

Making Compost in Schools



Prepared as part of the
Food for Life Partnership



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Why Compost in schools/communities?



One of the first steps in changing food culture is to develop a food growing area at school. A key part of this is having an effective composting system in place. This is a cornerstone of organic gardening and has many benefits to the school, community and environment. Making compost is not only about providing soil and plants with a source of food, it is an integral part of working organically and reducing waste. Composting provides a useful way for teachers, pupils and catering staff to explore educational opportunities together. Producing compost reduces waste to landfill, greenhouse gases and dependency upon peat-based growing media and chemical fertilisers, saving money and the environment.

Save money

Making compost can save a small fortune in horticultural and waste disposal costs by providing a simple and cost effective solution to the problem of organic waste.

- Making compost saves the average gardener hundreds of pounds over the year. Soil-improvers and growing media are bought less often and using homemade compost costs nothing.
- Reducing the amount of waste to landfill helps to reduce waste disposal costs. Waste is typically charged by the tonne; if all possible material is composted waste bills can be significantly reduced. New technologies allow even more materials to be composted, further reducing waste. Anaerobic digestion and in-vessel composters are just some of the ways waste can be converted into usable materials.
- Government targets for waste reduction have resulted in a rise in landfill taxes. Landfill taxes are expected to rise substantially over the coming years, in the hope of encouraging business and individuals to work with more efficiency with resources. These measures are making waste management an increasing priority for business. Composting waste is seen as a viable option in reducing waste costs.

Top fact

Around 40% of the average dustbin contents are suitable for home composting.



Save the environment

Living in a sustainable manner is important. It is too expensive, in terms of cost and environmental impact, to needlessly waste resources. Resources, in many cases, are taken from habitats that are under enormous pressure and are a valuable haven for wildlife. Using homemade compost not only helps protect these habitats, but also helps the environment in a number of ways.

- Less waste goes to landfill. When materials rot, harmful greenhouse gasses such as carbon dioxide and methane are released. When waste is composted correctly it does not release these harmful gases because composting is an aerobic process.
- Reduces peat use. A common ingredient in most growing media, mulches and soil conditioners is peat. Peat comes from bogs that are host to a range of rare plants and animals.



- Less chemical use. Using compost is much better for the environment than using chemical sprays. Chemical sprays destroy much of the microbial life in soil and can cause environmental and health problems if used incorrectly. Producing many of these chemicals uses large amounts of energy, creating vast amounts of carbon dioxide and other harmful by-products in the process.



Educational value

The composting process has a number of educational opportunities that can enrich the learning experience. An active compost bin is a diverse habitat and can provide a multitude of practical activities for pupils of all abilities. This fascinating process can be explored in lessons covering a range of key stages and areas of study. There are many subjects where compost and the importance of making compost can be used to aid learning. Below is a small sample of curriculum and learning links that can be associated with making compost in schools.

- **Key and transferable skills.** Learning about and taking part in compost production allows pupils to learn and improve upon many transferable skills. Skills such as team-building, communication and organisation are needed to make a successful collection system in schools. These skills are developed to an even greater degree if pupils become involved in training members of the community about how to compost and its importance.
- **Science.** The composting process can be studied at a number of levels; pupils can use an active compost heap for a number of experiments. This could be a simple invertebrate study or an investigation of the composting process. Advanced processes such as anaerobic digestion and in-vessel composting can also be investigated through the science curriculum. This could lead to discussions on energy production and sustainability issues where science plays a vital role.
- **Citizenship.** The environmental arguments for composting waste and living a more sustainable life are prime candidates for discussion. Pupils could also discuss issues surrounding anaerobic digestion and other forms of waste management. These issues are not UK specific and link to wider studies of politics and international relations. This aids pupil's understanding of the wider world and shows pupils that they can become actively involved in such issues.
- **Maths.** Volume, weight and ratios can be addressed through making compost as ratios are important in compost making. Pupils can use compost making as a way of improving maths skills to ensure the correct mix of materials.
- **Design and construction.** Once the composting process is understood, pupils could design and build their own compost bins. This not only gives pupils the chance to demonstrate practical building skills but also reinforces learning about the composting process.

Top fact

Methane is a very potent greenhouse gas. It is approximately 20 times more potent than carbon dioxide.



Around 20% of the UK's methane is produced from biodegradable material in landfill sites.



What is Compost?



Improving soil by using compost is a keystone of organic gardening. Well-made compost is an incredibly useful material. It is a wonderful soil improver, aiding water retention in light sandy soils and breaking up heavy clay soil. As a growing medium it provides nutrients to plants, allowing for vigorous growth and higher yields. When used as mulch it feeds the plant and improves soil. The composting process has many learning opportunities that are accessible to pupils of all ages.

Compost is a mixture of organic matter that has broken down naturally over time. Good quality finished compost has a dark brown almost black colour. It has a rich, almost sweet, earthy smell. Once passed through a sieve there should be no trace of the component parts, e.g. vegetable peelings, egg boxes etc.

As the organic matter breaks down, a myriad of bacteria, other micro-organisms and mini beasts come together creating a complex ecosystem. It is the management and maintenance of this ecosystem that is vital in creating good quality compost.

Why is compost seen as a keystone in organic gardening?

Successful growing relies upon many factors and arguably the most important factors are the quality of soil and availability of nutrients. If soil is of poor quality with little nutrients, plant growth will be stunted and sickly, yields will be poor and diseases may be an issue. Regular use of compost solves many of these problems.

- Compost is rich in nitrogen (N), phosphorus (P) and potassium (K). Using compost as a mulch or digging it into soil adds these vital nutrients that are needed for vigorous growth and improving crop yields.
- Compost is a first class soil improver, so much so that it is the default solution for many soil problems. Adding organic matter to soil improves drainage in heavy clay soil, aids water retention in light soils and improves aeration, thus reducing soil compaction. Adding compost also encourages creatures such as earthworms which further improve soil quality.
- Compost makes fantastic mulch, locking moisture in the soil, adding valuable nutrients to the soil and improving soil structure as earthworms incorporate it into the soil.



Making good compost



As a general rule, if something rots it can be turned into compost. The composting process happens naturally where conditions are right. Sadly it is not quite as simple as emptying your vegetable peelings into a compost bin and waiting a few weeks. But, by following a few simple rules good compost can be produced time and time again.

Rule 1: Have the right materials

Composting needs a mix of two distinct materials. These are classified as either green material or brown material.

Green

Green materials, often called 'greens', are high in nitrogen and rot down very quickly. Grass clippings, nettles, fruit and vegetable peelings, tea bags/leaves, coffee grounds, manure from cattle and poultry are all examples of green material. The high nitrogen content makes some green material excellent 'activators', i.e. they kick-start the compost process.



Farmyard manure, an excellent source of nitrogen. Larger amounts are best put directly onto soil.



Grass, a good activator (used in small quantities and mixed with brown waste to stop it matting together).



Nettles, an excellent activator, high in nitrogen and readily available.



Comfrey, an excellent activator and useful feed.



Fruit and vegetable peelings.



Used ground coffee.

If left, green materials will rot into a slimy, smelly mess. Hence it is essential to mix them with browns to provide structure and airflow. An item can usually be classified as 'green' if:

- 1 It has a high amount of sap/water content.
- 2 Its leaves/stalks are lush and flexible.
- 3 It is high in nitrogen.

Brown

Brown materials, often called 'browns', are high in carbon and will take a long time to compost on their own. Hedge cuttings, twigs and sticks, shredded paper, newspaper, empty toilet and kitchen rolls, cereal boxes, egg boxes, straw bedding from herbivorous animals are all examples of 'browns'. If left alone these materials will rot down very slowly. However if they are mixed with 'green material' they rot down much faster.

Browns are essential in a compost heap as they add structure, aiding airflow, and act as a sponge, absorbing excessive moisture. A good structure is important as it allows the movement of air, which is needed by micro-organisms responsible for turning waste into compost. Usually an item can be classified as 'brown' if:

- 1 It has very little or no sap/water content.
- 2 It has a woody/twiggly structure that is usually brittle.
- 3 It is high in carbon.

Top tip

When composting potato peelings be aware that as they may sprout in the compost heap.



Top tip

Shredding is ideal for composting large amounts of tough woody material.



Use a hammer or spade to smash up corncobs and tough stalks. They will compost much faster.

Leaves can be added to your compost heap but the best use of them is to make leafmould.



Twigs and sticks, no more than 1cm, as they will take too long to breakdown.



Bedding from herbivores e.g. old bedding from a rabbit hutch.



Egg boxes are excellent at adding structure and improving airflow.



Newspaper once crunched up is a readily available brown. Shredded office paper works well too.



Empty kitchen and toilet rolls, are excellent at adding structure and improving airflow.



Sawdust is freely available from the woodwork rooms and an excellent source of carbon.

Rule 2: Know what not to compost

Knowing what not to compost is just as important as knowing what to compost. Adding inappropriate material to a compost heap may cause problems such as attracting pests or slowing the process down.

