Look what we've grown!

GROWING FASTER THAN THEIR SUNFLOWERS

Tourists flock to Haworth in West Yorkshire to visit the home of the Brontes, walk across the moors or ride on the steam railway. ***Shirley Davids*** *describes an added attraction that locals are proud to talk about: Haworth Primary School Gardening Club, whose reputation for environmental, community and health education is* 'growing faster than their sunflowers!'

'The children always have a big smile on their faces and that's the way I intend to keep it' (Steve Thorpe, Founder, Haworth Primary School Gardening Club)

This morning, as I left my car in the school's car park I noticed the roses were looking lovely, just coming into bud. The first leaves of squash and pumpkin were showing through, green against the rich brown soil. In the polytunnel the chrysanthemums were coming on a treat, whilst in the greenhouse the tomatoes seemed to be growing like tryffids. As I approached the main entrance, I noted that the lilies in their tubs had taken a beating from the weekend's rains, but the summer bedding in over thirty pots was just starting to show colour. Taking a moment to check my class's sunflower had survived the weekend, I entered school with a smile on my face, cheered by my daily dose of nature. I knew the day's science lesson on microorganisms would be well

Left: Comparing the taste of school-grown and supermarket carrots
Right: Autumn poetry lessons become unforgettable if you have a seven-stone pumpkin to describe!

received; we were planning to investigate the compost heap!

Why do we need a school garden?

The educational benefits of a school garden are numerous and far reaching. Yet many schools have not developed this facility, citing time restraints, space, cost, staffing, lack of skill or other problems. Is it worth the undoubted effort required? How did we do it?

Our garden is an integral part of school. A year 6 child, summed it up:

Let us learn more about the environment ... this way we can learn to respect others, to get involved, to communicate, to work with others and to spend time with other kids.

Food grown in the garden is taken straight to the kitchens, where, on selected days it becomes part of school lunch – the children see plants grow from seed, harvest the crop and then prepare it for lunch:

We got to taste pumpkin soup, it was lovely ... it was grown in our own school garden for us to eat.

All the vegetables are fresh and not from a tin.

The organic garden has played a major part in the school's achievement of 'Healthy School' and 'Green Flag' status, and has helped to make healthy eating and recycling a part of everyday life. Everyone benefits: from shy children who need to develop confidence, to those with behavioural problems who need active involvement in their learning, working with the soil, seeing the plants grow. It is a form of therapy, and invaluable personal enrichment.

Success in the garden also generates enormous pride:

Winning these awards affected us in a good way, we felt proud to be at school, we appreciate all the work Steve put in ... We know how lucky we are to be in a healthy environment.

When so much effort is put into maintaining the grounds, children are eager to keep the whole school looking good – a recent request for a new lunchtime litter-picking team had over 30 volunteers! The caretaker is especially appreciative of their efforts, as are visitors to the site:

Even on a grey, rainy day, it still looks beautiful.

How did our garden grow?

Steve Thorpe, a parent and professional gardener, is the driving force behind the garden. Distressed by vandalism in the local park, he started to work with the Haworth Primary schoolchildren. In the first year, he taught children to plant up tubs, grow seedlings, prick out, water, nurture and grow a range of vegetables and flowers. Each year he has added a new challenge: permanent planting, roses, raised vegetable beds, new varieties. The sale of plants at school functions keeps the club self-sufficient in seeds and other consumables. Additional finance comes from local businesses that have appreciated the gardening club's work.

Does the garden benefit teaching and learning?

In case you are wondering whether the gardening club actually helps the children to learn, this is what some of the children and teachers said when asked this:

I think it makes lessons more fun going outside to learn.

Every year group in school can use a garden for their work across the curriculum.

The most interesting science lessons are when we use the school grounds to do work – my favourite science lesson was in year 5 when we did a bug search.

The day I learned most was when I went outside to look at the flowers. I sucked in quite a lot of learning that day! Children learn more when they get physical.

I will always remember the lesson when I collected the pollen from the beautiful flowers in the playground.

Reception have used the garden quite a lot lately, as they have been learning about water. They say the garden helps them learn about creatures and their

habitats, and that going outdoors and seeing things for themselves is a lot better than staying inside.

It helps children to learn about the environment ... it can be used to learn about spotting minibeasts or the parts of the flower, which are difficult subjects to teach in the classroom.

How is the garden used in science teaching?

