Contents

INTRODUCTION
POSTER

FACTSHEETS
1 Sunflower Art and Science
2 Fruit and Vegetables in Hanging Baskets
3 Growing Wildflowers
4 Playground Markings
5 Well Dressing
6 Shade Umbrellas
7 Hanging Bird-Feeders
8 Butterfly and Bee Borders
9 Medieval Herb Beds
10 Murals
11 Composting and Wormeries
12 Musical Washing Line
13 Mosaics
14 Decorated Pots
15 Weather Station Instruments
16 Renewable-Energy Watering System
17 Ceramic Flowers and Plant Labels
18 Interactive Pergola
19 Storytelling Chair
20 Willow Sculptures
21 Decorative Fencing
22 A Herb Book
Introduction

This Teachers’ Resource Pack aims to help all teachers use their school gardens and grounds as a creative learning resource. Schools across the country and pupils of all ages can make use of their outdoor spaces to enhance teaching and learning, whatever their location. The pack contains 22 factsheets and a wall poster based on the features made by participating schools and incorporated in the Growing Schools Garden. The factsheets give details of how to recreate these and provide links to the curriculum, illustrating the wide range of imaginative and educational features that can be made by pupils and teachers in school without major expense. They are intended to inspire schools to develop their own ideas for bringing school grounds to life in useful, enjoyable and creative ways.

The Growing Schools Garden was first exhibited at the Hampton Court Palace Flower Show in 2002. This marked the public launch of Growing Schools, a major government initiative encouraging schools to harness the full potential of the outdoor classroom as a context for learning, both within and beyond the school grounds.

The aim of the show garden was to demonstrate how barren playgrounds could be transformed into exciting and welcoming green spaces. The design incorporated the ideas, many already in everyday use, from 21 schools around the country, as well as features they had made and plants the pupils had grown from seed. Early Years, Primary, Secondary and Special Schools were all represented in the garden; some large, some small; some rural, some urban; some from prosperous areas, others from areas of acute deprivation. But common to them all was an infectious enthusiasm, a real commitment to outdoor learning and enormous creativity in the use of their outdoor spaces.

The garden was a huge hit with the public, and received massive media attention. The Royal Horticultural Society judges declared it an inspiration to young people, and awarded it a prestigious silver-gilt medal. It provided an excellent example for teachers, pupils, governors, parents and the general public alike, of what schools can achieve, regardless of location, budget or resources.

The Growing Schools Garden was a partnership project, managed by Gardening Which? magazine, gardening experts with a track record of successful issue-led / campaigning show gardens. The other partners involved were the Department for Education & Skills (DfES), who initiated and part-funded the project; Learning through Landscapes and the Federation of City Farms and Community Gardens, both experts in the development of school grounds as a context for learning. The garden was generously sponsored by National Grid Ltd, and also received invaluable ‘in-kind’ support from many other businesses and organisations (see list overleaf).

The garden has been reconstructed at Greenwich Curriculum Environmental Centre in Eltham, south east London, for use as a training facility for Continuing Professional Development (CPD) and Initial Teacher Training (ITT), both locally and nationally and as a resource for local schools. If you would like to visit the garden or find out about training courses, please contact Learning through Landscapes in London, 77 Bexley Road, London SE9 2PE, tel: 020 8850 3112.

All the factsheets may be freely photocopied and digital versions may be viewed and downloaded from the website: www.teachernet.gov.uk/growingschools.
Contributors

Growing Schools would like to acknowledge the contributions made to the garden by the following companies and organisations:

**Box Watch Ltd**
- provided the birdbox with CCTV
- Brackenhause
- Bank Farm
- Cowden
- Kent TN8 7EG
- Tel: 01342 850259
- www.boxwatch.co.uk

**Geffrye Museum**
- provided historical herbs
- Kingsland Road
- Shoreditch
- London E2 8EA
- Tel: 020 7739 9893

**I.S. Maintenance Ltd**
- provided arch, railings & wind turbine mast
- Wakefield Road
- Smithies, Barnsley
- South Yorkshire S71 1PA
- Tel: 01226 297286

**LMV Ltd**
- provided wind turbine
- Old Oak Close
- Arlesey
- Bedfordshire SG15 6XD
- Tel: 01462 73 33 36

**Maestro International Ltd**
- provided drinking fountain
- 11-17 Powerscroft Road
- Sidcup
- Kent DA14 5NH
- Tel: 020 8302 4035
- Fax: 020 8302 8933
- www.maestrontl.com

**Magical Marking Ltd**
- applied playground markings
- Roall Lane
- Roall
- Kellington DN14 0NA
- Tel: 01977 662500

**Marks & Spencer PLC**
- provided tomato expert & tomatoes for taste testing sessions
- Michael House
- Baker Street
- London W1U 8EP
- Tel: 020 7935 4422
- Fax: 020 7487 2670

**Spa Irrigation Products**
- provided watering system
- 217 Bath Road
- Cheltenham
- Gloucestershire GL53 7NA
- Tel: 01242 228940
- www.garden-irrigation.co.uk

**Straight Line Fencing**
- provided rustic fencing in wildlife area
- 10 Linchmere Road
- Haslemere
- Surrey GU27 3QF
- Tel: 01428 651728

**Tarmac Ltd National Contracting**
- provided playground surface material
- Hayes Road
- Ham Hill
- Snodland
- Kent ME5 5LA
- Tel: 01634 242514
- www.tarmac.co.uk

**The Bat Conservation Trust**
- provided batboxes
- 15 Cloisters House (Unit 15)
- Battersea Park Road
- London SW8 4BG
- Tel: 020 7627 2629
- Tel: 0845 1300 228
- www.bats.org.uk

**The Hawk & Owl Trust**
- provided birdboxes
- 15 Butterfield Road
- Wheathamstead AL4 8PX
- Tel: 01582 832182
- www.hawkandowl.org

**Today’s Energy Systems**
- gave design input & advice for alternative energy feature
- 19 Albany Drive
- Wolsley Gardens
- Rugeley
- Staffordshire WS15 2HP
- Tel: 01889 584667

**Wiggly Wrigglers**
- provided wormery
- Lower Blakemere
- Herefordshire HR2 9PX
- Tel: 01981 500391
- www.wigglywrigglers.co.uk

**Wildlife World**
- provided wildlife boxes, bird feeder
- Street Farm
- Sinchcombe
- Near Dursley
- Gloucestershire GL11 6AW
- Tel: 0870 7572233

**W C Thomerson Ltd**
- provided wood for bird hide
- 20 Middle Lane
- London N8 8PL
- Tel: 020 8340 2742

**Woodlands Farm Nursery**
- provided stone trough, millstone, barrel for pond
- The Green
- Wood Street Village
- Guildford
- Surrey GU3 3DU
- Tel: 01483 235536
- www.salvo.co.uk/dealers/woodlands-farm
Sunflowers are one of the most widely grown flowers in schools. The seeds are easy to germinate and the young plants grow prolifically. Their large yellow flowers provide an excellent way to add colour to a blank wall or create an interesting avenue leading from one part of the school to another. They are also a great source of inspiration for artwork and their edible seeds can be used for feeding the local wildlife or included when baking bread.

### CURRICULUM LINKS

#### Foundation Stage
1, 2, 3, 4, 5, 6

#### Science
- KS1 – SC1, SC2
- KS2 – SC1, SC2, SC4
- KS3 – SC1, SC2

#### Art & Design
- KS1 – 1ab, 2abc, 3ab, 4ab, 5abcd
- KS2 – 1abc, 2abc, 3ab, 4b, 5abcd
- KS3 – 1ab, 2ab, 3a, 4ab, 5abcd

#### Information & Communication Technology
- KS1 – 1abc, 2ab, 3ab
- KS2 – 1a, 2a, 4a, b, c

### HOW TO GROW Successful Sunflowers

Coombes CE Infant School in Berkshire cultivate their own sunflowers and use them creatively to support both formal and informal learning in school. For the Growing Schools Garden, pupils recreated their Sunflower Avenue which leads to their vegetable patch. They also created a spectacular sunflower collage displayed in the classroom. Sunflowers also provided inspiration for some dramatic ephemeral grass artwork described overleaf.

Sunflowers need a sunny, sheltered spot away from strong winds if they are to thrive, and will need to be staked. To create an interesting display and plenty of flowers for harvesting, use multiple headed varieties that will grow to about 2m tall, interspersed with low-growing varieties of different colours.

For earlier than usual summer flowering, sow sunflowers in January indoors or in a heated greenhouse. Sow the seeds, one per pot, in damp multipurpose compost and label each pot. Put them in a warm place and keep the compost damp.

Germination takes about a week. Keep the young plants indoors in a warm sunny place until they are strong enough to be hardened off in a coldframe or under cloches for one or two weeks, depending on the weather. Only transplant them outside once all danger of frost has passed. Alternatively, start the seeds in March and you will not have to keep the young plants indoors for so long.

The best month to sow seeds directly into the soil is May. Sow them evenly into shallow drills, spacing the seeds of long-stemmed, single-headed flowers 15cm apart and of multiple-headed varieties 30cm apart. As a precaution against slugs, treat the soil with slug-killing nematodes (microscopic organisms, available by mail order) before sowing.

Water the sunflowers well until they are established and give them plenty of tomato feed as they grow. Sunflowers can also be grown in tubs, though this makes staking them more difficult. In the autumn, harvest the mature seedheads. Keep some of the seeds for sowing the following year, and use others for baking or artwork. Leave several mature seedheads as a winter food source for local birds and small mammals. Pupils can also keep seeds to put in hanging bird feeders for the winter.

Modern sunflowers include both single-headed and multi-headed varieties. For tall varieties, try ‘Earthwalker’ (orange), ‘Claret’ (red), or ‘Full Sun’ (bright yellow). Shorter ones include ‘Gold and Silver’ (yellow, with silvery foliage), ‘Ikarus,’ (lemon yellow, short, multi-stemmed), or ‘Elite Sun’, good for cutting. Even smaller and excellent for containers are ‘Dwarf Yellow Spray’, or ‘Teddy Bear’.

NB: If you want to collect seeds to sow the following year, avoid growing F1 hybrids, as their seeds will produce flowers different from those of the parent plants.
HOW TO MAKE a Grass Sunflower

If you leave a brick on the lawn, after a day or two the grass underneath will start to turn yellow and die for lack of light. Remove the brick and in a week or so you will notice new shoots appearing through the dead grass. This natural process of decomposition and renewal is an easy and effective way of creating ephemeral artwork in school grounds.

First, get pupils to draw a simple outline design on paper, e.g. leaf shapes, like giant 1m oak leaves arranged in a spray, one for each class, or mazes which open up a whole new opportunity for play. Large, repetitive shapes like the 10m sunflower created by Coombes School are the most effective. Transfer the design onto black plastic, old carpet, tarpaulin or dark scrap fabric, and cut out the shapes. This may need some adult help.

Choose a grassed area that receives full sunlight right across the site throughout the day. The grass needs to have been mown regularly to ensure a good result. Lay out the pieces of dark material to create the design and anchor them with tent pegs, stones or bricks.

The colour changes caused by loss of chlorophyll should take about 3 weeks, but check regularly until you are satisfied with the result. When the white-out design is ready, gather all the pupils together and have a big unveiling ceremony.

NB No permanent harm will come to the grass: even if it looks completely dead it will re-grow quickly.

ADDITIONAL INFORMATION


Sunflower seeds are available from many suppliers including: DOBIES ☎ 01803 696444 www.dobies.co.uk. MR FOTHERGILL’S ☎ 01638 552512 www.mrfothergills.co.uk.


Department for Education and Skills (DfES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and ‘Gardening Which?’ magazine. Designed by Sarah Harmer: www.teachernet.gov.uk/growingschools.
Decorative plants in baskets are ideal for schools without gardens or areas to cultivate. They occupy minimum space in the playground, can be planted up in the classroom and are less likely to be attacked by pests. They are also an excellent way to brighten up dull corners. Growing fruit and vegetables in baskets provides an interesting alternative to growing flowers, and pupils can monitor their development and ultimately harvest and eat the crop.