NEVER COMPOST the following...

- 1** *Dog or cat faeces. (Including litter tray waste)* Contains bacteria that will not break down in the composting process and can cause severe health conditions. There is also a strong chance of parasites being present in dog and cat faeces, these will not be killed during the composting process.
- 2** *Human faeces and urine.* Human waste should not be composted for similar reasons that cat and dog waste should not be composted. Garden Organic does not recommend using human urine in school compost due to hygiene health and safety issues. Diluted human urine can be used as an activator at home with no health or hygiene issues.
- 3** *ANY cooked food, including fruit and vegetables.* Cooked food can attract rats and other vermin.
- 4** *Raw meat and fish, including dead animals.* This will attract rats and other vermin, including foxes that will travel to raid your bin.
- 5** *Liquids such as oil, gravy, milk and soft drinks.* These could attract vermin and may affect the composting process.
- 6** *Glass, plastic and metal.* These materials will not compost.
- 7** *Glossy magazines and junk mail.* These sometimes have a thin layer of plastic that will not rot down. It is better to recycle this waste, rather than compost.
- 8** *Ash from coal or coke fires.* These are high in sulphur. This can disrupt the composting process and poison the soil.
- 9** *Seeds, weeds and plants with diseases.* Many seeds, some weeds and diseases are resilient enough to survive in a standard compost heap. Surviving seeds will germinate when the compost is used, making more work and taking nutrients from your plants.

Rule 3: Have the right mix

Getting the correct mix of greens, browns, air and water is very important in making compost. Air is especially important as composting works best as an aerobic process. Traditionally air is refreshed by regularly turning/aerating the compost heap or bin. This can be done by moving the compost to another compost bin or simply stirring the compost using a fork or broom handle.

However this is unnecessary if attention is given to the structure in the compost heap and the types of brown material being composted. By using brown materials that hold their shape such as egg boxes, corrugated cardboard, scrunched up newspaper, kitchen and loo tubes, air can move around the compost heap, thereby eliminating the need to refresh the air in the heap.

As a general rule of thumb a 50-50 mix of green and brown material is about right. Using excessive greens can result in unpleasant odours. If the ratio of greens is particularly high, sludge can seep out of the bin; it is even possible for the composting process to stop as the airflow is too

Top tip

Many books instruct people to compost in layers. This is unnecessary; add greens and browns at the same time so they naturally mix together. This provides structure to the heap.



limited. To solve such problems it will be necessary to aerate/turn the compost and add browns to change the ratios of green to brown material.

Using too much brown material can cause problems too. Brown material can take a very long time to break down. The more dense the material the longer it will take, thus a twig will compost much faster than a log. Excessive amounts of brown materials can slow or, in some cases, stop the composting process.

Rule 4: Get to know your compost heap



Too much green material. Add brown materials such as egg boxes and loo rolls..



The perfect 50/50 mix of greens and browns.



Too much brown material. Add green materials such as grass clippings and vegetable peelings.

Look at your compost heap and keep in mind these questions.

Are the materials right? Make sure all materials in the bin are appropriate to compost. Immediately remove any items that are inappropriate, e.g. plastic bottles, meat etc. For a full list see Rule 2.

Does the mix look right? You should see browns and greens in roughly equal proportions.

Does it look too wet or too dry? The material should be damp.
If it is too dry, sprinkle water over the heap.
If it is too wet, turn and add scrunched up newspaper. Cover to prevent rain from getting into the heap.

Are there any strong unpleasant odours? There should be no strong smells. If there are, turn the compost and add brown materials.
Unpleasant odours could also be caused by inappropriate material such as meat or fish.

By keeping these questions in mind while looking at the compost heap it is possible to 'diagnose' potential problems. Problems can then be addressed before they become a more serious issue. Prevention is always far better than cure.

Health & Safety

Wash hands regularly, especially after handling compost and compostable waste. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required.

See also *Health and Safety Guidelines*

Compost collection in schools



Collecting compostable materials in schools could be seen as a surprisingly difficult thing to do. There are no hard and fast rules for collecting material, what works for one school may not work for another. However by following this guide collection can be a simple job, which can be done by pupils of all ages.

Moving compostable material around school

There are a number of ways to move compostable material around school. The way in which this is done will depend upon the type of school and location of the compost heap. In a domestic situation any container will do. However in school, it is wise to invest in kitchen caddies for hygiene reasons. Caddies are essentially small plastic bins with tight fitting lids and filters that prevent odours. Caddies can store a reasonable amount of compostable waste, making them ideal for the staffroom and food technology room. Caddies have handles making them easy to carry, this is important if the school has its compost heap off site. Caddies come in a number of styles and colours.



Kitchen caddies are a handy way of moving material to the compost bin. This is the kitchen caddy from the Garden Organic staffroom.

Educate pupils and staff and get everyone involved

This is, in many ways, the key to a workable, stress-free system. If all pupils and staff have some understanding of the composting process and why the school is making compost, fewer mistakes are likely to be made. Pupils and staff will also make an effort to compost waste as they understand why it is important for the school and environment. Compost-making can easily be introduced to the whole school through assemblies and lessons on sustainability and the environment. Posters make striking visual aids in acting as prompts for pupils around the school. The messages of living sustainably and reducing waste do not stop at the school gate. Schools are ideally placed to make a positive impact on educating the community.

Getting staff and pupils involved is very important. Not only does involvement in the process provide many educational opportunities across a multitude of subjects, it also fosters a sense of ownership and community, which can be vital for some students.

Compost Monitors

A tried and tested system for pupil participation is to nominate 'Compost Monitors'. This is a group of pupils who are responsible for the daily collection of compostable materials from around the school. The size of school and age of pupils will affect how this system works; younger pupils usually need adult assistance with organising rotas and carrying waste may also be an issue. The biggest advantage of this system is that once it is running, the staff responsible can take a less active lead, allowing pupils to take over and in doing so learn many valuable lessons.

Compost monitors are most successful in schools where staff put a high value upon reducing waste, collecting compostable material and making compost. Pupils value the responsibility placed on them and in doing so forge closer links with the school community. The usual system of setting up and running Compost Monitors is as follows.

- An assembly is given to all years about the schools involvement in FFLP and why the school is now

starting to compost waste. This is not just from a growing perspective but also from an environmental one.

- Pupils apply for the position of compost monitor. Some schools even interview pupils, providing a valuable learning experience and reinforcing the idea of responsibilities. It is a good idea to give Compost Monitors a badge; this distinguishes them from other pupils and further places value upon composting.
- Once sufficient numbers have been recruited, training is given and a rota for collection is compiled. The number of pupils needed and the complexity of the rota will depend upon the size of school, amount of waste etc.
- Training will vary from school to school. Ideally it should cover more than the basics of what to compost and ratios of greens to browns. It is best to get pupils to understand the whole process and value the finished product. If pupils value school made compost and understand its many uses, mistakes are less frequent.
- In many schools the cook is involved with Compost Monitor training. The cook gives a tour of the kitchen, showing where fresh food is prepared and showing pupils which waste can be composted. Involving the school cook not only assists in demonstrating to pupils the cyclical nature of composting, it also brings the cook closer to the school community.
- The rota is often designed with pupil input. It tells pupils who is collecting material, what day they are collecting it and where from. Many schools encourage pupils work together to collect compost, improving team working skills and speeding up the job.
- Once the rota has been drawn up, every person involved knows when they are collecting material. In order to minimise potential problems, it is advisable to give a copy of the rota to each pupil.
- Compost Monitors regularly attend meetings. This allows pupils to voice ideas or concerns and makes sure that everyone is doing their job. These normally happen at the start of every term and ensures that waste collection is resumed on the first day back.



A badge distinguishes Compost Monitors and highlights the value of composting.

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Having specific Compost Monitors is not appropriate for some schools. Mistakes with material can cause problems, for example putting cooked meat in a bin could attract vermin. The system's reliance on pupils can also cause problems as pupils may forget. In such cases there are other options that can work for schools; using an existing gardening club is a popular option for many schools.

Using the school gardening club or pupils who regularly grow to collect compostable material, rather than setting up a new organisation/working group can save a lot of time. This system can be run in a similar way to the Compost Monitors. Schools do this for a number of reasons:

- Compost creation is a big part of organic gardening, the garden will need a steady supply of compost.
- Pupils involved in gardening are likely to know the need for a mix of green and brown materials and what ratios are needed.
- The increased knowledge of these pupils means they are less likely to compost inappropriate material.
- Pupils are less likely to forget to collect materials at break and lunch times as they are interested in gardening.
- Pupils who are interested in growing also know the value of compost, hence will work to make it.



Some schools have minimal pupil participation in making compost, with staff taking the lead. Waste is collected by a member of staff, often a chosen pupil is 'helping'. This system is particularly good in reception classes where pupils need more assistance. As staff have taken the lead, mistakes are less likely to be made and the whole process is much smoother. However, this system takes time away from staff and potential learning opportunities will not be developed.