Year 6 children asked staff how they had used the garden this year. Here is a sample of their responses:

- **Conducted a minibeast survey in three different habitats**
- **Investigated the preferences of small animals in the habitat**
- **Looked at flowers and the function of their parts**
- **Held a sunflower-growing competition**
- **Measured and experimented with different plant foods.**
- **Water studies – where does the water go?**
- **Nursery nature walks**
- **Drew graphs of the sunflowers – weighing, measuring their growth**
- **Investigated different microclimates around school to discover the best locations for planting different species according to their adaptation**
- **Recycled waste on the compost heap**
- **Studied the compost heap and the rate of decay of different materials**
- **Taste-tested carrots – compared own-grown with supermarket**
- **Invited in a local restaurant to help devise a recipe for 250 portions of pumpkin soup, then prepared and cooked it on the premises**
- **Studied the life cycle of frogs**
- **'Borrowed' plants from the garden to study the conditions needed for healthy growth**
- **Compared soil types and investigated which are best for different crops**
- **Year 2 have grown their own tomatoes**

And finally ... the nursery staged a reconstruction of *The enormous turnip* story in the car park. They involved children and adults from across the school – from the smallest to the caretaker – and, of course, a very, very large pumpkin!

Independent investigation

The possibilities for carrying out investigations are endless, once a resource such as this is in place. For example: Which forces are needed to lift a wheelbarrow? Which wellies have greater grip? Which surface is safer on the path? Can we make a windmill that will scare the birds from our seeds? Which material would work best as a wick to water plants in the holidays? Which material is best for a plant pot? Which plant food dissolves most quickly into the soil? How can we shade the plants but allow the light to get through the greenhouse glass? Can we have a slug race – or a snail race? Which sunflower grows fastest? How many types of ladybird are there in our garden? Which colour flower attracts most bees? How can we insulate the greenhouse? Is digging harder work than jogging – does my heart beat faster? And so on ...

Cross-curricular teaching

The garden is a living, growing, changing and changeable resource for every lesson. Autumn poetry lessons become unforgettable if you have a seven-stone pumpkin to describe – the colour, smell, shape, and feel of it. But first solve the problem of getting it to the classroom: it took four strong children and a trolley!

Remember the smell, Miss, and the colour? It was such a lovely orange, burnt yet glowing, smooth and rich. My poem was fantastic.

There is a constant supply of maths opportunities to develop:

At the end of 2006, Steve grew a gigantic pumpkin that weighed 7 stone, which is nearly the weight of some people in year 6!

Even learning to read maps is more fun if you turn left at the turnips and walk through the willow tunnel! The possibilities for teaching art are obvious, and new bird boxes and windmills can be constructed in design technology. The sensory garden also provides a place for reflection, contemplation and remembrance. The garden provides a setting for the more subtle education of every child; as their words below show, they are enriched personally by their involvement with nature.

I take in a lot more ... I understood a lot of what I needed to know, without being taught it.

I think every school should have a gardening club, because it is good for the area they live in. It is not just about the area, it is about the fun and the effort they put into doing it, so it is like a new place. It is good to garden because when you plant things, you are happy.

They are keen about plants and the environment from an early age, this means they will know more in later years.

What else can be achieved?

The gardening club is very much a part of the local community: every year the children fill planters and make hanging baskets for the railway station, the surgery, the fire

The school caretaker *(left)* and Steve, parent and gardener, proudly display one of the many cups won by the gardening club

station and community contact points around the village; every plant is grown by the children. Regular visits are made to old people's homes to plant bulbs and flowers with the residents. Displays are prepared for the harvest festival and the carnival procession. And we have won most of the cups and prizes in the local horticultural shows, as well as Yorkshire in Bloom! The children's pride in their achievements is clear:

I feel proud winning all these awards.

People at my mum's work recognised my uniform and asked about the garden.

Haworth Primary School's gardening club has affected the whole village as well as the school.

How to get started

Start small, keep it simple, raised beds are the best.

Steve's advice is clear: don't try to do too much in the first year, keep your tasks small and achievable, that way you will enjoy success. Gradually add new challenges and crops as your expertise grows. Steve recommends building raised beds if possible: they can go anywhere, even on a tarmac base; are at the right height for children to work in; are easier to keep free from weeds; and hold a surprising amount of different crops. Steve finds beds around 1.5 m x 1.5 m x 0.75 m deep work best. Haworth's club meets on two evenings a week, one for each key stage, and lasts an hour. Children plant out in the grounds or community sites or work in the greenhouse on seasonal tasks.

