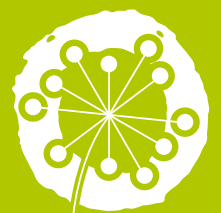




School orchards

Low-cost and easy to grow – how fruit trees can enrich learning, encourage wildlife and enhance your grounds



Learning
through
Landscapes





Step 1

Imagine a school orchard...

Imagine having a high-quality outdoor teaching resource right on your doorstep that gets your pupils excited about learning across the curriculum – from food to biodiversity, world trade to local history, sustainability to literature and much more. Now imagine you could create this resource in your own school grounds without the need for lots of space, funding or technical knowledge.

Hundreds of schools across the UK have discovered that a school orchard can be an effective and practical way of enriching learning and school life in many ways. This booklet distils what we've learned from supporting the creation of school orchards in over 70 primary and secondary schools across England, Scotland and Wales. The tips you'll find here are school-tested, practical and inexpensive. Our hope is that it will inspire you to get going and create your own school orchard and give you the practical guidance that you need to make it a success.

Re-connect with the natural world

At a time when pupils are increasingly disconnected from nature, the seasons and the process of food production, a school orchard offers a great way re-engage them with the natural world. What better way to help pupils understand the range of issues around food production than getting them to grow their own? A school orchard will help you explore plant growth and care, global trade, food miles and carbon footprinting. With experts predicting future global food shortages as oil prices rise, teaching our pupils how to grow their own food may be one of the most valuable skills we can give them.

Imagine...

- outdoor learning
- connecting with nature
- healthy eating
- improving your grounds



Promote healthy eating

Teaching pupils about 'five a day' is easy but how do you actually get them to eat more fruit? Experience shows that pupils are more likely to eat fruit they've grown themselves. As one pupil explains, 'I've learned that apples aren't just boring old fruit – they are awesome, healthy and very tasty!'

Learn across the curriculum

A school orchard isn't just for learning about biology – after all Newton claimed to have 'discovered' gravity from an apple! An orchard can support learning across a wide range of curriculum areas, from stimulating creative writing to looking at fruit in legends, literature and art; from developing enterprise and business skills to cooking and the technology of food processing. Step 6 gives you a wide range of ideas for primary and secondary pupils to get you started.

Engage with your community

People of every age, background and ethnicity are connected to food through what is perhaps our most intimate exchange with nature; we eat it! A school orchard offers loads of opportunities for involving family, friends and volunteers, from the planting of trees to their care and maintenance, from the harvesting and sharing of fruit to its celebration.

Enhance your school grounds

A school orchard can be about more than just fruit. As Step 3 explains, an orchard can be a place to learn, a place to escape the bustle of the playground, a place to play and a place to socialise. It can provide a location for artwork, a refuge for wildlife and a natural feature that makes your school a more attractive place to be – for pupils and teachers as well as for bees and butterflies.

The perfect school grounds project

An orchard is the perfect school grounds project. You need as few as five trees and very little space – you can even grow your fruit trees along a wall. Step 4 explains the maintenance needs of an orchard, but these are significantly less than growing vegetables. Orchards require little or no work over the long summer holidays and produce their fruit when you are back at school to enjoy it. Read on to find out everything you need to know to get started.

Find out more

You'll find lots more detail on everything covered in this booklet in the 'how to' section of our website www.fruitfulschools.org. You'll also find case studies and real-life examples of schools that have developed their own orchard, as well as details of over 70 schools across the UK that have taken part in our school orchard projects. Why not search the map to see if there's a school near you that you can visit and learn from?





Step 2 Planning your orchard



Careful planning at the start of your project will go along way to ensuring healthy trees, good harvests and successful learning.

Location location location

Most traditional and local fruit varieties have similar needs and can grow in a fairly wide range of soil types. Minimum requirements are:

- **good drainage** avoid low lying areas that collect water after rain.
- **reasonable soils** dig a few sample holes to find out what's below the surface and avoid heavy, compacted or poorly drained soils.
- **air drainage** spring frosts can kill flowers or young fruit so avoid planting in frost pockets where cold air can collect, such as in a hollow or along a wall at the bottom of a slope.
- **sunshine** it's the sun that makes the fruit so find the sunniest place that you can.
- **shelter** try to find a place that's relatively sheltered from strong winds.

If you plan to use the orchard as a social space, learning space or wildlife space, then what other factors do you need to think about when choosing a location? For example, if you intend pupils to access the orchard in break times, will they need an all weather path to get there? Think too about what the area of ground is currently used for. Would an orchard conflict with or complement this? Check your planned location with your Local Authority to make sure that it doesn't conflict with underground services or their access needs.