Top tip

Do not become reliant upon one member of staff or a small number of pupils.



Have several members of staff and a wide spread of pupils to avoid the system collapsing when pupils and staff leave the school.

Get the co-operation of the catering staff

The Food for Life Partnership actively encourages a good relationship with catering staff. They are able to support the school in a number of cooking related activities through clubs and open days. Passing on cooking skills is essential in achieving the Food for Life Partnership Mark and school cooks are ideally placed to help with this. Ensuring the co-operation of catering staff allows schools to get large amounts of fruit and vegetable peelings for composting. Many school kitchens also use a lot of cardboard which is an excellent source of brown material.

Catering staff are usually very happy to support the school in many ways. A good relationship with catering staff and catering contractors can lead to the school having access to an in-vessel composter. These can be very expensive, however it may be possible for school and catering contractors to hire/buy a system together. This will not only reduce costs of waste disposal for the catering contractors, it will also provide a means of composting cooked food waste in a clean way.

When collecting compostable waste from the school kitchen, it is very important that it is collected as soon as possible. School catering staff take kitchen hygiene very seriously and there are several laws governing what they can and cannot do with waste. They will not tolerate waste being left in their kitchen for several days. If waste is to be collected from the school caterers it must be collected every day, potentially twice a day depending upon the size of the kitchen.

Currently the Food for Life Partnership is working with a number of caterers to achieve the 'Food for Life Catering Mark'. This is a change management scheme similar to the school's award scheme and caterers work towards Bronze, Silver, and Gold Marks. The scheme assists caterers with sourcing local, organic and seasonal produce as well as many other things. A Food for Life Partnership school must work with a caterer who is working towards the Mark. Compost-making is an ideal opportunity for both school and caterer to work together, see a change in food culture, work in a more sustainable way and reduce costs.

Put collection points where the majority of compostable waste is created

Sorting waste for composting can be seen as a time consuming activity. It is important to put collection points in places where suitable material is likely to be.

Good places for collection points are:

- The school canteen is an excellent source of fruit and vegetable peelings. Often school canteens generate a lot of waste cardboard too, making them an ideal location for a collection point.
- The staffroom – a lot of tea bags, coffee grounds and fruit peel are thrown away in the staffroom.
- The school offices are a good source of shredded paper and the occasional fruit peel. Make sure that any paper composted does not contain any identifiable confidential information.
- Food technology rooms generate a lot of compostable materials that tend to be mostly fruit and vegetable peelings. It is always worth looking out for inappropriate material that can inadvertently become mixed with compostable materials.
- Key Stage One classrooms tend to produce a lot of fruit waste from the 5-a-day healthy eating campaign.

It can be a good idea to put collection points in the playgrounds and other areas where pupils congregate. This can lead to the wrong material going into the bin, e.g. crisp packets. This can be avoided by ensuring pupils know what goes into each bin and placing posters around the school and on the bins to remind pupils, as well as lessons and assemblies on composting.

Be realistic about what can be done

Just because something can be composted does not mean it must be. Do not try to compost every apple core and shred of cardboard. Schools produce a vast amount of green waste, especially food waste, usually too much to be composted using a traditional heap or bin. If this extra green waste is added to the compost bin, it will change the ratio of greens to browns. This will have a detrimental effect on the composting process.

Find your own way

There are many schools involved in the Food for Life Partnership. With so many schools, a one-size fits all solution is not possible. Each school needs to approach the issue of producing compost in their own way, finding a solution that best suits them. The following case studies are some fantastic examples of how individual schools have achieved it.



Case studies



There are a number of schools that have had enormous success with producing compost in a school environment. These schools have not had an easy journey and have learned much along the way. It is hoped that in highlighting some of the common pitfalls and solutions, other schools will capitalise on the success of these schools.

Franche Community Primary School

This school is a mixed, fully extended primary school located in Kidderminster, Worcestershire. The school has a strong ethos of child centred learning and involving parents and the community. Franche has been working with the Food for Life Partnership to transform its food culture since 2007. They have an active gardening club that is involved in collecting compost. Teachers use the school garden and compost heap in lessons where appropriate. This not only makes learning exciting but also reinforces previous lessons on composting materials. Learning about the composting process takes place across the whole school:

- In the Early Years and Key Stage One via the Forest School programme.
- In Key Stage Two, through gardening club and science lessons looking at the decaying process.
- An entire module has been developed for Year Six pupils. This is run during the spring term and provides ample opportunities for conducting practical composting experiments.



Franche celebrating their much deserved success.

This approach has given pupils and staff a wealth of knowledge and experience in growing and making compost, so much so that Franche won first place in the compost competition at the Garden Organic Produce Show 2009. They also won best in show for their basket of organic produce.

Franche has six compost bins in total, three dalek bins, three wooden bins and one wormery. Uncooked food waste is collected from the kitchen along with eggshells, egg boxes and cardboard. The kitchen alone produces 30-90 litres of waste a day, depending upon the menu, and is located across a car park. For this reason a member of staff is always with pupils when collecting waste and supporting pupils to play an active role in making compost. Paper and fruit for composting is collected from classrooms by staff and pupils, via a system of Compost Monitors. Gardening waste is collected by Garden Club members and added to the heap as it is produced. When plastic is found in a bin it is returned to the classroom. This system has proved very successful for Franche and they are now producing excellent compost.

In order to achieve a successful composting system, Franche overcame a number of challenges. One of the greatest challenges was helping staff and pupils understand what can go into the compost bin. Assemblies were held for both upper and lower school on composting and Compost Monitors were carefully selected and were trained for a long period of time. Compost Monitors are a key element of the success Franche has had. They are very involved in the collection of material and creation of compost. Compost Monitor training also includes uses of compost and the environmental reasons behind making compost. This adds to the importance and status of Compost Monitors. Lessons were also given to pupils on the theory of composting in Year Two, Gardening Club and Forest School. Problems were also experienced with a large number of fruit flies. A number of strategies were adopted to overcome this: bins were moved to a sunnier location, maturing compost was covered with spent compost with the lid seal closed, the compost was turned and a large amount of brown material was added.

Franche are also very good at communicating with parents and the wider community. Franche are active bloggers on the Food for Life Partnership website, sharing news and tips. They regularly update their website where visitors can see the school's involvement in the Food for Life Partnership and what this entails. This not only helps advertise the school but also allows Franche the opportunity to engage with the community, thereby passing on growing, cooking and composting skills. Franche also has a member of staff who is trained as a Master Composter, allowing the school to spread the message about composting amongst the local community and other schools. Mary Bendall, from Franche gives this advice: "Start slowly, just collect kitchen waste and always add more paper than you think necessary."

Archbishop Ilsley Catholic Technology and Sixth Form Centre

Archbishop Ilsley is a vibrant, mixed high school serving the community of Acocks Green, Birmingham. A high proportion of pupils are entitled to free school meals and many pupils travel from the city centre to attend. Since joining the Food for Life Partnership, Archbishop Ilsley has made huge strides in improving their food culture. Their composting is good and they produce a well finished product. They have very strong community links, thanks to the excellent work done through the extended schools programme. Archbishop Ilsley's high standing in the community has resulted in a lot of support for the project from parents and members of the community, who give their time as well as donating vouchers for growing equipment. This generosity even extends to the wider community, where local builders donated netting that was used to cover vulnerable crops.



Archbishop Ilsley's success in composting has come from its active inclusion of the community and the school's in-house caterers. Catering staff produce a lot of vegetable and fruit waste as they only use freshly prepared vegetables and fruit. Uncooked food waste is collected by kitchen staff and placed into large bins outside the kitchen. Originally this waste was collected by students and carried to the compost bins. However, the large amounts of waste produced became too heavy for pupils to carry safely. The job of collection has now fallen to the lead teacher for gardening, who has much experience in growing and making compost. Pupils are still involved in compost creation at the allotment by ensuring ratios of greens and browns are correct, turning the heap, adding garden waste and by diagnosing problems. Pupils also learn about the importance and process of compost production in food technology lessons throughout the school.

As with many schools, space is at a premium at Archbishop Ilsley and therefore composting takes place both on and off site. Archbishop Ilsley have an allotment near to the school where members of the school's allotment group meet every Sunday. The majority of compost production takes place with the support of the lead teacher. The allotment group is not limited to members of the school, family members are also welcome to participate.

Archbishop Ilsley uses every opportunity to inform parents, pupils and the wider school community about composting:

- The lead teacher has conducted composting seminars for parents to teach them how to make and use compost.
- The school newsletter is used to inform parents containing quizzes and information related to composting.
- The open membership of the allotment club ensures a wide range of people can attend allowing the maximum number of people to benefit from learning about compost.
- Pupils run composting awareness sessions at open days and parents evenings.

This level of inclusion involving the wider school community results in many opportunities to pass on the composting message to new people and hopefully inspires them to compost at home.

Garden Organic Compost Monitor Training

Aim

The aim of this programme is to enable schools to establish a successful organic waste collection system that will be sustained over many years.