If you don't have a dedicated, passionate and generous parent bursting with enthusiasm for the project, who will give endless hours to the school without financial reward, there are other channels of support. Haworth has benefited from advice and back-up provided by Duchy Originals Garden Organic for Schools project, a nationwide campaign to help children grow food at school. They provide activities, resources, a telephone hotline and competitions. The Food for Life Partnership, an initiative led by the Soil Association, is aiming to develop 180 flagship schools or communities, and has a £17m Big Lottery Fund grant; check their website for dates.

So go on, give it a go, grow your own pumpkin and reap the rewards; the smiles on their faces say it all.

Websites

Duchy Originals Garden Organic for Schools project:
www.schoolsorganic.net

Food for Life Partnership:
www.foodforlife.org.uk

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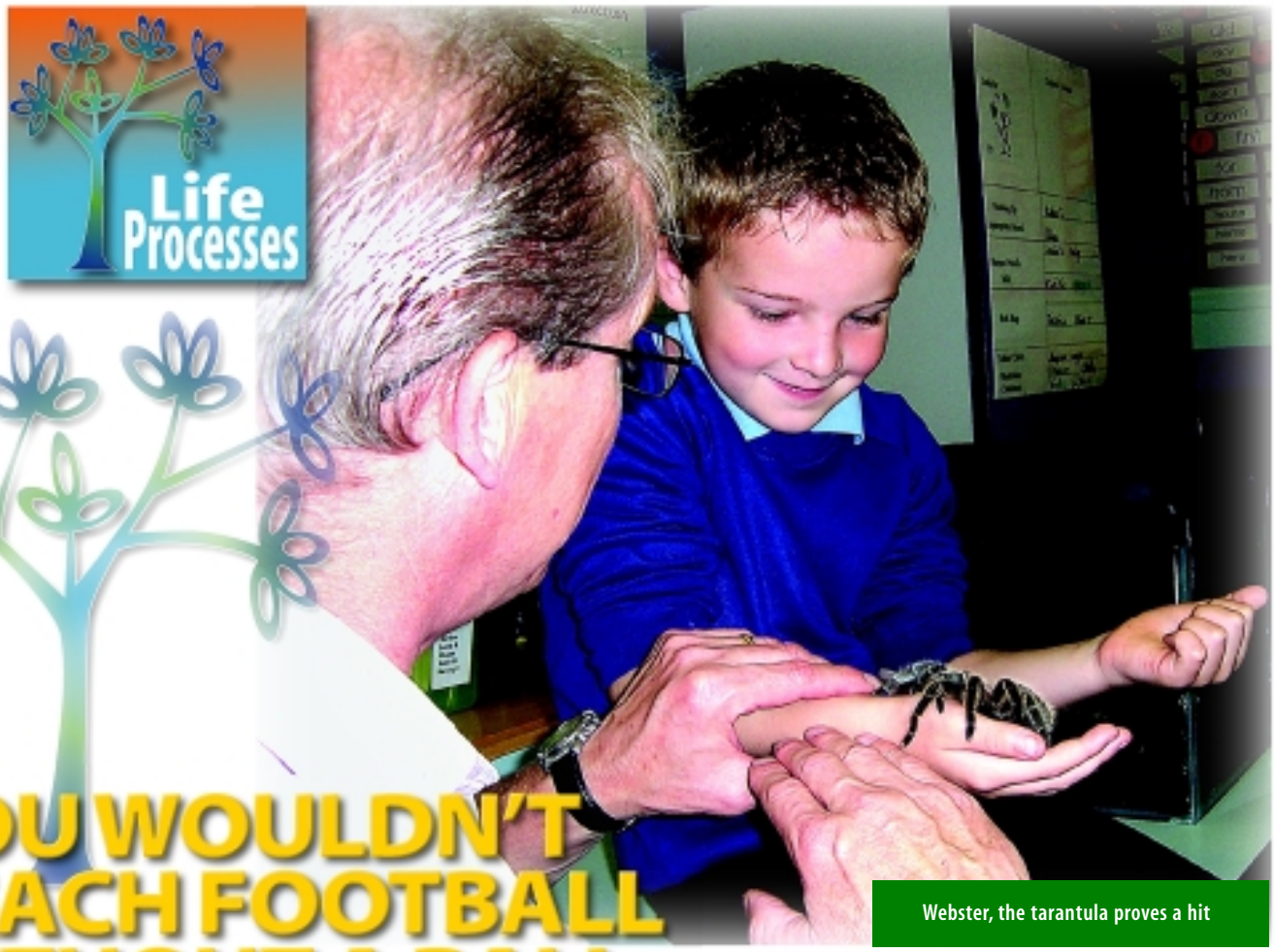


Webster, the tarantula proves a hit

YOU WOULDN'T TEACH FOOTBALL WITHOUT A BALL, WOULD YOU?

