

How can we live smarter?

5 Smart showers



Objective

In this activity students will do calculations where they can figure out how many litres of water they use per minute and create a scoreboard to gamify the way they look at water usage at home.

TOPIC LINKS

🔗 Maths: calculating water usage

ESSENTIAL SKILLS SUPPORTED

Listening, presenting, problem solving

TIME

🕒 40 minutes

RESOURCES AND PREPARATION

- A3 sheets of (coloured) paper
- cardboard (to make their scoreboard more sturdy)
- coloured markers
- extension: Desktops or laptops with internet access

DELIVERY

- 1 Start a discussion about the different topics students can think of that can lead to wastage of (natural) resources. They might have heard of their carbon footprint, but do they know about water footprints? (optional: have students think about their own water footprint)
- 2 Define the term water footprint and clarify that it is not just the amount of water consumed by human activity (eating, drinking, water needed for the resources we use) but that it also includes the amount of water we use to clean ourselves. Ask students to think about why their water footprint matters. For example, in dry summer months there can be water shortages which make it even more important not to waste excess water. Can anyone think how they might find out how much water is used at their home? (Most people have a water meter that is used by the water supplier to keep track.)
- 3 Introduce the goal of the activity: for them to make a scoreboard and reduce the amount of water that might be wasted at home.
- 4 Guide students as they work through the student guide.

TIPS

- The water footprint Extension idea (below) can also be used as a starter.

DIFFERENTIATION IDEAS

Support: assist students with their calculations.

Challenge: imagine this device in every household! Can students predict when the demand for water is high – link this to variations in seasons/climate.

EXTENSION IDEAS

- 1 Students could devise a game where points are gained by reducing the amount of water that is used each time they shower.
- 2 Water footprints: students could analyse in detail what their own water footprint is and think about areas in their daily lives where they could save water (see the calculator in the Useful links below).

USEFUL LINKS

🔗 Fast Company article: This Showerhead Changes Colour When You Use Too Much Water
www.fastcompany.com/3055446/this-showerhead-changes-color-when-you-use-too-much-water

🔗 Water Resources Institute article: 7 Reasons We're Facing a Global Water Crisis
www.wri.org/blog/2017/08/7-reasons-were-facing-global-water-crisis

🔗 Hunter Water information water heads (water wastefulness and showerheads)
www.hunterwater.com.au/Resources/Documents/Fact-Sheets/Saving-Water/showerhead-facts.pdf

🔗 The Water Footprint Network's webpage
<http://waterfootprint.org/en/>

🔗 Water Footprint calculator
www.watercalculator.org/wfc2/q/household/

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Your challenge

About 95 percent of the water entering our homes goes down the drain. This is bad for the environment and expensive to people on water meters. How can we use smart technology to combat this wastage?

YOUR TASK In this activity, think up how to easily see when you are being wasteful under the shower and make a scoreboard to find out who is the least wasteful at home.

WHAT YOU NEED TO DO

Phase 1 - calculations with water

- 1 A standard showerhead uses between 12 and 22 litres per minute. A water saving showerhead uses 9 litres per minute or less. Finish table 1 below to take a closer look at how much water is used up in different households.

TABLE 1:

	Average time in shower (minutes)	Average amount of water used per minute (litres)	Average number of showers a day	Total water used a day (litres)	Total amount of water used a month (litres)
Household A	7	9	4		
Household B	9	12	3		
Household C	6	20	4		

- 2 Now imagine that household C switches to a water saving showerhead that only uses 9 litres per minute. Everything else stays the same. Fill in table 2 - how much water will this family save in one month?

TABLE 2:

	Average time in shower (minutes)	Average amount of water used per minute (litres)	Average number of showers a day	Total water used a day (litres)	Total amount of water used a month (litres)
Household C					

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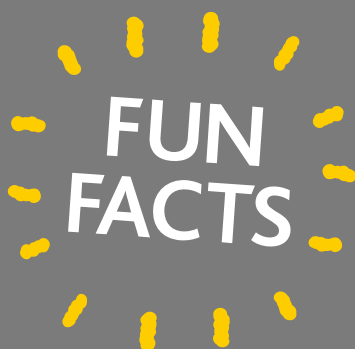
Phase 2 - coming up with more solutions

- 3 Find out how much water your shower head at home uses per minute. If you cannot find this information, assume your shower head uses 15 litres per minute. Fill in the row in the table below for the time in minutes it would take you to use up the water amounts in the top row. (Tip: if you use up 15 litres per minute, it would take 40 seconds to use 10 litres).
- 4 Come up with a colour code for each of the amounts of water used, e.g. it could turn blue to orange to red depending on how long you have been showering.

Water used (litres)	10	20	30	40	>50
Time (min)					
Colour code					

Phase 3 - time your showers!

- 5 For one week, have every member in your household keep track of the number of minutes they shower. Every time they shower! Create an A3 scoreboard. Include the following:
 - a way to indicate each day of the week
 - the names for all participants
 - for each participant:
 - the amount of time they showered that day (in minutes)
 - the amount of water they used showering that day (in litres)
 - the colour code according to table 3 (as a sticker, or using markers)
 - now that you know just how much water you use under the shower, can you think of any ways to save water? How could you ensure you shower in shorter sessions? Could you find a use for the cold water as you are waiting for the shower to warm up? Discuss with each other



- 1 A standard showerhead uses about 12 to 22 litres of water per minute. More efficient showers can reduce the amount of water down to only 6 to 9 litres per minute.
- 2 A water efficient showerhead can save thousands of litres of water per household per year.
- 3 As populations increase and incomes grow, so does water demand. There are 7.5 billion people in the world right now, and the numbers are still rising. Scientists are coming up with ways to allow us to use our water wisely (like smart showers), but people have to be careful with their water too so we all have enough to drink.