**Fruit and Vegetables in Hanging Baskets**

**CURRICULUM LINKS**

**Foundation Stage**
1, 2, 4, 6

**Science**
KS1 – SC1, SC2, SC3
KS2 – SC1, SC2, SC3
KS3 – SC1, SC2
KS4 – SC1

**PSHE & Citizenship**
KS1 – 1ac, 2abcegh, 3a, 5abcd
KS2 – 1c, 2ahj, 3a, 4a, 5ade

For the Growing Schools Garden, Brockhill Park Secondary School in Kent grew several varieties of cherry tomatoes in their hanging baskets, as well as courgettes and ornamental gourds.

Wire or metal mesh baskets look good. Solid plastic baskets, on the other hand, are cheaper, don’t dry out so quickly, and may be less attractive to garden thieves. Choosing the right sized basket is important, to ensure it retains enough moisture. A 35cm-40 cm diameter basket will stay damp more effectively, having a smaller surface to volume ratio than smaller baskets. However, if the pupils are to take their baskets home, then a 25cm or 30cm size is more practical.

Line the basket with a suitable material which needs to be porous but strong enough to hold the compost in place. Sphagnum moss is no longer recommended, because excessive commercial collection of this plant from bogs and lowland fens is destroying these fragile ecosystems. Instead, try liners made from old woollen fabric, with perforated plastic inner liners to aid water retention. Pupils could carry out their own experiments to see which material works best, using anything from old jerseys or hessian sacks to turf sods or conifer clippings.

Then add a good multipurpose compost and mix in a slow-release fertiliser to reduce the need to feed the plants so often throughout the season. Most plants will still benefit from additional liquid feed once fruiting starts.

Tomato plants are easy to grow from seed and a good fruit to start with if you have not cultivated hanging baskets before. Peppers, dwarf peas, dwarf runner beans and French beans are other good vegetables to grow. Ornamental gourds are useful for craft work. For fruits try growing strawberries or even passion fruit. If you don’t want to raise plants from seed, many plants are available as seedlings or plantlets.

Tomato seed is flat and tends to stick together, so separate them before sowing. Start the seed off individually in small pots or divided trays. Sow in mid-March in a heated propagator or on a warm sunny windowsill. When their roots fill the starter pots, first transplant them to bigger pots, and later into the baskets. Use a dibber or small trowel to make holes large enough for each plant, taking care not to damage the roots. Put just one plant in small baskets (25cm), three in the larger ones (40cm).

Once established, the tomatoes will provide a great display of colour, climbing up the basket chains and cascading over the edges of the basket. As the plants grow, remember to keep the baskets well watered, particularly the gourds and squashes, which require a lot of water. You may choose to set up your own renewable energy watering system to save time and resources. Like many fruits and vegetables, tomatoes, gourds, squashes and strawberries will reach their peak during the summer holidays. However, having the plants in baskets means they can easily be taken home by pupils to enjoy over the summer.

There are many different varieties of fruits and vegetables you can grow. For tasty cherry tomatoes try ‘Tumbler’, an ideal basket variety which will trail down over the sides. For colour contrast you could also grow ‘Yellow Tumbling Tom’.

For ornamental gourds try ‘Small-Fruited’, ‘Bottle Gourds’ or ‘Warted’ varieties, all of which produce small gourds suitable for craft activities once mature.

Good varieties of courgettes and edible squashes, such as ‘Little Gem’ or ‘Rolet’, may be picked from July onwards.

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Good varieties of courgettes and edible squashes, such as ‘Little Gem’ or ‘Rolet’, may be picked from July onwards.
1 March – sow the seeds indoors

2 Line the basket

3 Transplant the small plants

4 Let the plants trail over the edges of the basket

ADDITIONAL INFORMATION
These companies sell a wide range of vegetable seeds, and some sell fruit seeds too:

- **CHILTERN SEEDS** ☎ 01229 581137
  www.chilternseeds.co.uk (unusual seeds)

- **DT BROWN** ☎ 08456 014656 www.dtbrownseeds.co.uk

- **FUTURE FOODS** ☎ 01924 713623 www.futurefoods.com (peas & beans)

- **KINGS SEED** ☎ 01376 570000 www.kingsseeds.com

- **MR FOTHERGILL’S** ☎ 01638 552512 www.mrfothergills.co.uk (includes children’s seeds)

- **THE ORGANIC GARDENING CATALOGUE** ☎ 01932 253666
  www.organiccatalog.com (organic and historic seeds)

- **MARSHALLS** ☎ 01945 466711 www.marshalls-seeds.co.uk

- **SIMPSONS SEED** ☎ 01883 715242 (tomatoes)

- **SUFFOLK HERBS** ☎ 01376 572456 www.suffolkherbs.com (gourds & squashes, traditional British varieties)

- **SUTTONS SEEDS** ☎ 01803 696363 www.suttons-seeds.co.uk (includes children’s seeds)

- **TERRE DE SEMENCES** ☎ 01227 731815 www.terredesemences.com (heritage varieties from all over the world)

- **THOMPSON & MORGAN** ☎ 01473 688821 www.thompson-morgan.com

- **TOTALLY TOMATOES** ☎ 01803 389516
  www.totallytomato.com (hundreds of tomatoes and peppers)

- **UNWINS** ☎ 01945 588522 www.unwins-mailorder.co.uk
Wildflowers are an important part of everyone's heritage, and a vital living link with the countryside. Many of our wildflowers are specific to particular areas, soil types or climates. Growing wildflowers is an excellent way of attracting wildlife to your school garden. They provide food plants for butterfly larvae, pollen and nectar to attract bees, butterflies and other insects, and seeds to help feed birds and small mammals in winter.

**HOW TO GROW Wildflowers**

Many wildflowers are pretty enough to be part of a mixed flower border; in a shady spot you could try foxglove, primrose, bluebell, bugle and snowdrop. In a sunny spot geranium, knapweed, scabious, soapweed and toadflax should thrive. Meadow-sweet, meadow buttercup, globe flower and lady's smock like damp conditions, while annuals such as corn poppies, corn marigold and cornflower need open, cultivated soil, without much competition from other plants.

Containers give you the chance to mimic different habitats. Use a very sandy compost to grow sea-cliff plants such as sea pink, sea campion and wild carrot, or create a bog container and grow marsh marigolds, water mint and flowering rush.

One of our most endangered wildflower habitats is old meadows, where a medley of flowers thrive among a range of grasses. Many of these have taken hundreds of years to develop and are very specific to local soil conditions. They cannot be entirely recreated, but you can produce very attractive meadow-style plantings that will support a range of wildlife.

A flowery lawn is cut regularly except for a few weeks in May or June so plants must tolerate mowing eg bird's foot trefoil, daisy, mouse-ear hawkweed, and self-heal. Spring-flowering meadows are cut in July and November; suitable plants include cowslip, ox-eye daisy and stitchwort. Summer-flowering meadows are cut in April and November so catsear, lady's bedstraw, meadow vetchling, scabious and red clover are good choices.

If you have a suitable area of grass, the simplest way to produce a meadow is to stop mowing and see what develops, then add to this with plants (which you can raise from seed) or bulbs. Don't try scattering seed directly into established grass as it will not be able to compete. As far as possible, choose plants appropriate to your locality.

To start from scratch, sow a grass and wildflower mixture direct onto bare earth. This is most likely to succeed if the soil is infertile – rich soils encourage too many coarse grasses and unwanted weeds. Sow your seed in the spring (March-May) or in autumn (September-October). It is best to buy seed from the UK, not from Europe or other origins, as UK seed is likely to perform better here, and is less likely to disrupt the natural species balance of your area.

First remove any existing vegetation in the area by cutting and digging or treating with a weedkiller based on glyphosate which will kill the roots but not persist in the soil. If the soil is rich, scrape off the top layer; which will also help remove weed seeds.

At least 3 weeks later, break up the soil by hand cultivating, then treading it down or using a light roller: Don't add any fertiliser. Sow your seed lightly and evenly, spreading it out so that you have approximately one gram of seed per square metre. Often, wildflower seeds are so small it can be difficult to see where you have already sown, so mix your seeds with a little fine sand to make it more obvious. Lightly rake the seeds into the soil and pat them down. Wildflower seeds do not germinate as readily as cultivated plants and some may not grow until the following year. Some species (like the clustered bellflower and cowslip) require a cold spell before they will germinate.

A young meadow will require regular weeding. This will reduce as it becomes established, but it will still need occasional attention to keep the plants in balance. Mow the area at least 3 times in the first year, to a height of about 5cm. If you have planted in a shady area, allow natural mosses and ferns to grow, too. Many wildflower mixes contain annuals such as poppies and ox-eye daisies that will flower in the first year, but then tend to die out. Perennials may take a season or two to flower, but will then last for many years.
ADDITONAL INFORMATION

For more information on wildflowers local to your own area contact: FLORA FOR FAUNA ☎ 01747 811778 www.nhm.ac.uk/science/projects/fff  
PLANTLIFE – THE WILD-PLANT CONSERVATION CHARITY ☎ 020 7808 0100 www.plantlife.org.uk  
THE WILDLIFE TRUSTS ☎ 01636 677711 www.wildlifetrusts.org

These specialist nurseries sell a wide range of wildflowers:
BTCV ENTERPRISES ☎ 01302 572200 www.btcv.org (seeds, bulbs and plants)  
JOHN CHAMBERS ☎ 01933 652562 (seeds, bulbs and plants)  
EMORSGATE SEEDS ☎ 01553 829028 www.wildseed.co.uk (seeds)  
LANDLIFE WILDFLOWERS ☎ 0151 737 1819 www.wildflower.org.uk (seeds and plants)  
NATURAL SURROUNDINGS ☎ 01263 711091 www.hartlana.co.uk (seeds, bulbs and plants)  
NATURESCEAPE BRITISH WILFLOWERS ☎ 01949 860592 www.naturescape.co.uk (seeds, bulbs, plants)  
SUFFOLK HERBS ☎ 01376 572456 www.suffolkherbs.com (seeds and plants)  
YELLOW FLAG WILDFLOWERS ☎ 01452 311525 (seeds, bulbs, plants)

Add woodland flowers to shady spots

A flowery lawn is easy to manage

Use containers to create special habitats

A summer meadow is a magnet for wildlife
Playground markings are an excellent way for schools to brighten up plain tarmac areas, improve on-site facilities and provide useful curriculum resources for teachers. The creation of more focused areas, with stimulating games and activities for pupils to play during break times, can encourage better social interaction between different age and gender groups, as well as promote cooperative play. Focused play also promotes safer play, reducing the risk of falls and collisions caused by chaotic running around.

**CURRICULUM LINKS**

**Foundation Stage**
1, 2, 3, 5, 6

**Mathematics**
KS1 – Ma2, Ma3
KS2 – Ma2, Ma3

**Art & Design**
KS1 – 1ab, 2ab, 4ab, 5abcd
KS2 – 1abc, 2abc, 3ab, 4b, 5abcd

**HOW TO DESIGN and PAINT your own Playground Markings**

Before painting markings onto your playground, consider your school’s needs fully. Permanent markings must relate to the school’s policy on play and staff should think about how they can be used in the development of the curriculum. Ensure provision covers different gender, ethnic and age groups in the school.

Alvanley Primary School, Cheshire, and Coombes CE Infant School, Berkshire, produced markings for the Growing Schools Garden which included games invented by the pupils and mathematical problem-solving games.

First, make a detailed scale plan of the playground, clearly marking any existing features or playground markings. There must be enough room for pupils to play around each marking without overlapping with the adjoining game. Involve your pupils in this process and get them to draw their ideas in colour.

Once you have selected your designs, enlarge the drawings to the desired scale and mark them out on the playground with chalk. Using a stencil for complicated designs will ensure a neater finish. To mark out straight lines stretch a piece of string between two fixed points. To mark out a spiral, attach one end of a piece of string to a bucket at the centre point and the other to a piece of chalk and walk around the bucket in circles, chalking the ground as you go, until you reach the middle. To mark a circle, attach a piece of string to a centre point, then walk around it, pulling the string taut and chalk a circle as you walk.

Use emulsion, gloss or road paint, or special playground marking paint from commercial suppliers (see overleaf). Road paint will last the longest and can be applied with aerosol sprays or sponges. Check the cans for health and safety instructions first as some paints give off toxic fumes.

