



**Scottish
Water**

Always serving Scotland

Water in the home

First level

Description of module

The main thrust of this module is to look at domestic uses of water. There are many opportunities to develop maths during the course of the work, and using graphs and other charts in particular, along with proper scientific recording.

Main experiences and outcomes

Expressive arts

I have the opportunity to choose and explore a range of media and technologies to create images and objects, discovering their effects and suitability for specific tasks.

[EXA 1-02a](#)

Health and wellbeing

I am becoming aware of how cleanliness, hygiene and safety can affect health and wellbeing and I apply this knowledge in my everyday routines such as taking care of my teeth.

[HWB 1-33a](#)

By investigating the range of foods available I can discuss how they contribute to a healthy diet.

[HWB 1-30a](#)

I am discovering the different ways that advertising and the media can affect my choices.

[HWB 1-37a](#)

Literacy and English

When I engage with others, I know when and how to listen, when to talk, how much to say, when to ask questions and how to respond with respect.

[LIT 1-02a](#)

Numeracy and mathematics

I can estimate how long or heavy an object is, or what amount it holds, using everyday things as a guide, then measure or weigh it using appropriate instruments and units.

[MNU 1-11a](#)

Using technology and other methods, I can display data simply, clearly and accurately by creating tables, charts and diagrams, using simple labelling and scale.

[MTH 1-21a](#)

Sciences

By researching, I can describe the position and function of the skeleton and major organs of the human body and discuss what I need to do to keep them healthy.

[SCN 1-12a](#)

Social studies

I can contribute to a discussion of the difference between my needs and wants and those of others around me.

[SOC 1-16a](#)

I have participated in decision making and have considered the different options available in order to make decisions.

[SOC 1-18a](#)

Technologies

As I extend and enhance my knowledge of features of various types of software, including those which help find, organise, manage and access information, I can apply what I learn in different situations.

[TCH 1-03a](#)



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Activity 1

Learning intention

- Pupils recognise the many ways in which they use water, and how integral it is to their lives

Success criterion

- Pupils can identify and discuss the ways water is used at home and at school

Suggestions for teachers

1 Researching

There is useful material on the websites of Scottish Water, Waterwise, Energy Saving Trust Scotland and WaterAid. Look at www.scottishwater.co.uk/savewater www.waterwise.org.uk www.energysavingtrust.co.uk/scotland and www.wateraid.org/uk This will show children how much water is used in various activities in daily life and at home. Showing what 1 litre, 10 litres etc look like will help considerably.

2 Water use survey

Introductory activities usually include a survey of home and/or school use. Be aware that asking children how they use water at home, and recording that in picture form, could result in their drawing pictures of themselves on the toilet, in the bath or shower – don't go there! Alternatively, pupils could draw appliances in the home (and other items) that use or need water, such as a kettle, toilet or washing machine.

Also, some parents might object to a survey that records how many times a week people wash, for example. It is probably better to use discussion of home use as a starting point, and then move on to school-based activities.

To make children aware of water's importance, discuss the impact of having no water - what wouldn't they be able to do? This would also make them aware of how lucky they are.

A survey at school could be done by dividing the class into groups and setting various tasks (choice of who is in each group could be random, by drawing named lolly sticks out of a jar, for example). Some groups could interview specific staff members, for example:

- janitor
- cook
- child
- nursery teacher

whilst other children start on the display, drawing round each other, cutting out the shape and painting it to look like each of the people interviewed.

The interviewers could, with teacher's help, generate some questions about water use. When they return with lists of the ways in which each person uses water, these could be written on pieces of paper (e.g. light blue, in the form of a drop) for display alongside the paintings of each person. To take this one stage further, the size of the drop could roughly indicate the amount of water used by each function.



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Activity 2

Learning intention

- Pupils gain an understanding of how much water they use at home and how much is wasted

Success criterion

- Pupils can explain in discussion how much water they use in terms of litres

Suggestions for teachers

These activities need to be tied to a reinforcement of what a litre looks like (and also multiples of a litre, like plastic milk containers), so this topic is a good one to do alongside Capacity and Volume in maths. Stress that the average person in the UK uses around 150 litres of water a day

1 Brushing teeth

Do an experiment to see how much water is used when a child brushes their teeth. Due to hygiene and time (and mess!) considerations, it may not be possible for a whole class to do this. However, the whole class could be involved in designing the experiment. See resource sheet 1. If you want to inject an element of competition and challenge, the group coming up with and drawing the best design could be most involved in the practical work, the best being chosen by the children in a vote - for example by each child putting a 'stickie' on the design they think would work best. Probably the easiest way is for a child to use their own toothbrush, and brush their teeth over a bucket, which also collects water from the running tap. The water in the bucket needs to be measured in litres. Again, how to get the water from the bucket into measuring containers could be part of the experiment design; it is probably best to use a disposable container to measure all that spit-in, toothpasty water - something like a milk carton, perhaps - so that you don't have to sterilize anything afterwards.

Conduct this experiment twice. On the first attempt, leave the tap ON whilst brushing, the second time, turn the tap OFF. This will demonstrate how much water is wasted and how much we could save by turning running taps off.

Encourage pupils to think about other ways they/their family could save water. They can refer back to the lists they compiled in activity 1 about water usage in the home.

