

# Trash Attack

Grade

5

Topic: Waste  
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Duration: 45 minutes (ongoing over several weeks)

*Students will create a small “landfill” to discover what materials will rot naturally and break down into nutrients that plants need to grow and what materials will not decompose. They will see that nature will get rid of this garbage by using it over again.*

## **Curriculum Expectations**

- 5s27: Demonstrate an understanding of the three states of matter and of changes in state
- 5s29: Identify the properties that make different materials useful in everyday products and discuss the environmental impact of their use
- 5s30: Identify and describe some changes to materials that are reversible and some that are not
- 5s45: Compile data gathered through investigation in order to record and present results, using tally charts, tables, and labelled graphs produced by hand or with a computer
- 5s47: Identify the source of the materials found in a product and describe the steps required to modify the natural materials to make the product
- 5s48: Describe how physical and chemical processes change materials found at home and materials used in industry
- 5e5: Produce pieces of writing using a variety of forms (e.g., stories, poems, reports), narrative techniques (e.g., first- and third-person points of view, dialogue), and materials from other media (e.g., illustrations)
- 5m108: Predict the validity of the results of data collected
- 5m113: Design surveys, collect data, and record the results on given spreadsheets or tally charts
- 5m114: Display data on graphs (e.g., line graphs, bar graphs, pictographs, and circle graphs) by hand and by using computer applications
- 5m115: Analyse how data were collected and discuss the reasonableness of the results
- 5m119: Construct labelled graphs both by hand and by using computer applications
- 5m120: Evaluate data presented on tables, charts, and graphs and use the information in discussion

## **Background Information**

Materials can be classified into biodegradable and non-biodegradable. Biodegradable materials such as food wastes decompose. Some of these break down very quickly. They rot, which means they are digested by tiny creatures such as bacteria and moulds, and turned into food for plants. Food scraps, grass clippings, leaves – things that were once alive - all break down in this manner. Paper made from trees breaks down in the same way. Materials take a different amount of time to break down in a landfill. For example:

- a banana peel takes 6 months to one year
- a hot dog takes 1 year
- magazines take 40 years

Plastics, glass and metal cans are non-biodegradable. It takes a very long time for these to break down in a landfill. For example:

- tin cans take 100 years
- aluminum soda cans take 500 years
- milk jugs take 500 years
- glass takes a million years to break down.

Nobody knows how long it will take for plastic to break down because plastic has not been around for that long. If dangerous chemicals were in the plastic container when it was made, they may seep into the water for a long time.

Materials that decompose naturally can be included in regular landfills. Materials that do not decompose such as certain kinds of plastic will stay in the landfill forever.

### ***Accountability***

Student will develop an understanding of what kind of materials should be put into the garbage and what material need to be recycled.

### ***Teacher Notes***

1. This activity can be presented as a scenario to the students:

Your school has been examining different methods of recycling materials. You are very good at using recycling containers. You want to conduct an experiment to demonstrate that some materials that are currently being thrown away in landfills by some people will never decompose and therefore pose an environmental threat to the community.

2. Find a place that is away from the general public and that can be contained for safety purposes.
3. Ask students to choose one or two scraps of food and paper – an apple core, a crust of bread, and a piece of paper.
4. Select one or two items made of plastic, metal or glass – a plastic bag, metal lid, glass bottle.
5. Lay all of the items outside on moist dirt, in a spot where no one is likely to go near it. Cover the objects to keep dogs and cats away.
6. If there is no place outside, put the objects on a cookie sheet, moisten then with water, cover them and tuck them out of the way. Do not keep in the classroom.
7. Check the objects after a week, after two weeks and after a month. Ask students to predict their results before they examine the objects each time and record their predictions.
8. Get students to keep an accurate record of the decomposition of all the materials.
9. Ask them to predict what this site would look like in one year, and in ten years.
10. Talk about how this relates to a regular landfill site in the community.
11. Find out where the garbage in your city goes. Contact the municipal offices and have a guest speaker come to the class to explain the city's policy on landfills. Visit the landfill site, if possible.
12. Over time, conduct additional experiments so that they can complete this large class chart with the following headings:

Material	Amount used by 1 person in 1 year	Found in	To recycle this material	Recycled materials are used for	Good news is
Food scraps and yard wastes	30 cans	Fruits and vegetables, grass clippings, leaves	Material is mixed with soil, turned now and then to provide air, watered from time to time. It turns into rich soil called "compost"	Garden soil, fertilizer	Nutrients that came from the soils are put back again
All paper					
Students fill in more headings and information					

### ***Home Extension***

Create a compost heap in your yard to help reduce the amount of material that is being thrown out as "garbage". Check to see what regulations are in place in your municipality. See if compost containers can be obtained from the municipality at no cost or a lower cost. Keep a record of how much garbage is put out in containers each "garbage" day. Create a chart to record this information over a period of a few weeks and try to reduce the amount of materials that are going into the landfill areas by reducing, reusing and recycling more materials.

### ***Lesson Comments***

Teachers, feel free to add in your own comments for this lesson.