



# Primary School Permaculture

*Dave Richards*

**In this article Dave introduces forest gardens: a new way of using the school grounds to provide not only a wide range of stories, sounds, tastes, scents and textures to stimulate the senses, but also a laboratory in which pupils can investigate the fundamentals of life.**

Like the Queen and the Obamas, Geoffrey Field Junior School is highlighting the benefits of growing food locally in a world where the future of our daily bread, rice or maize meal is increasingly uncertain. Winner of the 2009 Pride of Reading Healthy Lifestyle Award, Geoffrey Field is one of a growing number of schools that are treating their school grounds as a wonderful, living, teaching resource.

That the Garden Organic for Schools project has 6000 members and the Royal Horticultural Society's (RHS) Campaign for School Gardening has over 10,000 members reflects a growing concern for children's health and also for their need to understand the issues that surround the food they eat, methods of food production and sustainable land management. However, despite the excellent work being supported by these initiatives and the DCSF's Growing Schools programme, I believe the true potential of the outdoor classroom is not yet fully appreciated.

There are management issues with outdoor classroom projects; school

pressures and overstretched teachers mean that, more often than not, a solitary teacher has responsibility for the Sustainable Schools framework. It is an uphill task persuading colleagues that the inspiring case studies from a CPD workshop deserve attention! Typically, the school allotment is the responsibility of an enthusiastic teaching assistant or parent volunteer who organises the gardening club. There is actually a wealth of resources that can help bridge the gap between indoor and outdoor classrooms, and enrich every area of the curriculum.

Reading's Development Education Centre, RISC, began working with Geoffrey Field Junior School in the baking hot summer of 2006. The initial project transformed the neglected school garden, with its leaking pond, into a forest garden similar to RISC's own award-winning edible roof garden. Not to be confused with forest schools, permaculture forest gardens are a temperate version of the traditional home gardens designed to bring food security to people throughout the tropics.

Permaculture is about 'designing sustainable human settlements through ecology and design. It is a philosophy and an approach to land use which weaves together micro-climates, annual and perennial plants, animals, soils, water management and human needs into intricately connected productive communities' (Mollison and Slay, 1991).

It is the ideal approach to designing an outdoor classroom which maximises its educational value.

Permaculture has much in common with old-fashioned allotments – it makes use of local renewable, or reused, materials for hard landscaping where possible. At Geoffrey Field, a severely overgrown area of willow coppice in the school grounds has been cut to provide instant rustic edging for raised beds. In the future it will be harvested to provide withies for woven raised beds and craftwork. Other beds are formed from used storage heater bricks and waney edge oak beams a local sawmill cuts from cordwood that would otherwise be turned into woodchip.

Forest gardens don't suffer the common problem of school ground crops being ruined over the summer holidays. They are based on an immature forest ecosystem with many layers of trees, shrubs, herbaceous perennials, tubers and climbers, selected to suit the needs of school – scents, dyes, herbal teas, craft materials, fruit, nuts and other food. Once established, they are low maintenance, will survive a dry summer holiday, provide a learning environment that gets richer with age and offer an edible harvest for much of the year – from nettle and wild garlic soup in the early spring to medlar pie in the autumn.

With climate scientists predicting a drought every three years on average and

an ever-increasing demand for water, every school garden hoping to grow significant quantities of food needs to harvest rainwater. This is an invaluable learning point in terms of adaptation to climate change. It also provides an opportunity to learn about water-conserving growing techniques and low-cost, gravity-fed, irrigation systems (used in drier countries for generations). We have sourced 1400-litre containers, used to import orange juice concentrate, for our water butts and old pallets for compost bins.

The design and hard landscaping becomes one of the stories woven into the garden, and a means to explore the life cycle of materials, think about embedded water and energy, and consider the 'R's of sustainable living: rethink, refuse, reuse, reduce, repair and recycle – all based around the key 'R': respect.

The soil is heavy clay so we have to force feed it with humus. An initial dressing of ground Scottish granite and fish, bone and blood meal provides trace elements and nutrients that will release gradually. This is followed by several layers of cardboard scavenged from the school bins. This suppresses weeds until plants are established. A thick mat of straw and manure from a local farm provides the perfect combination of carbon and nitrogen for bacteria to break down into humus. A wood chip mulch, available in abundance from tree surgeons, helps to conserve moisture and reduce water consumption.

The plants we have selected also have tales to tell. A two-metre square of wheat (*Triticum*) – the grass from the Fertile Crescent which became the favoured carbohydrate that sustained several civilizations – is sufficient for a symbolic loaf of Geoffrey Field bread. And then there is oca (*Oxalis tuberosa*) from the Andes, part of the diet of the Incas which, unlike the potato, did not go global.