Species and varieties

We tend to think 'apple' when we think 'orchard'. But why not think about including some other fruit trees? Plums can be grown successfully in most parts of the UK while pears do well in more southerly locations. Why not also consider less common traditional fruit like gages and damsons?

Choose varieties that have a long tradition of being grown in your area and try to include at least some varieties that you can't find on the supermarket shelf. These will generally be well suited to your climate and you'll be helping to preserve a bit of your local history (see Step 5 for ideas on researching and learning about your local orchard heritage).

Shapes and sizes

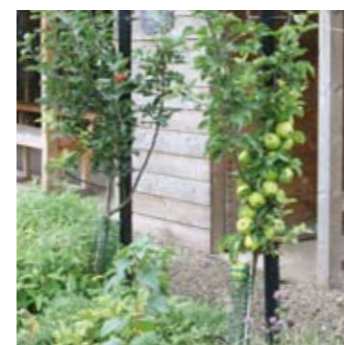
Fruit trees are usually grafted on to a rootstock (the lower portion of stem which has the roots attached). To stop trees becoming too big, most varieties are grafted on to a 'dwarfing' or 'semi-dwarfing' rootstock – this helps to keep the trees at a suitable size so they can be picked and pruned easily.

You can prune your trees to grow in a range of shapes and sizes. If you want to grow them flat up against a wall or fence or create a hedge-type effect, then opt for 'espalier', 'fan' or 'cordon' forms. 'Stepover' forms are pruned very low and are idea for growing along a path or around a planting bed. You can prune your trees this way yourself over several years or buy trees that have already been trained by the nursery. They will still need to be pruned each summer but this is quite easy to do.

If you have space, simple 'bush' forms planted into a grassy area will work well for most varieties and will be suitable if you want a small grove of medium-sized trees. Again, it is possible to buy trees that have already been trained and pruned into this shape by the nursery.

Pollination

All varieties will set a better crop if pollinated by at least one other different variety (even self-fertile varieties). This means you should aim to have several varieties that flower at the same time. In most towns and villages where schools are located there should be enough trees nearby to help with pollination, but if your tree always seems to produce blossom but no fruit, you may need to consider adding another variety or two. Crab apples also make good pollinators for apple trees provided they flower at roughly the same time.



Which tree form?

- Bush (top) for a grove of medium sized trees
- Flat (middle row) for walls, fences and boundaries
 - Custom prune (bottom row) for growing up, around or along other features

Step 3

Designing for the future

A school orchard can give you much more than just fruit – here are some other ideas to think about when designing your orchard.

A space for nature

Traditional orchards are hugely important for wildlife and with a bit of thought you can make your school orchard into a refuge for nature too. For example, think about:

- planting a protective hedge around your orchard using native species.
- leaving some grass uncut to allow flowering and seed set.
- creating a 'forest garden' by growing herbs and other forms of fruit such as raspberries, brambles and strawberries.
- adding other simple wildlife features such as bird boxes, feeders and baths, a hedgehog box, bee box or mini pond.

You'll also find that if you encourage the right kind of insects then they'll help you to control some common orchard pests and diseases. For example:

- encourage ladybirds and lacewings by creating 'hotels' using plastic bottles and straw or cardboard for them to over-winter in.
- leave a patch of nettles to boost ladybird populations.
- plant yellow flowers like marigolds or nasturtiums to encourage hoverflies.
- grow aromatic plants such as basil, chives, lavender and garlic, generally thought to repel pests and encourage beneficial insects.

A space for socialising

Most orchards naturally make attractive social spaces – but you can enhance this in a range of ways by, for example:

- providing seating – natural seating often works well in an orchard – for example, one school used boulders that had been dug up by contractors working on a school extension, while another worked with a local craftsman to design and carve log seats from a large tree that blew down in a storm.
- encouraging nature – a protective wildlife hedge will create a quieter and more sheltered space, while the beneficial plants suggested above will provide attractive colours and scents.
- creating an obvious and attractive entrance – one school, for example, has created a rose arch entrance.
- providing some 'natural play' features such as logs, boulders, willow structures or loose materials (see www.ltl.org.uk/naturalplay for ideas).

A space for learning

You can enhance the value of your orchard as a learning resource in a number of ways. For example, some schools have created a log seating area large enough to allow a whole class to sit in the orchard while others have designed and installed interpretation panels illustrating flower parts, pollination and information about key pollinators. In addition you could:

- create tree labels that describe the history, origin and use of the different varieties grown.
- use your orchard as a place to display larger scale outdoor art or sculpture.

