

# Design Technology - The plastics problem



Age 7-11



60 minutes

## Curriculum links

- Develop and communicate design ideas
- Evaluate existing products

## Resources



**Slideshow 9:**  
The plastics problem



**Student Sheet 9a:**  
Solutions sheet

**Student Sheet 9b:**  
Product analysis



**Thinglink:**  
What's your bag?

## Extension or home learning

Students consider a range of single use plastic products and research sustainable alternatives already in development. Share findings with the class.



## Lesson overview

In this lesson students are posed with a problem; they need to design a product to help Santa's elves carry several items from one location to another. They should attempt to design a new product and consider its features including strength, usability and materials. Students go on to evaluate existing solutions to this product in terms of strength, cost, aesthetics, usability and finally sustainability. They conclude by evaluating whether a new product is required based on the existing alternatives.

## Lesson steps

## Learning outcomes

### 1. Design criteria (10 mins)

Students are posed with a problem; helping Santa's elves transport presents between two points.

- Understand design criteria

### 2. Developing ideas (15 mins)

In groups students discuss possible solutions to this problem, sharing and building on ideas.

- Develop and communicate ideas

### 3. Specifications (15 mins)

Students then consider in greater detail the strength, usability, materials and aesthetics of their designs.

- Discuss purpose, function and appeal of products

### 4. Analyse existing products (10 mins)

Students investigate a variety of existing similar products and analyse their strength, cost, aesthetics and usability.

- Investigate and analyse a range of existing products

### 5. Evaluate existing products (10 mins)

They then evaluate the sustainability of each of these products (and their own) and conclude whether a new product is required based on the existing alternatives.

- Evaluate ideas and products

## TEACHER GUIDANCE 9 (page 1 of 2)

### Step Guidance

### Resources

**1**  
10  
mins



In step one students are presented with a problem; they must transport several items from one point to another.

- Using slides 1-5 talk through the problem and ask students for their initial ideas on how they could solve the problem.
- Explain that they should think beyond products they already know of and try to come up with a novel way of completing the task.

**Slideshow 9:**  
Slides 1-5

**2**  
15  
mins



In groups students then discuss possible solutions to the problem.

- Ask students to discuss the problem with their group and share initial ideas.
- Encourage students to think outside the box and share the most unusual solutions with the whole class.
- Using Student Sheet 9a students sketch and annotate three ideas.

**Student Sheet 9a:**  
Solutions sheet

**3**  
15  
mins



In Step 3 students further develop their ideas through considering the design specifications of their product.

- Using slides 6-8 ask students to suggest the materials their product could be made from.
- Explain that they should avoid using products such as single-use plastics, to develop a more sustainable product.
- Students should also consider the strength, usability and aesthetics of their design, adapting where necessary.

**Slideshow 9:**  
Slides 6-8

**Student Sheet 9a:**  
Solutions sheet

**4**  
10  
mins



Step 4 demonstrates some existing solutions and asks students to evaluate each product.

- Using slides 9-12 share some of the existing solutions to the problem and ask students to comment on the strength, usability, aesthetics and sustainability of each product.
- As you go through the slides ask students to compare their own design against each criterion.

**Slideshow 9:**  
Slides: 9-13

**Thinglink:**  
What's your bag?

### Step Guidance

### Resources

5

10  
mins



Step 5 asks students to make a detailed comparison of each existing product with their own, specifically focussing on sustainability and environmental impact.

- Explain that students should complete Student Sheet 1b, commenting on each aspect of the design and comparing the sustainability and environmental impact.
- They then conclude by writing a paragraph summing up their findings and stating whether a new product is needed or whether there are already enough sustainable solutions.
- Explain that in the next lesson they will be looking at the design process in more detail to develop a new product to replace a single-use plastic.
- Look at Diagram: The design process to illustrate.

#### **Slideshow 9:**

Slides 14-17

#### **Student Sheet 9b:**

Product analysis

#### **Diagram:**

The design process