



ART OF SCHOOL GARDENS

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School gardens should not be only about work and growing of vegetables...

School gardens are a wonderful way to take use of the schoolyard as a classroom, to reconnect students with the natural world and the true sources of their food, and to teach them valuable gardening and agricultural concepts and skills that integrate several subjects, such as math, science, art, health and physical education, and social studies, as well as various educational goals, including personal and social responsibility.

GETTING YOUR SCHOOL GARDEN STARTED

Consult the head teacher about the idea of a school garden and decide who is to be the "garden leader". Find out how education authorities, agricultural services and the local council can support the school garden.

Ask for help from the colleagues, parents or community members, even if you're an experienced gardener, because this should be a common school/community garden. Start informal discussions about a school garden. Write down ideas about the garden work. Ask the children, what they think about gardens, gardening and garden food. Altogether you can evaluate your site:



Does it get a minimum of six hours of full sun per day?



Is there easy access to water?



Is it close enough to classrooms to get used? (out of sight, out of mind...)



Can it be protected from two-legged and four-legged unwanted visitors?



Test the soil texture, drainage, and composition (this can be part of a lesson)



Plan/design your garden according to your site and your goals



do you want a separate plot or raised bed for each class? Raised beds are better for small children



do you want to include garden plots for community members?



Do you want a greenhouse or cold frame to extend your growing season?



Will you include a composting centre?



Will you need a tool shed?



Do you want to incorporate an outdoor classroom area and/or shade structure?

CHOOSING THE RIGHT SITE

Starting your organic vegetable garden in the right place will make a huge difference right from the start. There are a few things you want to keep in mind:

Sun: You'll want a site that offers as much direct sunlight as possible - at least 6 hours, preferably 8, during the main growing season.

Terrain: Is the land sloped? You'll want to orient your garden bed to take a full advantage of the sun exposure. Is there a depression where water collects? You'll want to think about filling this in with good soil so it doesn't stay soggy - a site like that will take much longer to dry out in spring, and could result in rotted plant roots during the growing season.

Wind: Is the site protected from strong winds? If you live in a windy area, consider trying to position your garden in a place that has a hedge, wall, or other structure nearby to reduce the effect of strong winds. If you don't already have some type of windbreak in place, consider erecting strong trellises nearby for this purpose.

Access to water, tools, compost. You don't want to have to drag tools from the other end of your yard, and toting a watering can around isn't much fun, either. Make it easy for yourself, and try to situate your vegetable garden bed in a convenient place.

SOIL CONSIDERATIONS

What is the soil composition and quality in your potential veggie garden area like? Is it



rocky and full of tree roots? You may want to consider building a raised bed vegetable garden. If not, then you could go ahead and double-dig the existing soil and try to grow there. Either way, it's important to assess your soil to see what you need to do to make it perfect for growing organic vegetables – at least by measuring of pH and determining of its structure. Knowing the soil and its properties is an important part of the design.

Humus is the organic material in soil. Humus is not a form of soil; rather it is the broken down composted remains of leaves, grass, and other organic matter contained within the soil. Humus is highly nutritious and rich in minerals and microbes vital for healthy plant growth. Humus also is able to hold 90-80 per cent of its own weight in moisture. It may be mixed with garden soil to provide a rich humus planting bed. organic matter attracts microorganisms that feed on it and break it down, converting it into humus. Humus is very helpful in gardens, since it color the soil to black, so that soil is more and earlier warmed in early spring and ready for seeds. Raw Humus can also be created from a home composting system.

Composting is the most effective way to improve soil fertility. Through effects of bacteria, fungi, worms, insects and small organisms, organic material is transformed to humus, the most important part of the soil fertility. Quantity of humus determines the fertility of the soil. Sandy soils have for example poor humus content and therefore are not very fertile.

Composting is nature's way of recycling. Composting biodegrades organic waste. i.e. food waste, manure, leaves, grass trimmings, paper, wood, feathers, crop residue etc., and turns it into a valuable organic fertilizer. Adding compost to the soil is very useful for soil and for plants, too.

What to include into the compost: mowed grass, vegetable residue, fruit, fermented plant parts, weed, trimmed branches, leaves, cuttings, coffee grounds, tea bags, pots, paper napkins.

What not to include into the compost: metals, plastics, textiles, glass, paints, old medicines, oils, batteries, detergents and other chemicals, citrus peels (pesticides, herbicides), animal bones and meat, dairy products.

We use compost as a fertilizer. We apply it into the soil in spring or autumn. In autumn we use 4-3 liters of compost per 1m² of soil, leaving it on the surface. The snow-melting will take it into the necessary depth during the spring. However, it is better to fertilize the soil in the spring: put the same amount of compost on the prepared bed, carefully incorporate it into a depth of max. 5 cm.



