

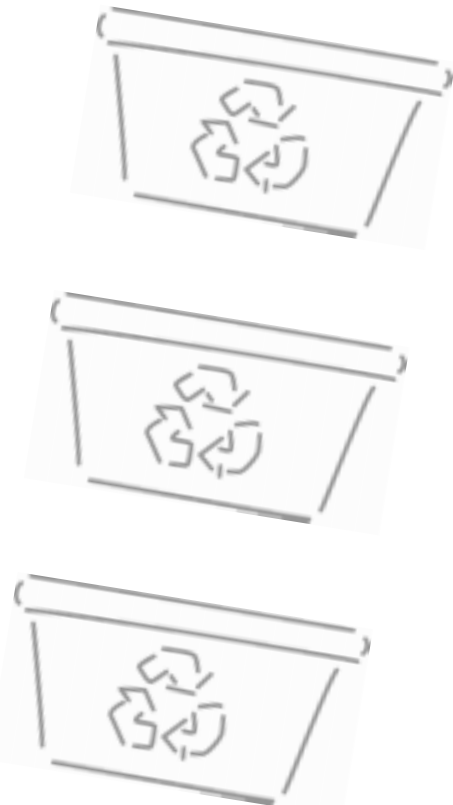
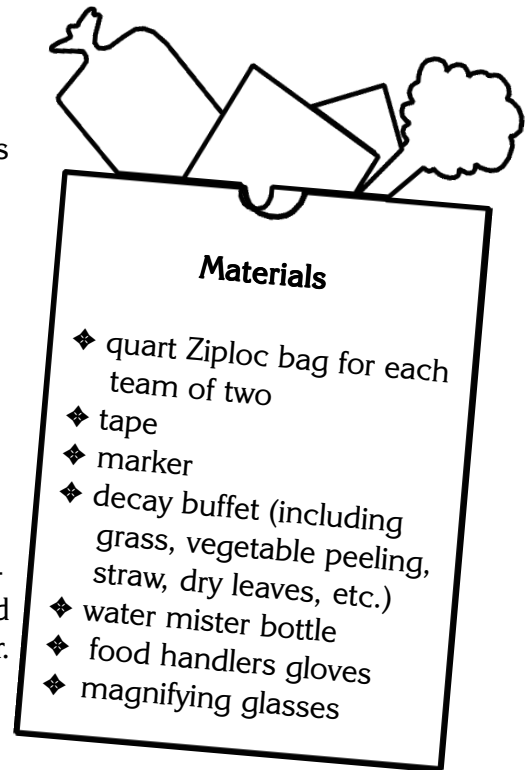
Rotten Truth

Yes it's true; decomposition is a fundamental process on which all life depends. We'd all be knee deep in garbage without it. Bacteria, fungi, and other microscopic organisms that live in the soil, air, and water are responsible for turning once living plants and animals into nutrients that can be used again and again. Think of them as nature's recyclers. These tiny creatures have the ability to produce special enzymes, which allow them to break down dead plant and animals and use them as food. No job is too big as they enlist the help of friends and family. As they eat, they grow and multiply at an amazing rate. In just 4 hours, one bacterial cell can grow to a colony of 5,096. And at days end there are millions and billions of them working together. Why, in 1 teaspoon of soil, there are more bacteria and fungi than all the people on Earth!

Despite their microscopic size you've probably seen evidence of them right in your own homes. Remember that orange with blue-green mold in the back of the refrigerator? Or that black or white fuzzy slice of bread? Or those damp old gym socks that you left in a plastic bag, newly spotted with black and pink? These are colonies of our microbial friends hard at work at the fine art of decomposition.

Decay and Decomposition

1. Divide the class into pairs.
2. Provide each pair of students with a Ziploc quart bag and ask them to write their names on some tape and then stick the tape on the bag.
3. Set up a "Decay Buffet" of items noted in the list of materials to be placed in the bags.
4. Students should place one small piece of each item at the "Decay Buffet" into their bags. Have them cut up items, if necessary. ***Stress that they not add any meat to their bags as potentially harmful bacteria could grow.***
5. One student can place the items in the bag and the other student can record the exact contents.



6. The recorder should also note his or her partner's predictions as to what will happen to each item over time. Will the item rot? Smell yucky? Remain the same?
7. **Optional.** You may want the students to switch roles and create a second compost bag with a list of contents and predictions.
8. Ask the students to add about 1/2 cup of soil to their bags and to lightly mist the contents with a plant mister. (Adding a teaspoon of water and mixing the contents will work the same way.)
9. Have the students blow into the bags (to inflate slightly) and carefully seal the bags.

Once the bags are sealed, leave them for 2-8 weeks. You may decide to keep the bags together, or place them in various locations with differing conditions. (If you let the students choose their compost bag's location, be sure to have everyone register their locations on a class master list or you may be unpleasantly surprised when a missing bag finally makes its presence known.)

10. Have students create compost bag journals. Ask them to observe their bags periodically and record what they see happening inside. **Remind students that they are not to open the bags until the designated date.**
11. On the designated date, have the students take their bags outside. Distribute plastic gloves to the students to wear while sorting through the contents of their bags with their partners. They may need magnifying glasses to "see" the original items. **Caution: students with known allergies to fungus and fungal spores should not participate!**
12. Record any items still identifiable and in their present state. Provide misters or water bowls so items can be cleaned off for closer observation and identification.
13. Are any items missing? Check the list and note the items missing.



14. How did the results compare with the predictions?
15. Define and discuss the process of decomposition or decay.

You may want to ask your students some questions:

- 1) What are some things you have thrown away over the past couple of days? What happens to these things? Do they disappear? Decompose? Remain in the same form forever?
- 2) Will placing the bags in various conditions have an effect on what occurs in the bags?
- 3) Can you think of any other types of compost containers that would get the decomposition job done?

“Bottle Biology” published by Kendall/Hunt Publishing, includes plans for making compost tumblers, the “Decomposition Column,” out of 2-liter bottles. Pickling bottles “vats,” making your own microscope, and other great science projects are included in this book. See the Appendix for ordering information.

Making compost can be very educational whether you are studying soils, plant growth, gardening, microbiology, or just trying to reduce waste. Follow the simple recipe above and you can smell the sweet scent of success!