Rob Senior, Leigh Hoath *and* ***Mick Dunne***

encourage their student teachers to take animals into the classroom for science learning

Very few teachers would disagree with the reasoning behind the question in the title. There are clearly elements of football that can be taught without a ball, but it would be an impoverished set of football lessons if balls were never used. In the same way, we argue that too many primary science lessons are taught without using living things, particularly animals, and that consequently, such lessons are likely to be less effective.

Why take animals to school?

The use of living specimens in primary (and secondary) classrooms has diminished considerably and sometimes for good reasons. Arguments presented by teachers most frequently relate to the demands of being responsible for their upkeep and maintenance, health risks, the cost of their purchase and care (vet bills can be prohibitively expensive), ethical and moral positions and the lack of expert knowledge and understanding. Indeed, the Royal Society for the Prevention of Cruelty to Animals has gone so far as to say that '*children and young people can be taught about animals without keeping pets in the classroom*' (RSPCA, 2007, online). As initial teacher educators, we were keen to address what we believe is a fundamental omission in the provision of learning experiences for student teachers, as well as classroom practitioners and young learners in school. While we have always used animals and plants in our teacher training, three years ago the decision was made to expand our practice and the 'McMillan Minibeast Project' (named after our college building) was established.

What's in our collection?

The purchase of new 'livestock' was informed by several key considerations: specimens needed to be cheap, easy to look after, require little in the way of

specialist knowledge or equipment, be safe to handle, something unusual and curious and easy to transport. This last point was particularly important because we wanted to take them into our partnership schools. The final choice of species was giant millipedes, giant African land snails, Indian stick insects and Madagascan hissing cockroaches – representatives of three very different animal groups. Their acquisition was quickly followed by a type of amphibian called an axolotl (a salamander) and a Chilean rose tarantula, the former being purchased and the latter ('Webster'), an unwanted gift, given to us. By popular request, two young male rats and a pair of chequered garter snakes have completed the team.

How does it work?

Our student teachers were quick to seize the opportunity to work directly with some or all of these animals in the classroom, in order to address a wide variety of Foundation Stage Curriculum Guidance or National Curriculum needs. Alternatively, one of us would take the animals into school or nursery and support the delivery of a programme of activities to suit the identified needs of the learners. Inevitably, during either student-teacher-led or tutor-led sessions, other teachers, school managers and teaching assistants would join in to see what was happening. This often led to enquiries about whether we would support their class or year group in a similar fashion. To date, we have worked with about twenty different schools and nurseries, teaching children from pre-school up to year 6 (10/11 year-olds). We have worked with individual classes and whole schools within our partnership, at no financial cost to any school.

One of the most positive outcomes of this work has been that, up to the present time, about a third of these schools have acquired their own animals, the most popular being the giant millipedes and African land snails. Another pleasing result has been the steady demand for our services; there are now three tutors who support schools with this work and even local secondary schools are showing an interest! We are always bowled over by the massive interest and enthusiasm shown by the children of any age, even when some of their teachers may be more reluctant. We always encourage staff and children to handle the animals carefully, the only precaution being that hands are washed before and after (a dry handwash is very good for this purpose). Of course, Webster, our tarantula, requires a little more care but he is always easy to handle and risks from his allergenic hairs (flicked off by his hind legs if he becomes upset) can be quickly anticipated. He has never done this defensive action all the time we have had him, although on a few occasions he started to gently rub his abdomen, at which point we carefully returned him to his container!

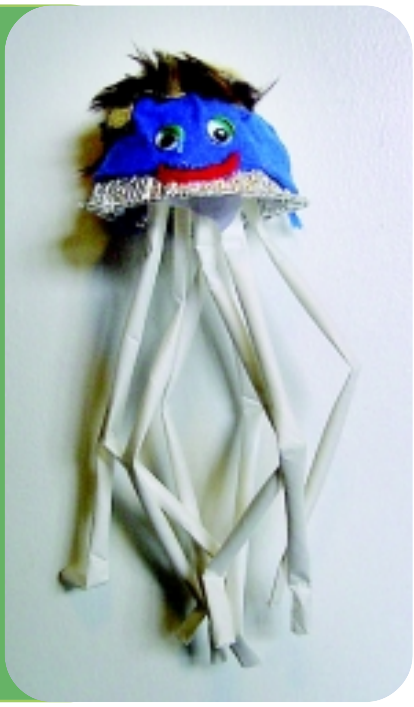
How we use the animals

So what have we done with these wonderful beasts? Working with two reception classes we used all the animals except, for purely practical reasons, the axolotl. We took them out of their containers and asked questions such as:

- **What is it?**
- **What type of animal is it?**
- **How do you think it moves?**
- **Does it have legs?**
- **Does this animal have the same or a different number of legs from ...?**
- **How many legs?**
- **Where do you think it lives?**
- **What do you think it eats? How do you know?**
- **Do you think it likes being in the light or in the dark? How can you tell?**
- **How similar/different is it to you?**

Giant African land snails provide lots of scope for investigations

An Indian stick insect



Cross-curricular work inspired by 'Webster'

Such questioning was designed to help develop nursery and reception children's ideas about 'Knowledge and understanding of the world', as well as satisfying their own sense of curiosity and demands for information. They always want to know how many legs the millipede has or if Webster has any friends. Such occasions are good opportunities for talking about our own native species of spiders, millipedes, insects and snails. Often, talk shifts towards something they have seen or heard about, for example spiders being sucked up by a vacuum cleaner. This provides an excellent chance to discuss issues associated with stewardship and behaving responsibly with all living things. Our experience is that having the animals present in any educational setting promotes a huge amount of talk that is very much focused on the 'stars of the show'. Teachers often want to take digital photographs in order to use them with the children in follow-up activities that often extend beyond those related to science. Minibeasts foster cross-curricular links!

Science investigations with our 'livestock'

Our work with years 4, 5 and 6 (ages 8–11) has tended to be more focused on addressing the 'Life and living processes' aspect of the Science National Curriculum. It becomes relatively straightforward to talk about adaptation when children can observe animals with no legs (a muscular foot), four, six, eight or lots of legs. They are more than capable of offering good explanations for why these differences occur; such as those based on balance, being stable, grip, or the need to move quickly (for hunting purposes). Basic life processes always create interest. Spiders are male or female but snails can be both male and female at the same time – wow! Carnivorous and herbivorous feeders can be compared: do snails really have tens of thousands of teeth? Snails lay eggs and so do millipedes, but what do spiders do? Is there any parental care? Poo (faecal waste) is always a hot topic for discussion. Does the colour of African land snail poo vary according to what is being eaten? This is a great investigation that is 'pattern seeking' rather than 'fair testing' and fits in with recent trends to extend the range of investigations being done. In fact, having a tank of giant millipedes or snails in your classroom lends itself to an almost limitless variety of practical work, including different types of investigations. When are they most active? What is their favourite food? How much food do they eat in one week? How quickly do they grow? Why do they have lots of very small animals crawling over their bodies? Living things are of course less predictable than physical objects and this also adds to the richness of learning. A natural follow-on from this would be work on classification at key stage 3 with animals representing vertebrates, invertebrates and some of the major groups within these.

Overcoming phobias

Contact with all living things, especially animals, is a way to learn about responsibility, animal welfare and respect for life. The opportunities to enhance real understanding of the relevant areas of both the early years' curriculum and the Science National Curriculum are self-evident. Many of our children have little experience of the natural world, with no direct contact with living things other than human beings, and these are not just children confined to urban environs. Such sheltered experiences have the potential to generate ignorance and may result in irrational fears. Phobias are a natural element of human behaviour; over the duration of their course, trainees who find the idea of working with minibeasts distressing have the opportunity to gradually familiarise themselves with the creatures. By engaging in this type of work they not only add to their science teaching skills but also remove a possible source of anxiety from their own lives.

The future

We will keep working closely with both our students and local schools, in the hope that, despite perceived constraints, they will see the significance of such valuable and stimulating resources. While the advantages of using animals are many, it is clear that fewer and fewer are being used in schools and we are keen to see this trend reversed. We have had remarkably few incidents where someone has needed to remove themselves from the room the animals were in – and both were adults! Simple health and safety precautions are taken and we always offer the school a formal risk assessment. We recognise that, as three biologists, we do have what might be described as 'specialist' knowledge, but this is much less significant than our choice of easy-to-keep, genuinely interesting animals, which we will continue to use in both our Centre-based teaching and in schools so that others are able to share our trainees' excitement.

Go on! You wouldn't teach football without a ball, would you?

Reference

www.rspca.org.uk/education (accessed: 12 October 2007)

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