If you plan to have class groups in your orchard, think about how to balance easy access from the school while avoiding disruption to indoor classes that may be able to see the orchard.

Grand designs

Designing your orchard can be a fun, creative and inclusive process. Why not run a design competition to get lots of people involved? You could pick the best entry or combine the best ideas into a single plan. Perhaps you have a parent or colleague with particular design skills who can help, or maybe you could use the process to develop ICT design skills with simple free software such as Google Sketchup.



Dream your orchard

Visit the 'inspiration' section of www.fruitfulschools.org for ideas and case studies





Step 4 Get growing!

Planting

Bare root trees need to be planted in winter (November to March) while container grown trees can be planted at any time. Having selected the right site and designed the layout of your orchard, carefully mark out the location of your trees.

Dig a hole with a diameter of 80 -100cm, deep enough to accommodate your tree roots. Break up the subsoil at the bottom of the hole, remove any weeds and large stones and mix in a layer of compost. Knock in a sturdy stake, leaving about 75cm of the stake above the soil level. For bare root trees position the stake vertically, for container-grown trees position it at an angle so it doesn't interfere with tree roots when planting.

Place the tree in the hole so that the stem is about 8cm from the stake, making sure that the final soil reaches the level it was when the tree was in the container or at the nursery (you can usually see the old soil mark on bare root trees). Make sure the graft joint is well above soil level and that no roots are poking out of the surface. Backfill the hole, firming the soil gently with your foot. Water well and secure the stem near the top of the stake with a tree tie.

Protecting

Deer, rabbits, voles and hares can all damage young trees but in most schools the main problem will be strimmers and grass cutters. Protect your trees with guards which you can purchase from your local garden centre or make yourself using wire netting. Where possible, mark the boundary of your orchard with a physical feature making it difficult for grass cutters to accidentally damage your trees.

Weeding and watering

For the first few years after planting, water your trees well during dry weather (a large watering can of water applied every few days). Weed control is key to successful establishment. Your aim should be to keep a weed-free area of about 1m in diameter around each tree for the first 3-5 years. Wood chip from your local tree surgeon makes an excellent mulch which will inhibit weeds and break down to create a rich humus that mimics woodland soil.



Pruning

Pruning your trees will keep them healthy and productive and allow you to control their shape and size. Pruning may seem a daunting prospect but there are a few simple rules and it need not be complicated. Don't worry if you prune the wrong bit – it is all part of the learning process. Apple trees are normally very resilient and will recover from even the harshest of cuts. Pruning will depend on the species and type of shape you are trying to achieve. Detailed pruning guidelines are given in our website www.fruitfulschools.org.

Pests and diseases

There are a few common pests and diseases that are fairly easy to spot and to deal with. Fortunately, there are some simple organic ways of dealing with most of these – for example, by encouraging beneficial insects, removing or trapping unwanted insects and removing infected material. Gardening organically involves tolerating a certain number of pests and diseases – after all, they are part of the world we live in – but if your trees are well cared for they will be able to cope with a certain amount of pest and disease pressure. Advice on dealing with the most common pests and diseases is given at www.fruitfulschools.org.

On going care

- Remove fruitlets as soon as they become visible in the first year or two to support stronger tree growth.
- Thin overcrowded clusters of fruit by hand in late June to leave one to two fruits per cluster.
- Check that your tree ties don't become too tight or loose.
- Most important of all, allocate clear responsibilities for all your orchard's care and maintenance tasks and plan them into your school calendar so they don't get forgotten or overlooked.



Top tip
Consider allocating responsibility for maintenance to a particular class or school group, such as the eco-committee, and using golden time for maintenance tasks





Step 5

Inspiration on your doorstep

Investigating your local orchards is a great first step to getting inspired as well as offering lots of opportunities for hands-on, real-world learning.

There are ancient fruit trees and orchards close to most schools that can unlock rich learning opportunities about the past in your community. For example, who owned the land and how did they tend it? Who bought the produce and how did they process it? You can also explore the place of fruit in traditional songs, stories, art and myths and the economic and social changes that are now threatening these wonderful places. It's a topic that makes a fantastic class research project and allows you to link to a wide range of curriculum subjects (see Step 6).

Where to start?

There are many local orchard groups across the UK that exist to protect historic orchards and help the public understand and appreciate their local fruit tree heritage. These groups can direct you to historic orchards in your area and will often be able to help you arrange a school visit. They commonly organise training and information events and will be able to identify local people with expertise who could visit your school and support your research project. To find the orchard group closest to you, visit www.orchardnetwork.org.uk.

