Sustainable engineering

WHERE'S THE IMPACT?

Description of activity

This activity is used to work out the environmental impact of a product throughout its lifecycle.

Initially use a simple product (we suggest a drinks can) to illustrate the process of working out the environmental impact during its life cycle. You can then ask students to look at a more complex engineered product (e.g. a mobile phone) to do the same activity independently.

Divide your class into pairs and give each pair a lifecycle analysis worksheet (overleaf).

Ask students to write the name of the product in the central box.

Ask students to identify the constituent parts of the product they are looking at. Then ask them to consider and record each stage of the product's life cycle under the following headings:

- **Material used:** What was used to make the product? (e.g. plastics, metals)
- **Production:** How and where was it produced? (in the Uk or overseas?)
- **Distribution:** How was it transported at each stage of the lifecycle? (ship, lorry, train)
- **Use:** What was the product's impact during the use stage? (use of energy, water)
- **Disposal:** How can it be disposed of? (charity shop, recycled, landfill)

Once completed ask students to identify where in the product's lifecycle they consider to be the major environmental impacts.

If they were to redesign the product, how could it be done in a way to reduce the impact on the environment?

Learning objectives

1. To enable students to develop a detailed understanding of the environmental impact of an engineered product throughout its life cycle.

2. To provide opportunities for students to show how changing an engineering process could reduce its environmental impact.

Learning outcomes

1. Students can describe and evaluate the environmental impact of an engineered product throughout its life cycle.

2. Students will be able to suggest ways in which the environmental impact of an engineered product could be reduced in an innovative way.

PLTS

Reflective learners – by looking at an engineered product students will be able to reflect on its impact e.g. in terms of energy used, transport, buildings.

Creative thinkers – by applying their knowledge of an engineered product they can look at alternative ways of producing the same outcome.

PRODUCT LIFECYCLE ANALYSIS

Activity: Mind map the resources used at each stage of the product's lifecycle.