UrbSTEAM

Teaching STEAM through Urban
Garden Based Learning
in the kindergarten

Educational Material
Module 1.
Permaculture

# Learning objective:

- Definitions of permaculture
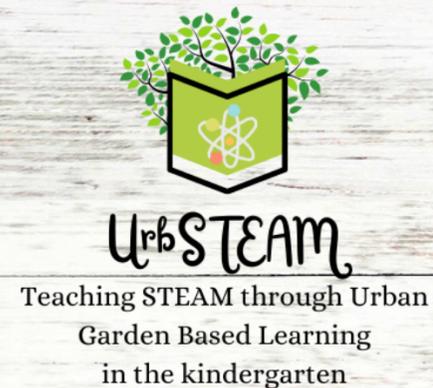- Permaculture ethics
- Permaculture principles

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# Expected Results

- Understanding of the basics about permaculture ethics, principles and design
- Inspiring through permaculture

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# WHAT IS PERMACULTURE?

Permaculture can be understood as the growth of agricultural ecosystems in a self-sufficient and sustainable way. This form of agriculture draws inspiration from nature to develop synergetic farming systems based on crop diversity, resilience, natural productivity, and sustainability.

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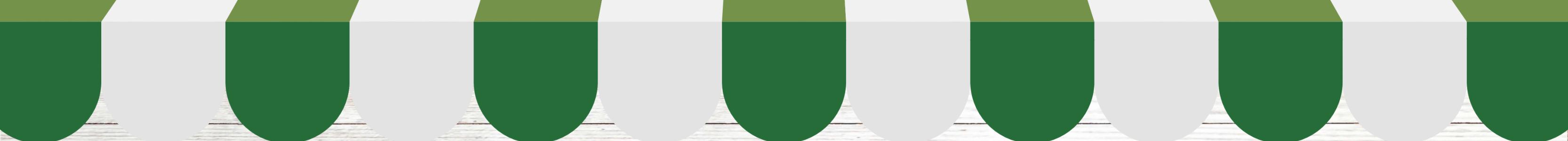Garden Based Learning
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Image via *Biodesic Strategies*

Nowadays permaculture is synonymous with Permanent culture in its broadest sense, permaculture is a global ethic method for designing integrated systems based on the idea of sustainable development.

When it comes to gardening, the goal of permaculture is to design the plot so it meets the needs of its inhabitants, including wildlife, pollinators, and plants, such that the entire system thrives both now and in the future.



*Photographed by Deep Green Permaculture. Available at: https://deepgreenpermaculture.com/ (Accessed: December 20, 2022).*

In the pursuit of these goals, practitioners adhere to three primary ethics of permaculture.
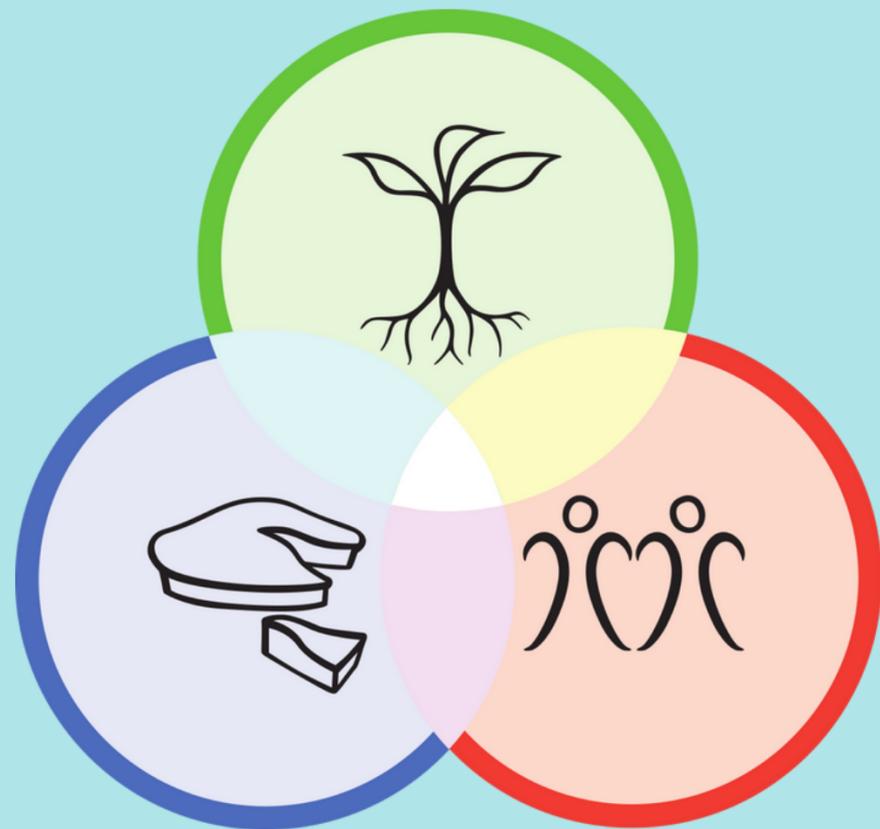
-Care for the earth.

