

Designing plastics for reuse

Challenge: You are going to reinvent the plastic yoghurt pot.

Problem:

Recycling plastics is good, BUT

- It still costs some energy
- It releases toxic chemicals and CO₂ (contributing to the greenhouse effect)
- Not all plastic can be recycled, and not all plastic that can be recycled is
- It's often cheaper to make new plastic from fossil fuels

Many plastics are designed for single-use, then get thrown away.

Scientists think that a better solution is **improving plastic design** so it is not single use and can be used again and again.

Outline:

You may wish to work in a group.

You will be

- Designing an improved yoghurt pot;
- Making a label;
- Pitching your yoghurt pot solution.

After a picture of a sea turtle injured by a straw went viral in 2015, people boycotted plastic straws.



Image: Wiki commons

[https://commons.wikimedia.org/wiki/File:Sea_turtle_2015_\(Unsplash\).jpg](https://commons.wikimedia.org/wiki/File:Sea_turtle_2015_(Unsplash).jpg)

More reading:

<https://www.envchemgroup.com/richard-thompson.html>

Key stages 3- 5
30 mins + presentations

1. To begin, analyse a yoghurt pot.

What shape is it? What are its geometric requirements? How many shapes can you think of that would work?

What material properties does the plastic it is made of have? Research to find out what plastic yoghurt pots are typically made of, and what their advantages and disadvantages are. How long is the yoghurt pot in use? What job does it need to do?

What modifications could you make to the yoghurt pot to make it better at its job?

Key stages 3- 5

30 mins + presentations

2. Now it's time to think about other uses.

What else could you use a yoghurt pot for? Write down as many uses as you can think of.

What modifications could you make to the yoghurt pot to make it better at some of these jobs?

Key stages 3- 5

30 mins + presentations

3. Choose one or more further applications of the yoghurt pot.

Your job is to design a modified yoghurt pot that can be bought, used, and then put to a second use where it can be used again and again.

How could you change the appearance of the yoghurt pot to make it look purposeful and smart doing jobs?

Could you add or take anything away from it?

Would you modify the material it is made of in any way?

Outline your design for the yoghurt pot. Include an estimate for the cost.

Key stages 3- 5

30 mins + presentations

4. Design a label for your yoghurt pot that explains how to use it for consumers. This should be as simple as possible.

5. Prepare a "Dragon's Den" style oral pitch to convince an investor to choose your yoghurt pot solution.

Present your pitch to your class or family, and listen to those of others. Hold a vote to see which solution is the most popular.

Key stages 3- 5

30 mins + presentations