

BECOME A
WASTE
HERO

REDUCE TO ZERO



Creating the Circular Economy


Level 4 Intermediate Lesson



Lesson Prep & Curriculum Alignment

Prep time: 10 – 15 minutes

Students will understand the differences between the linear and circular economies and how natural cycles can teach us to design more circularly. They will develop the ability to think about the full life of the products that we use in our daily lives and set the groundwork for being able to redesign systems. Students will understand the 5 different types of circular economy business models and identify how these models practice the 3 principles of the circular economy.

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- 1** Display the lesson slides for the class and create a discussion about what they already know about **the linear vs circular economies and introduce the concept of product lifecycle mapping**. Ask students the guiding questions in the PowerPoint slide notes.
 - 2** **Print out the 4 handouts:** 1. Circular Business Cards; 2. Circular Business Case Study; 3. Areas of Circularity; 4. Circular Lifecycle Map.
 - 3** **Follow the steps on the next slide** and in the teacher notes in slides 16 and 18 to conduct the class activity.

Lesson Prep & Curriculum Alignment

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Key Learning Outcomes and Curriculum Alignment:

- **Science - Earth and Human Activity:** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. Things that people do can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.
- **English Language Arts and Literacy:** Participate in collaborative conversations with diverse partners about topics and texts. Follow agreed-upon rules for discussions. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **Social Studies - People, Places, and Environments:** The study of people, places, and environments enables us to understand the relationship between human populations and the physical world.

SDG Alignment



Flexible and adaptive lesson

Lesson plans are designed to be flexible and responsive to the evolving needs of your classroom. Lessons are editable and customizable to meet the different individual student and classroom contexts. A PowerPoint version with teacher instructions and a printable PDF lesson are available for download.

The Lesson

Lesson duration: 30 - 45 minutes

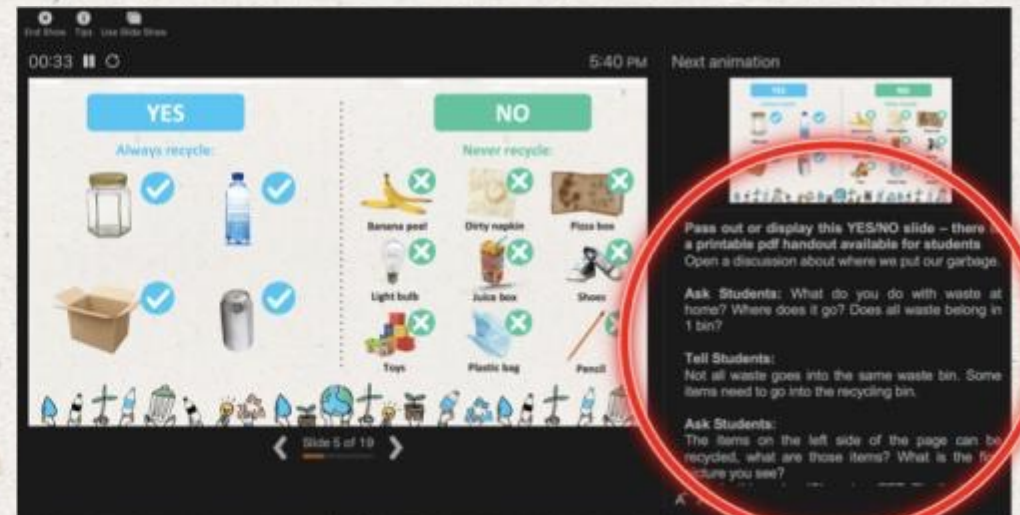
- 1 Students will receive the **Circular Business Case Study handout** with nine questions that they will answer based on the circular business card they choose. Allow them to do their own research online if they need.
- 2 **Distribute the circular business card handouts** and have students select one of the five circular businesses they will use for their case analysis.
- 3 Once they have answered all the questions for the case study they will **map the areas of circularity** found in their business case. The handout will consist of the 5 linear stages of a product's lifecycle and have them draw in the arrows indicating the kinds of circularity used in their business case.

Prepare the PowerPoint presentation

When you are ready to present the lessons to your class click on **Slide Show** on the top menu bar then select **Presenter View**. In Presenter view, you can see your notes as you present while the audience see only your slides.



The notes appear in a pane on the right. The text should wrap automatically, and a vertical scroll bar appears if necessary. You can also change the size of the text in the Notes pane by using the two buttons at the lower left corner of the Notes pane.