Before starting to paint, sweep the surface to remove any grit. The older and rougher the surface, the shorter lifespan your markings will have. Avoid painting in very cold or very hot weather.

Coombes CE Infant School provided three games: Pong Hau K’i, Achi and Nine Men’s Morris.

**Pong Hau K’i** is a Cantonese game in which each player has two stones. One player’s stones are positioned on the two points on the left-hand side of the board as shown in the illustration overleaf, and the other’s on the right-hand two. Players take turns in moving their stones along any of the lines to the next empty point. The aim of the game is to block the opponent and prevent them from moving.

**Achi** is a game from Ghana played in two phases. Each player has four stones, with a different colour or shape for each player. In phase one, the stones are placed onto any empty spaces on the board in alternate turns of play. When all eight stones are in position, phase two begins. Players take it in turns to move their stones along the lines to the next empty space in an attempt to make a row of three (as in noughts and crosses). The first row of three stones wins.

**Nine Men’s Morris** is a game believed to date back to ancient Egypt, and is also played in two phases. Each player has nine stones which are placed onto any empty spaces on the board in alternate turns of play. Players attempt to form a row of three stones. If they achieve this they can remove one of their opponent’s stones from the board.

Once all the stones are on the board, phase two begins. Players take it in turns to move their stones along the lines to the next empty space in an attempt to make a row of three (as above). For every line of three, players can remove one of their opponent’s stones. A player blocking all the opponent’s stones or reducing them to two pieces wins the game.
ADDITIONAL INFORMATION


Playground markings are available from the following:

**COLAS LTD** ☎ 0121 561 4332 www.colas.co.uk (thermoplastic markings)

**FLEET LINE MARKERS** ☎ 01684 573535 www.fleetlinemarkers.com (playground paint, machines, aerosols and gels to remove markings and graffiti)

**MAGICAL MARKINGS** ☎ 01977 662500 www.magicalmarkings.co.uk (pre-formed thermoplastic system paint to suit each school’s individual needs)

**PRISMO LTD** ☎ 01802 989732 www.prismo.co.uk (markings based on individual school’s designs)

**ROCOL SITE SAFETY SYSTEMS** ☎ 0113 232 2800 www.rocol.com (playground paint, paint applicators and stencils)

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www.teachernet.gov.uk/growingschools
Well dressing is an ancient Peak District tradition and its true origins are unknown. Today the blessing of the local wells has taken on a Christian meaning and often involves the whole village participating in a short outdoor service, usually accompanied by a brass band. More than sixty towns and villages, mainly in the limestone villages of the central and southern Peak District, dress their wells in a succession of celebrations between May and early September.

5

Well Dressing

The well dressing on display in the Growing Schools Garden was designed and made by Elton CE Primary School, a small rural school in the heart of Derbyshire.

Making a full-size well dressing is hard work and requires artistic dexterity, but having little fingers is a great advantage.

Once you have decided on a theme for the design, ask pupils to draw suitable pictures. For the show garden, Elton depicted the story of Noah’s Ark.

First make the board on which the design will be displayed, using stout pine or oak planks. Elton’s board measured 1m high by 60cm wide. It needs a 2cm rim to hold the clay, like a large tray, and is studded with nails to stop the clay sliding out when the board is vertical. Hammer flat-headed nails in rows approximately 4cm apart all over the board, leaving them with about 1cm protruding.

Decide how the heavy board will be held in place and attach appropriate fixings.

Two weeks before the well dressing is to be made, leave the boards to soak in water for a week. They need to be thoroughly saturated or they will draw the moisture out of the clay. If your school has a pond, the easiest way is to immerse them in the water. Otherwise borrow a large inflatable paddling pool.

Preparation of the clay should start at least a week before the well dressing is to be displayed. Use grey-coloured buff powder clay and mix it with water to make a butter-like texture, adding salt to keep the moisture in. This mixing process is called ‘puddling’, especially enjoyed by pupils who like to get messy. They can mix it in an old tin bath or similar either with bare feet or wearing wellington boots.

Once the board has been soaked and the clay puddled, place the board face up on a strong table, and using a wet plaster trowel, smooth the clay onto the board. Leave to stand for 24 hours to allow excess water to evaporate and a skin to form. Now the board is ready to decorate.

Transfer the design to the clay by placing a full-size copy of the design over the clay board and pricking out the design, piercing the paper with a cocktail stick or darning needle. Once complete, carefully peel back the paper and ‘join the dots’. This can be done by drawing a line in the clay with the cocktail stick or by placing lengths of black wool over the dots.

Natural materials are then used to colour in the design like a collage, pressing the different materials securely into the clay one at a time. This process is referred to as ‘making it live’. As a large well dressing may take a few days to complete, the non-perishable materials should be added first, such as alder cones, stones, bark, wool, feathers, leaves and seeds, as well as coffee beans, rice and even dry macaroni. Flower petals should be applied as late as possible. Press each petal into the clay with a cocktail stick, working from the bottom up, ensuring each row slightly overlaps the next, to shed any rain.

Finally, fix the board securely and safely into position, bearing in mind the weight of the clay will make it very heavy. A well dressing will only last for a week in good condition, but the finished result is very rewarding and ensures the survival of a venerable local tradition.
1. Make the frame and then immerse in water
2. Puddling the clay
3. Prick out the design
4. Place the decorations one by one

ADDITIONAL INFORMATION
Suppliers of clay and pottery-making materials: POTTERY CRAFTS ☎ 020 7720 0050 www.potterycrafts.co.uk

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Shade Umbrellas

Many schools have specific shade policies to reduce the risks from too much exposure to the sun. An enjoyable way of implementing these policies is to create pleasant shaded spaces to help protect pupils during break time, taking advantage not only of trees and pergolas but adding home-made parasols or ‘shade umbrellas’. Children can easily make their own shade umbrellas using recycled materials and also study how the earth’s movement affects the daily amount of sunshine we receive.

HOW TO MAKE a Shade Umbrella

For the Growing Schools Garden, Chaddesley Corbett Primary School in Worcestershire made two ‘shade umbrellas’ from cheap, recycled materials. Shade umbrellas can be mobile or permanent features and are a colourful solution to help provide shelter in the playground.

The initial element to consider is the position of the sun and where the shade falls in the playground at break times. Pupils can investigate how much shade is already available in their playground, looking at shadows cast by trees, buildings, or other permanent structures, observing the movement of shadows throughout the day, and how shade changes during the year. Once pupils have established what shade is available, they can then consider what additional shade is needed, and where.

To make their shade umbrellas, pupils from Chaddesley Corbett Primary used strips of plastic bags to twist into the spokes of an old garden parasol. However, many other materials could be used including old fabric, strips of cloth or tarpaulin, bamboo, wood, metal, willow or straw. Pupils can research how sunlight penetrates these different materials and investigate which are the best to use.

First strip the old parasol of any remaining fabric, leaving only the bare spokes. Meanwhile, cut the plastic bags into long strips and sort them into their different colours. Bags including garden sacks, rubble bags and bin liners come in a variety of different colours, so try to get as many colours as possible.

Open the parasol and if possible remove the pole (you may need to unscrew it). This will make it easier for the pupils to work on the parasol. Starting at the centre, near the pole, take a strip of plastic and weave it in and out of the open spokes. When the strip runs out, tie another strip of plastic to the end and continue as before. Make sure the plastic strips are tightly packed together as you progress, otherwise the sun will creep through the gaps. By using the different coloured strips creatively, the final product can have an attractive appearance. When all the spokes are covered, tie the loose end off by knotting it firmly to one of the spokes. Finally, create a feathered edge by tying short strips of plastic to the edge of the completed parasol, letting them dangle in the wind.

If the umbrella is to be a permanent feature, it is best to sink the pole into dry-mix concrete or attach the top to a longer wooden pole which can be driven into the ground. Alternatively, fill the base of the parasol with sand and carry it outside when needed.
2 Decorate the edge with a fringe and ensure the sunshade is fixed securely in the ground

1 Weave the plastic strips in and out of the spokes

ADDITIONAL INFORMATION
For old umbrellas and garden parasols to convert try charity shops and car boot sales.

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Attracting wildlife into school grounds is something all schools can do, however large or small, whether urban or rural. It is an excellent way to encourage pupils to investigate their environment and learn to respect and care for animals, and it also provides great enjoyment. The most common and varied wildlife visiting school grounds will undoubtedly be birds. Providing the right food will attract more into the school grounds, particularly in late winter when natural food supplies are low.

**Hanging Bird Feeders**

In the Growing Schools Garden, a number of schools loaned bird boxes from their own school grounds. There was also a bird table, and Collingham Gardens Nursery School in London made a number of different bird feeders. These come in all shapes and sizes and can be made from many different materials.

To make a hanging bell feeder, popular with blue tits and great tits, take a small plastic plant pot and thread a length of wire or string through the hole in the bottom, securing the pot so it hangs upside down. This will enable you to hang the feeder from the tree. If you are using coconut shells, cut the coconut in half and either remove the flesh to use yourself, or hang it up for the birds to peck at.

Mix a selection of bird seed, nuts and berries together with breadcrumbs and suet in a bowl. Warm some lard carefully in a pan until melted, then add to the mixing bowl. Stir the lard in, and allow to cool a little. Carefully spoon the mixture into the pot or coconut shell, packing it in tightly. When the lard has completely cooled it will set hard and hold the mixture in place.

To make a hanging feeder log, take sections of branch 7cm - 8cm in diameter and 25cm - 30cm long, eg from coppicing or heavy pruning. Drill a series of holes along the length of a wooden log, approximately 2cm in diameter, using a wide-ended drill bit. Attach a galvanised metal eyelet to one end, ensuring it is securely fastened and strong enough to take the weight of the log. Thread a piece of string or wire through the eyelet, to tie it to the tree. Prepare the mixture in the same way as above, packing it into the holes along the length of the log and waiting for it to set before hanging it out for the birds.

To make a live food container to keep mealworms for insectivorous birds like blackbirds, robins and thrushes, thread a piece of string or wire through the holes in the bottom of a plastic plant pot, securing so the pot hangs the right way up. This will be filled with the mealworms, so to prevent them from wriggling out, tape over the holes with waterproof tape, eg freezer tape. To protect the mealworms from the weather, cut the top off an old plastic bottle (leaving the top screwed on) and attach it to the string higher up to act as a roof. Remember to leave sufficient space between the two for the birds to get in and out easily.

When feeding birds, it is important to remember that different species of birds have adapted to eat different things. Some prefer live food, others are fruit- or seed-eaters, while others are omnivores, happy to eat general kitchen scraps. Collingham Gardens Nursery made a number of mixtures of feed to cater for different tastes. They then attached them all to a wicker wreath, which in turn was hung from a tree, providing a twiggy resting place for feeding birds.

Many small birds need to eat around a quarter of their own body weight every day in winter to survive the cold weather, so suet, mealworms, peanuts and other high energy foods are particularly valuable.

Always make sure birds also have safe access to fresh water, not only for them to drink but also to bathe in - an important part of their grooming routine. Put some food on the ground in a safe place for birds that do not like feeders. Putting food out at a set time every day, such as first thing in the morning, will keep a regular number of birds visiting your feeding station.

Although food is particularly welcome in winter, most authorities now agree it does no harm to feed all year round. However, if you do feed birds in winter it is important not to stop suddenly. For example, if you cannot feed at weekends or during holidays, you could consider feeding only every other day during the week, so that birds do not become too dependent on your food source and suffer during your absence.
ADDITIONAL INFORMATION

Drill holes to make a hanging log feeder

Use melted lard to hold ingredients together

Wreath with a selection of food diets

Hanging bell feeder

Mealworm feeder
A butterfly and bee border is a worthwhile addition to any school. As well as looking attractive, it will encourage a wide range of insect visitors, and these in turn can provide food for other wildlife including birds and small mammals. Carefully chosen native wildflowers, border perennials, seed-raised annuals, herbs and flowering shrubs can all make stunning displays alone or in combination and provide an important food source for bees, butterflies and other insects.