Old maps of your local area are a great research tool – they may show the location of larger orchards and are a great way of identifying the location of old walled gardens and large houses in your area, which would commonly have had fruit trees. You can browse a wide range of historic maps of your area for free at www.visionofbritain.org.uk/maps.

To make your project more personal, why not ask pupils to interview their parents, neighbours and grandparents about their childhood fruit stories? Are any of the trees they used to 'scrum' apples from still around?

Rich pickings

Here are some ideas on how to use local orchards for fun and learning.

Visit a local orchard Go when the trees are flowering or fruiting and there will be lots to see and discuss. You'll nearly always find that the owner or a local enthusiast will be keen to show you around. During your visit you could explore a range of topics including the valuable wildlife that's supported by orchards, the importance of bees and the process of pollination, and the practicalities of managing an orchard. Look at some of the curriculum ideas in Step 6 for more inspiration. Try to visit throughout the seasons and think about capturing your learning through film, photos and drawings.

Get grafting You can play your part in orchard conservation by grafting traditional varieties and selling or donating them. This can be a fun and rewarding experience for pupils and your local orchard group should be able to direct you to someone

who can help. Younger pupils will need an experienced adult to do the sharp knife-work for them, but older secondary pupils may be able to do this with appropriate training.

Try apple tasting There's nothing like seeing a table laden with lots of different apple varieties to help pupils understand what a rich fruit heritage we have and to stimulate discussion about the merits of local compared to supermarket produce. You could run a taste test competition to find the school's favourite variety or introduce some traditional varieties into the school tuck shop or kitchen.

Enjoy juicing Collect apples from fruit trees in your area and enjoy the process of making your own apple juice. You can use a kitchen juicer to make a small volume or if you're lucky enough to have lots of fruit, borrow a press – your local orchard group should be able to help you locate one. Compare the carbon footprint of home made compared to supermarket juice.

Celebrate apple day Celebrated across the UK in October, you could join an event near you or organise your own, perhaps inviting parents and the wider community to join you. Find an apple day event near you and some great ideas for celebrating at www.commonground.org.uk.

Explore apple names Our traditional apple varieties have fantastic names, like Bloody Ploughman, Winter Banana, Peasgood's Nonesuch and William Crump. Find out how these names originated, the stories behind the names and what makes them distinctive. A great place to start is at www.orangeippin.com.

Share your findings online Why not share what you've discovered online? For example, you could map old fruit trees in your area using Google Earth and share your pictures, film, drawings and writing on your school's website or on a blog.



Help is
at hand

Visit www.orchardnetwork.org.uk
to find your local
orchards and orchard
experts



Step 6

Learning across the curriculum

Here are some ideas to get you thinking about how your orchard can enrich learning across the curriculum for a range of age groups.

Literacy and languages

- Look at the place of apples in poems, songs and stories and explore why they have played such a key role in literature. Use this exercise and a visit to your local orchard to stimulate pupils to write their own stories and poetry.
- Write and produce a play, performance or puppet show about apples and their mythology, with characters derived from names of varieties – then perform it in your orchard.
- Use opportunities for ‘real writing’ – like instructions for planting and care or letters requesting support from local businesses.
- Explore the words for apple in other languages and seek out stories from other cultures.

Expressive arts

- Look at apples in paintings and sculpture.
- Ask pupils to explore the subtle differences of colour and texture by painting different apple varieties.
- Create a mural, mosaic or tapestry celebrating local varieties.

- Design and create tree labels and interpretation panels for your orchard.
- Design and produce an orchard calendar or booklet for sale.
- Use apple printing to make apple stamp gift cards and wrapping paper.
- Use old fruit trees in your area as a subject for photography, drawing and painting and organise a ‘through the seasons’ exhibition.
- Explore different textures by making collages out of bark, leaf and blossom rubbings.

Maths and numeracy

- Who can get the longest peel from a single apple? Measure and compare lengths.
- Count the number of flowers on your tree and compare this to the number of final fruits. What is the ratio of flowers to fruit? How does this compare across varieties and what affects this ratio?
- Count the number of apples on your tree from first fruit set to final harvest – chart how this changes and calculate the survival rate.

- Measure the circumference of your apples as they grow through the season and chart how this changes over time. Use your circumference measurements to estimate volume and weight.
- Compare the yield of different trees and varieties in terms of weight and number. Calculate the average yield per tree and weight per apple.
- Share an apple with a friend. Cut it into halves, quarters and eighths.
- Create a fruit-based enterprise such as selling fruit, trees and fruit products, and use this to develop budgeting and financial management skills.