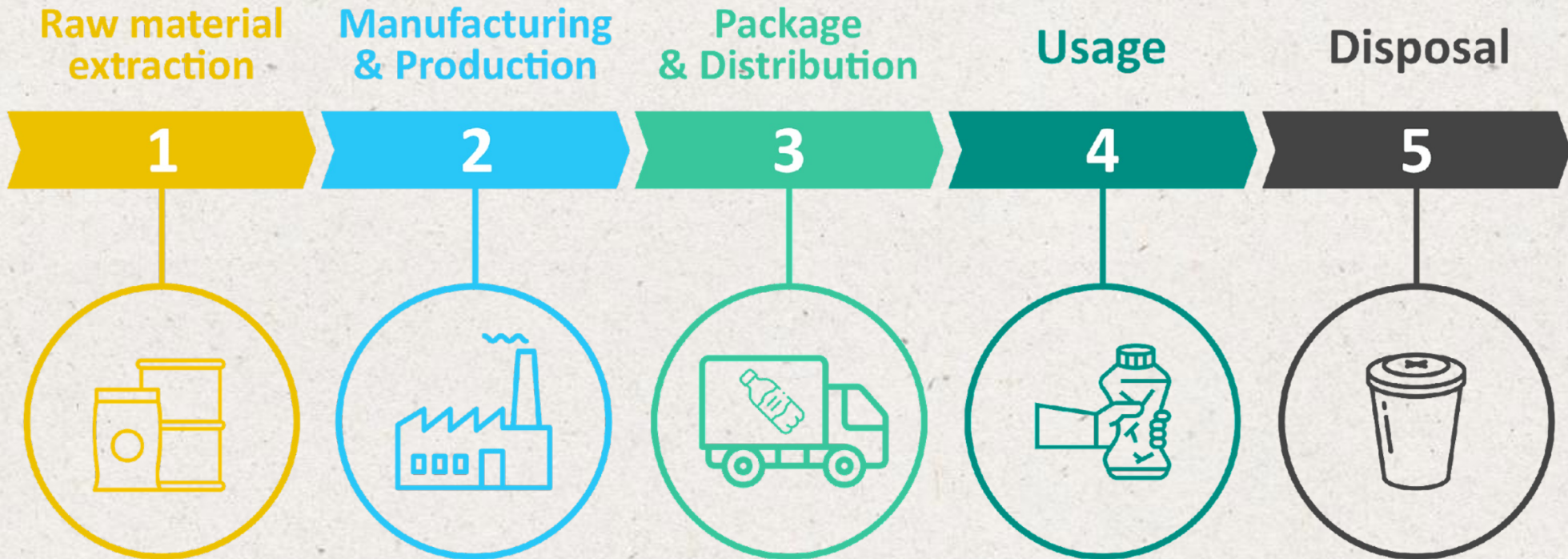
Linear Economy

VS

Circular Economy



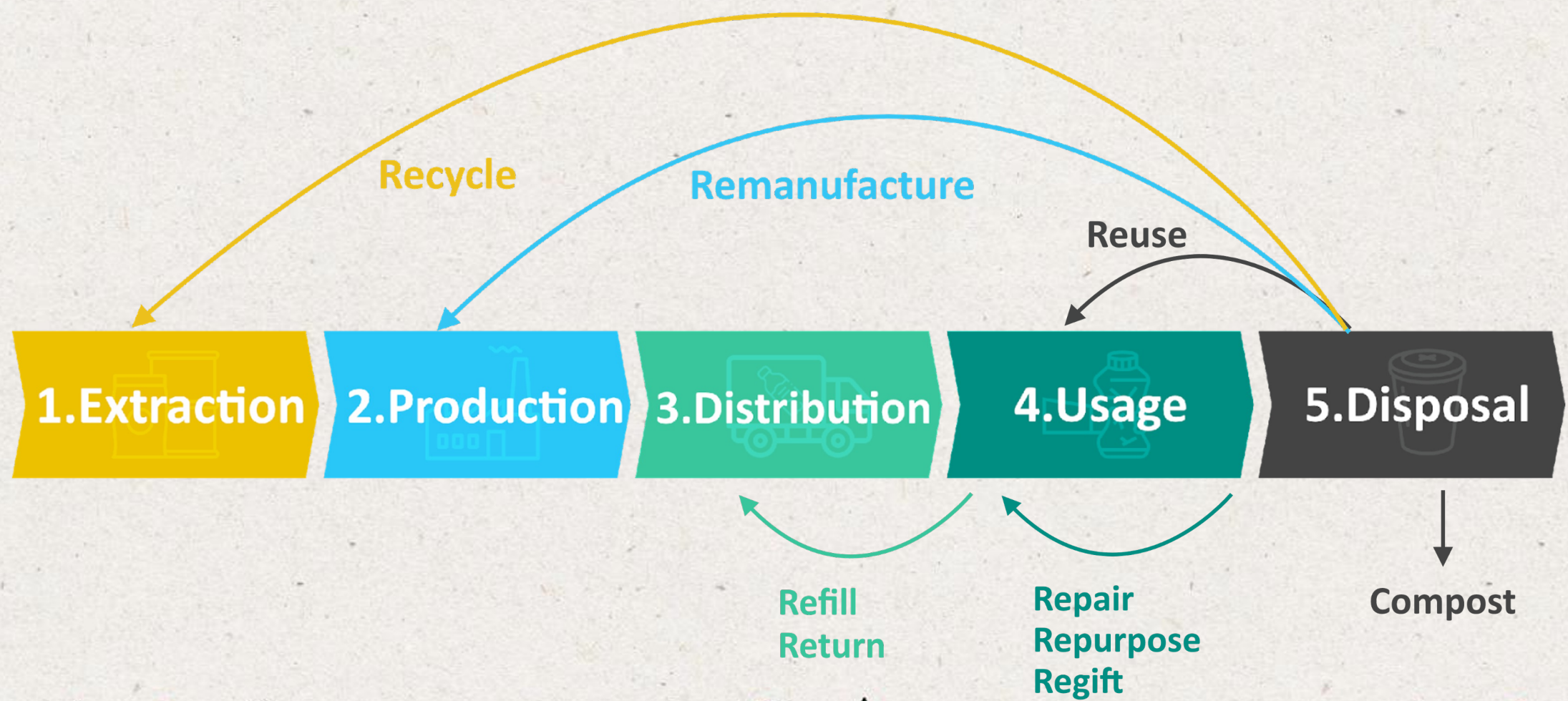
Linear Economy



Circular Economy



Life Cycle Mapping



Five Business Models of Circularity

Circular Supplies



Products made from fully renewable, recyclable, or biodegradable resource inputs.

Resource Recovery



Services that work to eliminate resources, materials, or waste from leaking into the environment and maximizing the value of it to reenter the loop.

Product Life Extension



Services that offer to extend the life of an otherwise discarded product through repairing, upgrading, or reselling back into the loop.

Sharing Platform



Sharing platforms allow people to collaborate and share a product amongst themselves without singular ownership by the customer.

Product As A Service



Products that are used by one or more customers as a pay-as-you-use arrangement.



Circular Supplies: Shoes made from plastic



Resource Recovery: Waste to energy



Product Life Extension: **Takeback & repair service**



Sharing Platform: Ridesharing



Product As A Service: Clothing rental



Class Activity: Circular Business Case Study

- 1 What does the company do?
- 2 Do they offer goods, services, or both to their customers?
- 3 Which of the 5 circular economy business models does the company utilize?
- 4 What linear problem is the company trying to solve through circularity?
- 5 How do they keep materials in a closed loop system? (E.g., recycle plastic bottles to make new products).
- 6 How do they reduce or eliminate waste?
- 7 Does their business model help regenerate natural systems?
- 8 What added value do they offer customers and the environment with their circular model?
- 9 As a designer, how could you help make their business even more circular?

Circular Supplies



Products made from fully renewable, recyclable, or biodegradable resource inputs.