### CURRICULUM LINKS

#### Foundation Stage
- 1, 2, 4, 6

#### Art & Design
- **KS1** – 1abc, 2abc, 3ab, 4abc, 5abcd
- **KS2** – 1abc, 2abc, 3ab, 4abc, 5abcd
- **KS3** – 1abc, 2abc, 3ab, 4abc, 5abcd
- **KS4**

#### Science
- **KS1** – SC1, SC2
- **KS2** – SC1, SC2
- **KS3** – SC1, SC2
- **KS4** – SC1

#### Information & Communication Technology
- **KS1** – 1abc, 2abcd, 3ab, 4abc, 5abc
- **KS2** – 1ab, 2a, 3ab, 4abc, 5abc
- **KS3** – 1abc, 2ab, 3abc, 4abc, 5ab
- **KS4** – 1ab, 2ab, 3ab, 4ac, 5abc, 6

### HOW TO GROW a Butterfly and Bee Border from Seed

**Brockhill Park Secondary School in Kent** designed the bee and butterfly border for the Growing Schools Garden, growing most of the plants as annuals from seed.

The first step is to design the border, which needs to be in a sunny position, but can be any size and shape you like. Draw an accurate scale plan of the border and copy it so everyone can try being a garden designer.

Butterflies and moths feed on the nectar of many flowers but will lay their eggs only on leaves of specific plants which are their caterpillars’ food. Bees collect nectar and pollen; beetles and other insects eat pollen. We’ve suggested some suitable plants, and you can find others in books on wildlife gardening. Seed catalogues and reference books will provide useful information on flowering time, heights and spreads, and colours of your chosen plants.

You can buy a range of seeds in garden centres, but mail-order companies have a far larger choice (see overleaf). Check the sowing times and any temperature requirements, then devise a growing timetable. It’s best to start off all the seeds in containers as this gives much more control over the process.

Sow the seeds evenly, about 1 cm apart, in trays of damp multipurpose compost. Apply a light layer of compost to cover the seeds. Label the trays with the date, variety and student’s name. Place in a propagator or cover with a clear plastic bag and leave on a warm windowsill.

Make sure that the seedlings have plenty of warmth and light, and water when required. Don’t forget to make contingency plans for all holiday periods. Look daily for signs of growth and once the seeds have germinated, remove the plastic bag and grow on until the second set of leaves have developed – they are then large enough to prick out. Brockhill used half-size trays of multipurpose compost, and pricked out 20 plants into each. The young plants should be ready to go out when the leaves are touching in the tray. Harden off the trays of young plants by putting them in a coldframe or under a cloche for a week or two.

Prepare the border by digging and breaking down the soil into a fine tilth with a rake. With a large area, a powered cultivator may be needed – these can be hired at reasonable rates, or perhaps a parent may lend one. It can help to mark out the planting positions with sand, or by laying out all the plants on the ground before you start to put them in. Once planted, keep the border carefully weeded and protect the young plants from slugs. Enjoy the flowers as they grow and bloom, and keep a record of the visiting insects.

### 40 top butterfly plants

#### Annuals and biennials from seed
- Alyssum, Aster
- Bedding dahlias
- Candytuft
- Forget-me-not
- French marigold
- Lobelia, Honesty
- Sweet rocket, Verbena

#### Border perennials and herbs
- Aubrieta, Catmint
- Marjoram
- Michaelmas daisy
- Mint, Phlox
- Primrose, Red valerian
- Rudbeckia, Sedum

#### Flowering shrubs and climbers
- Buddleja, Ceratostigma
- Cotoneaster, Escallonia
- Hebe, Honeysuckle
- Ivy, Lavender
- Lilac, Privet

#### Wildflowers
- Common fleabane
- Daisy, Dandelion
- Field scabious
- Hemp agrimony
- Ox-eye daisy
- Knapweed
- Purple loosestrife
- Ragwort, Teazel
ADDITIONAL INFORMATION

Suppliers of seeds for bee and butterfly plants:
CHILTERN SEEDS ☎ 01229 581137 www.chilternseeds.co.uk
DT BROWN ☎ 08456 014656 www.dtbrownseeds.co.uk
KINGS SEED ☎ 01376 570000 www.kingsseeds.com
MR FOTHERGILL'S SEEDS ☎ 01638 552512 www.mr-fothergills.co.uk
THE ORGANIC GARDENING CATALOGUE ☎ 01932 253666 www.organiccatalog.com
SUFFOLK HERBS ☎ 01376 572456 www.suffolkherbs.com
SUTTONS SEEDS ☎ 01803 696363 www.suttons-seeds.co.uk
THOMPSON & MORGAN ☎ 01473 688821 www.thompson-morgan.com
UNWINS ☎ 01945 588522 www.unwins-mailorder.co.uk

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Herbs can stimulate all the senses and are an ideal plant to grow in any school. Most varieties are easy to raise from cuttings or seed and they can be grown in many different ways. Most do best in a sunny position, though mint, chervil and chives are all happy in the shade. Because of their cultural links, herbs are also well suited to historical or symbolic plantings. Smaller herbs which make neat plants are also good for planting in patterns.

For the Growing Schools Garden, Mapledene Early Years Centre, London, produced a raised medieval herb bed, with the help of the Geffrye Museum. To create a raised bed that will stand up to the rigours of school life, it is advisable to create an inner structure, which can then be clad with a more authentic material, such as hurdles. Mapledene used treated timber, though you could alternatively use stone or brick. To follow their design, to create a bed 1m x 2m x 25cm high you need six hardwood or treated softwood posts 10cm x 10cm x 1.5m and 30 planks 15cm x 2.5cm x 1m. Ask the timber merchant to cut slots in the posts 2.5cm deep, wide enough to take the planks. The four corner posts need the slots cut in adjacent sides, and the two centre posts need slots cut in opposite sides. Slot the planks into the uprights to create a rectangular frame and secure each end of each plank with a screw. Cement the upright posts 0.5m in to the ground. Once the cement has set, the bed can be clad with willow or hazel hurdles, split logs or any other locally-available material to give a rustic effect.

Next, fill the bed ready for planting. Weed-free garden soil is the best thing to use provided it has a good crumbly texture. If the soil is heavy and has lots of clay in it, mix in grit and garden compost, leaf mould or second-hand potting compost (one bucket per barrow load of soil). Alternatively, use bought compost – growing bags are usually the cheapest source – though this will require topping up annually. To save effort and expense, the lower third of the bed can be filled with rubble or even broken up polystyrene packaging. Half a metre of soil is plenty for herbs.

Spend some time researching the herbs you are going to plant and you can find out lots of interesting facts. For example, sweet woodruff was historically used in potpourri and to scent linens, chamomile served as a tea to relax the facial muscles; and mint as a symbol of hospitality is mentioned by the Roman poet Ovid.

English literature is rich in references to herbs. In Shakespeare's ‘A Midsummer Night’s Dream’ Oberon, king of the fairies, describes his wife Titania’s favourite resting place:

“I know a bank where the wild thyme blows, Where oxslips and the nodding violet grows”

and Titania’s diminutive servants bear plant names: Mustard Seed, Peas-blossom.

The tragic figure of Ophelia in the mad scene in ‘Hamlet’ famously lists the traditional significance of many common plants: rosemary for remembrance, pansies for thoughts, etc, showing how the names of herbs often give a semantic clue to their properties. Lavender was used in laundering clothes, sage has an essential oil now found to improve memory and sagacity.

However, as not all herbs are suitable for culinary use, it is important to label them very clearly – see the factsheet on plant labels for some creative ideas.

Curriculum Links

Foundation Stage
1, 2, 4, 6

History

KS1 – 1ab, 2ab, 3, 4ab, 5, 6ab
KS2 – 1ab, 2ab, 3, 4ab, 5ab, 6, 7, 8b
KS3 – 1, 2ab, 3ab, 4ab, 5abc, 7abcde, 8

Art & Design

KS1 – 1ab, 2abc, 3ab, 4abc, 5abcd
KS2 – 1abc, 2abc, 3ab, 4abc, 5abcd
KS3 – 1abc, 2abc, 3ab, 4abc, 5abcd

Design & Technology

KS1 – 1abcde, 2abcd, 3ab, 4ab, 5abc
KS2 – 1abcd, 2abcd, 3ab, 4abc, 5abc
KS3 – 1abcd, 2abcd, 3abc, 4bc, 6ab, 7b

Science

KS1 – SC1, SC2
KS2 – SC1, SC2
KS3 – SC1, SC2
KS4 – SC1

PSHE & Citizenship

KS1 – 1ac, 2ahj, 3a, 4a, 5abcd
KS2 – 1c, 2ahj, 3a, 4a, 5ade
1 Plan of the raised bed

2 The planks slot into position

3 Rubble or broken polystyrene in the base reduces the amount of growing medium needed

ADDITIONAL INFORMATION
For hurdles and other woodland products: EXMOOR BASKETS AND HURDLES ☎ 01398 323391 www.greencountry.co.uk
THE ENGLISH BASKET & HURDLE CENTRE ☎ 01823 698418 www.hurdle.co.uk, or for more local suppliers look under BASKETMAKERS in the online Yellow Pages (yell.com) or visit WWW.ALOTMENTFORESTRY.COM

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Murals are an ideal way to decorate a dull empty wall space and, as they are relatively cheap to make, you can recreate them as often as you like. Despite their name, they don’t have to be on walls – they’re also an ideal way to improve the look of wooden and chain-link fencing. Creating murals is fun for all concerned and can involve from just one or two pupils right up to the entire school.

**Curriculum Links**

**Art & Design**

KS1 – 1ab, 2abc, 3ab, 4abc, 5abcd

KS2 – 1abc, 2abc, 3ab, 4abc, 5abcd

KS3 – 1abc, 2abc, 3ab, 4abc, 5abcd

**PSHE**

KS1 – 1abc, 2abcdfh, 4abcde, 5acdfgh

KS2 – 1ab, 2abcdef, 3g, 4adfg, 5acfg

KS3 – 1b, 3abcj, 4c

**How to Create a Painted Mural**

For the Growing Schools Garden, Godwin Primary School in Essex produced a Friendship Stop mural showing a line of children standing at a bus stop. Children who are on their own at breaktime can wait here for a member of the Playground Squad to collect them and find them someone to play with.

Most murals are painted onto masonry, concrete, brick or stone walls, though these need to be in good condition. However, Godwin Primary used marine plywood, which is specially treated for outdoor use. Wood can be painted indoors and then bolted to any external wall. In addition, one mural can be made up of several timber panels, enabling more children to be involved.

The most long-lasting murals are those painted onto well-prepared surfaces. This means smoothing any rough or pitted surfaces by rendering them with a good outdoor-quality plaster. Sand down the surface of marine ply. Then wipe each board and paint with a suitable waterproof primer. Then apply a weatherproof undercoat.

Once this is dry, mark out the design in soft pencil or chalk, traced from a full-size drawing, or by using a slide or overhead projector to project the design onto the wooden surface. If the design needs to be cut out of the panel, it should be done at this stage, before painting.

Acrylics and emulsions are the easiest and cheapest paints, and become impervious when dry. Acrylics have no fumes, are available in a wide range of colours and will last up to 10 years in good conditions. They are available from most DIY stores and also from education suppliers. Emulsion paints have a similar lifespan and are slightly cheaper. Mineral paints last longer, but are quite expensive.

**How to Create a Textured Panel**

Long Eaton Community School in Derbyshire made three mural panels for the garden, from recycled materials, illustrating various life cycles. The panels were constructed on a base of square wire mesh using scrap plastic bags.

Once the theme for your mural is agreed, get the pupils to draw the finished design in colour to scale on squared paper (you may find it helpful to blow this up to A3 size on a photocopier). Bear in mind that the simpler the design, the greater the impact - and also the easier to make.

Cut the wire mesh to the desired size and tape over the sharp edges. Cut the plastic bags into long strips and separate them into different colours. The strips need to be wide enough to fill the holes in the mesh so they hold firmly. Then transfer the design to the mural, which is quite simple, if laborious.

Starting from one end of the wire mesh, with the design in front of you so you can count the squares, thread a strip of plastic through the mesh from the topside passing it under the wire and up through the second hole to make a loop. The plastic should be pulled tight across the bottom of the mesh, but left loose sticking out of the top. Cut off any excess plastic.