WHAT TO GROW IN A SCHOOL GARDEN

Best way to reduce work as well as to preserve local heritage is to collect seeds and seedlings of traditionally grown old variety from grandparents and old gardeners. This variety of vegetables are best accommodated to your local conditions and are the most resistant ones. The same is valid for fruit trees and bushes. Plant varieties so that they can be harvested by the end of the school year or in autumn when new school year start:

|| **Sugar snap peas, great for planting along garden fences early in the growing season**

|| **Lettuce, spinach, and other leafy greens, with new seeds planted every two weeks for continued harvest (another early season one)**

|| **Radishes grow quickly and are ready to eat in a month (plant early in the season and they won't get too spicy)**

|| **Carrots grow quickly, too, though the seeds are quite tiny and hard to handle**

|| **Potatoes, planted early, could be ready for harvest before the summer break**

|| **Green beans, bush or pole, are great raw or cooked**

|| **cherry tomatoes and tomatillos are fun for kids — make some salsa together**

|| **Pumpkins take more space and won't be ready until fall, but are perfect for teaching patience**

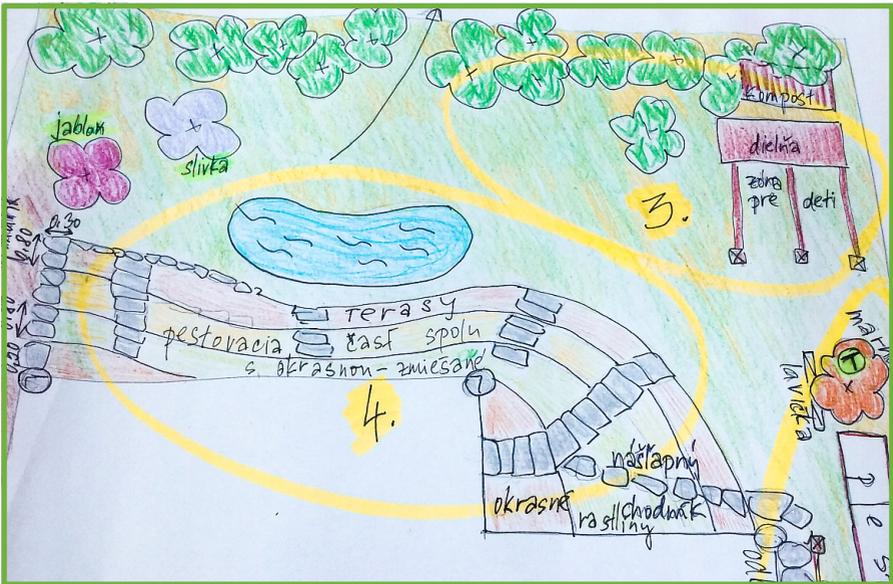
|| **Broccoli is not known as a favourite of children — until they've grown their own**

|| **Sunflowers — students can dry and eat the seeds, or leave the flower heads in the garden as a treat for birds**

|| **Asian greens, such as pac choi, because they germinate and grow so rapidly in cooler weather**

GARDEN DESIGN

As the result of all consultations, observation, measurements and discussions, you should create your garden design. Altogether with teachers, parents and students you should prepare and draw garden plan - design of your garden. If you have well thought out how the garden should like, where will be located planned elements (raised beds, glasshouse, playground, herbal beds, pond, orchard, etc.) and what plants are suitable for your condition, then you will prevent most of mistakes.



PLANT, GROW, AND HARVEST!

Now that you've got the garden sited and the soil amended, the organic plants and seeds collected, then it's time to plant and tend your garden.

Look up information on the types of vegetables you want to grow to ensure that you're providing them with the right amount of water and nutrients. Consider doing some companion planting for a healthier garden and learn about allelopathy relationships and



needs of plants.

Allelopathy is a biological phenomenon by which an organism produces one or more biochemicals, which influence the germination, growth, survival, and reproduction of other organisms. These biochemicals are known as allelochemicals and can have beneficial (positive allelopathy) or detrimental (negative allelopathy) effects on the plants.

When planting in our garden, we keep in mind observation in nature: plants grow densely next to each other, but each of them has a space for its healthy growth. Here you have simply rules we use, to get a healthy and colourful crop are:

|| The plants we grow for the root are planted in the neighborhood with those from which we will use the above-ground parts. Example: celery, kohlrabi.

|| We do not grow close to each other's relatives. They have the same demands, they are attracting the same pests and diseases.

|| To protect against pests and diseases we plant aromatic plants close to vegetables: salvia, lavender etc.

|| We also combine plants that have the same demands on both soil and moisture.

|| In a healthy garden we will grow plants in mixed cultures.