Technologies

- Design apple-themed seating, sculpture or other outdoor art for your orchard. Consider shade, wind and the likely size of your new trees in 20 years!
- Investigate the properties and uses of apple, pear and cherry wood.
- Design and construct features to encourage wildlife in your orchard as described in Step 3.
- Process your fruit in a range of ways such as drying, juicing, jams, sauces, chutneys and baking.

Science

- Growing trees and fruit gives lots of opportunities to explore the key ingredients needed for healthy plant growth: light, water, space and nutrients.
- Explore the role of bees in pollination and the difference between self fertile and cross fertilising varieties.
- Investigate the science of grafting and find out why apple varieties can not be reproduced from pips.
- Explore ecological systems by designing a natural pest control system for your orchard.
- Explore the ‘rusting’ of cut apples and what makes some varieties more suited to eating or cooking.
- Observe how apples ripen by placing stickers on young fruit to create patterns.
- Observe the different flowering times of different species and varieties and explore why they might be different and the impact of weather on flowering.
- Investigate the insects, birds and animals living in and around your fruit trees and draw food chains to show feeding relationships.

Social studies

- Research the apples in your local shops in autumn to find out if any of them stock local varieties. If not, interview the shop manager to ask why.
- Place different varieties of supermarket apple on a world map and explore the concept of food miles.
- Investigate the culture and traditions associated with fruits from parts of the world represented in your school.
- What are the possible implications of ‘peak oil’ for future food production and how might the UK adapt?
- Identify where local food production in your school’s catchment area happened in the past. Why have so many of these businesses disappeared and what may have been the social and economic effects?

More than just biology

Remember Newton ‘discovered’ gravity from an apple!





Step 7 Getting support and keeping it going

So you're ready to get going on creating your very own school orchard. This section gives some suggestions for where you can find help and, importantly, how you can sustain interest and care for your orchard for years to come.

Establishing your orchard – who can help?

If you have a local orchard group (see Step 5) this is the place to go to find out what support is available in your area. Fruit trees are relatively inexpensive (around £15-£25 each) but it's worth finding out whether there's a small grant scheme in your area. Alternatively, why not ask a local business to sponsor a tree and invite them to your official orchard opening ceremony?

Our 70 project schools accessed **free support** from a wide range of sources. For example:

- parents groups donated seating, built espalier frames and helped with planting
- orchard owners gave guided tours to school groups
- rotary clubs, church groups and community organisations helped with the heavy work of digging and planting and with watering over the summer
- countryside rangers supplied logs for seating and helped to develop biodiversity in the orchard
- botanic gardens helped to make tree labels
- prison and community service teams constructed seating and other orchard features
- the Woodland Trust donated native hedging plants
- local beekeepers visited schools to run workshops on pollination and bee keeping
- local allotment societies gave advice on planting and care (your local authority should be able to give you contact details for your nearest allotment group).

In addition, some schools paid for the support of local crafts people and specialists to provide significant additional value to pupils' learning. For example:

- story-tellers helped pupils to discover traditional fruit stories and create their own
- crafts people and sculptors helped pupils to create bespoke seating, willow features and outdoor art installations
- nursery specialists ran grafting workshops.



Maintaining your orchard – who can help?

A school orchard is a long term project – your trees should still be producing their fruit long after you have gone. It's important therefore to think in advance about how you can set up your orchard so that it's looked after and enjoyed once you've moved on to your next project or role:

- Get as many people involved as possible so that it's seen as a whole-school resource rather than just the project of a particular teacher or class. Use school assemblies and newsletters to make sure that everyone is informed and organise whole-school events and celebrations to create and sustain interest and excitement across the school. Have an orchard notice board or display area to share information and keep it fresh to sustain interest.
- Plan for maximum use of your orchard – for example, if it is also designed as a valuable social space (Step 3) then it will be experienced by more pupils and will be less easy to forget about or overlook.
- Encourage your colleagues to use the orchard to support teaching across the curriculum. Sign up for our free regular bulletins of outdoor learning ideas and inspiration at www.ltl.org.uk.

- Make sure you have a simple maintenance plan in place (Step 4).
- If and when you move on, make sure that someone else is appointed and briefed to take lead responsibility for the orchard.

Why not be an inspiration?

Finally, why not use your project to inspire other schools in your area to follow your example? You could invite them to join your orchard opening or take part in your apple day celebrations. You could share your learning on your school website or our facebook pages or donate some of your grafted trees to create a new orchard. Take the chance to show off what you've achieved and help to build a fruitful schools movement across the UK. Good luck!



We can help you!
Visit www.ltl.org.uk for

- Training courses
- Advisory visits
- Lesson ideas
- Case studies





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