

Primary Science & Technology *Bulletin*



Ideas and inspiration for teachers in Primary Schools and S1/S2



Creating a school pond

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Having access to a pond can provide learners with many opportunities to engage with the natural world and is often a valuable resource, attracting wildlife to even the most urban of settings. However, due to the potential hazards presented by a body of water, constructing a pond within school grounds needs careful consideration.

If you already have access to a pond, or are thinking of constructing one, there are a number of sources of advice. SSERC's sister organisation, CLEAPSS, has published an in-depth guide to developing and using environmental areas in school grounds [1] - this document provides information on creating and maintaining a school pond. A second CLEAPSS publication - *Using School Ponds* [2] provides extensive health and safety advice which is useful whether you have a pond in the school grounds or are planning to visit a pond to carry out

pond-dipping or water sampling activities. The Royal Society for the Prevention of Accidents (RoSPA) [3] also provides advice on pond safety. Each pond and school will be different, therefore individual site-based risk assessments are recommended. You may need to check with your Local Authority before proceeding. Generally the following points need to be taken into consideration:

- **Access** - the pond should be sited in a securely fenced off area and access should be restricted when the pond is not in use.

Figure 1 - Raised pond in the SSERC garden.

For small ponds a rigid metal mesh should be fixed over the top of the pond. Chicken wire is not suitable as a cover as it may sag under the weight of a child. Take into account the possibility of the pond being accessed outwith school hours and implications for safety, as well as potential for vandalism.

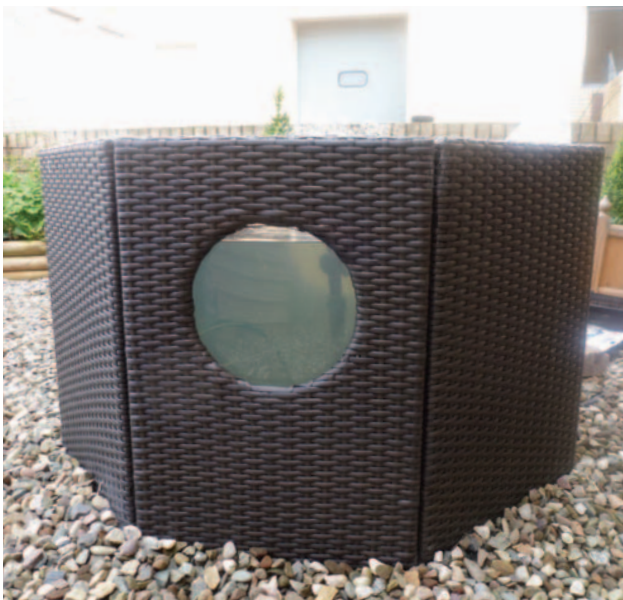


Figure 2 - Portholes allow learners to view below the surface of the pond.



Figure 3 - A selection of aquatic plants.



- **Warning signs** could be placed at access points to the pond.
- **Supervision** - the ratio of adults to children should be such that each adult can easily supervise those in their care.
- **Hand hygiene** - cover any cuts with waterproof plasters or wear suitable gloves, avoid ingestion of water and ensure that all children wash their hands after the activity especially before eating.
- **Footwear** - suitable footwear should be worn by adults and children and any areas of the pond set aside for pond dipping should be gently sloping, or flat and well defined.

Those of you who have attended a course at SSERC may well have seen our raised pond (Figure 1). Set up in 2013, it has proved to be a very useful addition to our outdoor area. The model we selected is the octagonal Affinity pond it is produced by Blagdon [4] and comes with an integral filter and pump. This pond obviously requires initial investment and installation but has proved to be a very low

maintenance feature in the SSERC garden. The portholes allow easy observation (Figure 2) and a rigid metal grille could be easily fixed across the top of the pond.

Adding plants to the pond will provide additional habitats for wildlife as well as contributing to water quality and making the pond look attractive. It is important to select suitable aquatic plants, bearing in mind the size and position of your pond. Aquatic plants include those that can tolerate growing in deep water, species that prefer shallow water (marginals) and those that tolerate boggy conditions - some aquatic plants even float on the surface of the water. Ponds are often designed with areas of differing depths to provide a range of growing conditions for aquatic plants. We selected a variety of plants (Figure 3) to give interest. Most garden centres have an aquatic section and will stock everything you need to get started. As our pond lacks sloping sides we used stacks of clean bricks to raise some of the potted plants up to the required level.