Repeat this process, threading a strip of plastic down through the second hole and up through the third. Continue this process working systematically from one side to the other, using different colours to create the picture.
1. Prepare the surface for the mural

2. Trace the picture onto the wall

3. All the children can help to paint the mural

1. Thread the plastic strips

2. Gradually build up the textured panel picture

ADDITIONAL INFORMATION

For more ideas: MURALS IN SCHOOLS by Carol Kenna and Steve Lobb published by Greenwich Mural Workshop
ISBN-1-870100-05-0

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Most of the rubbish we produce can be recycled, and that message can be vividly illustrated by actively encouraging pupils to recycle at school, especially by building their own compost heap. Composting is an excellent way to recycle organic waste which would otherwise be put in the bin and subsequently dumped in a landfill site. In addition, a well-maintained compost heap and wormery can provide enough good-quality compost and liquid fertiliser to keep all the schools’ plants healthy - at no cost whatsoever.

How to make a wooden compost bin
To make good compost you need a well-designed compost bin. The ideal bin measures one cubic metre in size, is well ventilated, and kept moist at all times, otherwise it won’t generate or retain enough heat to do the job properly. If the compost bin is too small, poorly insulated or lacking in moisture then it will take the detritivores (tiny insects that eat dead plants) and microbes (bacteria and fungi) much longer to break down the compost.

Compost bins can be purchased at garden centres and DIY superstores, but many local authorities have schemes to provide compost bins at a discount. However it is more interesting to make your own and can be even cheaper if you use second-hand or scrap materials. For example, four old timber pallets from a builder’s merchant wired together will make a perfectly good compost bin.

Cardinal Wiseman RC Secondary School from Coventry made a more sophisticated version – a wooden compost bin with a 1.1m long section of pipe 10cm - 12cm in diameter running through the middle so pupils could feel the heat being generated inside the compost heap without disturbing the heap.

First, make four one metre square frames using sixteen treated timber posts 7.5cm x 7.5cm x 1m. Then fix six treated timber planks 10cm x 1.5cm x 1m to each frame, leaving a 5cm gap between the planks to allow air in.

Next take two pieces of marine plywood, at least 7cm wider than the pipe’s diameter. Cut a circle out of the centre of each piece, just wide enough to slot the pipe through, by drilling a hole in the centre and then using a jigsaw to cut the circle out. Nail or glue the plywood to the centre of two of the panels you have constructed, cutting away the planks where they block the hole.

Screw the sides together to make a wooden box. The two sides with holes should be opposite each other. Slot the pipe through the two holes and glue in place, leaving 5cm protruding from each end.

Sit the compost bin directly on top of the earth to allow the organisms living in the soil to penetrate the compost and breaking it down. Insulate the compost with a lid made of a square of old carpet, and protect this from the rain with a sheet of polythene over the top.

Once it is full of compost, pupils can put their hands inside the pipe and feel the difference in temperature inside and outside the compost heap – if the compost is decomposing properly it should be very warm inside. You can measure this precisely using two thermometers arranged so that one is measuring the temperature of the air, and the other is pushed into the bin. These are available from educational suppliers with large print scales that are easy to read.

The following are all good materials to put in a compost bin:
Grass clippings
Autumn leaves
Farmyard and stable manure
Fruit and vegetable waste like potato peelings
Soft prunings, chopped or shredded
Most weeds - but not seed heads or roots
Garden plant remains
Torn-up paper, cardboard and newspaper
Natural fibres like old cotton or linen rags

Don’t put in any meat, fish, fat or left-over cooked food to avoid problems with rats. Avoid perennial weed roots, weed seedheads or diseased plants, or any dog or cat droppings. Thorny and woody prunings should also be excluded as they will take too long to break down. Man-made fibres, plastic or metal will never break down, so keep these out too.
HOW TO USE a wormery

Wormeries are an interesting alternative to compost bins, especially if you only have small amounts of waste. You can make your own, but it is generally more practical to buy one. They vary in design, and generally come as a self-assembly kit with instructions. The wormery in the Show Garden was a ‘Can-O-Worms’ from Wiggly Wigglers consisting of four trays:

A top working tray – into which scraps are added
A middle working tray – where the worms live
A bottom working tray – where the worms live
A collector tray (or sump) – in which liquid fertiliser is collected

The working trays are interchangeable and allow recycling to continue indefinitely. The benefit of a wormery is that it is compact, taking up minimal space and as it has a lid, there are fewer unpleasant smells lingering around. Pupils can learn about worms and the habitats different species live in – the stripey brandling worms that live in compost heaps are the same ones sold for fishing and are raised commercially in worm farms.

1. Assemble the side panels of your compost bin
2. Cut a hole in two of the four sides
3. The completed compost bin with a pipe to let pupils feel the heat generated once it is fully functional

ADDITIONAL INFORMATION

Wormeries are available from: WIGGLY WIGGLERS ☎ 0800 216 9900 or 01981 500391 www.wigglywigglers.co.uk

Department for Education and Skills (DfES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and ‘Gardening Which?’ magazine. Designed by Sarah Harmer. www.teachernet.gov.uk/growingschools
Musical washing lines are a popular acoustic addition to the school grounds. Composed simply of a washing line strung with home-made musical instruments, they are a colourful, cheap and easy feature for any school to make, and offer opportunities for informal learning through play. The instruments themselves can be made from almost anything that makes an interesting noise – copper piping, old tin cans, plant pot trays, saucepans, buckets, shells, dried gourds or natural seed pods.

**Curriculum Links**

**Foundation Stage**
- 1, 2, 3, 6

**Art & Design**
- KS1 – 1a, 2ab, 3ab, 4abc, 5abcd
- KS2 – 1abc, 2abc, 3ab, 4abc, 5abcd
- KS3 – 1abc, 2abc, 3ab, 4abc, 5abcd

**Design & Technology**
- KS1 – 1abcde, 2abcdef, 3ab, 4ab, 5abc
- KS2 – 1abcd, 2abcdef, 3abc, 4ab, 5abc
- KS3 – 1abcdefgh, 2abcde, 3ab, 4abcd, 6ab, 7b

**Music**
- KS1 – 1abc, 2ab, 3ab, 4abcd, 5abcd
- KS2 – 1abc, 2ab, 3abc, 4abcd, 5abcd
- KS3 – 1abc, 2ab, 3ab, 4abcd, 5abcd

**How to Make a Musical Washing Line**

The instruments for the musical washing line in the Growing Schools Garden were made by Windmill First School, Worcestershire and Loddon Special School, Hampshire. To make a washing line for the show garden, we used thick garden rope supported by treated hazel posts painted with leaf patterns drawn in pastels and decorated with brightly coloured string. The posts were sunk into the ground and set in place with dry-mix cement. Garden rope was then tied between the two posts to make a strong, sturdy washing line.

If you want to give the washing line an extra sound dimension, use an old metal down-pipe to make a speaking pipe. This consists of a giant ‘U-bend’, the bottom part of which is buried under the ground. It works like a telephone, so when a child speaks into one end the sound comes out of the other. These pipes can be purchased, but they are also easy and cheap to make yourself.

Windmill First School made instruments from old pots and pans which were painted in bright colours and strung up with wooden spoons to use as drum sticks. Use a good quality metal paint, such as multi-crom translucent paints, Hammerite or metallic model paints which will last longer outside. Loddon School made wind chimes, tambourines, shakers and rattles. To make a tambourine, superglue two plastic plant pot saucers face together (use saucers made from ‘soft’ rather than ‘brittle’ plastic with rims rather than straight sides). Decorate with acrylic or plastic paints. Once it is dry, carefully drill eleven small holes at evenly spaced intervals, through the outer rims of the saucers (this should be done by an adult). Thread a short length of galvanised wire through ten of the holes, attach a sleigh bell to the piece of wire and secure tightly. Attach a longer piece of wire through the final hole with which to hang up the tambourine.

To make rattles, take four recycled tin cans of different sizes. Remove any sharp edges with a metal file or cover with duck tape. Decorate the cans with metal paints and, once they are dry, drill a hole in the bottom of each. Thread the cans onto a length of wire by size, starting with the smallest. Secure a washer or bead on both sides of the hole to stop the cans slipping up and down the wire. Attach a dolly peg to the bottom of the wire for the children to rattle the cans with.

To make the shakers, fill three different-sized pieces of strong plastic piping with shells, buttons and beads. Superglue stoppers to the end and decorate the tubes with plastic paints. Screw a small eyelet through each end of the tube and superglue in place. Once they are dry, thread thin garden rope through the eyelets and attach to the washing line.

The wind chimes created by Loddon were made from old copper piping which looked attractive and made a beautiful sound. You will need six pieces of copper piping of different lengths, five to hang down and one horizontal piece to which the others are attached.

The hardest part of making wind chimes like these is drilling a series of holes along such a narrow piece of pipe. Wear protective goggles and clamp the pipe in a vice to stop it slipping. Drill five holes evenly along the length of each piece of piping, passing right through both sides. Attach sleigh bells to the piping by threading wire through each hole, then attach each individual pipe to the horizontal piece of pipe to complete the wind chime.

Suspend the instruments from the washing line with garden rope, and attach sticks, wooden or metal spoons to act as drum sticks.
ADDITIONAL INFORMATION

All the items required to make a musical washing line can be obtained from scrap yards, junk shops or the local DIY store for minimal cost.

Tambourine
Tin can rattler
Shaker

Musical washing line and alternative washing line with underground sound pipe

Department for Education and Skills (DES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and "Gardening Which?" magazine. Designed by Sarah Harmer: www.teachernet.gov.uk/growingschools
Mosaics come from a venerable tradition dating back to ancient Greece and Rome, yet today have a fresh new appeal. They are a colourful and lasting way to embellish school playgrounds, and can be used on external walls or areas of tarmac or incorporated into special features. The Growing Schools Garden featured three mosaics, two permanent ones set into the ground, and one short-term creation supported over the entrance.

HOW TO MAKE a Mosaic

First decide where you want your mosaic. It could be on a floor or wall, or applied to much smaller objects like metal tables, pottery plant boxes, or a bird bath or drinking fountains. For the show garden, St John’s Infant School created a large mosaic compass which also incorporated colours representing the four seasons. Selwood Middle School made a decorative mosaic bowl to catch the drips from the drinking fountain.

Encourage children to create their own designs. Successful designs can be complex or very simple – but they should be your own. However, doing some research before starting your design can be fascinating. Investigate the Romano-British mosaics on the British Museum’s website. Look at the mosaic floors and walls in older buildings in your area like churches and local town halls often incorporating heraldic beasts, medieval motifs and mottos. Even swimming pools are often lined with mosaic.

Once you have created your design, make an accurate scale drawing of it, ready to transfer to the final surface.

Prepare the surface thoroughly. With brickwork, brush down the surface and remove any loose material and dust, then seal with an exterior-grade sealant. Render uneven walls with a water- and frost-resistant cement first.

Alternatively, create the mosaic on a suitable base. St John’s Infant School used 18mm thick marine plywood sealed around the edges. Once complete it was embedded in the asphalt play area.

Transfer your design carefully onto your clean, dry, prepared surface using coloured chalk or pencil marks. Group your mosaic pieces according to size, colour or type, so that you can pick them out easily and quickly once the adhesive is applied. You can use ready-made tile pieces or make your own.

If you cut your own pieces out of broken tiles, ensure everyone working on mosaics wears fine latex gloves and eye protection, as ceramic fragments are extremely sharp.

Spread a layer of tile adhesive onto the surface and stick on the pieces of mosaic according to your pattern. Then grout the entire surface of the design, smoothing the grouting material by hand all over it – wear gloves for protection from sharp edges. Wipe off the excess grouting with a dry cloth and small scrubbing brush. Once it is dry, clean it with a damp cloth to remove any residue of grit, grouting or dirt, and polish it dry.

If you like the mosaic look, but don’t want to make a permanent feature, the same effect can be created by gluing paper cut-outs or card squares onto your mosaic design, and then covering the completed design with varnish or clear plastic laminate. Technically this will be an appliqué, but the end product can be very impressive and much less expensive than mosaics made of conventional materials.

Chaddersley Corbett School Primary School, Worcestershire, produced the large sign over the Growing Schools Garden entrance using laminated mosaic appliqué. Each child drew a flower, a mini-beast or a garden tool. Their drawings were then cut out and laminated individually arranged on a preprinted semicircular board and stuck down. The letters spelling out “Welcome to the Growing Schools Garden” were cut out of artificial grass donated by a local greengrocer.