Good example is the neighbourhood of pore and celery. Both plants have high demands on water. When digging, we can grind the soil to the pore, while we have to bend the celery so that big root will grow.

Extremely favorable plant examples:

carrot	with	onions
tomatoes	with	onions
tomatoes	with	parsley
salad	with	radish
peas	with	celery
potatoes	with	brassica



Extremely unfavorable plant communities:

beans	with	onion
cabbage	with	onion
parsley	with	lettuce
peas	with	beans
red cabbage	with	tomatoes
potatoes	with	onion

A FEW GOOD TIPS FOR GARDEN FEATURES

As you can find in examples below, to reduce your costs, waste material is possible to use as much as possible to build your garden. You need imagination, fantasy, some craft skills and some available waste and natural materials from your location.



old metal barrels



Raised beds from old bricks



for seedlings – old wooden pallet

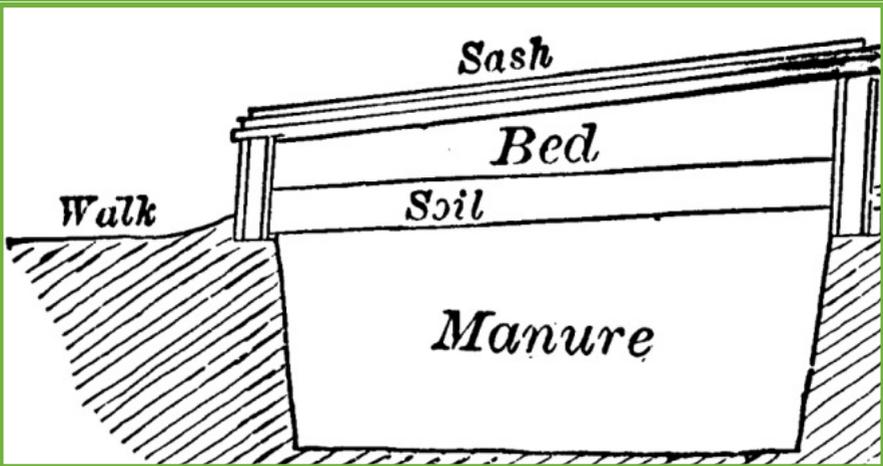


*composting organic material from school kitchen
and classes for garden compost!*





Other features: hotbeds to start season sooner





planting in 3rd dimension





structure from old PET bottles



Stone spiral of healing herbs



A small pond – for beauty and education



Home for the helpful animals



Support competitiveness – one bed per one class – and let's compete!



...and let's cooperate!



Living fence – edible shrubs



When you are building your school garden, think of the important fact, that each element you create there should have several functions. The more functions of some element, the better solution.

Edible shrubs are typical example of multi-functional element:

First – they are nice (beauty is very important for children!),

They provide shelter for birds and small animals that increase biodiversity of garden

They protect garden from wind (windbreak function)

They provide healthy fruits for children (and for birds)

They can help to create some “hidden places” for children to have some “private areas

And, thorny shrubs, like seabuckthorn (*Hippophae rhamnoides*) can be very effective as a protection of your garden and harvest.

Good and diverse combination of native, resistant species is always the best solution.

DEEP MULCH

To reduce hard work in school garden, deep mulching is one of the best solutions.

This system is appropriate for less humid climate, since it keeps soil humidity. Except of humidity, it protects soil from erosion and improves its structure. Straw reduces necessity of watering and keeps out weeds from soil. You can combine it with raised beds, to maximize output with minimal effort.

<https://www.youtube.com/watch?v=uHcJO88tX5E>



The advantages of deep mulch method:

- * The great part about deep mulch is reduction of the weeds.
- * The mulch holds the moisture in the dirt. It is an excellent solution for a dry climate that you do not have to water as much.
- * Because the soil is staying moist, you can immediately notice an increase in earthworms.
- * The mulch nourishes and protects the soil.
- * When you deep mulch year after year you don't have to till the garden, just add more mulch in the fall, make rows in the spring and plant.
- * Balances your soil-nutrients
- * Moderates day/night temperature fluctuations in the soil.
- * Adds organic matter to keep soil from becoming too sandy or clay-bound.
- * It's very comfortable to sit or kneel on as you cultivate and harvest your plants.

What material can you use?

The best material is straw from the fields. Also dry hay is a good one, as well as wood chips or sawdust. If you have a forest nearby, you can use fallen dry leaves from trees (but not from walnut trees!).