- Care for the people.

- Fair share.

## Care for the earth.



In other words, help all life systems continue to exist and multiply. Because if we don't have a healthy planet, humans can't exist at all.
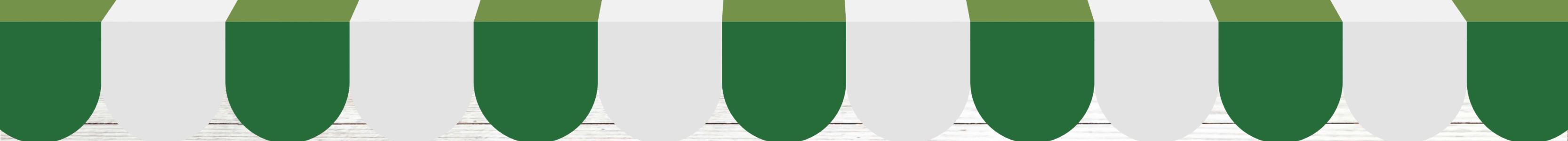
PEOPLE CARE

**Care for the people.**

Allow people to access resources they need to survive.

## Fair share.



You should only take what you need, and reinvest any surplus. Any extra can go forward to helping fulfill the two other core tenants. This includes returning waste products back into the system so it can be made useful again.

Crisis, Hope, and Permaculture

GEOFF LAWTON
CRISIS
HOPE
& PERMACULTURE

Watch on YouTube

The foundations of permaculture are the ethics which guide the use of the **12 design principles**, ensuring that they are used in appropriate ways.
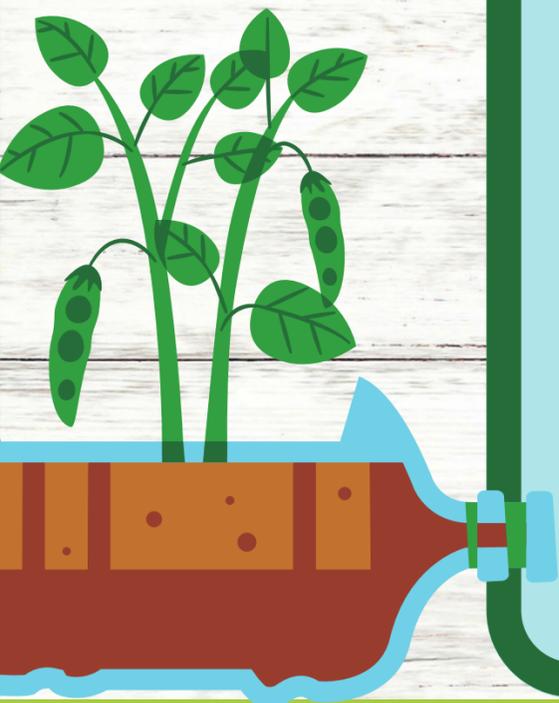
## Design principle 1:

## Observe and interact

Before you take action, start by taking some time to observe what's happening. If you want to build a garden, watch the space and see which parts get sun and rain and which parts get the wind or shade. Your job becomes so much easier when you can work with nature, rather than spending time and effort tending to plants that are growing in the wrong spot.

## Design principle 2:
## Catch and store energy

When resources are abundant, it's smart to store some of them to use later. For example, use water tanks to catch rain, or pickle summer vegetables so they can be eaten in winter. Design your house so the sun heats it throughout a winter's day, retaining the warmth into the evening.

## Design principle 3:
## Obtain a yield

Make sure your hard work pays off. If you go to the effort of planting tomato seedlings, watering them and keeping the snails off them, you want to make sure you end up with some fresh tomatoes for your salad. If not, you need to improve your systems. On top of that, think about what yields you might be missing. Is there uncollected fruit, left on the trees in your neighbourhood? Or weeds from the footpath you could collect for your chickens?