It will:

- enthuse children and a key member of staff about the composting process
- enable the children to become “Compost Monitors” in the school, with a remit to collect organic waste; supervise the school compost bins; and inform the wider school community about the composting process
- help to improve knowledge and understanding of organic gardening.



The sessions will help participants develop the skills needed to set up and manage a successful composting process in the school grounds. Practical activities and participatory techniques will build knowledge and confidence.

Objectives

Compost Monitors will be able to

- identify some “compost munchers”
- name items that can/not be composted
- tell others about the composting process
- collect organic waste and transfer it to the compost bin

Programme

- What is compost?
- Why do we compost?
- How do we compost?
- What is compost used for?
- How can we tell others?
- Practicalities – how this will work in school?

Resources

Compost Monitors will need:

- Compost
- Trays/paper plates
- ID keys for creatures in compost
- Hand lenses
- Spoons
- Small tubs
- Large sheets of paper/pens
- School composting area
- Newspaper
- Hand trowel
- Cards with pictures/names of items that can/not be composted



Planning

It is suggested that the following activities take place during a focused teaching session or as a sequence of activities at a garden club. It is useful to arrange with the School Cook to visit the kitchen in order to see where fresh food is prepared and to discuss collection arrangements.

• What is compost?

- Look at compost from a compost bin. Find and identify “compost-munchers”.
- Explain how compost is made.

• Why do we compost?

- Group brainstorm – ask for ideas.
- Put together ideas.

• How do we compost – what can be composted?

- Play “Yes / No / Maybe” game: children sort item cards into 3 groups – can they be composted? Available in the Garden Organic Food Growing Manual.
- Look at the “Maybe” outcomes & discuss.
- Go to school composting area & examine contents of the bin.
- Demonstrate adding “browns” – scrunched up newspaper and card.



• What is compost used for?

- Demonstrate using some compost in a bed. Dig it in.
- Talk about adding goodness to the soil/using as a mulch.

• Practicalities – how this will work in school?

- Identify all the places in school that organic waste is produced.
- Remember – classrooms, playground, staffroom, hall, school kitchen.
- Visit the school kitchen and ask the Cook where fresh food is prepared and what happens to the waste.
- Plan a collection system – containers/delivery to compost bins/timing issues/who -?
- Who is going to monitor the contents?
- List resources required & assign responsibilities for actions.

• How can we tell others?

- Decide how the wider school/community are to be involved in the system.
- How can we get the message across to parents/wider community too?

• Extension Ideas

- Set up experiments:
 - * decomposition in the compost bin: put some waste in a net tied with string and examine it over the coming weeks
 - * take temperature readings of the compost heap or bin
 - * sow seeds using different potting compost mixes and compare rates of growth



Telling others



A key element of Food for Life Partnership is community involvement. Schools in many cases are the heart of a community, teaching not only pupils but also parents and the wider community. Educating the community about the wonders of composting and living sustainably is something that schools can do to great effect. There are many ways in which schools can pass on the composting message and become actively involved in community composting efforts. Schools that are the most successful in raising the profile of compost are schools where sustainability and other green issues are at the heart of the school.

Take every opportunity to pass on the message in a positive way

Parent evenings, open days, newsletters, food and growing events are ideal opportunities to inform parents and the wider community about the work a school has done with composting. Open evenings are especially important as they are a time for the school to show itself in its best light. It is an opportunity for schools to demonstrate not only the academic success of its pupils but also the opportunities that are on offer. Displays and announcements in newsletters are also excellent ways of informing pupils and parents about why the school is making compost and its importance.

Maximising opportunities for pupils to try new things and have new experiences is very important. For some parents access to a wide range of experiences is just as important as academic learning.

Showing parents and prospective students the school has something different to offer along with its commitment to encouraging pupils to develop their skills and lead a healthy life style can be beneficial. Good use of the school garden and compost heap can help schools in this regard; OFSTED have already noted the positive impact the Food for Life Partnership has had upon pupils.

A good way of highlighting the school's achievements is to show the transformation that has taken place under the Food for Life Partnership. This is best done through a pupil-manned display at open days and parents evening. Pupils can demonstrate their newly acquired knowledge and skills to visitors, by leading activities that explain why the school makes compost and why it is important.

Composting is just one aspect of transforming food culture in schools and should be considered when planning work around food in school.

Become a 'recycling centre'

Some schools have shown innovation by becoming 'mini recycling centres'. Such schools collect items such as empty printer cartridges and old mobile phones. Parents and pupils are able to drop off items, which are then recycled. This is convenient for parents and there is the possibility of earning money through collection of such materials. If sufficient materials are recycled at one time, some companies will pay a small amount of money or will give a discount on new purchases. Such incentives are common with items such as printer cartridges and this can lead to long term savings.



*A display created by a Master Composter at a West Midlands event.
Photo by Jeremy*

In becoming a hub for reducing waste, schools gain a number of benefits. Lessons in sustainability, waste management and the importance of making compost become embedded within the school ethos and culture. This not only improves the standing of the school in the local area, but passing on the composting message becomes a natural act for both pupils and staff. This is a good link for schools that are already involved in the Eco-Schools programme.

Work with and inform caterers and councils

There are many organisations that schools can work with to help reduce waste and pass on the composting message. Producing compost can substantially reduce waste bills, potentially saving many hundreds of pounds over the year. Many organisations have a vested interest in seeing waste bills reduce and seeing an improvement in the well being of the school community at large. In many cases these organisations are unaware of the options available to them for reducing waste bills. Schools are perfectly positioned to assist such organisations in finding workable solutions that are beneficial for all.

Schools have regular contact with councils and their caterer, meaning that a good working relationship is likely to already exist. These organisations seek to reduce costs and are often willing to work closely with schools to achieve this goal. Furthermore these organisations are often in a stronger financial position than schools, thus may be able to assist with purchasing or leasing a more advanced, hence more expensive, systems. There are already many projects running that schools can become a part of. A number of County Councils are currently undertaking trials with in-vessel composting. Schools have been asked to trial the system to test its ease of use and its ability to deal with waste.

When approaching caterers and councils it is always worth remembering that what your school can offer is mutually beneficial for both parties. It is helpful to have figures that show projected saving against costs; this is particularly important when in discussions with caterers. It can also be advantageous to calculate the carbon reduction. Councils and businesses are actively looking to cut their carbon footprint, not just for financial reasons but ethical reasons too.

It is very important that schools are willing to invest time and money into working with caterers and councils. It is highly unlikely that a catering firm or council will purchase an in-vessel system outright, especially if there is little or no previous relationship. Schools are likely to have more success if they are willing to part fund a system or assist with hire costs.

Become involved in community composting/ environmental projects

There are a wide variety of community composting organisations and projects that school can become involved in. Community composting offers numerous opportunities for schools to become involved with the wider community, which bring citizenship opportunities and many other avenues for learning to take place. Community composting is an excellent place to start engaging with the wider community and get assistance with composting.

An ideal place to start is the local allotments. Allotments often have communal compost heaps that are run by the allotment committee. This is a very popular system with allotment holders, they are guaranteed a good quality supply of compost for very little cost. As the compost heap is primarily looked after by committee members, mistakes are few and far between. Becoming involved in this type of composting is easily achievable for most schools, giving novice compost makers to learn about the composting process and to gain confidence.





A display created by a Master Composter at a West Midlands event.

Garden Organic has also trained a number of Master Composters. Master Composters are volunteers who encourage people in their local community to start composting, and offer support to people who are already composting. Many Master Composters work with school and community gardening groups to make good quality compost. There are a number of Master Composters located across the U.K. For more information follow the link: <http://www.homecomposting.org.uk> or contact your Local Authority to find out if there are Master Composters in your area.

If your school is lucky enough to be located in a Transition Town there are many opportunities for your school to become involved in the community. A transition town is a village/town/city where members of the community are actively engaged with issues of sustainability and climate change. Transition towns are grass roots led, i.e. the people at the bottom of the organisation are leading the way. Each transition town makes its own decisions on how the town is best suited to deal with climate change and become more sustainable. This leads to a number of different ways in which to tackle the same problem, this is a key point with transition towns. Education plays a key role in the success of transition towns and schools are ideally placed to take the lead in many activities by encouraging members of the community to be actively engaged in making small changes that can have a big difference. For more information on transition towns follow the link: <http://www.transitiontowns.org/>

There are a number of other projects operating on a much larger level. These projects tend to be run by organisations with a strong environmental ethos looking to demonstrate how easy it can be to make large reductions in waste. These organisations are normally very happy to share their knowledge and experience of composting and they run composting on a larger scale. This means that it may be very difficult for pupils to become actively involved in the composting process due to health and safety regulations surrounding the handling and movement of waste. Despite this it may still be possible for school involvement on some level.