Although such paper or card mosaics are not weatherproof in the long term, they work well indoors or can be created for outdoor use on special occasions such as open days or celebrations.
1 Prepare your surface thoroughly

2 Spread the tile adhesive

3 Place your mosaic pieces carefully onto the glue

4 Spread the grout all over the finished design

5 Once dry, remove excess grout and polish the mosaic clean

ADDITIONAL INFORMATION
For more on Romano-British mosaics: WWW.THEBRITISHMUSEUM.AC.UK
For more about making mosaics, and inspirational ideas: BEGINNER’S GUIDE TO MOSAICS by Peter Massey & Anne Slater published by Search Press ISBN 0-85532-889-4
TEACH YOURSELF MOSAICS by June Mc Morland Hunter with Louise Carpenter published by Hodder & Stoughton ISBN 780-340-8009-1

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Understanding where food comes is increasingly important in this supermarket-orientated age, when few children have direct links with the countryside. Sustainable development is another important aspects of the curriculum. By making innovative containers from discarded objects and planting them with herbs, flowers and vegetables children can combine learning about recycling with seeing how their food grows - transparent planters even allow children to view the roots growing without disturbing the plants.

**CURRICULUM LINKS**

**Foundation Stage**
1, 2, 6

**Art & design**

KS1 – 1ab, 2abc, 3ab, 4abc, 5abcd
KS2 – 1abc, 2abc, 3abc, 4abc, 4abcd
KS3 – 1abc, 2abc, 3abc, 4abcd, 5abcd

**Design & Technology**

KS1 – 1abcd, 2abcde, 3abc, 4abc, 5abc
KS2 – 1abc, 2abcde, 3abc, 4abcd, 5abc
KS3 – 1abcdegh, 2abcde, 3abc, 4abcd, 7b

**HOW TO MAKE See-through Planters**

Seeing is believing - and children love to check and see if plants really are growing roots. Normand Park Primary School, London, grew seeds in transparent planters with removable jackets making this is easy to arrange without harming the plants.

First, cut the top from a plastic bottle and punch holes in the bottom. (Normand Park used 5 litre sizes, but smaller ones would also work.)

Then make a black or brown removable waterproof jacket for the bottle (to keep the roots dark), using a double layer of mulch fabric to fit around the bottle.

Ensure that it fits snugly but can be removed and then put back easily without tearing. Stitch on a design made from cut-outs of polythene bags if desired – some compost bags have brightly coloured pictures of plants or flowers which you could use. Sew or staple on ribbon or Velcro fastening tapes to keep it secure.

Finally, fill the container with potting compost, sow the seeds according to the packet’s instructions, place it on a plastic saucer or suitable waterproof drip tray and water it well.

Then put it in a suitable sunny place like a window-sill or on a nature table – and wait for the seeds to germinate.

Having jackets with fastenings enables the children to monitor the progress of the roots without disturbing their plants. Using this method Normand Park successfully grew carrots, garlic, peas and potatoes in their see-through planters.

**HOW TO GROW Vegetables in Recycled Containers**

Despite having a tarmac playground, Boyne Hill CE Infant School, Berkshire wanted to grow vegetables. They had already dug up a central section to make room for some trees, as well as creating beds, borders and tubs with shrubs and flowers attractive to butterflies. They decided that each class should have its own area so that the children would be responsible for looking after their own plot.

They also wanted to demonstrate how it is possible to use discarded materials originally intended for another purpose, so they opted to re-use a variety of old and unlikely containers. They used old tyres (available free from a local garage), an old tin bath, a pair of discarded wellington boots, the shell of a broken vacuum cleaner, an old kettle, plastic food tubs and a leaky bucket.

Some containers were painted, some decorated with poems and flower designs, and others covered with buttons, beads, nuts and bolts, and metal scraps set in Polyfix tile cement. You could choose any number of interesting containers so long as you can make drainage holes in them, and they are sturdy enough to hold potting compost. You can even use old woven baskets, whether of wire or willow, if you line them with polythene to hold the soil.

Boyne Hill first planted seeds in pots and trays indoors, to give them a good start before planting the young seedlings out in their playground containers. Their crops included beans, beetroot, carrots, courgettes, peas, potatoes, onions, radishes, red lettuce, and rocket.

The children enjoyed tending and watering their plants, and after harvesting their vegetables they used them to make fresh vegetable soup and lettuce, rocket and radish salad sandwiches.
HOW TO ADAPT old tyres as plant containers

Use one tyre for most types of vegetables. Use two stacked on top of each other for plants needing more root room, like potatoes.

Paint the outside of the tyre - Boyne Hill used masonry paint coloured with left-over emulsion. Make a base by placing old pieces of discarded wood inside the tyre, and then line it with polythene. Place it in a situation in the playground which has good light – though not necessarily full sun. As it will be very heavy and awkward to move once full of soil, put it in its final home before you fill it.

Fill the tyre with potting compost or topsoil mixed with a little organic poultry manure, available in pellets. (You could also ask for some well-rotted manure from a local farm. For schools in towns, city farms allow you to collect the composted manure from their premises free.)

Plant out with young seedlings started off indoors. Water the plants regularly and remove any slugs or other pests.

Old boots can make unusual plant containers

1  Cut the top off a plastic bottle
2  Make a removable jacket
3  Decorate it with cut-outs
4  Fix it with velcro strips

ADDITIONAL INFORMATION

Department for Education and Skills (DFES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and *Gardening Which?!* magazine. Designed by Sarah Harmer.  www.teachernet.gov.uk/growingschools
Weather-watching is suitable for pupils of all ages and may be a one-off project or a daily activity. Rain, wind and sunshine have a constant effect on all aspects of gardening, on how we grow our food and even where and how we live. Global warming and how it may alter our climate is a growing concern. If you have your own school weather station and keep your own records you can track the trends - and maybe forecast the weather too.

**Curriculum Links**

**Geography**
- **KS1** – 1abcd, 2abcdef, 4ab
- **KS2** – 1abe, 2abefg, 3abcdefg, 4ab, 5ab, 6abcdef, 7abc
- **KS3** – 3abcde, 4ab, 5ab

**Art & Design**
- **KS1** – 1ab, 2abc, 3ab, 4abc, 5abcd
- **KS2** – 1abc, 2abc, 3ab, 4abc, 5abcd
- **KS3** – 1abc, 2abc, 3ab, 4abc, 5abcd

**Design & Technology**
- **KS1** – 1abcd, 2abcdef, 3ab, 4ab, 5abc
- **KS2** – 1abcd, 2abcdef, 3abc, 4abc, 5abc
- **KS3** – 1abcdefgh, 2abcde, 3abc, 4bc, 7b

**How to Set Up a Mini Weather Station**

Cardinal Wiseman RC Secondary School in Coventry monitor local weather conditions with the aid of a compact meteorological station, some of which they lent to the Growing Schools Garden. School suppliers offer a range of meteorological kits. You will also need a Stephenson screen (a louvre-sided box) to house some of the instruments, though this can be home made. Some kits have instruments which can be linked to a computer, enabling results to be automatically recorded and printed out. Garden supplies catalogues are also good sources of outdoor weather instruments.

The standard kit would contain a minimum/maximum thermometer, a barometer to measure atmospheric pressure, a hygrometer for measuring humidity, a rain gauge, an anemometer to measure wind speed and a weather vane to show wind direction. The first three would be sheltered by the Stephenson screen to provide shade and still air, the others need to be out in the open.

Position the kit in an open situation, away from walls, trees and other shelter which could affect many of the readings. As well as providing interesting data for further study, weather records can be linked to other activities such as growing plants.

**How to Make Playground Weather Instruments**

The high tech option is not the only way to monitor the weather. You can make your own simple instruments using readily available materials in imaginative shapes, like the large friendly goose windsock and the windmill weather-vane made by Windmill First School, Worcestershire, for the Growing Schools Garden.

To make a goose windsock, first mould the body out of chicken wire, including wings and a tail. Cover it with Modroc (strips of textile impregnated with plaster of paris). Make flat feet out of MDF or wood, wide enough to act as stabilisers, and fix copper piping in them as legs. Secure the body firmly onto the legs.

To make the head, use an old plastic football or rugby ball as a mould, and cut a hole in each end. Cover with Modroc, leaving a wide hole open at one end to let the wind enter it. Make a beak out of orange ripstock fabric (used for kites), with a wire ring in both ends. Attach the beak onto the head, and fix the head onto a copper pole as neck, ensuring that it can swivel round freely.

Once the Modroc is dry, paint the whole bird with gloss paint to protect it from the weather.

The windmill weather vane is made in a similar way. Make the body out of chicken wire and cover with Modroc. Attach sails made of wood or plastic in the shape of a cross, fixed on a long nail or a short length of metal tube, ensuring they are free to swivel. Add or paint a door onto the house and stick on a miniature door knob. Paint the completed windmill with gloss paint for weather protection.

On the top firmly fix a weather vane - Windmill School bought a metal one, but it could also be home-made from a variety of materials.
ADDITIONAL INFORMATION

Weather station instruments Available from school suppliers and garden catalogues.

Playground weather instruments Materials available from school suppliers, DIY and plumbers stores.

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Working with renewable energy is a great way to get pupils thinking about issues of sustainability, pollution and recycling. One of the most exciting features built for the Growing Schools Garden was the renewable energy watering system devised to keep plants, pots and beds watered regularly throughout the year, including holidays. It used recycled rainwater and was driven solely by wind and solar power.

The renewable energy watering system in the show garden was devised and constructed by Royston High School, South Yorkshire in partnership with Today’s Energy Systems, experts in using alternative energy sources. The system works by using wind and solar energy to charge gel batteries which, in turn, drive a pump. This draws water from the rainwater storage tanks and distributes it through a network of irrigation pipes directly to the plants, minimising evaporation.

It is important to position the solar panel in a south-facing location, where it will receive maximum sunlight. The wind turbine needs to be in an open spot away from sheltering trees and buildings. These expensive pieces of equipment also need positioning out of harm’s way, such as on the roof. Alternatively, the wind turbine can be located on a free-standing pole, as Royston have done at their school.

The batteries should be housed in a well-ventilated, weatherproof and tamper-proof enclosure, or indoors, ideally within close proximity to both the energy generators and the water supply, to avoid the need for long cables.

The wind turbine and solar panel, 12v surface-mounted water pump and DC current timer switch all need to be connected to the batteries. The timer switch (which controls the pump) is not essential, as the system can be switched on and off manually.

Standard hose pipe is used to deliver water from the water storage tanks to the pump. Attach a water filter to the end that will go into the storage tank, and secure this end firmly so that it remains constantly submerged below the level of the water. Attach the other end of the hose to the inflow end of the pump.

The rainwater storage tanks provide the reservoir from which water is drawn for the plants and should be positioned where they will collect maximum water from the gutters. However, during hot or dry spells, water levels may fall. To avoid having to top them up manually with mains water, position one or two additional tanks next to the main one, at a higher level. Attach them together with hose pipe, so that the lower tank is constantly refilled.

Drip-feeder irrigation systems are usually purchased as a kit and come with irrigation piping (usually 5mm), fixing hooks, drip spouts, a distributor that allows you to have several irrigation pipes running off in different directions and a pump attachment hose. Attach one end of this to the outflow end of the pump and the other to the distributor. The irrigation pipes should then be positioned among the plants and drip feeders positioned accordingly.

Once connected, the solar panel and wind turbine will generate enough energy to keep the batteries charged and the system going indefinitely, saving time and resources and ensuring the plants in the school grounds can stay healthy and well-watered all year round.

NB The diagram overleaf is schematic only. Always consult a qualified electrician for advice on assembly and wiring of renewable energy systems.
For advice on alternative energy systems: TODAY’S ENERGY SYSTEMS, ☎ 01889 584667
Wind turbine: LMV LTD, Old Oak Close, Arlesey, Beds SG15 6XD
Materials: from electrical supplies and garden stores.

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Ceramic Flowers and Plant Labels

Labelling your plants is essential if you want to keep track of what you have sown or planted, and the labels can be long-lasting, attractive and unique if you make your own. Clay and metal are ideal media for this, and allow the labels to be formed in all kinds of imaginative shapes like flowers, leaves or fruits. You can also make ceramic flowers to decorate your flower beds year-round as a permanent artistic feature of the garden.

