Figure 1 The range of plants growing in the creative school garden

Mary, Mary quite contrary how does your garden grow?

Creating the creative school garden

Padraig Egan *believes that learning outside the classroom is key in supporting development of scientific concepts, as exemplified in his creative school garden*

Plants and the outdoors may be something of a mystery to a generation of children who are reportedly spending more and more time indoors; this has the potential to inhibit real understanding of many complex biological processes. Taking children outdoors introduces them to a world from which they are becoming increasingly distant. However, a creative approach to teaching the life processes and living things content of the curriculum can encourage children to engage more fully with the school grounds and engender a love of the living world. As teachers we have a responsibility to children to ensure that they are not disconnected from the natural world around them. This article will explore the importance of taking children outdoors as well as offering some activities that can be undertaken in the school grounds.

The value of outdoor learning

'*The first-hand experiences of learning outside the classroom can help to make subjects more vivid and interesting for pupils and enhance their understanding*' (Ofsted, 2008: 7) and so the use of an outside area can arguably aid understanding and development of science in the curriculum. Out-of-classroom work immerses children in an environment in which they have

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individual and group-based learning experiences that can be memorable (Cremin and Arthur, 2014) and offers the chance for learning that can then be applied back in the classroom. The UK Department for Education states '*children learn and develop well in enabling environments, in which their experiences respond to their individual needs*' (DfE, 2012).

Ownership of their outdoor garden is key in deepening engagement; work carried out in it can develop leadership and decision-making, as well as engaging the children in using the skills of the scientist, such as observation, classifying and measuring. Such work supports cross-curricular links with PSHE (personal, social, health and economic) education with an emphasis on responsibility. Learning outdoors can be especially valuable for children with specific learning difficulties as it provides children with multisensory experiences that they cannot fully access inside the classroom (Cremin and Arthur, 2014). It also allows children with English as an additional language the opportunity to interact with their peers in a social, constructivist learning space, hence increasing their vocabulary.

Using the garden/outdoor space

The following collection of ideas suggests some ways in which thought-experiments can be employed while addressing areas of the science National Curriculum in England. There are a number of areas where direct links can be drawn (Box 1).

Choosing the plants

An enormous range of plants is readily available but a few points should be considered before final choices are made. The plants should require the minimum of fuss and yet represent the diversity of species. When choosing the plants and vegetables teachers need to be realistic, as summer holidays restrict what you can grow and harvest.

What to look for when choosing plants:

- **fast-growing crops;**
- **main crop varieties that provide a harvest when still in the infantile stage;**
- **sprouting seeds or little greens;**
- **four-week old seedlings in order to give them a head start**

Growing sunflowers

Setting a context to the topic of growing seeds by reading a story such as *Mouse finds a seed* by Nicola Moon provides the children with some meaningful discussion of what happens to a seed when it is planted in the ground. The children should also be encouraged to plant their own sunflower seeds, which should grow into sunflowers and then be transplanted to the outdoor area. Once the flowers have grown and are beginning to die the children can be encouraged to collect the seeds from their plant and store them for next year's crop. You can also choose to plant different varieties of sunflowers and compare their flowers.

Nectar patch for children

Many butterfly species are in decline because of the destruction of wild habitats; schools can do their part to conserve them by making the school grounds butterfly friendly. Caterpillars have their favourite plants; these are often weeds. Make a nectar patch for butterflies by constructing a bed against a sunny wall. Fill it with good soil and add in plenty of organic matter. In the front, plant low-growing nectar plants such as *Arabis*, aubretias, marjoram and dwarf buddleia. This work can be extended in the classroom by looking at the life cycle of the butterfly and literacy cross-curricular links provided by the children reading, for example, Eric Carle's *The very hungry caterpillar*.

Plant colours and sizes

The use of plants can support learning across the age phases. Younger children can be encouraged to look at and compare the colours of the various vegetables. Children can be encouraged to ask questions about their plants; for example, is the potato a root or stem vegetable? The younger children could sort the various vegetables by size, focusing on *big, bigger, biggest* or *small, smaller, smallest*, thus increasing their vocabulary as well as working scientifically in identifying patterns.