For more information follow the link: <http://www.communitycompost.org/>

Compost bins



A compost bin is possibly one of the most useful items an organic gardener can have. It provides a simple solution to the problem of what to do with compostable material. Compost bins come in a number of shapes, styles and colours but all do essentially the same job. i.e. they provide a habitat for microbes and invertebrates. The secret to quality compost is to make the habitat as efficient as possible by catering for the needs of the microbes. Schools generate a lot of compostable waste and for this reason Garden Organic recommends a minimum of three “dalek” bins or two homemade wooden bins.

Hot or Cool

The composting process can be described in two ways, hot or cool.

In a hot process, all material is added at the same time and turned regularly; the main advantage being that the composting process happens much faster, usually 6-12 months. The biggest problem with a hot heap is gathering enough material for composting as the large amounts needed can be prohibitive. Another problem is the amount of labour a hot heap demands, regular turning takes time and will need to be done at least once a week.

With a cool process materials are added over time and perhaps turned now and again. The main advantage of this system is that it is very user-friendly. As materials are added bit by bit it is much more convenient than stock piling material for a hot heap. A cool heap also requires much less turning than a hot heap, thus is less labour intensive. The only real disadvantage with a cool heap is that it takes longer than a hot heap. Typically a cool heap will take 12-18 months.

Top tip

Composting takes time, be patient and you will be rewarded with good quality compost.



Placing a compost bin

The composting process can happen in almost any location provided there is sufficient warmth, air and materials. However in order to get the best results and avoid possible problems it is advisable to think about the following factors when placing a compost bin.

- **Sunlight.** The composting process works best when the bin is in direct sunlight or part-shade, avoid putting the bin under heavy foliage.
- **Convenience.** Put the compost bin in a location where pupils and staff can easily deposit materials from the garden and other locations.
- **Space.** Ensure there is enough space surrounding the heap so pupils and staff are able to access the heap with ease.
- **Water.** Make sure there are no streams, rivers etc nearby. There is a small chance that nutrients may leach from the heap into the water course. There is also the chance that the water could rise and wash away the compost.

- Ground. Composting works best on grass or soil. Beneficial microbes and insects can move to the heap and any excess liquid will seep into the soil. If space is at a premium it is possible to compost on hard surfaces such as tarmac or concrete, although excess may be an issue.. In such cases it will be necessary to add at least 5cm of soil or newspaper to the bottom of the bin to absorb excess liquid.

There are a vast array of compost bins available on the market and choosing a bin is mostly down to personal preference and cost. Spending a small fortune on all-singing, all-dancing compost bins is not a guarantee that top quality compost will be produced. By far the most influential factor in compost production are the materials used. See Making Good Compost for more information.

Plastic bins

The Compost Converter is the most common type of plastic compost bin, often nicknamed 'Daleks'. They come in a number of colours and are normally made from recycled plastic. Most bins have a firm lid and a panel at the bottom for removing material from the bin. Materials are put into the top of the bin and compost is collected at the bottom. Typically this is a cool process with materials added over time, however it will work very well as a hot process too.

There are a large number of variations on this style of bin. Some are made from plastic panels that slot together to form a rectangular bin, others have air vents or even come with a bin jacket that allows composting in colder weather. Some of the newer models are made from a new type of plastic that claims to be more insulating than regular plastic, speeding up the process. Irrespective of the style of bin the composting process is exactly the same.

Prices of regular "dalek" bins vary enormously so it really pays to shop around. Expect to pay around £20 for a standard converter bin, prices increase substantially for bins that have the added extras. It is worth looking at your local council's website as they often subsidise bins to encourage people to reduce waste going to landfill. They also sometimes offer special deals to schools.



The converter bin, the most common and recognisable style of compost bin. Its simplistic design and low cost make it a good choice for most gardeners.

Advantages of converter bins

- One of the biggest advantages to this style of bin is that they are usually cheap.
- A standard compost bin is easy to acquire and is available from many garden centres or even larger supermarkets.
- Converter bins are unobtrusive requiring little space.
- Require no specialist knowledge to assemble or operate. This is a very simple way of producing compost and provided the Garden Organic Guidelines are followed, problems are few and far between.

Disadvantages of the converter bin:

- The lightweight construction means it cools down quickly in cold weather.
- If the bin is empty and in an exposed place it may blow over and become damaged or damage crops.
- Size – schools need a minimum of three bins, however due to the large amount of compostable waste in schools this may still not be enough for your school's needs.

Wooden bins

The most common style of wooden bin is the New Zealand bin, although there are many alternatives. Typically bins are 1 metre square with a movable lid or improvised cover and have gaps between each plank of wood to aid airflow. The front panels usually slide up and down to make getting finished compost out easier. Many wooden bins are made by keen gardeners from scraps of wood or pallets. Strictly speaking these are not New Zealand bins, but still follow the same principles of a New Zealand bin.



A homemade wooden bin is a cheap solution to making compost on a budget. The real benefit being you can build to the size you want.

These bins are much larger than plastic alternatives thus are able to cope with a larger volume of materials. Typically this is a hot composting system and bins are often next to each other with adjacent bins sharing walls. Materials are moved from box to box throughout the composting process. This movement adds air that speeds up the composting process and frees up space for the next batch. This is repeated until the material is in the final bin where it matures. Once the compost has matured it can be used. It is possible to use a New Zealand-style bin as a cool heap, but the size of the bin limits its effectiveness. Material can cool down too quickly for the composting process to take place unless large amounts of material are added regularly.

New Zealand bins can be expensive to buy and prices vary enormously. A new double bay system can cost anything upwards of £180, although there are wooden boxes available for significantly less.

Advantages of wooden bins:

- Wooden bins are an easy building project making them ideal for a design projects for pupils.
- Wooden bins can be made very cheaply. They don't necessarily need to be made from large amounts of expensive timber. It is possible to make a compost bin from old wooden pallets and chicken wire.

Disadvantages of wooden bins:

- Buying a new wooden compost bin can be very expensive, especially when compared to the cost of converter bins.
- Wooden bins, especially when based upon a New Zealand system, can take up a large amount of space, so are not suitable for all schools.

Tumblers

These types of composter are less common than a converter bin. Looking very different from traditional compost bins, a tumbler works on the same principles. Tumblers get their name because the bin is repeatedly turned over. It is this spinning action that adds air to the material and significantly speeds up the composting process, replacing the job of turning the heap. Tumblers sometimes have a supporting frame in which the bin is secured and spun, others are pushed along the ground. Usually material is added to the tumbler via a tight fitting lid. The tumbler is then spun every day for approximately 3-4 weeks. During this time it is always wise to check the process and adjust the green to brown ratio as necessary. A full tumbler can be heavy and younger children may be unable to turn the bin unaided.

There are a number of different styles of tumbler and most are very conventional looking. Others are designed to look like animals e.g. Rolypig is a tumbler that looks like a pig, making composting engaging for younger pupils. Tumblers are more expensive than "dalek" bins. A 200 litre tumbler costs approximately £70 or more; for the more interesting designs expect to pay



Tumblers come in a number of shapes and sizes, costs vary accordingly.

considerably more.

Advantages of tumblers:

- Tumblers produce compost much faster than traditional compost heaps. Some manufactures make claims of compost in 14 days!
- There are a number of fun designs that can engage younger pupils, providing opportunities for learning.

Disadvantages of tumblers:

- Tumblers can be very difficult to turn, younger pupils may not be strong enough.
- Tumblers must be spun every day, requiring a lot of attention and daily inspection to ensure the process is working.
- Cost and space can also a limiting factor as tumblers need space to be spun safely.

Wormeries

Officially known as vermicomposting, this composting system uses special worms, typically tiger worms, to convert waste into compost. This system is primarily used for dealing with fruit and vegetable peelings. As worms eat the material they produce worm casts. Worm casts are very high in beneficial plant nutrients and make excellent fertiliser when mixed with regular compost. As well as producing compost, wormeries also produce a liquid feed, worm liquid. Worm liquid collects at the bottom of the wormery, and is drained away via a tap at the bottom. Worm liquid is a very rich feed, dilute to 1:10 before use on plants.

Wormeries are usually divided with sections, the exact number will depend upon the wormery. Worms are able to pass between the trays eating materials as they move around. Fresh material is added to the top tray, while useable compost is removed from the lower trays. When removing the finished compost it is important to keep as many of the worms inside the wormery. Wormeries come in a number of styles, colours and designs. The most common, the Can-O-Worms, can cost anything up to £100, however this does not include worms. As prices vary enormously it pays to shop around.



The Can-O-Worms is one of the most common wormeries, or why not make your own.

Advantages of wormeries:

- The superior quality of the finished product, vermi-compost, has a very high nutrient content, making it ideal for producing potting mixes.
- Worm liquid can make a fantastic feed that is ideal for containers and helping sickly plants.
- They are especially good for younger pupils and provide excellent learning opportunities. Pupils can also be made responsible for feeding and looking after the worms.