**Curriculum Links**

**Foundation Stage**
1, 2, 6

**Art & design**
- KS1 – 1ab, 2abc, 3ab, 4abc, 5abed
- KS2 – 1abc, 2abc, 3ab, 4abc, 5abed
- KS3 – 1abc, 2abc, 3ab, 4abc, 5abed

**Design & Technology**
- KS1 – 1abcde, 2abcdef, 3ab, 4ab, 5abc
- KS2 – 1abcd, 2abcdef, 3abc, 4a, 5abc
- KS3 – 1abcdedgfh, 2abcde, 3abc, 4bcd, 7b

**Science**
- KS1 – SC1, SC2, SC3
- KS2 – SC1, SC2, SC3
- KS3 – SC1, SC2
- KS4 – SC1

**How to Make Ceramic Flowers**

Meldreth Manor Special School made several life-size sprays of ceramic flowers on strong metal stems and planted them amongst the living flowers in one of the beds of the Growing Schools Garden.

You can make your own clay flowers of any kind to serve as beautiful and permanent decorations in your school grounds, and with care they will last indefinitely.

For ceramic flowers you will need modelling clay, tools for shaping and cutting the clay, wire and beads for making stamens and pistils, glue and paint, and strong wooden or metal stakes to serve as the stems.

Roll out the clay like pastry. Cut into large flower shapes — flat ones like daisies, bells for daffodils or bluebells. A whorl shape like arum lilies is also effective and stable.

Gently shape the edges into curved petals, taking care not to cut too deeply into the centre. Stamens and pistils made of beads on metal wire can be added if desired.

Make a hole in the base of the flower if fixing it on top of a stem, or pierce a hole in the tops of those which will hang down like a bell from the stem. When finished, rest them on a suitable support and leave to dry.

If you have access to a kiln, fire them before glazing. When they are fully dry, glaze and refire them.

Make stems of painted metal strong enough to support the weight of the flowers. Attach firmly to stems with superglue or thread through the holes you have made. Plant your everlasting flowers in suitable positions to enhance your flower beds year-round.

**How to Make Clay and Metal Plant Labels**

**Clay labels**

Roll out the clay and cut suitable shapes, e.g. rounds for flowers, rectangles for vegetables, or simple leaf shapes.

While the clay is still wet, incise flower petals into rounds, press leafy herb twigs (e.g. rosemary or thyme) into flat surfaces, or inscribe plant names or the name of your school onto plaques.

Crimp the edges (like pastry), and add a twisted roll to finish off. Make a hole in the base or through the top in which to locate a wooden or metal supporting rod once the label is dried or fired.

Dry or fire the labels if you have access to a pottery kiln. Then glaze and dry or refire. Fix securely onto support stakes with superglue. Alternatively bend some stout wire into a shepherd’s crook shape and hang your labels from the hook at the end.

**Metal labels**

Cut out leaf or flower shapes using tin snips, or use precut shapes in copper or tin. Decorate with enamel paint or simply paint with nail varnish. Write on the names and if necessary cover with clear varnish. Fix securely onto metal rods or wooden canes with superglue and stake them in the earth next to your plants.
ADDITIONAL INFORMATION

Suppliers of clay and pottery making materials: POTTERY CRAFTS ☎ 020 7720 0050 www.potterycrafts.co.uk

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Pergolas are a traditional garden feature that can have a new and practical purpose for school grounds, giving structure, interest and focus to pathways and areas of paving. Although normally a support for plants, an interactive pergola is different, displaying colourful fixed and mobile decorations which last all year round, stimulating the senses of sight, sound and touch, complementing the plants growing below and helping shade children from too much sunshine.

**Interactive Pergolas**

A pergola can be any length or shape. The interactive pergola in the Growing Schools Garden was created by Palatine Special School, West Sussex, and their design is for a straight pergola up to 4m long and up to 1.8m wide. For this you will need ten treated round posts (0.1m x 2.4m), about 40m of untreated wood 25mm - 50mm diameter, 75mm & 50mm galvanised nails, some small tacks, offcuts of acrylic sheet eg Perspex; and strong fishing line.

Work out a design for the ten main poles. The bottom 450mm of each one can remain undecorated. For the upper part, try wrapping some of the poles with strings and materials of different textures and colours, glued or tacked on, or mask off shapes using paper and Blutack, and spray paint over the whole pole.

Having decided how far apart to put the poles, (eg.1m), you can make the hanging panels that will fit in between. Allow for these to be up to 200mm narrower (ie 800mm - 850mm wide). Make between eight and sixteen panels, using untreated coppice poles for the frames or, if this is hard to locate, cut up round untreated poles 25mm - 50mm diameter; join the pieces together by drilling holes near the ends and bolting them together. The panels can be decorated by hanging any number of interesting objects from them, either fixed at both ends or swivelling free like a mobile. Try using:

- beads, buttons, shells, stones, plastic bottles cut into different shapes (some can act as hanging plant pots)
- strings, ribbons, cans and shapes cut from cans and decorated with different patterns
- spoons, forks, and anything else that makes an interesting sound
- bits of wood, feathers, corks, woven elements.

To construct the pergola, dig the decorated poles into the ground to form two straight lines. Check the vertical with a spirit level. Take lengths of decorated poles of a smaller diameter, or natural coppice poles, and nail these horizontally at three different heights (about 25cm and 100cm from the ground, and at the top of the main poles). Hang the decorated panels between these horizontal poles.

The roof can also be decorated in a variety of ways. Transparent shapes can be cut out from acrylic sheet offcut, painted, and suspended from the pergola. Another useful technique is to tie in some reinforced wire mesh to form a frame from which to hang objects. Alternatively, leaf shapes can be cut out of plywood and fastened with clear fishing line to create a novel roof casting fascinating shadows.

**Curriculum Links**

**Art & design**
- KS1 – 1ab, 2abc, 3ab, 4abc, 5abcd
- KS2 – 1abc, 2abc, 3ab, 4abc, 5abcd
- KS3 – 1abc, 2abc, 3ab, 4abc, 5abcd

**Design & Technology**
- KS1 – 1abcde, 2abcdef, 3ab, 4ab, 5abc
- KS2 – 1abcd, 2abcdef, 3abc, 4ab, 5abc
- KS3 – 1abcddefgh, 2abcde, 3abc, 4bcd, 6ab, 7b

**Music**
- KS1 – 1abc, 2ab, 3ab, 4abcd, 5abcd
- KS2 – 1abc, 2ab, 3abc, 4abcd, 5abcd
- KS3 – 1abc, 2ab, 3abc, 4abcd, 5abcd
1 Hang plant pots made from plastic bottle sections

2 Tie ribbons on curtain rings

3 Thread shells and beads on fishing lines

4 Decorated panels, poles and roof section

ADDITIONAL INFORMATION
For more inspirational ideas: GARDEN DECORATION FROM JUNK by Leeann Mackenzie published by Collins & Brow, ISBN 1-85585-761-8 To locate local suppliers of coppiced wood visit: WWW.ALLOTMENTFORESTRY.COM

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“Tell me a story...” Children love listening to stories, and inventing their own ones, too. Storytelling helps them to develop their literacy skills alongside social and cooperative skills, and can inspire them with a lifetime’s love of literature. Making a special storytelling chair for the quiet area of school playgrounds can make the listening experience more memorable and transform the process for children, increasing their attention span and encouraging far greater participation.

**Storytelling Chairs**

Every storytelling chair, whether specially made or improvised, can be an innovative part of the playground. It can also show that listening to stories is not a passive experience but one to which all children can make their individual contribution. Alvanley Primary School, Cheshire contributed their unique carved chair to the Growing Schools Garden and Loddon Special School, Hampshire provided an imaginative props bag to help bring stories to life.

Alvanley School enlisted local artist Paul Noon to help them build their own storytelling chair. Alvanley’s brief was ‘to design and make a storytelling chair for use by everyone using our school grounds.’ First of all, the younger children sketched their favourite characters from traditional stories. The older children considered what would be the most appropriate materials to use. Once it was decided that the chair was to be made of wood, the school invited local sculptor and wood carver Paul Noon to come to visit the school and talk to the children. He encouraged the children to share their ideas and make a positive contribution to the design of the chair, making it special to the school by incorporating features of Alvanley’s beautiful Victorian school building into the design – the rose window and the school bell.

Paul Noon prepared the wooden panels for the chair and ensured that all the children were involved in making their own marks in the wood, using traditional wood-carving tools. The panels were of oak board and the seat made from the butt of an ash tree trunk. Paul assembled the panels and constructed the chair, with children helping to finish and varnish the wood.

Your chair could be a much simpler affair: Try customising an inexpensive folding ‘director’s chair’ by inscribing the canvas back with large colourful letters to show its new identity as the school’s storytelling chair. Add a shade parasol, and imaginative props like a director’s hat, or make-believe lights, camera and action clapper. Using a foldaway chair also enables it to be stored under cover when the weather is wet.

Deciding special ‘rules of the game’ can help engage all pupils’ attention and make the storytelling sessions go smoothly. For example, the inclusion of a real bell in Alvanley’s chair also served as a prompt, so that ringing the bell was the signal to move on.

The chair may also serve as an incentive for children to write their own stories. Reciting traditional ballads, or rapping, or making up new poems and rap sagas might also be a creative use of your chair and add a dramatic dimension.

Loddon School showed that interesting objects from everyday life also have a role to play in creating the setting for a storytelling chair – and these can be ephemeral and interchangeable. They made a special props bag filled with objects to help enhance the storytelling experience. For example, to conjure up the right atmosphere for a story about going to the seaside, the props bag could be filled with familiar things from a trip to the coast. The children could sit on beach towels, rub some sun cream into their arms, listen to a tape of the waves, feel sand with their feet, build a sand castle, feel pebbles and sea weed, or even experience a water spray. Large pieces of material could be used to simulate the sea, and the children could dress up in appropriate clothes for the sun (hats, sun glasses) and perhaps have waterproofs in case it rains. Other elements like masks, costumes or tapes of sound effects or music could also be added.

**Curriculum Links**

**Art & design**
- **KS1** – 1ab, 2abc, 3ab, 4abc, 5abcd
- **KS2** – 1abc, 2abc, 3ab, 4abc, 5abcd
- **KS3** – 1abc, 2abc, 3ab, 4abc, 5abcd

**Design & Technology**
- **KS1** – 1abcde, 2abcdef, 3ab, 4ab, 5abc
- **KS2** – 1abcd, 2abcdef, 3abc, 4ab, 5abc
- **KS3** – 1abcdefgh, 2abcde, 3abc, 4b, 6a, 7b

**English**
- **KS1** – En1, En2, En3
- **KS2** – En1, En2, En3
- **KS3** – En1, En2, En3

**Growing Schools**
A simple storytelling chair

Story prompts in a props bag

Alvanley’s carved chair surrounded by seats for listeners

ADDITIONAL INFORMATION

For details of local artists working with schools, your own local authority may be able to help.
Natural, flexible and inexpensive, willow weaving is one of the oldest and most enduring of handicrafts, which has recently gained a new lease of life in sculptural work. From simple abstract shapes up to large animal figures, willow creations can be infinitely versatile and surprisingly durable. Willow can also be worked with as a living material ‘in the green’, to make living fences and garden dividers which continue to grow, or airy green arbours for agreeable shade in school grounds.

Willow Sculptures

The lifesize willow sculptures of woodland animals made by Beaconside Infants School, Penrith, were created in partnership with a local artist in willow, Phil Bradley, of Cockermouth, Cumbria. Children found it easy to work on the figures with Phil during his two-day residency at their school, and he observed that they grasped the concept of working in three dimensions better than many adults.

Unless you have the help of a willow expert you may not wish to launch into such ambitious projects, so your pupils could try making simple shapes in willow, like the small sphere illustrated overleaf, which can be made to any size and displayed to great effect outside, like abstract sculptures.

Before you start, investigate your local craft scene as there are now many short courses on willow weaving run by artists and small firms across the country. They often supply the withies (willow rods) and all the materials and equipment as well. They can also give you details of workers in willow who run workshops in local schools.

