

# Bottled water vs tap water lesson 1

## Group

Year 4, a two-hour lesson.

## Areas of the curriculum

Geography, Citizenship, Art and design, PSHE, EN1

## Objectives

- To understand about drinking water.
- To understand how our water drinking habits affect the environment.
- To produce a 3D model made from recycled bottles.

## Equipment

On each student's desk place an empty plastic water bottle (labels removed, preferably).

Online picture search: a street, a bin, a recycling bin, a landfill site, a wood, a beach, Pacific ocean map, water bottle chiller, the great Pacific garbage patch.

Recycled objects e.g. bottle tops, sequins, foil, plastics, wood, sand, paper, fabrics string/wool.

Paper, pencils, marker pens, glue and glue spreaders.

## Activity

Decorate the water bottles to create 3D reminders of the environmental costs of bottled water.

## Discuss:

- We know where to buy bottled water, but what happens to the bottles once the water is gone?
- Where do you think most of these bottles are likely to end up? In the street? In a bin? on the beach? In the sea?
- Where do you think these bottles should end up?
- The amount of plastic that ends up polluting the environment.
- The size of great Pacific garbage patch.
- How long does it take for a plastic bottle to break down?
- The importance of recycling plastic bottles.
- The energy used to make and recycle plastic bottles.
- What impact does plastic bottles have on the environment?
- The students to incorporate facts they have learned into their designs.

## Summary

Recycling is important, but is there more we can do?

Perhaps it is better not to use disposable plastic bottles in the first place?

Students to evaluate their work, by discussing their 3D piece with the class as a whole or with other students on their table. Success, changes & developments?

In the next lesson we are going to look at the differences between bottled water and tap water

## Evaluation

## Resources

- Britain consumes 3bn litres of bottled water per year.
- Tap water costs around 0.097p a litre – or around 1p for a bucket of water. Bottled water costs, on average, 500 times more than tap water.
- The average person will spend £25,000 on bottled water and associated soft drinks in their lifetime.
- A Which? survey questioned 3,000 of its readers and found half were unable to tell the difference between tap and bottled water.
- Research shows that bottled water isn't any cleaner, better for you or tastier than tap water.
- Tap water in developed nations is transported from treatment works in underground pipes and requires much less energy than the production, distribution and 'disposal' of bottled water.
- The UK bottled water industry is worth approximately £2bn per year.
- The majority of bottled water is sold in PET (polyethylene terephthalate) bottles, which can be recycled. These bottles are not designed to be used more than once.
- In 2007 it is estimated that 13bn plastic bottles of water were sold in the UK of which only 3bn were recycled.
- Most plastic bottles for bottled water are produced using a virgin petroleum feedstock.
- 162g of oil and seven litres of water are required to manufacture a single one litre volume disposable PET bottle and this amounts to the release of 100g of carbon dioxide (CO<sub>2</sub>) a major greenhouse gas (GHG).
- Some research has claimed that drinking 'a bottle' of water has the same impact on the environment as driving 'a car' for one kilometre.
- The World Wide Fund for Nature (WWF) campaigns strongly that bottled water is not only environmentally unfriendly but also a waste of consumers' money.
- 50% of bottled water contains added minerals and salts. This does not mean that it is more 'healthy'.
- The UK bottled water industry has made some changes recently. PET plastic bottles have been re-designed so that they are 30% lighter than 15 years ago and increasing amounts of recycled plastic are used to manufacture the bottles themselves, but there is litter problem with many discarded PET bottles and other 'waste' plastics.
- Recycling rates though improving are still low in the UK as a whole. Today nearly 35% of PET plastic bottles in household waste streams are now collected for recycling.
- The majority of PET bottles end up in landfill. It is estimated that these bottles will take between 500 and 1000 years to decay.
- Fewer are incinerated with some energy being recovered. Many 'discarded' bottles become environmental pollution and can be found in hedgerows, parks, streams and rivers. Via rivers they can be transported to the open seas.
- The Great Pacific Garbage patch (also known as the Eastern Garbage Patch) is an area 6 times the size of England, where plastic outweighs plankton by 6:1. It is the world's largest waste dump.

## Links

[www.nottingham.ac.uk/etc/news-water.php](http://www.nottingham.ac.uk/etc/news-water.php)

[www.education.nationalgeographic.com/education/encyclopedia/great-pacific-garbage-patch/?ar\\_a=1](http://www.education.nationalgeographic.com/education/encyclopedia/great-pacific-garbage-patch/?ar_a=1)

[www.ow.ly/i/UW9G](http://www.ow.ly/i/UW9G)

[www.bbc.co.uk/news/business-11813975](http://www.bbc.co.uk/news/business-11813975)

[www.nytimes.com/2010/06/23/us/23water.html?\\_r=2&hp&](http://www.nytimes.com/2010/06/23/us/23water.html?_r=2&hp&)

[www.drinkingfountains.org/](http://www.drinkingfountains.org/)

[www.kids.nationalgeographic.com/kids/stories/spacescience/water-bottle-pollution/](http://www.kids.nationalgeographic.com/kids/stories/spacescience/water-bottle-pollution/)

[www.which.co.uk/home-and-garden/heating-water-and-electricity/guides/switching-from-bottled-to-tap-water-/tap-vs-bottled-water/](http://www.which.co.uk/home-and-garden/heating-water-and-electricity/guides/switching-from-bottled-to-tap-water-/tap-vs-bottled-water/)

[www.guardian.co.uk/education/2011/aug/08/bottled-water-taste-research](http://www.guardian.co.uk/education/2011/aug/08/bottled-water-taste-research)

[www.news.nationalgeographic.co.uk/news/2010/03/100310/why-tap-water-is-better/](http://www.news.nationalgeographic.co.uk/news/2010/03/100310/why-tap-water-is-better/)

[www.tapwater.org/faqs](http://www.tapwater.org/faqs)