Disadvantages of wormeries:

- It is not able to produce large amounts of compost, the capacity is very small compared to “dalek” bins.
- It requires more attention than other systems. Worms are very sensitive, if they get too hot or cold they will die, they can also drown or dehydrate – they need year round care and attention.
- Attention must be given to what is being composted; for example citrus peel, onions, leeks and garlic are acidic and will harm the worms. Do not add grass cuttings as these can heat up and kill the worms
- Worm liquid needs to be drained regularly to prevent worms from drowning.

Other systems

There are a number of other systems that are able to produce compost from a wide range of materials. Such systems not only offer valuable learning opportunities, but also reduce waste costs, produce useable compost and reduce carbon emissions. Some of these systems have a tendency to be on the larger side and cost significantly more than a traditional converter bin. However these costs are recuperated in the savings made with reduced waste costs.

Bokashi

Bokashi provides a solution to the problem of cooked and raw food waste, not only producing compost, but also a powerful liquid feed, bokashi juice. This system uses Bokashi bran that has been inoculated with ‘Effective Micro-organisms’ that ferment waste, rather than compost it. The fermentation process takes place in a sealed bucket with a tap on its base. This prevents unpleasant smells from being released and allows liquid feed to be extracted. Cooked and raw food is put into the bucket along with the appropriate amount of Bokashi bran. The mix is then compressed to remove air and excess liquids. This process is repeated until the bokashi bucket is full; it is then kept sealed and left to ferment for 2-3 weeks. During this time liquid feed will need to be removed every few days. Due to the fermentation process it is normal to have two Bokashi buckets; one is filled while the other is fermenting. The finished product will have no smell and be covered in a white fungi, this then needs to be put into a compost heap to compost. There are few designs and styles for this system, capacity being the major difference between bins. Prices of bins and bran vary enormously so it is always worth shopping around.



Bokashi buckets bin

Advantages of bokashi:

- It can pre-treat cooked food waste, including meat, fish and dairy, in a clean, easy and cheap manner.
- The liquid feed produced during the process is of superb quality and very potent. Dilute feed to 1:100 with fresh water. Feed is ideally suited to potted plants, however it can be occasionally used as a ‘pick me up’ for plants in beds and borders.

Disadvantages of bokashi:

- The ongoing cost of buying Bokashi bran is an issue; the process is dependent upon bran. The more waste that is composted, the more bran is needed, making it impractical on a larger scale.
- If the bin is used incorrectly there can be a distinct smell. However in most cases this can be easily remedied by: adding more bran, compressing the waste firmly, ensuring the lid of the bokashi bucket is fully closed and regularly draining the bucket of liquid feed.
- The bin can fill up very quickly if a lot of food waste is being produced at one time, making it less practical for a large catering solution, but ideal for the staffroom or food technology rooms.

In-vessel composting

In-vessel composting is a modern way of producing compost. It is a fully enclosed system, providing the perfect conditions for composting to take place. As the entire process is enclosed a wider variety of materials can be composted e.g. cooked food, including dairy, fish, meat and small bones. Enclosure also means that unpleasant odours, vermin and other pests are not an issue, provided the area around the composter is kept free of food waste.

In-vessel composters can get up to much higher temperatures than regular composters and airflow is regulated, ensuring a clean end product. Materials are turned inside the unit; this is done manually or automatically depending upon this system. As with all composting methods brown material is needed; most in-vessel systems need wood chip or sawdust as a source of brown material.

This is composting on a larger scale, capable of turning large amounts of catering waste and gardening waste into quality compost. There are a number of in-vessel systems, with varying capacities and costs. They are mostly used by business and municipal service, e.g. universities and hospitals, looking to cut waste bills and reduce their carbon foot print.

However there are smaller systems that can be used in schools and colleges. The smaller systems operate on the same principles but have a smaller capacity, come with fewer options or are a manual process rather than automated. These systems tend to be expensive and the cost can be prohibitive for some schools.

Advantages of in-vessel:

- All catering waste and all garden waste can be composted in large amounts.
- Rodents and other pests are not a problem as all material is kept within a sealed unit.
- Production of compost is much faster than a traditional heap. It typically takes two to three weeks.
- Some systems produce compost to such a high standard it can be sold as a growing medium.

Disadvantages of in-vessel:

- Cost can be prohibitive; advanced units can cost several thousand pounds and have running costs.
- Positioning of some systems can be a problem, as they may need shelter or require access to electricity. However there are systems that do not require this level of care.
- The size of in-vessel composters can be an issue where space is at a premium as they tend to be fairly large.



The Ridan in-vessel composter is a relatively cheap in-vessel composter that can be sited outside



The Rocket in-vessel composter is a relatively state of the art in-vessel composter. When fully operational it produces compost that is pure enough that it can be sold.

Top tip



There are a number of ways of dealing with organic matter. Currently one of the most exciting is anaerobic digestion (A.D). This is a system of using organic waste to generate renewable energy and create a fertiliser as an end product.

Why not use A.D in citizenship, humanities, business studies and science lessons. Anaerobic digestion can be used as a focus for discussions on green issues such as sustainability, energy production and waste management.

Frequently asked questions



Producing compost is a relatively easy process, but occasionally problems can occur. Below are answers to some of the most common questions that have been asked by members of Garden Organic and the general public.

The compost heap smells unpleasant. How can I stop this?

This could be because the heap is too wet, usually from adding too many green materials. To solve this problem turn the compost heap and add brown materials. Unpleasant odours could also be caused by inappropriate material such as meat or fish. Look at the contents of your bin ensuring there are no inappropriate materials.

When will my compost be ready?

The time it takes to make compost depends upon what is being composted and the type of composter used.

A cool heap in a “Dalek” can take 12-18 months to fully compost.

A hot heap in the same bin, but is turned regularly and is well positioned can make compost in 6 months.

The golden rule is to be patient.

There are lots of flies and wasps around my bin.

This is probably due to a high amount of food waste, particularly fruit in schools. There are number of ways to solve this problem.

- 1 Always cover the compost bin with a well fitting lid.
- 2 Bury food waste under a 3-5cm layer of brown materials such as scrunched up newspaper or cardboard.

Will composting attract rats and mice?

No, if mice and rats are already in the area then a compost bin looks inviting. Rats and mice will not travel specifically to a compost bin. However if there are concerns to discourage vermin do the following.

- 1 Visit the compost bin regularly and firmly tap the compost bin every time it is passed. Rats and mice will not go to a place that is regularly disturbed.
- 2 Make sure that meat and fish are not composted as they will attract rodents, potentially badgers and foxes too.
- 3 Ensure that the area surrounding the compost bin is kept free of food waste at all times.

There is a smelly, slimy liquid coming from the bottom of my compost bin, how can this be stopped?

This is due to excessive moisture in the compost heap. To solve this problem add more brown materials, ideally scrunched up newspaper, and turn the compost heap.

It is also worth making sure that the compost bin is covered preventing rain from entering the bin.

There's a wasps nest in my bin, what can I do?

Unfortunately there is no ‘organic’ way to get rid of wasps. A wasps’ nest cannot be left in a school garden, call your local council’s Environmental Health Department for advice.

To avoid the problem in future, make sure that your heap does not get too dry. Make sure it has a lid and that the sides are solid, with no air gaps.

<i>Do I need a shredder to make compost?</i>	No. A shredder can be very useful where there is a lot of woody material to be composted, but it is not essential.
<i>Can I compost poisonous plants?</i>	Yes. The toxins from rhubarb, yew, laurel and other poisonous plants are all broken down during the composting process and will not cause any damage to you or your garden.
<i>Is garden compost the same as bagged 'multipurpose' compost?</i>	No. Sowing, potting and multipurpose composts that you buy in garden centres are mixtures of various materials such as shredded bark, sand, coir and fertilisers and have usually been sterilised. These are used for raising seedlings and growing plants in pots.
<i>There are ants nesting in my compost heap. How can I stop this?</i>	Ants do have a part to play in the composting process but the presence of nests in the heap is a sign that it is too dry. To solve this problem water the heap thoroughly, or, if some parts are wetter than others, give it a good mix or turn.
<i>Will a compost bin attract more slugs to my allotment/garden?</i>	No. Slugs and snails are decomposer organisms that help break down the organic matter in the compost bin so the bin acts as a great feeding ground for them. There are no guarantees that the slugs and snails will not be tempted to other areas of your garden, but the compost heap provides them with an ideal habitat they have no reason to leave as they have a constant food source and are protected from predators. If you do have slug problems, the most effective way to control them is to encourage natural predators such as hedgehogs and frogs by providing habitats for them.



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Health and Safety Guidelines



When working outside or inside with plants and soil, a common sense approach needs to be taken with respect to health and safety. Always carry out a risk assessment before gardening activities take place.

The following are guidelines only and Garden Organic does not take any responsibility for incidents that may occur.

