

The circular life cycle of green waste

Year level

Lower secondary – Year 7 – 8.

Lesson description

Students investigate the circular life cycle of organic materials that can be placed in the green waste recycling bin. From garden to bin to Resource Recovery Centre to a compost processing facility). Students will consider the environmental, economic, and social benefits of recycling green waste materials as opposed to sending it to landfill.

Students will:

- understand the environmental risks of sending waste to landfill
- recognise the social, environmental and economic benefits of recycling green waste
- understand life cycle thinking in relation to green waste.

Curriculum links

Year 7

V 8.4 Science and technology contribute to finding solutions to a range of contemporary issues: these solutions may impact on other areas of society and involve ethical considerations (*Science - ACSHE120*)

V 8.4 Some of Earth's resources are renewable, but others are non-renewable (*Science - ACSSU116*)

V 8.4 Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (*Science - ACSHE121*)

V 9 Use models, including food webs, to represent matter and energy flow in ecosystems and predict the impact of changing abiotic and biotic factors on populations (*Science - AC9S7U02*)

V 9 Explain how new evidence or different perspectives can lead to changes in scientific knowledge (*Science - AC9S7H01*)

Year 8

V 8.4 Science and technology contribute to finding solutions to a range of contemporary issues: these solutions may impact on other areas of society and involve ethical considerations (*Science - ACSHE135*)

Year 7 and 8

V 8.4 Analyse how food and fibre are produced in managed environments and how these can become sustainable (*Design and Technologies - AC9TDE8K04*)

V 8.4 Critique needs or opportunities for designing and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas (*Science - ACTDEP035*)

V 9 Examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations (*Science - AC9S7H03*)

V 9 Explore the role of science communication in informing individual viewpoints and community policies and regulations (*Science - AC9S7H04*)

V 9 Write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate (*Science - AC9S8I08*)

Materials

- Internet access
- Butchers paper
- Markers/ pencils/ pens

Procedure

1. What do we mean when we talk about green waste materials in Brisbane?
2. Discuss sending green waste to landfill. Sending green waste to landfill is fine. It's natural right? Explain that Landfill sites are great big piles of rubbish. There is no air in the landfill which means not much can break down aerobically (with oxygen). Bacteria can survive in the landfill and they act as decomposers, breaking down the waste anaerobically. However when bacteria breaks down organic material it creates methane, a greenhouse gas that's 28 times more potent than carbon dioxide*.
3. Talk about how anaerobic decomposition of organic waste in landfill also produces leachate, a liquid that's created as waste materials decompose. Leachate is made up of decomposed materials plus rain when it falls on the landfill site. Because this leachate contains substances harmful to the soil, groundwater and waterways it must be carefully managed to ensure it is contained.
4. Watch the [Brisbane City Council Green Waste Video](#) which shows the journey of green bin contents in Brisbane.

Discuss green waste. When organic materials are put in your green waste recycling bin, it is taken in a truck to a Resource Recovery Centre where it is shredded and transferred into another truck and taken to a facility where it is composted.

Lesson plan: The circular lifestyle of green waste



Composting is a natural process of decomposition using oxygen (aerobically) that is better for the environment. This process doesn't produce methane like the bacteria in landfill. Furthermore, composting turns green waste into a range of high quality, natural soil conditioning products such as mulch, compost, blended soils and potting mixes used in landscaping, horticulture and agriculture. These products recycle green waste as it is reused, enriching the soil and helping to grow healthy crops and gardens. Contamination (such as plastic or non-organic materials) in the green waste recycling bin can impact the quality of the end product and must be reduced at the collection stage.

5. Have the students work in groups to define the following terms:
 - Waste
 - Organic waste
 - Green waste
 - Compost
 - Landfill
 - Contamination
 - Circular economy
6. Students continue working in their groups to brainstorm the lifecycle of the materials placed in the green bin. What are the barriers to recycling these items? What are the benefits? What are the implications of contamination in these bins? How could this be effectively communicated to the community? Students will create a poster presenting and promoting this information.
7. Students will present their poster in a short presentation. Engage the students in discussion.

Extension activity

- Students create a campaign to acquire a green bin for their school.
- Book an excursion to the [Towards Zero Waste Education Centre](#) at Brisbane Landfill to receive a waste education presentation with Brisbane City Council and tour of the landfill. This will give students the opportunity to learn more about the journey of different waste streams in Brisbane.
- Students could investigate establishing a school compost area/ system.

**<https://cer.gov.au/schemes/national-greenhouse-and-energy-reporting-scheme/about-emissions-and-energy-data/global>*