

# It's elemental – water in the environment

Water is vital for life – and school grounds can offer children lots of opportunities for exploring its value in the life cycle, whether it's watching how plants thrive or perish depending on how little or how often they are watered, or constructing a river and exploring how the flow impacts on river banks and vegetation. A pond is also a great addition to a school site – and can be quick and easy to create, while providing lots of benefits.

Use these activities to explore the properties of water, encourage children to understand its value – and at the same time support curriculum subjects such as science, geography, literacy and maths.



The activities you will find here include:

- Pure magic?**
- Slippery slopes**
- Mixing streams**
- Making a mini pond**
- Picnic by the pond**
- A day in the life**
- Construct a river**
- Pond challenge**
- Whatever the weather**



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## Pond perfect

Ponds are perfect habitats for a wide variety of wildlife, and ideal for illustrating why water is such a valuable resource. They can also be a great focus for study, offering opportunities not just to support scientific understanding but also:

- **maths** building a pond involves work on area, distance and price.
- **literacy** creating stories about the pond and the life it maintains.
- **art** collecting natural resources from around the pond for creating artwork.
- **history** discovering how ponds have been used through out history.
- **Design and technology** designing pieces of equipment for the pond like nets for pond dipping or an underwater viewer.
- **Performing arts** the movements of pond life can be expressed though dance, music and drama.

For more information about installing a pond in your grounds see Groundnotes Ponds available in the resources section of our website [www.ltl.org.uk](http://www.ltl.org.uk).

## Pure magic?

How can you turn dirty water into clean water? Collect some pond water in a clear container and take an image of it, then leave this water to stand. Take this experiment one step further by creating a sand filter. First run the water through gravel, then through finer and finer particles before it runs out at the bottom (search the internet for a range of designs that you could use to test out). This water should be quite clear – although it still won't be clean enough to drink. More able children could investigate how the water we drink is filtered and what problems occur when this is not done properly.

You could also look at using a filter you make yourself. There are a number of different filter systems on the internet that you could make. Why not create a project that involves researching different systems and checking them out against each other?

## Slippery slopes

Explore the impact of deforestation on the flow of water by using an existing slope or setting one up outside and placing a series of empty tin cans or similar, at the bottom of the slope. The children need to devise an experiment that involves a range of different surfaces and obstructions – for example, laying grass on the slope to recreate vegetation. Start with your 'forested' slope – pour down a measured amount of water and record the destruction at the bottom of the slope. Keep reducing the amount of obstructions on your slope to see the impact. Relate this to how deforestation can lead to landslides and discuss the impact this can have on vegetation and communities.

## Mixing streams

What happens when two streams meet? Using guttering create two routes for water to travel down then meet. You will need to slope the guttering downwards to encourage flow, but don't make the system too steep or the water will move too fast for the children to see the effect.

- Use contrasting food colouring or water-based paint to colour the water that feeds your two streams. Make up batches in buckets. Ask the children what they think will happen when the two streams combine lower down the system, then feed both of the top streams at the same time and watch the results. You may want to video the results so that you can watch it later, possibly in slow motion.
- In a similar experiment, set mini boats or other floating objects off at the top of the two streams. Encourage the children to predict what will happen as the streams join.
- Use water at different temperatures. Again, encourage the children to predict what will happen when the two streams meet – what temperature will the water at the bottom of the system be?

## Making a mini pond

If you don't have much room on your site, why not make a mini wildlife pond by filling a washing up bowl with a thin layer of gravel and two or three large stones with a bunch of freshwater oxygenating plants dropped in. Positioned somewhere slightly shady it will soon become inhabited by mini beasts, and attract visitors such as birds and frogs.



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# National School Grounds Week

## Picnic by the pond

If you have a pond but it needs a tidy up, why not get your local community involved – and offer a picnic in return for their help? This is the kind of job that many parents and community members are happy to get involved in as they can see a very clear difference as a result of their help. Plan to do the work before the summer to avoid disturbing the habitats of the local wildlife. Visit [www.britishecologicalsociety.org/educational](http://www.britishecologicalsociety.org/educational) for more help on pond maintenance. It is also important to make sure that ponds are repaired properly if they have a leak – otherwise you will be continually topping it up throughout the year.

## A day in the life

Spend some time by your school pond – or visit a pond in your local area. What can the children hear and see? Ask them to identify a particular animal they might find in or around the pond and get them to write about 'a day in the life' of that animal. Encourage them to imagine how the natural resources (plants, pebbles, debris etc) in and around the pond would look like to a small creature, and to think about being a predator or prey to other animals.

## Construct a river

Use an area of your school grounds that has a slight slope (preferably to a curb) and construct a river using sand to create the channels and build river banks. Position a large tray at the end of the channel (where the water runs off the kerb) to collect the water. Use water from a water butt to test the channel. Adjust the design as needed. Use clay, twigs, sand and stones to explore and experiment with changing the flow, speed and direction of the water. Use your own 'river' or visit a local stream to talk about dams. Talk about which animals create dams and explore the types of material they use, and the properties of these materials. Let the children use natural resources themselves to dam their 'river' or stream.

## Pond challenge

Does your school pond need topping up in the summer months? It's important not to use tap water as this is too nutrient-rich and will support algae growth. The best option is

to use clean rainwater. If you have a building near your pond – even a shed or greenhouse – water could be collected from the roof and run into the pond. Set your children a challenge – who can create the best system for collecting rain water and feeding it into your pond? Extend the challenge by asking them also to find ways to:

- heat the water up on its journey as it is likely to be significantly cooler than the water in the pond.
- deal with sudden rain fall or ensure that the flow of water doesn't pick up nutrients on its way to the pond.

## Whatever the weather

How much rain do you get in your school grounds? Does this vary from week to week, and how does this compare to other parts of the UK and around the world? For this activity you will need several rain gauges. Here's how to create one:

- cut the top from a large (2 litre) clear plastic drinks bottle
- fill the bottom of the bottle with enough sand so it can stand upright. Shake sand to a flat surface.
- pour in enough water to saturate the sand and create a small layer of water on top.
- using a marker pen, mark this as your base-line measurement.
- mark lines every 1cm up the bottle to measure your rainfall.
- turn the cut-off top of the bottle upside down; remove the lid, and using duct tape secure to the top of the bottle to create a funnel for collecting the rainwater and draining it into the bottle.

Position the rain gauges in open spaces in different parts of the grounds, away from any overhang that will prevent rain from reaching it, so you can measure any mini rain shadows you have around the grounds – for example, besides the school building.

Ideally you want to measure your rain fall over a long period of time so that you see variation at different times of year. You can access weather data from the met office to find out about previous patterns of rainfall in your area, in different parts of the UK and around the world to compare with rainfall in your own school grounds.



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