To make a willow sphere, you will need a sharp knife, secateurs, linseed oil, white spirit and a paint brush.

Start by forming the flat base on which it will stand. This needs to be strong, so experiment by making some practice bases in basketweave first. A simple alternative for beginners is to opt instead for a ready-made hardboard base with pre-drilled holes. These are the bases of many simple baskets, and can be bought from craft shops or from school art suppliers, or you could make your own from wood or plywood. The holes in ready-made bases will need to be enlarged as they are generally made for canes, which are thinner than withies.

Thread about 12 fine willow rods of 1m - 1.8 m in length down through the holes in the base and up again. Bring them together over the top to form an arch. Twist them over each other repeatedly to link them. Do this until all the holes of the base are used and you have built up a spherical framework of vertical rods bent together into the shape of a round domed roof.

Then weave in the rest of the rods horizontally and diagonally, one at a time, in and out of the vertical rods, in a random pattern, holding onto the thin end and tucking the thick end of each rod inside the sphere. Gradually build up successive layers of willow, curling the rods in and out of the shape until your spherical sculpture is complete.

When you have achieved the size and shape you want, trim off any stray ends of willow sticking out with a pair of secateurs. Brush the outside of the sculpture with a protective mixture of linseed oil and white spirit (3 parts linseed to 1 part spirit) to help weatherproof it.

Your pupils’ woven sculptures can then be displayed outside, all together or in groups of different sizes, on the ground or on top of a wall for extra visual effect. To prevent them blowing away, tether them to something solid or put some pebbles or small rocks inside them to anchor them to the ground.

Living willow

Willow’s extraordinary tenacity also enables it to be used while a living material, planted in the ground and yet able to sprout afresh once woven. Beautiful green willow has a traditional association with undying love:

“Make me a willow cabin at your gate, 
And call upon my soul within the house. 
Write loyal cantons of contemned love 
And sing them loud, even in the dead of night; 
Holla your name to the reverberate hills 
And make the babbling gossip of the air 
Cry out: Olivia!”

This is one of the most celebrated declarations of love from Shakespeare’s ‘Twelfth Night’. Your pupils too could make airy willow structures to shade themselves from the sun. Simply plant living willow and weave the withies into imaginative arbours which will grow green shoots every spring – creating a novel addition to any school grounds.

CURRICULUM LINKS

Art & design
KS1 – 1ab, 2abc, 3ab, 4abc, 5abcd
KS2 – 1abc, 2abc, 3ab, 4abc, 5abcd
KS3 – 1abc, 2abc, 3ab, 4abc, 5abcd

Design & Technology
KS1 – 1abcd, 2abcdef, 3ab, 4ab, 5abc
KS2 – 1abcd, 2abcdef, 3abc, 4ab, 5abc
KS3 – 1abcdefgh, 2abcde, 3abc, 4abcd, 7b

Science
KS1 – SC1, SC2, SC3
KS2 – SC1, SC2
KS3 – SC1, SC2

HOW TO CREATE a Willow Sculpture
ADDITONAL INFORMATION

For general information contact: THE BASKETMAKERS’ ASSOCIATION www.basketassoc.org PHIL BRADLEY Basketmaker ☎ 01900 826413 WILLLOW POOL DESIGNS ☎ 01539 567056 www.geocities.com/willowpool WWW.BASKETMAKERS.COM

For details of local suppliers and courses consult YELLOW PAGES online (www.yell.com)

For information on working with willow LIVING WILLOW SCULPTURE by Jon Warnes published by Search Press ISBN 0-855-32834-7

Department for Education and Skills (DfES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and ‘Gardening Which!’ magazine. Designed by Sarah Harmer: www.teachernet.gov.uk/growingschools
School fences can be much more than just utilitarian. Although essential for security or separating different areas, fences can be decorative in their own right. They can challenge pupils to make structures that are both useful and beautiful, perhaps using locally grown wood or recycled and scrap materials. In addition, like the railings round some urban parks, they can become a temporary outdoor exhibition space, displaying works made by pupils in science or art lessons.

**Decorative Fencing**

The decorative fencing pupils made by Palatine Special School, Worthing, for the Growing Schools Garden, was inspired by their investigations about trees, focusing on leaf shapes, leaf skeletons and chlorophyll patterns in science lessons. They also use their own school fence creatively as a showcase of the art they produce, changing the exhibits each year.

Fences can be made from a range of different materials. Palatine School used coppiced wood poles, which they purchased cheaply from their local Woodland Trust. Coppiced wood will make an attractive rustic-looking fence, and it is also environmentally friendly, being the by-product of woodland management. If you cannot source it locally, try contacting your local Wildlife Trust (01476 581135) or ask at your local timber merchant.

To make the decorative fencing you will need coppiced wood poles, galvanised nails or screws, marine plywood, acrylic paints, pastels and varnish, garden rope, and galvanised wire.

Palatine found the easiest way to make this basic post-and-rail fence was in 3m sections flat on a hard surface, erecting it afterwards. To create each section, you will need four 1.5m poles and four 1.2m poles to make the upright posts, as well as six 1m poles to make the horizontal rails.

Place all the upright posts in a line on the floor in pairs (0m, 1m, 2m & 3m), with the taller posts at either end. Then measure 30cm and 115cm up from the bottom of each post and mark it clearly. The next step is to place the horizontal rails perpendicular to the uprights at the marked points, sandwiching them between each pair of upright posts at either end. Then use galvanised nails or screws to fix through each upright into the horizontal rails. Once assembled, erect each fence section using a mallet to drive the poles into the ground.

The show garden fence was used to display enlarged leaves cut out of marine plywood (approximately 50 -70cm wide), but other things could take their place. The pupils copied leaf shapes onto the plywood, cut them out and then decorated them to look like leaves, using acrylic paint, pastels and varnish. The leaf shapes were then attached to the fence using strong galvanised wire, small holes having been drilled through the plywood at four points.

The finishing touches included smaller plywood leaves (10cm – 15cm), some of which were nailed to the top of each pole, while others were attached to a garden rope and strung between the taller posts.

An alternative type of decorative fencing which Palatine School have used in their own school grounds is made from timber posts and concrete reinforcement mesh.

**Science**

- **KS1** – SC1, SC2, SC3
- **KS2** – SC1, SC2, SC3
- **KS3** – SC1, SC2
- **KS4** – SC1

**Design & Technology**

- **KS1** – 1abcde, 2abcdef, 3ab, 4ab, 5abc
- **KS2** – 1abcdef, 2abcdef, 3abc, 4abcd, 5abc
- **KS3** – 1abcdefgh, 2abcdef, 3abc, 4bcd, 6abc, 7bc

**Art & design**

- **KS1** – 1ab, 2abc, 3ab, 4abc, 5abcd
- **KS2** – 1abc, 2abc, 3ab, 4abc, 5abcd
- **KS3** – 1abc, 2abc, 3ab, 4abc, 5abcd

**How to Make Decorative Fencing**

The decorative fencing pupils made by Palatine Special School, Worthing, for the Growing Schools Garden, was inspired by their investigations about trees, focusing on leaf shapes, leaf skeletons and chlorophyll patterns in science lessons. They also use their own school fence creatively as a showcase of the art they produce, changing the exhibits each year.

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The finishing touches included smaller plywood leaves (10cm – 15cm), some of which were nailed to the top of each pole, while others were attached to a garden rope and strung between the taller posts.

An alternative type of decorative fencing which Palatine School have used in their own school grounds is made from timber posts and concrete reinforcement mesh.

For this you will need: timber posts (15cm x 15cm in diameter), concrete reinforcement mesh, galvanised 17cm nuts and bolts, dry cement mix, clay, marine plywood, paints, pastels and varnish.

Each section of fencing requires two 2m lengths of timber to make the upright posts and one section of concrete reinforcement mesh. Ask the timber merchant to cut a slot out of one side of each timber upright, just wide enough for the concrete mesh to slot into and about two-thirds the thickness of the post. Then place each timber upright flat on the floor and slide the wire mesh into the slot, one post at each end, drill holes along the length of the post and through these bolt the mesh into place.

To erect the fence, dig out holes deep enough to bury 45cm of the upright posts in the ground and back fill them with dry cement mix. Decorate the fence with shapes cut out of plywood, or with other designs produced by the pupils. Clay balls fixed on the top of the concrete reinforcement mesh add a decorative finish and discourage climbing. The clay balls will need to be fired if they are to last the winter months.
ADDITIONAL INFORMATION

For information on local sources of beanpoles, hurdles, and other woodland products:
www.allotmentforestry.com

For timber and wood working supplies try your local timber merchant.

Department for Education and Skills (DfES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and “Gardening Which!” magazine. Designed by Sarah Harmer. www.teachernet.gov.uk/growingschools
Herbs can stimulate all the senses and are an ideal plant to grow in any school. Most varieties are easy to raise from cuttings or seed and they can be grown in many different ways. Most do best in a sunny position, though mint, chervil and chives are all happy in the shade. Because of their cultural links, herbs are also well-suited to historical or symbolic plantings. Smaller herbs that make neat plants are good for planting in patterns, or incorporating in a herb book.

**Herb Books**

If you have no space for a raised herb bed, a herb book is an excellent short-term alternative. The original concept for the book of herbs arose from a residency week with an artist held at Ebchester CE Primary School, County Durham which encouraged pupils to explore and interpret their local area. The creation of the herb book began as a drama project exploring the life of Katherine Elliot, a local woman accused of witchcraft, in the medieval period. The outcome was an outdoor plant bed that looked like a medieval book but was filled with growing herbs.

The herb book is made of wood and willow, in two halves, positioned close together to look like an open book. To make the base, cut two pieces of 1cm marine ply 100cm x 80cm. Screw four legs 30cm long cut from 5cm x 5cm timber to the underside of each rectangular board. Make an edge for each half, approximately 20cm deep, to retain the compost by fixing four wooden planks securely at the corners and onto the base board. An attractive alternative is to create a willow basketweave section around the edge. Ebchester did this with the help of a local basketweaver.

Once completed, put both halves of the book as closely together as possible and line with rot-proof permeable material (such as thin capillary matting or woven plastic mulch). The four legs adjacent to the spine can be cut shorter, or pushed down into soft ground to angle the sides of the book slightly.

Fill each half of the book with multipurpose compost. Plant herbs in rows, using a different herb for each line, then cover the soil with fine bark chippings or cocoa shell to retain moisture. Cut thin wooden batten into 60cm lengths, write the name of a herb on each and place them directly underneath the appropriate line of herbs, thus resembling lines in a book. An extra piece of batten can be fixed down the centre of the book to form a spine.

Pliat thick string to create a length of rope about 1.2m long, tie a knot at the end and tease out the ends to make a tassel. This forms the bookmark and can be attached to the spine.

**Curriculum Links**

**Foundation Stage**
1, 2, 4, 6

**Design & Technology**
KS1 – 1abcde, 2abcdef, 3ab, 4ab, 5abc
KS2 – 1abcd, 2abcdef, 3abc, 4ab, 5abc
KS3 – 1abcdefg, 2abcde, 3abc, 4bc, 7b

**Science**
KS1 – SC1, SC2
KS2 – SC1, SC2
KS3 – SC1, SC2

**PSHE & Citizenship**
KS1 – 1ac, 2abcegh, 3a, 5abcd
KS2 – 1c, 2ahj, 3a, 4a, 5ade

Most herbs can be raised cheaply and easily from seed or cuttings. Choose herbs that are naturally compact, and trim them regularly with scissors to keep them neat. If you stick to edible herbs you can even use the trimmings (well washed) in sandwiches and as garnishes. Even so, the plants will soon outgrow the space, so the book is best replanted each year afresh. Good choices include chives, feverfew, thymes, sages, rosemary, small-leaved basils, hyssop, and winter savory.
1  Fix the legs to the base boards
2  Add the edging
3  The completed book

ADDITIONAL INFORMATION
To find a local basketmaker contact THE BASKETMAKERS ASSOCIATION www.basketassoc.org

Department for Education and Skills (DfES) in partnership with Learning through Landscapes (LTL), the Federation of City Farms and Community Gardens (FCFCG), and 'Gardening Which?' magazine. Designed by Sarah Harmer: www.teachernet.gov.uk/growingschools