Bug hotel

Bug hotels help children to feel more comfortable around small outdoor organisms and enable observation of some of the changes that take place in nature throughout the seasons. For example, children will be able to observe the different types of organisms that inhabit the hotel at different times of the year. Bug hotels provide a safe, stimulating and challenging way for children to explore in an outdoor setting. For some children the idea of touching 'bugs' may be scary, but with the constant exposure provided by the hotel and the reassurance of their

Box 1 Where plants appear in the National Curriculum in England

Year 1 (ages 5–6)

Pupils should be taught to:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees;
- identify and describe the basic structure of a variety of common flowering plants, *including trees.*

Year 2 (ages 6–7)

Pupils should be taught to:

- observe and describe how seeds and bulbs grow into mature plants;
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

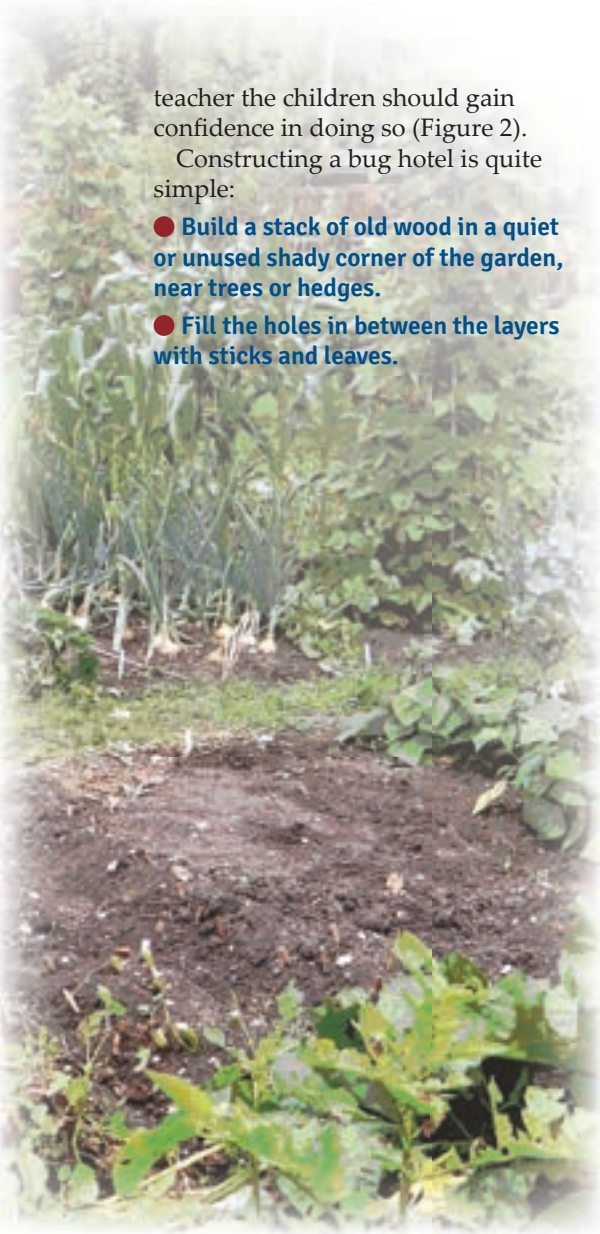
Year 3 (ages 7–8)

Pupils should be taught to:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers;
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant;
- investigate the way in which water is transported within plants;
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Figure 2 Dinner, bed and breakfast – vacancies at the bug hotel

Figure 3 'Strawberry fields forever' – children set to work on their strawberry bed



teacher the children should gain confidence in doing so (Figure 2).

Constructing a bug hotel is quite simple:

- **Build a stack of old wood in a quiet or unused shady corner of the garden, near trees or hedges.**
- **Fill the holes in between the layers with sticks and leaves.**

Strawberry beds

Strawberry gardens provide rich spaces for children and teachers to explore concepts relevant to their curricula in a hands-on experimental way. The garden becomes a living laboratory, providing an integrated context to explore all subject areas. Science concepts, such as plant growth and development, can be easily studied and managed and children can observe and discuss the relationships between plants and animals and their surrounding environments. A strawberry garden affords an opportunity for children who are disconnected from how fruits and vegetables are grown to understand the way food is produced. The simple act of cultivating a strawberry plant from a starter plant to a mature fruit-bearing plant imbues children with a proud sense of accomplishment. Tasting fruit fresh from the garden, which you have grown yourself, can encourage a lifetime preference for eating healthy food and a love of gardening.

Seed trial

Longer-term investigative work can be undertaken be exploring the best place for seeds to grow. Children can plant seeds in different parts of the school grounds and then evaluate their growth by comparing, for example, the effects of different levels of shade, light and moisture.

Summary

The outdoors can be utilised for a plethora of activities; the list is endless. We must ensure that our children are involved in an exciting world of outdoor science that provides them with hands-on as well as minds-on experiences. Above all, we must ensure that children appreciate and respect the outdoors and all it has to offer them.

Our survival as a species depends on all aspects of the natural world: the air we breathe, the food we eat, the resources we use for living a full and healthy life.
(Max de Boo, 1999)

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