

PROJECT GO – LESSON PLAN

Topic: Life Cycle Analysis & Circular Economy (Years 10–12)



Investigating how products move through waste systems and the environmental impacts of disposal choices

Overview

Project GO is a sustainability education program that helps students understand waste, recycling, and caring for the environment through storytelling, characters, and real-world problem solving.

This lesson introduces students to the concept of **Life Cycle Analysis (LCA)** and explores how everyday products move through **waste and recycling systems**. Students investigate how disposal choices affect the environment and examine the difference between a linear economy and a circular economy.

Through discussion, systems thinking, and a sustainability investigation activity, students analyse the environmental journey of a product commonly used in Ipswich and evaluate how waste systems can reduce landfill, conserve resources, and support sustainability outcomes.

This lesson is designed to work directly with the **Project GO Years 10-12 Worksheet 2** and can be delivered as a stand-alone classroom activity or alongside other Project GO digital resources.

Objective

By the end of the lesson, students will be able to:

- Understand the concept of **Life Cycle Analysis (LCA)**
- Identify the environmental impacts of different **disposal methods**
- Compare **linear and circular economy systems**
- Analyse how **recycling, reuse, and composting** reduce waste and conserve resources
- Create a “Waste Road Map” tracing the journey of a product through **waste systems**

Materials

- Whiteboard or digital display
- **PROJECT GO YEARS 10-12 Worksheet 2: Life Cycle Analysis (one per student)**
- Pens/highlighters
- Optional: internet enabled devices for research

Lesson plan

1. Review & Introduction (10 minutes)

Teacher prompts:

- What happens to products after we throw them away?
- Do all products end up in **landfill**?
- What choices can people make to **reduce waste**?
- Why do **disposal choices** matter for the environment?

Record student responses and discuss how waste systems affect:

- Energy use
- Pollution
- Natural resources
- Greenhouse gas emissions

Key framing statement:

“Every product has a life cycle, and the choices people make determine whether materials become waste or valuable resources.”

Introduce the concepts:

- Linear economy = make > use > throw away
- Circular economy = reuse > recover > recycle > regenerate

2. Explore (10 minutes)

Introduce the key concepts from the worksheet:

- Life Cycle Analysis (LCA)
- Circular Economy
- Waste Road Map

Discuss examples of common products students use every day:

- Coffee cups
- Food containers
- Aluminium cans
- Garden organics

Ask students:

- Which products are easiest to recycle or reuse?
- Which products create the most waste?
- How could products be reused or redesigned to reduce waste?

Reinforce that:

- Products require resources, energy, transport, and disposal systems
- Recycling and composting reduce environmental impacts
- Circular economy systems aim to keep materials in use for as long as possible

Explain that students will now investigate the environmental journey of a product through a **Project GO Life Cycle Analysis** activity.

3. Activity – Life Cycle Analysis Investigation (30-60 minutes)

Distribute the **PROJECT GO Years 10-12 Worksheet 2** to each student.

Explain the task step-by-step:

1. Select one product commonly used in Ipswich
Examples may include:
 - Takeaway coffee cup
 - Reusable coffee cup
 - Food container
 - Garden waste item
 - Another everyday product
2. Investigate the product's life cycle:
 - Raw material extraction
 - Manufacturing
 - Use
 - Disposal or recovery
3. Create a “Waste Road Map” showing the journey of the product through:
 - A linear economy pathway
 - A circular economy pathway
4. Analyse environmental impacts including:
 - Waste generation
 - Energy use
 - Resource consumption
 - Landfill impacts
 - Recycling or composting opportunities

Encourage students to:

- Think critically about environmental systems
- Consider both consumer behaviour and infrastructure
- Use evidence and sustainability concepts to support conclusions

Support students by:

- Prompting deeper analysis and discussion
- Assisting students to compare waste pathways
- Encouraging students to connect concepts to real-world systems in Queensland

Where to Find More Additional Project GO digital stories, activities, and resources are available for students, teachers, and families to continue learning at:

PROJECT-GO.COM.AU

4. Reflect & Connect (10 minutes)

Whole-class discussion or written reflection:

- Which products had the greatest **environmental impact**?
- Which products fit best into a **circular economy**?
- What role does recycling or composting play in **reducing landfill**?
- How can individuals and communities **reduce waste more effectively**?

Reinforce the key message:

Products do not simply become “waste”. Their environmental impact depends on the waste management systems and choices available to us.

Connect learning to real life by discussing:

- Waste systems used at home or school
- GO bins and organics recovery
- Ways businesses and governments support circular economy systems

Assessment Opportunities

Teachers may assess students on:

- Understanding of Life Cycle Analysis concepts
- Ability to compare linear and circular economy systems
- Application of sustainability concepts to real-world products
- Quality of analysis and systems thinking in the Waste Road Map activity
- Participation in discussion and reflection activities

Assessment formats may include:

- Worksheet completion
- Waste Road Map diagram
- Short written reflection
- Group discussion contribution
- Sustainability proposal or infographic (extension)

Australian Curriculum (ACiQ v9) Connections

Sciences

- Earth and Environmental Science – sustainability systems and environmental impacts
- Science in Practice – applied sustainability and waste management contexts

Technologies

- Engineering/Engineering Skills – systems design, problem-solving
- Design – sustainable design influences
- Building & Construction – infrastructure and facilities
- Digital Solutions – data use, systems thinking and optimisation

HASS

- Career Education
- Geography: human–environment interaction

General Capabilities

- Critical and Creative Thinking
- Ethical Understanding
- Literacy
- Personal and Social Capability

Cross-Curriculum Priority

- Sustainability

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