Example:

A shoe company makes their shoes from 100% recycled materials. PET plastic bottles can be recycled into polyester fibers (rPET) which are made into fabric used to make athletic shoes. After usage, the customer can return the shoes to be recycled into other shoe parts.

Resource Recovery



Services that work to eliminate resources, materials, or waste from leaking into the environment and maximizing the value of it to reenter the loop.

Example:

The methane produced in landfills can be recycled and used for the production of electricity and thermal energy, effectively diverting waste from landfills and eliminating tons of greenhouse gas emissions.

Product Life Extension



Services that offer to extend the life of an otherwise discarded product through repairing, upgrading, or reselling back into the loop.

Example:

Customers can get a discount on future purchases by bringing their old gear back and the brand will repair and restore before reselling it. This extends the life of the garment that would otherwise be disposed.

Sharing Platform



A service platform allows people to collaborate and share a product amongst themselves without singular ownership by the customer.

Example:

Ridesharing functions on the principle of owners sharing their assets, fuel, and time with others in exchange for money. A company provides a platform where private car owners can offer their car and a ride to people who need one.

Product As A Service



Products that are used by one or more customers as a pay-as-you-use arrangement.

Example:

Clothing rental models can provide customers with access to a variety of clothes while decreasing the demand for new clothing production. Short-term rental models offer a compelling value proposition, particularly when taking changing customer needs and fashion trends into consideration.

Identify areas of circularity

