What can I compost?

Subject(s): **Science, English**

Grade(s): **1–6**

Learning intention(s)

Students will investigate what materials decompose by identifying organic (natural) and inorganic (man-made) materials. They will observe how bacteria and fungi (decomposers) break down organic materials and how these materials change over time.

Mapping to curriculum

Strands

- Science – Life and Living, Farming, Energy and Change
- English – Writing

Sub strands

Science

- 1.1 Living and Non-living Things
- 2.4 Gardening
- 3.2 Energy Sources
- 4.2 Cycle of Life

English

- 2.9 Writing to express stories and ideas
- 4.5 and 6.5 Writing to present information

Learning outcome(s)

Science

- 1.1.3.2 Identify and sort living things and non-living things according to their groups.
- 2.4.1 Understand that good soil, water and sunlight are needed for successful gardening
- 3.2.5 Appreciate that energy is essential for all aspects of human life and activity
- 4.2.1 Describe the main stages of reproduction in flowering plants
- 5.1.2 Understand that green plants need water, light energy and carbon dioxide for the process of photosynthesis
- 5.1.3 Understand how nutrients from the soil are absorbed and transported to parts of the plant.

English

- 3.9.1 Plan and write stories and other fictional texts with a clear storyline or message.
- 6.5.1 Understand how to respond to given situations or prompts by choosing appropriate texts to write

Lesson Instructions

Materials/resources

- 5 clear jars with wide openings
- Organic items: examples include orange peel, apple core, tea bag, cardboard, newspaper or a leaf
- Inorganic items: examples include a piece of plastic, glass or brick
- Soil (or finished compost, if available)
- Spray bottle for watering

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Who can do this activity

- Grades 1 to 2: Students will set up and observe the decomposition process with guidance.
- Grades 3 to 6: Students will work in pairs to conduct the investigation and engage in more advanced discussions and reporting.

Time required

- Set-up and starting the activity: About 1 hour
- Observations: Over 4 weeks or more
- Final observations and discussion: About 1 hour
- Optional: Extra time for writing a scientific report or completing the extension activity.

Activity 1: for Grades 1 to 2

Investigation Instructions

1. Set the scene: Start by discussing the differences between organic and inorganic materials.
2. Select 2-3 pieces of organic material and 2-3 pieces of inorganic material.
3. Fill jars with soil or compost, placing each material against the side for observation.
4. Lightly spray the soil to keep it damp, not soggy.
5. Record initial observations with photos or drawings.
6. Observe changes weekly for four weeks, keeping the soil moist.

Source: https://www.wasteauthority.wa.gov.au/images/resources/forms/Compost_Activity_Guide_2020.pdf

Predictions

1. Ask students to predict what will happen to each material after four weeks in the jar.
2. Observations
3. Observe jars weekly.
4. Record changes (or lack of changes), using the observation worksheet.
5. Compare final observations to the initial ones.

Source: https://www.wasteauthority.wa.gov.au/images/resources/forms/Compost_Activity_Guide_2020.pdf

Discussion

1. Which items changed? How?
2. Were predictions correct?

3. What caused changes?
4. Why did some items not change?
5. Group items into organic (decomposed) and inorganic (did not decompose).
6. Identify compostable and recyclable materials.

Application question

Composting is a good way to reduce most organic waste going to landfill – name several items of waste from your lunch, or someone else's lunch, that you could compost.

Activity 2: for Grades 3 to 6

In pairs, students will conduct the investigation outlined above (Activity for Grades 1 to 2).

Investigation Instructions

1. Provide the list of materials and equipment.
2. Ask students to design their investigation to test which materials decompose.
3. Discuss their designs and suggest improvements.
4. Identify hazards and establish safety rules.
5. Students will set up the investigation as planned or based on the Grades 1 to 2 instructions.

Predictions

- Students predict which set of jars will show more decomposition over four weeks and why.

Observations

- Over four weeks, observe and record changes in both sets of jars weekly, using the observation worksheet. See the example provided below.

Discussion Questions

1. Were your predictions correct?
2. Which items do you think are organic? Why?
3. Suggest possible reasons for why some materials decomposed while others didn't.
4. Do you think the changes are reversible?

Application Questions

1. Composting is a good way to reduce most organic waste going to landfill. Name five items from your lunch that could be composted.
2. What happens to inorganic materials in landfill, like metal, plastic, and glass?
3. Discuss alternatives to landfill for inorganic materials (reduce, reuse, recycle).

Scientific Reporting

- Students will use their observations to write a scientific report summarising their findings and answering the discussion questions.

Observation Worksheet

Name _____

Record changes (or lack of changes) in all jars weekly. You can also include illustrations to show what the material in your jars looks like.

Week	**Jar 1** Material: Organic or Inorganic (circle)	**Jar 2** Material: Organic or Inorganic (circle)	**Jar 3** Material: Organic or Inorganic (circle)	**Jar 4r** Material: Organic or Inorganic (circle)	**Jar 5** Material: Organic or Inorganic (circle)
1					
2					

Week	**Jar 1** Material: Organic or Inorganic (circle)	**Jar 2** Material: Organic or Inorganic (circle)	**Jar 3** Material: Organic or Inorganic (circle)	**Jar 4r** Material: Organic or Inorganic (circle)	**Jar 5** Material: Organic or Inorganic (circle)
3					
4					