2. Stress that you need soil** and not dirt and ask if they know the difference. (Dirt is what is under your fingernails and gets washed off before meals. Soil is a living entity that grows the food we eat.)
- 3. Ask the students to raise their hands** if they have ever cooked before using a recipe. Compare making soil to baking a batch of cookies. Explain that they are both a mixture of different ingredients in certain proportions. The final product is made by combining these ingredients according to a recipe.
- 4. Explain that a well-organized cook** has all the necessary ingredients on hand, so they simply add them as they are called for in the recipe. Tell the students that their first job is to gather the necessary soil ingredients to have on hand.
- 5. Go outdoors and divide the class into pairs.** Assign each pair the task of finding some soil ingredients (such as leaves, pine-cones, grasses, small sticks, etc.). Give each pair a small paper bag in which to collect the materials and remind them to collect mostly non-living things.

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- 6. At the end of the collecting time,** gather the students together in a comfortable outdoor spot or back in the classroom. Ask for a volunteer who enjoys cooking to be the soil chef. Ask them about their favorite recipe while they are donning an apron or chef's hat. Give them the bowl and magic cooking spoon. Ask him or her to gather soil ingredients from the other students and mix them thoroughly. Record these ingredients on a giant recipe card.
- 7. After all the items have been placed in the bowl,** explain that there is a bit of magic in the science of making soil. Ask the soil chef to cover the bowl with the napkin and tap the bowl three times with the magic spoon. In unison, have the class whisper magic words (such as abracadabra, hocus-pocus or any other class favorites). Have the students give a drum roll by slapping their thighs, while the soil chef removes the cloth with a flourish. Since nothing has happened, exclaim to the soil chef that you thought he or she was a good cook. Ask the students what went wrong. Suggest that perhaps some ingredients were missing. Again compare making soil to baking, and make the analogy of baking chocolate chip cookies and leaving out the chips.
- 8. Pull out the shopping bag** and tell the students you might have some of the missing ingredients inside. Give the students clues to the missing ingredients (sunlight, water, nutrients, earthworms, bacteria) and as they guess them, add the cards or props to the mixing bowl. Discuss the role of each item in the life of the soil.
- 9. Give additional clues** so the students can guess the final, important missing soil ingredient -- time. Pull out a bottle of the herb thyme as a joke when they guess. When the students protest, add a little more thyme and ask if that isn't enough. Point to your watch and ask the students if they mean that kind of time. Take off your watch and add it into the bowl. Is that enough time? Ask the students how much time they think is needed.
- 10. Compare their guesses to the actual figures.** Explain that it takes 50 to 100 years to make an inch of topsoil. Using their grandparent's age, give them a sense of the time span involved. Hold up a handful of soil and explain that when they are grandparents their soil ingredients will finally look like this. Finish by stressing the importance of soil in our lives and brainstorm ways to care for and save our soil.