This material is reducing nitrogen content in soil, because of that, you have to compensate it with manure.

How to do it?

At springtime, put at least 20 cm of straw, or dry hay on top of the soil, which is cleaned from weed. On this layer, you have to put 20 cm layer of cow or horse manure, supporting straw with nitrate. Then, you put another layer of mulch (about 10 cm) to protect the manure.

To plant the seeds or seedlings, you have to pull the mulch aside with a rake to expose the soil to plant in rows. Only after the seedlings are well up, you can push the mulch back up close to the plants.

RAISED BEDS

Bed raised even 20 cm above path level provided infinitely better drainage than a bed built flush with the soil. Gardeners today also find that raised beds heat up faster in spring, adding days (or even weeks) to your growing season. Raised beds allow for far easier soil amendment, too. Build up a bed 40 – 30 cm above path grade, and you can fill it with the ideal mix of organic topsoil and other amendments. And when the soil is at shin level, weeding and harvesting are less of a strain on your back.

Beds should be no broader than 1.2 m, separated by paths, allow children to reach into the middle of each bed without stepping into it. This keeps you from ranging through your seedlings, compacting the soil and crushing plants underfoot. Moreover, you can work with your feet planted in a nice, clean path rather than in the middle of a muddy bed.

To build your raised bed, screw planks of selected lengths together using decking screws. You can overlap the planks by screwing through one board into the end of another or screw the boards into wooden corner posts. Fill your beds with a nutrient-rich mix of compost and soil to ensure optimum growth. With the right mix, you shouldn't have to add fertiliser, just a top-up of compost once or twice a year to recharge nutrients for the next crop. To prevent losing of moisture from the soil, you can cover the bed with 10 cm layer of straw.

Another option is to build a frame for raised beds from old bricks or even from unprocessed logs.

WILD ANIMALS IN THE GARDEN

An indispensable part of a healthy natural garden are wild animals and creatures. They help us as biological predators and help us to protect garden in a natural way. And they are beautiful and interesting! So, what can we do to attract animals into the garden? The solution is not too complicated.

First, we do not use pesticides, herbicides, poisons and sprays. They damage not only animals but also human and soil health. If we want to have a natural, organic garden, we need to get rid of it.

And then it is important to create in garden appropriate environment for animals. All animals need food and a good place to live and breed. So, think of it, building your garden.

So, which species do we need in the garden and how can we create suitable conditions for them?



Predatory insects : They hunt for garden pest, harmful insects. For winter we offer them various shelters (leaves, bark, stones, old trees ...) in som garden corner. Some of them need for surviving in the winter home slopes, pots filled with wool or straw.

For some of them we prepare an “insect hotel” from riveted tires, including holes of various diameters or reeds, placed on a protected stand.



Amphibians: we can set up a pond with different zones, and a place to hide (stones) and climb. It is necessary do not forget to put plants, suitable for different zones of the pond. Amphibians feed with insects, caterpillars, snails, beetle larvae.



Birds: For the birds, we can prepare places to nest, keep old trees with cavities (holes) in the garden, or build bird boxes for them.

They need a pond with an access point, or some water supplies. Useful are plant hedges with berries and other fruits. They eat harmful insects, caterpillars, snails, beetle larvae.



Mammals: for hedgehogs we leave heap of lops and sticks, to create a safe shelter, a “home”. Bats need old, hollow trees, so it is good to leave some in the garden.



SOME FINAL SUGGESTIONS

Please ensure that your school garden is grown organically, without toxic pesticides or synthetic fertilisers.

Invite parents and community gardeners to help out. You don't have to do it all by yourself.

Be sure to organise volunteers (parents or local older adults) to come in the summer months to water and weed the garden. Volunteers can split the harvest as a "price" for their help.

Watch to see if gardening "vocabulary" seeps into usage amongst your students and colleagues. The organic language of gardening is so much "greener" and more life-affirming than the techno language of computers.

Track your school garden's growth through photos, student artwork and poems, and a journal. Create and display a calendar of gardening activities: planting dates, special events, volunteer schedules, etc. Keep your garden in the spotlight by sharing your photos, accomplishments and milestones in the school newsletter and on bulletin boards, and by holding harvest celebrations. Let your local media know about your successes.

Plan for success (even if you don't attain it at first). Use plants that grow well in your area and that will mature quickly as well as some that will be ready for the new school year. Gardening is a lesson in patience and delayed gratification, but an early salad with pea shoots will win over the students. Keep garden lessons fun and hands-on.

And finally, because your original group of student gardeners will eventually move on, be sure to involve and instil the sense of ownership in the new students each year, by allowing them to participate in design and planting decisions.

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