



## The Rotten Truth

### Lesson

#### Goals

Students will learn about the decomposition process and the importance of composting and recycling.

#### Objectives

Students will investigate the process of decomposition by conducting hands-on experiments with various food items. They will learn what happens to various items when they are thrown away.

#### Standards

Science: Life Science

GR.6-S.2-GLE.2

Science: Earth Science

GR.1-S.3-GLE.1

GR.3-S.3-GLE.1

GR.6-S.3-GLE.2

**Total Time** – Day one: 60 minutes, Day two: 60 minutes

#### Did you know?

We would all be knee-deep in garbage without decomposition. In one spoonful of soil there are more bacteria and fungi than all the people on Earth.

The typical American throws away about five pounds of trash every day.

#### Materials

- Various decomposable and non-decomposable items (suggestions at end of lesson)
- Plastic Ziploc bags
- Soil or compost
- Spray bottle
- Journals

#### Vocabulary

bacteria

decomposition

nature

resources

biodegradable

fungi

organisms

decay

microscopic

recyclers

#### Mentor Text

- *Compost Happens*. Mike Peters, 2000.

#### Background for Teachers

Have enough decomposable and non-decomposable items for each student to have one each. To save time have the items cut into one-inch or smaller pieces before the lesson.

Two great follow up lessons are Let's Make Compost

([http://dug.org/storage/school-garden-curriculum/Lets\\_Make\\_Compost.pdf](http://dug.org/storage/school-garden-curriculum/Lets_Make_Compost.pdf)) and Worms Are Our Friends ([http://dug.org/storage/school-garden-curriculum/Worms\\_Are\\_Our\\_Friends.pdf](http://dug.org/storage/school-garden-curriculum/Worms_Are_Our_Friends.pdf)).

## **Method – Day One**

### **Introduction (10 minutes)**

1. Ask the class to name some of the things they have thrown away over the past two days. *What happens to these things? Do they disappear? Or remain in the soil forever?*
2. Review the terms “biodegradable,” “non-biodegradable,” “decompose” and “compose.”
3. Create two headings on the board “Biodegradable” and “Non-Biodegradable” and have the class come up with items that fit under each term.
4. Explain to the class that they will conduct an experiment to learn the fate of some commonly thrown away items.

### **Activity (40 minutes)**

1. Give each student a plastic Ziploc bag. Students should put one of each item into their bag, so that each student has the same contents. Have the students write their name and today’s date on the bag.
2. Have only a few students add a sprinkling of soil or compost and a light misting of water to their bag. Every student should lightly breath into their bags before carefully sealing them.
3. In their journals, have students record exactly what they are putting into their bags. They should also note their predictions of what will happen to each item over time (Rot? Smell? Stay the same?). If the students put soil/compost or water in their bags, make sure they include their predictions of what effect these variables may have.
4. Explain that they will leave their bags for 2-8 weeks. You may decide to keep all of the bags together, or place them in various locations with differing conditions (hanging in a sunny window, hidden inside a dark closet, in a cool entry way, etc). In their journals, have the students record their predictions related to the various locations.

### **Snack (5 minutes)**

Enjoy the Asian Slaw.

### **Conclusion (5 minutes)**

Discuss the various parts of the slaw and whether or not the students think they could be recycled or composted. Also review what section on MyPlate the salad ingredients belong.

## **Method – Day Two (2-8 weeks later)**

### **Introduction (10 minutes)**

1. Ask a few of the students to share some of their predictions for their bags. Have them explain why they made those predictions.

### **Activity (30 minutes)**

1. Bring the class outdoors with their bags. Have the students sort through their bags and record any items still identifiable in their present state. Are any of the items missing? Provide spray bottles so items can be cleaned off for closer observation and identification.

2. How did the results compare to the predictions? Have the students record the results on the same page in the journal as where they wrote their predictions.
3. Define and discuss the process of decomposition or decay. Explain how certain materials are broken down by microorganisms, mainly bacteria and fungi, into basic nutrients and recycled back into the soil. Talk about composting as an alternative to the garbage dump or garbage disposal for certain items. Review the vocabulary terms: biodegradable, non-biodegradable, recyclable and reusable. Have the students sort the items in their bags into these categories.

#### **Conclusion (10 minutes)**

Have students share their findings. Discuss with the class how decomposition relates to the garden and healthy eating.

#### **Snack (10 minutes)**

Have a healthy snack.

#### **Assessment Tools**

- Participation
- Predictions and observations in journals

#### **Modifications**

- You can try having students put different items in their bags.
- Have students bring scraps from their lunches to put into their bags.
- Have students write a list of all the items they have thrown away in the past day in their journals. Then have the students predict which items are biodegradable and non-biodegradable.

#### **Extensions**

- Have students create a product list for a subsequent experiment to ensure understanding of which objects are biodegradable and which ones are not.
- Kitchen waste composes the most significant amount of a landfill. Have students brainstorm ways to reduce the amount of kitchen waste.

#### **Suggested Products**

- Suggested items to put in bags: paper bags, celery sticks, leaves, newspaper, plastic bags, cabbage, carrots, twist ties, etc.

## **Asian Slaw**

This is a great alternative to the traditional cole slaw and kids love it!

- 1 Tbsp vegetable oil
- 1 tsp sesame oil
- 3 Tbsp rice vinegar
- 3 Tbsp honey
- 3 tsp soy sauce
- 3 cups shredded cabbage
- 2 carrots, shredded
- ¼ cup sunflower seeds

Preparation (15 minutes): Combine first 5 ingredients in medium sized mixing bowl and mix well to make dressing. Add the rest of the ingredients and mix together well. Cover and refrigerate until ready to serve, up to 24 hours.

## **Sources**

Parrella, Deborah, and Cat Bowman Smith. *Project Season: Hands-On Activities for Discovering the Wonders of the World*. Shelburne Farms, 1995.

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303.292.9900 | DIRT@DUG.ORG | WWW.DUG.ORG**