Ensure that you obtain suitable pots for use in ponds, these typically have mesh sides and resemble baskets, rather than traditional plant pots. We lined our pots with hessian before planting, to keep the aquatic compost around the roots (Figure 4). Aquatic compost or washed grit is recommended for planting up pond plants as ordinary compost is high in nutrients and can lead to algal growth and poor water quality (Figure 5). We covered the top of the aquatic compost with a layer of grit and stones to weigh the pot down and keep the compost within the pot (Figure 6).

When selecting a place to site your pond, having taken into consideration safety measures, it is best to avoid placing the pond too



Figure 4 - Planting basket lined with hessian and gravel.

close to overhanging trees. Leaves falling into the pond can cause a problem as the rotting leaves can pollute the water. Try to ensure that the pond receives sunlight for at least half of the day.

One of the disadvantages of the raised pond at SSERC is that it doesn't allow access for amphibians. Frogs, toads and newts need sloping sides to access the water to mate and spawn. The offspring then need to be able to leave the pond once they are fully developed - see SSERC Primary Bulletin 61 [5] for more information about keeping tadpoles. We decided to introduce ornamental fish into our pond - if this is something that you are considering then ensure that you



Figure 5 - Plants positioned in planting basket using aquatic compost.



Figure 6 - Planting basket ready for positioning in the pond - a layer of gravel and grit covers the aquatic compost.

obtain them from a reputable stockist, do not overstock the pond and ensure that there is someone willing to take responsibility for the welfare of the fish - especially during the holidays.

If you have a small space, or do not wish to take on a traditional pond you could consider a “pond in a pot” - this is essentially a water container garden. The most basic version is simply an outdoor container filled with water, stones and water plants. Look for shallow containers without drainage holes or a removable plug. You can purchase kits that contain a water filter or bubbler to keep the water moving. Advice for siting the container would be similar to that of a larger pond, though bear in mind that a small volume of water can reach high temperatures if exposed to direct sunlight for a long period. This could result in reduced oxygen levels in the water making it an inhospitable environment for some organisms. Even a small water filled container can be heavy so select the site carefully before filling it with water and plants. Solar powered

pond fountains are available and can prove an inexpensive way to help to maintain the quality of the water.

Maintenance of the pond may involve cleaning the pump filter, feeding and checking on the condition of any fish, removing fallen leaves and checking for a build up of algae. A small sack of barley straw (sold by most suppliers of aquatic equipment) is traditionally placed in the pond to provide an organic solution to the seasonal problem of excessive algal growth. A pond can prove to be a valuable resource, providing learners with an opportunity to explore a number of curricular areas and foster a connection with the outdoor environment that can enhance and inspire learning. ◀

References

- [1] <http://www.cleapss.org.uk/attachments/article/0/L221.pdf?Primary/Resources/Guides/> (accessed 3rd March 2017).
- [2] <http://www.cleapss.org.uk/attachments/article/0/SRA09.pdf?Primary/Resources/Supp> (accessed 3rd March 2017).
- [3] <http://www.rospa.com/leisure-safety/water/advice/pond-garden-water/> (accessed 3rd March 2017).
- [4] http://www.affinitypools.co.uk/affinity_products/view-octagon/ (accessed 3rd March 2017).
- [5] <http://www.sserc.org.uk/index.php/primary-bulletins/2013/61-spring-2013>.

Experiences and outcomes

- I have observed living things in the environment over time and am becoming aware of how they depend on each other - *SCN 0-01a*.
- I can distinguish between living and non living things. I can sort living things into groups and explain my decisions - *SCN 1-01a*.
- I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction - *SCN 2-01a*.
- I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food - *SCN 1-02a*.
- I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area - *SCN 2-02a*.
- By investigating how water can change from one form to another, I can relate my findings to everyday experiences - *SCN 0-05a/SCN 1-05a*.
- I have investigated different water samples from the environment and explored methods that can be used to clean and conserve water and I am aware of the properties and uses of water - *SCN 2-18a*.

NDLW 2017

The 2017 National Digital Learning Week (NDLW 17) will take place from 15-19 May.

This year the theme of the week will be ‘Digital Difference’ and throughout the week there will be opportunities to share and celebrate the digital approaches which make a positive impact on classroom practice. The week will be packed with inspiring case studies from Early Learning and Childcare through to Senior Phase and beyond showcasing how digital makes a difference throughout the entire learner journey equipping young people for work. ◀

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