Lesson 11: Biodegradable or Not?

Objectives: Students will learn what types of items are biodegradable and what types are not.

Vocabulary: biodegradable, physical characteristics, recycling, decay, bacteria

You will need:

- Piece of wood (eg. popsicle stick)
- Slice of apple
- Piece of styrofoam cup
- Small piece of plant or a leaf
- Piece of plastic bag
- Penny
- Piece of napkin
- (optional) Piece of a soda can
- (optional) Biodegradable packing peanuts
- Masking tape
- Markers that will write on masking tape
- Eight 2-Liter soda bottles or gallon milk containers cut down to about 6” in height. Cover the cut edge with masking tape or duct tape so it is not sharp.
- Potting soil
- Plastic wrap
- Rubber bands
- Copies of “Is it Biodegradable?” worksheet (page 11-3) for students

Strategy: (NOTE: this activity will be conducted on two days, at least a week apart)

Day 1

1. Ask students what they know about recycling. Ask them to give you examples of things that they can recycle (newspaper, soda cans, tin cans, plastic bottles etc.) Ask them to think about why some items can be recycled and why some cannot. Ask if anyone knows what happens to our trash—when we throw items away? Explain that most trash is taken to a big place called a landfill, and that it just piles up there. As more and more trash goes to the landfill, the pile of trash gets bigger and bigger. Some of the things in the landfill will decay—this means that they will eventually disappear, as they are eaten by bacteria and other things. However, there are some things that take a VERY long time to decay, so it is a good idea to recycle most of those things. Let the students know they are going to do an experiment with different types of items to see which items decay fairly quickly (are biodegradable) and which ones do not (non-biodegradable). Many natural things are biodegradable, while many man-made things are not.

This activity is available online at http://stjohns.ifas.ufl.edu/sea/manatees.html
2. Have students get into seven or eight groups of 2-3 students per group. Give each group a soda bottle and have them label the soda bottle with the name of the item that will be buried inside. Show students all of the items to be buried, and have them record their observations on their data sheets.

3. Have the students place soil in their bottles until it is about 3 inches deep.

4. Have each student place their item on top of the soil in their bottle.

5. Have students add another 2” of soil on top of their item.

6. Give the students a measuring cup and have each of them pour one cup of water on top of the soil in their bottle.

7. Cut pieces of plastic wrap that are big enough to cover the top of the soda bottles, and have students use rubber bands to attach the plastic wrap so it covers the opening of the bottle.

8. Have students place all of the bottles on a table or counter where they will be safe for a week.

9. Have students make a hypothesis as to which items will be the most biodegradable. Their hypothesis will be a guess as to which items they think will be biodegradable and which ones will not be. Have them list why they think this is so.

Day 2 (about a week later)
1. After a week passes by you will have the students take the buried items out of the soda bottles. What do they notice? Do any of the items look different from the time they were first buried? Have the students write what has happened on their worksheets.

Standards addressed: SC.3.N.1.1; SC.3.N.1.6

This activity is modified from:


Lesson 11 Worksheet: Is it Biodegradable?

**My Hypothesis:** I think that __________________________ will be the most biodegradable because __________________________________________________________.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>What did it look like before you put it in the soil? (color, size, shape etc.)</th>
<th>After one week, did it change? Yes or No</th>
<th>Describe the changes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Styrofoam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Penny</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Napkin</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>