General

<i>Hand washing</i>	Thorough hand washing is extremely important. Teach young people to wash their hands correctly and thoroughly. They will need reminding of this regularly. This is a basic method of reducing risk related to many of the items detailed including protection against tetanus and when composting. Cover cuts or grazes with waterproof sticking plasters before gardening or making compost.
<i>Gloves</i>	Schools should adopt their own approach as to whether or not pupils should wear gloves when carrying out certain activities such as handling soil and compost. This is not essential if good hygiene routines are taught. However, gloves should be available for use if necessary. Gloves may be required for people that have skin allergies such as eczema.
<i>Tetanus bacteria</i>	Don't let pupils eat soil; it can carry tetanus bacteria as well as other pathogens. Check that tetanus vaccinations are up to date and try to stop pupils sucking thumbs or fingers, or biting nails while in the garden. Wash fresh cuts well with cold running water or clean with an antiseptic wipe.
<i>Footwear</i>	Ensure that the pupils wear the correct footwear e.g. sturdy boots/shoes or Wellingtons. As part of your school's risk assessment a decision will need to be made regarding circumstances when it may be advisable to wear steel toe-capped boots.
<i>Work area</i>	Help avoid accidents by making sure the working area is kept tidy.

Weather conditions

In sunny or hot weather make sure that people wear hats and sunscreen to avoid sunstroke and burning. It is also important to have an adequate supply of fresh drinking water to avoid dehydration. If possible, work in a shadier area of the garden.

It is still possible to garden in cold, wet weather when wearing appropriate warm, waterproof clothes, with possibly an extra pair of socks and Wellington boots. If the weather is too rough, there are indoor activities that can be done instead, e.g. cleaning pots or making labels.

Composting food waste

Do not compost meat, dairy or cooked food as this can attract vermin. There is little evidence of risk to human health by exposure to bioaerosols from domestic composting. However, if someone may be susceptible (e.g. suffers from asthma), make sure they are not close by when turning or disturbing a compost heap.

Vermin

Good housekeeping should help to prevent this problem. Keep growing and composting areas tidy and don't leave rubbish lying about. If you suspect that rats are present, contact your Local Authority Environment office. Ensure that compost bins are maintained correctly. Rats, dogs and foxes may visit a compost heap if they are already in the area but composting does not generally attract vermin in the first place. If rats or mice are nesting in your compost heap, this may be a sign that the heap is too dry. Add water until it has the consistency of a wrung-out sponge. You may still find instances where they nest and rummage in wet heaps but this is not common.

Weil's Disease, also known as *Leptospirosis*, is a rare, but serious disease carried by rats. It can be contracted by exposure to water or wet surfaces that are contaminated by rats' urine. It is highly unlikely that pupils would come into contact with such contaminated environments whilst going about their normal gardening activities. Young people should be reminded regularly to wash their hands thoroughly and not to put their fingers in or near their mouth. The incubation period is usually 7-12 days. Symptoms include fever, chills, muscular aches and pains, loss of appetite and nausea. In the later stages there may be bruising of the skin, sore eyes, anaemia, nose bleeds and jaundice. If symptoms appear, contact a doctor.

Use of tools

Young people should be taught the correct way to use tools and basic health and safety aspects. It is perfectly acceptable for young people to use a normal set of tools but make sure that the equipment is not too large or heavy for them to use safely.

Poisonous plants

Many plants in the garden may be toxic in some way and it's important not to become overly cautious about this but to take a practical view. Teach pupils not to put any plants or berries in their mouths and always check with an adult before eating any produce. Make pupils aware of any plants that could cause discomfort or injury such as stinging nettles, plants with thorns or hooks (e.g. roses, brambles) or sharp leaves (e.g. pampas grass).

Water

Never let pupils out of sight near water, whether a lake or pond. Wherever possible, fence off the area or install a steel mesh across a pond.

Top tip



Tell everyone the following

- The need for good behaviour for safety reasons.
- Hazards associated with ponds, e.g. falling into the water, slippery rocks, blue/green algae, Weil's Disease.
- Any cuts or grazes to hands should be covered with waterproof plaster before pond-dipping.
- Keep hands away from face and wash hands after contact with pond water.
- First aid and emergency procedures.

Further information

Royal Society for the Prevention of Accidents (RoSPA) www.rospa.com

Health and Safety Executive www.hse.gov.uk

Royal Horticultural Society www.rhs.org.uk

Food for Life Partnership www.foodforlife.org.uk/resources

Further information



There are a number of organisations that can provide resources for schools to use in lessons as well as practical composting support.

Community Composting Network

<http://www.communitycompost.org>

A website with many downloadable resources and events listings.

Home composting

<http://www.homecomposting.org.uk>

Garden Organic's web page dedicated to compost. Home of the Master Composters programme and free advice on composting.

Garden Organic

<http://www.gardenorganic.org.uk>

The Garden Organic website has a resources for schools section. This has resources and activities that are suitable for pupils at all levels.

Little Rotters Composting Club

<http://www.littlerotters.org.uk>

Practical advice and resources on composting. Ideally suited to primary schools.

Transition Towns

<http://www.transitiontowns.org>

Information on transition towns and how they function, as well as advice and resources on setting up successful movements.

Recycle Now

<http://www.recyclenow.com>

A useful website with information and resources for both primary and secondary schools on recycling and sustainability.

Eco Schools

<http://www.eco-schools.org.uk>

Contains a useful framework for schools to help schools become more sustainable.

The Field Studies Council

<http://www.field-studies-council.org>

A website with resources and courses on offer. Some resources are freely downloadable and will suit both primary and secondary schools.

The Open Air Laboratories Network

<http://www.opaexplorenature.org>

A very useful website with links to many different events around the country. There are many opportunities to take part in surveys and other experiments.

Activity - Compost bin makeover



Most plastic compost bins look the same, so why not give your school compost bin a makeover? This activity can be used at community events to attract attention to the school's compost bin and the importance of composting. There are many links with the National Curriculum, particularly in art, and can be accessed by pupils at all levels. This activity works well as a school competition with the winning designs painted on the school's compost bins. It can also be used as a fun way of reinforcing previous learning.

Resources

- Clean compost bin.
- Paper for draft designs, possibly a template of a compost bin for pupils to practise.
- Paints, e.g. poster paint.
- Paint brushes.
- Newspaper.

Top tip



Let pupils' imaginations run wild. Designs can be about composting, art, heroes, or local landmarks. Pupils could even personalise the bins with their own 'tags'.

Why not use chalk in place of paint? Bins can then be drawn on several times.

Activity

- 1 To help pupils plan their design, get them thinking about what they compost, why they compost and all the different creatures involved in the process. Record responses with a mind map.
- 2 Ask pupils to draft drawings associated with composting that will look good on their compost bin.
- 3 Choose the best design and put the compost bin on the newspaper ready for painting by the winner. Display other designs around the school.
- 4 Wait until the paint has completely dried before adding compostable material.

Extended activity

Why not paint the compost bin in the style of the artist Brian Froud? He is best known for his work in Lady Cottington's Pressed Fairy Book and the films Labyrinth and The Dark Crystal. This would suit older pupils as part of an extended art study.

Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required.

See also Health and Safety Guidelines

Further information

Garden Organic for Schools www.gardenorganic.org.uk/schools

Activity - Compost collage



Creating collages is a fun and easy activity for all ages and abilities. This activity has links to the National Curriculum and can be linked to learning based on environmental issues. These collages are classified as brown material and can be added to your compost bin, once they have been used for displays.

Resources

- 'Brown' compostable material e.g. wood chippings, twigs, bark, leaves and paper.
- Paper and pencils.
- Water and flour to make 'glue'.

Activity

- 1 Gather a range of 'brown' compostable materials e.g. wood chippings, twigs, bark, leaves, paper.
- 2 Draw your design.
- 3 Mix water and flour to make a thick paste. This will act as a glue to secure materials to paper.
- 4 Make your collage using the flour mix to 'glue' the brown material in place.
- 5 Ensure the 'glue' is dry before displaying.

Top tip

Use wool tacked to paper as an alternative to 'brown' materials.



Don't use glue, it won't rot down in the composting process.

Avoid using 'green' material e.g. fruit peel, grass clippings. These will rot on the paper.

Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required

See also Health and Safety Guidelines

Further information

Garden Organic for Schools www.gardenorganic.org.uk/schools

Activity - Test your compost



Different plants have different needs, some prefer soil with a low pH such as blueberries. Others grow better in a less acidic environment. Knowing the pH level of home produced compost allows it to be used to great effect by targeting specific plants. This activity has links with biology and chemistry, providing a good opportunity for improving horticultural knowledge.

Resources

- Homemade compost
- Universal indicator / litmus paper.

Activity

- 1 Take a sample of homemade compost.
- 2 Put the sample into a jar or beaker and add water until all compost is covered.
- 3 Leave for 15 minutes.
- 4 Dip the universal indicator paper into the mixture of compost and water, record the colour.
- 5 Research a list of uses for the schools compost. Is it particularly beneficial to one type of plant?

Extended activity

There are numerous tests that can be conducted on homemade compost, such as calculating the nutrient value and sodium content (a high salt content will kill plants).

Why not compare school produced compost to different shop bought growing media? This can be done by growing plants, such as tomatoes, in containers and recording any differences in vigour, health and yield between the samples.



Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required

See also Health and Safety Guidelines

Further information

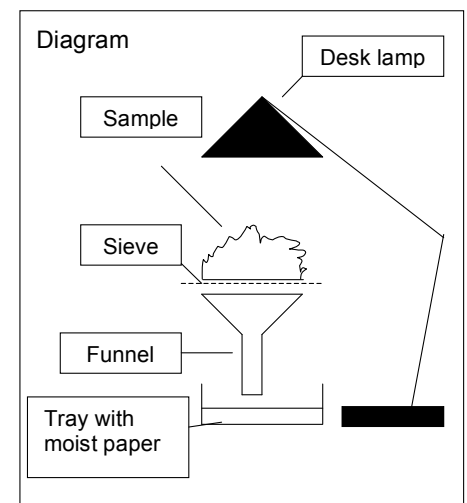
Garden Organic for Schools www.gardenorganic.org.uk/schools

Activity - Compost creature identification I

Ideally suited to secondary schools, this experiment was originally developed by Garden Organic and Peter Smithers from the University of Plymouth. This activity allows pupils to discover the biodiversity within the compost heap and identify many invertebrates and insects that are part of the composting process. This experiment has many links with science, especially biology.

Resources

- Fresh samples of compost from the school compost bin, approximately the size of a grapefruit.
- Sieve with a course mesh, i.e. holes are bigger than 2mm.
- Funnel.
- Collection tray with moist white paper in the tray.
- Desk lamp.
- Invertebrate identification key.
- Clamp to hold funnel over tray.



Activity

- 1 Collect samples from the middle of the compost heap.
- 2 Put moist paper into the collection tray.
- 3 Put the funnel over the top of the collection tray and clamp into position.
- 4 Put compost sample in the sieve, and put the sieve over the funnel.
- 5 Shine light from the desk lamp onto the top of the sample.
- 6 As the sample heats up, invertebrates migrate to moister, cooler areas of the sample. This migration causes invertebrates to fall from the sample into the collection pot. It is best to leave the experiment to run for two days to ensure good results.
- 7 Using the invertebrate identification key get pupils to identify what was collected.
- 8 Return materials and invertebrates to the compost bin once finished.



Flatworm

© JohnWalters



Springtail

© JohnWalters



Pseudoscorpion

© JohnWalters

Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required. Ensure the desk lamp has been certified safe to use.

See also Health and Safety Guidelines

Further information

Garden Organic for Schools www.gardenorganic.org.uk/schools

Activity - Compost creature identification 2



This activity is a simplified version of the compost creature identification activity. This versatile activity allows pupils to explore biodiversity within the compost heap while identifying many invertebrates and insects that are part of the composting process. This activity requires no specialist equipment and is accessible to pupils at all levels.

Resources

- Spoons.
- Trays lined with white paper.
- Fresh samples of compost from the school compost bin. The samples should be taken from a number of places to ensure a good mix of insects.
- Invertebrate identification key.
- Magnifying glasses.
- Plastic gloves (optional).

Top tip

There are normally more insects and invertebrates close to the centre of the sample as it is cooler and darker.



Activity

- 1 Divide the compost samples between the trays.
- 2 Carefully move the compost around the tray using the spoon.
- 3 Using the magnifying glass and invertebrate identification key get pupils to record any findings.
- 4 Return materials and invertebrates to the compost bin once finished.

Extended activity

- 1 Get pupils to compare different samples. Samples can be taken from the top, middle and the bottom of the bin or heap. This allows pupils to compare the distinct stages of the composting process and the different invertebrates involved at each stage of the process.
- 2 Pupils could research the invertebrates they found and find out their purpose in the composting process.

Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required

See also Health and Safety Guidelines

Further information

Garden Organic for Schools www.gardenorganic.org.uk/schools

Activity - Heat in the heap



This activity shows the temperature rises that take place in the compost bin as a result of decomposition. This activity is ideal for secondary schools linking both maths and science together. This activity produces better results in a hot heap, as temperature differences are much clearer.

Resources

- Thermometer
- Active compost heap
- String (optional)

Top tip

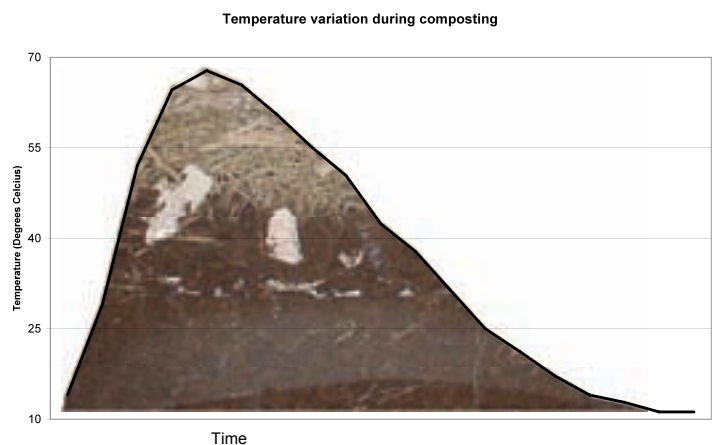
This activity is best conducted in the spring or summer term, as the composting process slows in colder weather.



Attach string to the thermometer, this will make it easier to find.

Activity

- 1 Note down the date and air temperature by the bins before putting the thermometer into the compost bin.
- 2 Bury the thermometer 10-15cm below the surface of the compost heap.
- 3 Leave the thermometer buried for 10 minutes and then remove it from the heap.
- 4 Note down the temperature inside the bin.
- 5 Repeat this process daily over the coming weeks.
- 6 This data can be turned into a graph that will look similar to this.



Extended activity

This activity could also include using different bins or similar bins in different locations. This would allow pupils to draw conclusions as to where best to site compost bins and what type of bin is best.

Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required

See also Health and Safety Guidelines

Further information

Garden Organic for Schools www.gardenorganic.org.uk/schools

Activity - Compost in action



This activity allows pupils to see how compost is made in the school compost bin. It has a good 'yuck' factor, which some children may find appealing. This is a very simple activity that can be done in primary and secondary schools, depending upon how closely the science is looked at. This activity has a maths and science link.

It can be conducted over an entire term taking less than five minutes every week. This activity allows pupils to explore a number of elements such as rates of reaction, decomposition and microbial life.

Resources

- A small amount of compostable material, a mix of greens and browns is ideal.
- Small net bag, e.g. an unused washing tablet bag.
- String or ribbon.
- White paper.
- Camera.
- Active compost heap.

Top tip

This activity is best conducted in the spring or summer term, as the composting process slows in colder weather.



Freshly added 'green' and 'brown' materials



Materials being decomposed by living organisms



Handling lovely compost after sieving

Activity

- 1 Note the condition of the material; ask pupils questions that make them look closely at what is being composted. Get pupils to make predictions as to what they think will compost the fastest and the slowest, pupils should record these predictions.
- 2 Take a photo of the material to aid later comparison.
- 3 Put compostable material into the net bag and close tightly.
- 4 Tie the ribbon or string to the bag.
- 5 Bury the net bag to a depth of 10-15cm below the surface of the compost heap, leaving the string/ribbon trailing out of the bin. The string/ribbon makes finding the bag later much easier.
- 6 Return to the heap at least once a week and retrieve the net.
- 7 Empty the contents of the net onto the white paper.
- 8 Note any changes to the materials and take a photo.
- 9 Put materials back into the net bag and return the bag to a similar place in the compost heap.
- 10 Repeat steps 5-6 until the end of term or material has completely composted.

Extended activity

See heat in the heap activity.

Health & Safety

Wash hands after handling compost. Ensure that all open cuts are covered with a plaster or appropriate dressing. Individuals can use gloves if required

See also Health and Safety Guidelines

Further information

Garden Organic for Schools www.gardenorganic.org.uk/schools



The Big Lottery Fund supports projects that improve health, education and the environment.

The Soil Association is the UK's leading environmental charity promoting sustainable, organic farming and championing human health.

The Focus on Food Campaign is the leading food education support programme for the teaching of cooking in the UK's primary and secondary schools.

The Health Education Trust is the national charity dedicated to initiating and supporting work with children and young adults to encourage the growth of healthy lifestyles.

Garden Organic is the UK's leading organic growing charity, dedicated to researching and promoting organic gardening, farming and food.

Disclaimer

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Garden Organic is the UK's leading organic growing charity, and is dedicated to researching and promoting organic gardening, farming and food. We are driven by an enduring passion and belief, founded on over 50 years of research and practice, that organic methods provide a healthy, sustainable life for us all.

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Registered charity no 298104 Garden Organic is the working name of the Henry Doubleday Research Association.

The Food for Life Partnership is a network of schools and communities across England committed to transforming food culture. The Partnership is led by the Soil Association with the Focus on Food Campaign, Garden Organic and the Health Education Trust. Together we work to revolutionise school meals, reconnect young people with where their food comes from and inspire families to cook and grow food.



food for life PARTNERSHIP

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