Four years on, the forest garden not only provides a wide range of stories, sounds, tastes, scents and textures to stimulate the senses, but also a laboratory for investigating the fundamentals of life – the creation of soil, the life cycle of plants, the interdependence of plants and insects, nutrient and water cycles – and the influence of humans. The after-school gardening club has become an enthusiastic band of tillers, familiar with the intense aroma and superb flavour of the wild musk strawberry (*Fragaria moschata*).

The success of the garden projects has prompted the school to make the garden an important part of the new curriculum currently being developed. With guidance from John Fox, year 5 teacher and enthusiastic vegetable grower, in charge of the gardening club, the whole school is gearing up to grow a meal. Each class has prepared a bed and is planning a meal around the crops that can be harvested before the end of the summer term. This is providing a focus for a range of classroom activities. John describes how:

*'We've tried to be creative in using the garden as a learning resource, to make the curriculum more engaging to the children, more relevant to their experience. It has been a useful starting point for geography, history, literacy and maths topics. We investigated where different fruit and vegetables came from and used atlases to map and record the likely routes and distances travelled. We discussed the idea of food miles and what to look out for when shopping. We've compared what we are able to grow in our climate with those in another country and researched the reasons why this may be. The garden is used as an introduction to map reading and drawing. The year 3 children drew a bird's eye view of the garden from their upstairs classroom. Later, co-ordinates were added to the maps and children were able to locate objects using their mathematical knowledge. During our Tudor history topic we used vegetables from the garden to make pottage – a soup eaten by the poor.'*

Demeter, Ceres and Balarama, the Greek, Roman and Hindu gods of farming, are smiling on this use of the edible classroom. At a recent policy forum on environmental education Jenneth Parker argued that the concept of 'ecosystem services', much favoured by policymakers, has 'enormous potential for helping understanding of the key messages of sustainability for current and future generations' because it 'can now demonstrate the human consequences in



Photo: Dave Richards



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loss of livelihood of the degradation and loss of ecosystem services in terms that everyone can understand – money' (Parker, 2010).

Other voices reinforce this message. Sir John Beddington (2009), the government's Chief Scientific Adviser, has flagged up the likelihood of the world being consumed by the 'perfect storm' by 2030 – the consequences of a global population of about 8 billion combined with increased demand for water and energy, against a background of global climate change. Tim Lang, Professor of Food Policy at the University of Leeds, warns that unless we change the way we grow and consume food: 'We are sleep-walking into a crisis' (Lang, cited in Linklater, 2008).

It is clear that the issues we are talking about here – climate, ecosystems, resource management, farming, food security – are the life blood of geography. Many civilisations of the past suffered the consequences of ignoring the real bottom line – humanity's dependence on living processes. Armed with the lessons of history, the school garden can be an essential ingredient that grounds children's

understanding and values in the soiling of their hands, like generations of peasants before them. The day of the fieldtrip to the veg garden has come.

### References

- Beddington, J. (2009) Speech at Sustainable Development UK 09, at <http://www.govnet.co.uk/news/govnet/professor-sir-john-beddingtons-speech-at-sduk-09> (accessed 9/8/2009).
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- Mollison, B. and Slay, R.M. (1991) *Introduction to Permaculture*. Sisters Creek: Tagari Publishers.
- Parker, J. (2010) 'Ecosystem Services: a breakthrough for ESD?', Paper to SEEd Policy Forum, January, at <http://www.se-ed.org.uk/policyforum/resources/SEED%20presentation%20Ecosystem%20Services%20and%20ESD.ppt>, (accessed 27/2/2010).

*The Schools Global Gardens Network (SGGN) is co-ordinated by RISC with funding from the Department for International Development (DFID).*



The Schools Global Gardens Network provides a feast of resources for bringing the global dimension

into the outdoor classroom: [www.globalgardens.org.uk](http://www.globalgardens.org.uk)

RISC has a wealth of information from lists of edible and useful plants to designs for your school garden: [www.risc.org.uk/](http://www.risc.org.uk/)

Garden Organic for Schools has information and advice on organic growing: [www.gardenorganic.org.uk/schools\\_organic\\_network](http://www.gardenorganic.org.uk/schools_organic_network)

RHS Campaign for School Gardening even has recipe of the month for making good use of your seasonal produce: <http://apps.rhs.org.uk/schoolgardening/teachershome/default.aspx>

The Permaculture Association has some useful information on Permaculture in schools and courses you may be interested in: [www.permaculture.org.uk/get-involved/teacher](http://www.permaculture.org.uk/get-involved/teacher).