2 Write up the experiment

Children write up the experiment in standard form:

- What we used
- What we did
- What we found out

Alternatively, these three could be drawn in storyboard/cartoon fashion:

What we used	
What we did	
What we found out	



Water in the home

Activity 2 continued

3 Discussion

Initiate a discussion based on the previous activities about how much water is used at home for various activities:

- Taking a shower
- Taking a bath
- Flushing the toilet
- Washing hands
- Brushing teeth
- Watering the garden
- Washing clothes in a machine
- Washing dishes in a machine

The children could then do a cardsort to show what uses the least to the most - templates are given on resource sheet 2. Once the children have arranged the cards in what they think is the right order, give out the second set, which the children can match to the activities. Ideally, have a very large container, like a plastic barrel, or the water tray, to show some of these volumes.

The answers can be given afterwards.

They are:

- **1000 litres** - Watering the garden for 1 hour using a sprinkler
- **Around 80 litres** - Taking a bath
- **50 litres** - Washing machine per wash
- **32 litres** - Short electric shower based on a 4 minute shower - using a water efficient showerhead.
- **Around 13 litres** - Old toilet per flush
- **12 litres** - Washing hands tap on
- **10 litres** - Modern dishwasher
- **10 litres** - Waiting for a tap to run cold water a day
- **6 litres** - Washing hands in basin with plug
- **6 litres** - Brushing teeth with tap on per minute
- **Around 4 litres** - Modern toilet per flush

Compare 'showering' with 'bathing', bathing uses almost **THREE** times more water. If pupils had a shower every day instead of a bath, how much would they save in a week? A month? A year?

Could also ask children how many times you would need to brush your teeth to use the same amount of water as a shower, or how many times more water a washing machine uses compared to a dishwasher? Instead of numbers, the litres could be displayed in shapes - perhaps for more advanced classes.

A plenary discussion will reinforce these.

4 Results graph

Graph the results in some way. Pictorially, based on litre bottles is best for younger children; the pictures on resource sheet 3 can be used for a display. Alternatively, more able children could put these results into Excel (or other spreadsheet application) like this:

	A	B
1	Drink	2
2	Washing hands (plug in)	6
3	Modern dishwasher	10
4	Washing hands (tap on)	12
5	Old toilet	13
6	Quick shower	32
7	Washing machine	50
8	Bath	80

and then choosing Insert > Chart (if using Excel)

The large range from 1 to 80 might make it difficult to show these numbers on the same scale, but cm square paper, cut out, could make a wall display.



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Activity 3

Learning intention

- Pupils appreciate that the water that comes through their taps is of good quality

Success criterion

- Pupils can describe any differences they can detect between water samples

Suggestions for teachers

It is sensible to tell children to drink when they are thirsty, and not worry about specific quantities – their bodies will tell them when they need it, for example after PE. The Food Standards Agency states that because water does not contain sugar, choosing to drink water over sugary or carbonated drinks helps you have healthier teeth, and drinking an adequate amount of water each day helps to keep your bones, hair and nails healthy. See more about this on Scottish Water website www.scottishwater.co.uk/yourwateryourlife

1 Blind taste test

Hold a taste test for water from different sources: tap water and a selection of bottled waters. Involve the children in the design of the experiment and decide with them how to make sure the test is fair, the main points being:

- the waters should all be at the same temperatures
- the waters should all be still
- because it is a blind taste test, the children doing the tasting should not know which water is which, but the 'scientists' should
- children should not drink out of the same cup as somebody else
- records should be made by each child to show which water they liked best; again, involve the children in deciding how to record

Ideally, every child should taste all of the waters. The easiest way to do this would be if every child in the class could have (say) four numbered plastic cups. The teacher, or well-coordinated children, could give out the water from correspondingly numbered bottles that do not show brand names. Children could then arrange their cups in order of preference (preferably without discussion or being able to see each other's preferences). Results could be graphed, and discussed once the identities of the waters are revealed.

An alternative activity involves collecting a selection of clear water bottles and filling with water from different waterways. Label the bottles, but cover them up. Some will look clean, some will look dirty. DON'T get pupils to taste, but discuss what's inside the bottles (they may say 'clean water'). Ask them which ones would they drink? Then surprise them by revealing where the water came from. Stress that there is a lot of work going on to ensure everyone enjoys safe, high quality, clear, and fresh drinking water when they turn on their kitchen tap.

An extension activity for the more sophisticated would be to do the experiment on another class, but this time let them see the brands. There will probably be a big preference for one or two, and a discussion of why might be very illuminating.



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Resource sheet 1

The toothbrush challenge!

You have 40 minutes to design an experiment to measure how much water you use each time you brush your teeth.

Draw your design on the large sheet of paper. Afterwards, each group will explain to the rest of the class how your experiment works.

We will vote for the best, so remember:

- Your design and talk must **make it really clear** what you want to do
- Choose a **Timekeeper** for your group to make sure you finish on time
- Choose a **Chair** for your group to make sure everyone gets a chance to give their ideas
- Choose a **Speaker** for the group, who will explain your ideas to the class at the end
- Choose a **Resources Manager** who will be in charge of getting any art materials you need
- Your **ideas must be able to work** (you might like to use an elephant to suck up the water, but we haven't got one!)



You need to collect all the water that runs out of the tap during brushing, and anything that is spat out.

You need to measure all the water collected in litres, without spilling any.

GOOD LUCK!



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Resource sheet 2

Cardsort

Modern dishwasher	Old toilet	Washing hands (tap on)	Quick shower
Washing hands (plug in)	Washing machine	Drink	Bath
32 litres	Around 80 litres	6 litres	12 litres
2 litres	50 litres	10 litres	13 litres

These cards can be cut up and used in a cardsort for discussion on how much water is used for various activities at home. Stress that these are averages.



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Resource sheet 3

Sports water bottles

