

SDG12 Future of Innovation and Enterprise

MM5: Introduction to Engineering for Good



Micro-Module 5: Introduction to Engineering for Good

Exploration and Experimentation

Lesson 6: Waste Not, Want Not 3

**Subjects: Applied
Technology, Climate
Action and Sustainable
Development, Digital
Literacy, Technology**

Lesson Title and Summary: Waste Not Want Not 3

In Waste Not, Want Not 3, learners will apply the Engineering Design Process to designing and testing a system for waste separation and management.

Vocabulary: Reduce, Reuse, Recycling, Materials Recovery Facility

In this lesson, the learner will...

- develop their understanding of the issues around human-produced waste, recycling and the complexities of the recycling process
- learn how to effectively support recycling in their communities
- learn about how creative technology can be applied to clean up global waste
- work collaboratively with peers on a recycling-related problem
- plan, design, sketch and build a recycling system

Materials:

- Worksheet: Waste Design Challenge (covers lesson 5 - 7)
- Notebooks
- Pen/Pencil
- Paper
- A variety of clean, dry recyclables in a single, large recycling bin
- Four smaller bins (one for plastic, one for metal, one for glass, and one for paper)
- A long table
- A selection of craft materials including, but not limited to: bin bags, hand fans, small magnets, plastic tubs, netting, paper, plastic cups, straws, tape etc.



MM4 Introduction to Engineering for Good

L6: Waste Not, Want Not 3



Activity Instructions

Activity 1: Waste Design Challenge- Empathise & Ideate (10min)

1. Ask learners to reform into their teams from the previous lesson. Using their brainstorming and feedback Guide, and Worksheet: Waste Design Challenge, ask them to develop a short profile on who will be using their waste sorting system.
 - Where is the system located? What type of area?
 - What types of people will manage and run the system? Is there anything about them you need to consider?

Activity 2: Waste Design Challenge- Prototype (paper designs) (40min)

1. As a team, design your waste sorting system on paper. Use diagrams and labels to show how the system works and will be used. Use Worksheet: Waste Design Challenge.
2. Share designs as a whole class and provide a round of feedback. Allow time to incorporate any feedback into paper designs.

Reflective Exercise: 3-2-1 (10 mins)

- Three things they feel they have learnt from the tasks
- Two things they found most interesting and would like to explore more
- One opinion they have about the tasks

Use Post-its or a mentimeter survey - www.mentimeter.com - to gather reflections

MM4 Introduction to Engineering for Good

L6: Waste Not, Want Not 3



Extension / Reduction Activities

Reduction: For a shorter class, reduce timing of Activity 2.

Extension: For a longer class, increase presentation and feedback time.

Media (materials, online video links, extra resources, case studies etc)

Repak: Ireland's leading environmental not for profit organisation: repak.ie

Modernising design for minimal waste [19:31min] https://youtu.be/TJNl3vWj2_I

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

Recycling – how to [3:00 mins] <https://www.youtube.com/watch?v=sZZsBedy0CU&t=81s>

Zero waste challenge: [5:36 mins] <https://www.youtube.com/watch?v=KtTTnEePeAQ>

Local Tips / Expertise / Additional Work and Assessments

Contact or take a trip to your local Materials Recovery Facility or recycling bins to see the process of recycling.

Contact local waste disposal, e.g., KWD, Panda, etc., to see how waste is handled.

Find local organisation or individuals who use recycled or reused materials in their business. Invite local authority environmental officer to speak to the class. Have students devise questions in advance.

If visiting Dublin, consider going to The Rediscovery Centre, Ballymun <https://www.rediscoverycentre.ie/> or use their resources as an introduction to the circular economy