

# Introduction to Engineering for Good



## Passion to Purpose TY unit

### Phase 2 - Exploration and Experimentation

### Micro-module Engineering for Good

### Lesson 3: What is our Waste?

#### CURRICULUM AREAS

Science, Technology, Engineering,  
Environment, Sustainability

**9** INDUSTRY, INNOVATION  
AND INFRASTRUCTURE



**11** SUSTAINABLE CITIES  
AND COMMUNITIES



**12** RESPONSIBLE  
CONSUMPTION  
AND PRODUCTION



**13** CLIMATE  
ACTION



#### **Lesson Title & Summary: What is our waste?**

Learners will examine the amount of waste and wasteful products that exist around them, and the toll that this has on the environment. Using everyday waste materials on hand, they will consider their recycling potential and ultimately their sustainability. They will apply the information they have learnt in the lesson on focused action they can take within their own school to reduce the amount of waste.

#### **Vocabulary: Recycling, Composting, Landfill**

#### **In this lesson, the learner will:**

- be introduced to the idea of sustainability and how it relates to our daily lives
- develop an understanding of life cycle analysis, circular economy and waste management
- learn about the impact of waste in the environment and how we as consumers can impact on this issue
- develop group work and analysis skills

#### **Materials:**

- Teachers' Support Sheet
- Non-transparent bag
- Common items made from different materials: e.g toothbrush (one bamboo, one plastic) takeaway dish (one polystyrene, one plastic, one cardboard cups (one single-use coffee cup, one reusable coffee mug) water bottles (one single-use, one reusable plastic, one reusable metal) etc.

\*Disclaimer: Please do not buy any new single-use items or items which could contribute to plastic waste for this lesson. Please source materials which you have on-hand already, which are to be recycled.

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## Activity Instructions

### Activity 1 Introduction to issues with our waste (15 mins)

1. Introduce learners to the standard sustainability definition and discuss, using the question prompts in the teachers' notes.
2. Watch the video 'Sources and impacts of marine litter' [3:50min].
3. In groups, discuss the questions in the teachers notes.

### Activity 2 - Sustainable pairs (25 mins)

1. Position the class in a circle, all facing inward. There needs to be enough room to walk around the circle, behind the learners.
2. Walking behind them so they cannot see the items, take items from the bag of 'waste' and give one item to each learner.
3. Learners should not look at their item until the whole class is each in possession of one item.
4. Learners now have to find their matches – i.e. the two different types of toothbrush are a match, the cups are all a match. This will create groups of 2, 3 or 4 depending on the materials you have used.
5. In their groups, they must discuss the items they possess in terms of sustainability - see Teachers' Support Sheet
6. Ask the groups to align the items from most to least sustainable and present their feedback to the whole class.

### Activity 3 – Presentation (10 mins)

1. In small groups, discuss what they see as the biggest waste issues in the school.  
For each issue:
  - What is the issue?
  - Why do they exist?
  - What are some possible solutions to the issue?
    - What actions can you take to reduce the amount of rubbish you create?
    - What can you as a class do to reduce waste in the school environment?

## REFLECTIVE EXERCISE: 3-2-1 (10 mins)

- Three things they feel they have learnt from the lesson and the tasks.
- Two things they found the most interesting and would like to learn more about.
- One piece of feedback on the lesson and the tasks.

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## Extension / Reduction Activities:

Reduction: For a shorter class, ask students to watch the video in Activity 1 before the lesson. Reduce the time for Activity 2.

Learners can also be divided into groups to focus on a key discussion question and feedback to the class.

Extension: For a longer class, select one of the key issues that comes up from the discussion in Activity 3. Write an action plan for solving this issue in the school. Decide on areas of responsibility and start implementing the action plan over the coming weeks.

Option B: You can also use the video 'I Tried To Make Zero Trash for 30 days' [5:26 mins].

Option C: Use the video 'Do you know how to recycle? Are you sure?' [3:00 mins] as a primer for Activity 2.

## MEDIA BOX: (materials, online video links, extra resources, case studies etc.)

Sources and impacts of marine litter [3:50 mins] <https://www.youtube.com/watch?v=017bBeXhYz4&t=1s>

Do you know how to recycle? Are you sure? [3:00 mins]

<https://www.youtube.com/watch?v=sZZsBedy0CU&t=81s>

I Tried To Make Zero Trash For 30 Days [5:26 mins] <https://www.youtube.com/watch?v=KtTTnEePeAQ>

## LOCAL EXPERTISE/ TRIP SUGGESTIONS

- Organise a visit to the local waste disposal facility.
- Invite the County Council's Environment Officer to come and speak to the class. Prepare questions in advance of the visit.
- Invite a local speaker or business owner who uses sustainable products to come and speak to the class.
- Find out from the local Tidy Towns group if they are working with waste issues.
- Explore [An Taisce's Green School Litter and Waste resources](#) and link into the school's programme.

# LESSON 3 TEACHERS SUPPORT SHEET



## Activity 1

### Discussion Points:

Share the standard definition of sustainability and discuss as a class.

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Bruntland Report for the World Commission on Environment and Development (1992)

### Key discussion points

- Is development ever sustainable in a planet with finite boundaries?
- How do you think might meeting current needs compromise future needs?
- Discuss the difference between needs and wants - what do we need for survival? What do we need for quality of life?
- What do you think might be the needs of future generation in 5,10,15 year's time?

### Discussion after watching the video

- What were the main points in the video?
- What new information did you learn?
- How did the video make you feel? Why?
- How much information in the video were you already aware of?
- Where did you learn about these topics?
- What would you change about the video to make it more suitable for your peers?

## Activity 2

### Post game Discussion

- What materials are the products made from?
- Can you work out if they are recyclable or not?
- Which do you use?
- How would you dispose of these items?
- Can they be reused?
- Can they be repurposed into other items?
- Which product is most sustainable? Why?

## Activity 3

### Extension Activity

- What actions can you take to reduce the amount of rubbish you create?
- What can you as a class do to reduce waste in the school environment?