*Photo taken by Sandi Pointner at Eagle Ridge Permaculture in NSW Central Coast, Australia*
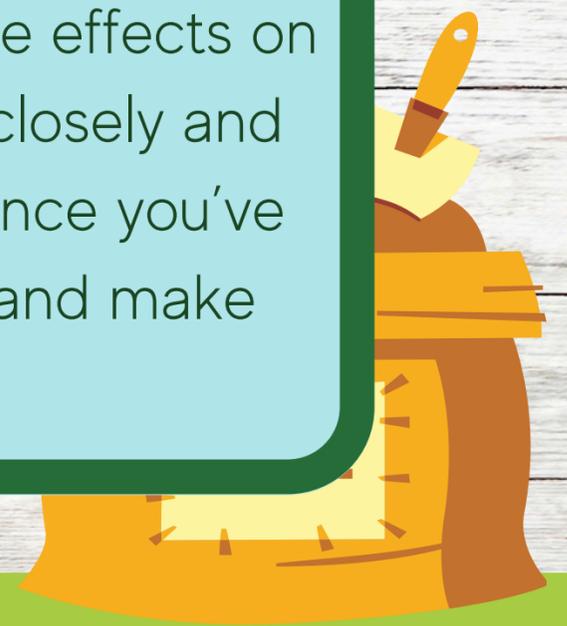
**Design principle 4:**
Apply self-regulation and accept feedback

Climate change is an example of negative feedback telling us to change the way we produce and consume goods. Your garden is its own ecosystem, and some of your interventions might have negative effects on parts of it. Watch your garden closely and listen to what it is telling you. Once you've heard the message, accept it and make changes.

*Photo taken by Kirsty Williams at growing_home_permaculture in Warrnambool, Victoria*

**Design principle 5:**
Use and value renewable resources and services

To make your garden sustainable in the long term, choose energy and materials that replenish themselves. Keep your soil rich and healthy by building up the microbes in your soil with compost, and choose cardboard and newspaper to suppress weeds instead of black plastic.



*Photo taken at Murrnong Farm in Violet Town, Victoria, Australia by Oliver Holmgren.*

## Design principle 6:
## Produce no waste

Remember that old saying: "Waste not, want not"? Have a look at what you throw away and reconsider whether it can be repaired or reused. Take the time to clean and maintain your garden tools so that they last longer. Create closed loops – feed your food scraps to the chickens, they produce manure, the manure turns into compost and is added to the garden, the garden produces veggies to eat and more food scraps.



*Photo taken at Melliodora Hepburn Permaculture in Australia by milkwood*

Image description: Three bathtubs are arranged in cascading order beside a house, supported by rocks and bricks. The top bathtub is filled with a worm farm, the middle bathtub is filled with reeds and the bottom bathtub contains water.

## Design principle 7:

### Design from patterns to details

Observe your daily patterns. What are the foods you and your family love to eat? Which parts of the garden do you walk past everyday on the way to the front gate? Plant your garden in zones, and put the herbs and veggies you use most in the zone closest to your kitchen door where you can access them easily. The things that need less attention can be placed further away.



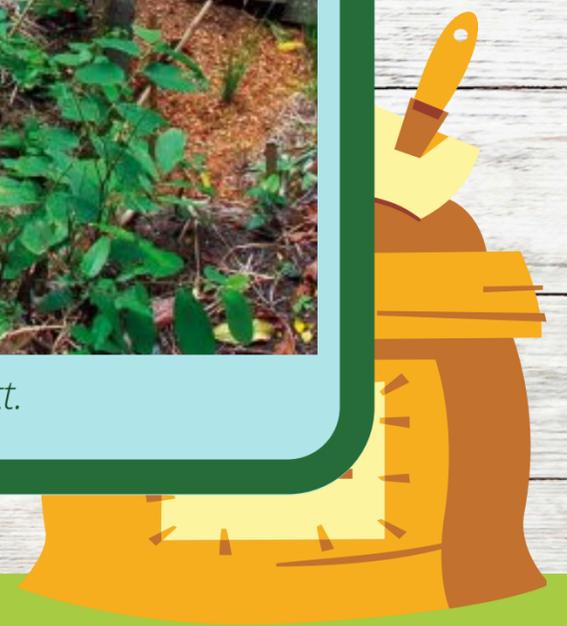*Photo taken in Bali by Mark Garrett.*

Photo taken by Koren Helbig of The Local Yum honesty stall in Adelaide, South Australia

## Design principle 8:
Integrate rather than segregate

Think of your garden as part of a much wider network of community gardens. You'll benefit from being able to swap your excess produce, from sharing your tools and learning new skills. Rather than trying to achieve self sufficiency for each household, think about building connections between households and aim for community sufficiency.

## Design principle 9:
### Use small and slow solutions

Have you ever started a new hobby, went out and bought a bunch of new equipment, only to drop the hobby a few weeks later and let the equipment gather dust? It's better to build your skills and invest slowly as you go. When building a garden, you can gather many materials cheaply or for free if you're willing to be patient. Going slowly means we save on resources because we won't buy new things that end up wasted.



*Photo taken by Natalie Mendham at Good Life Permaculture in Hobart, Tasmania, Australia*

## Design principle 10:
### Use and value diversity

We can describe this principle using the old phrase "don't put all your eggs in one basket". Growing a diversity of plants means there is always something for beneficial insects to eat, and protects your garden from pests and disease. Eating a diverse range of foods through our diet also keeps us healthier.

*Photo taken by Richard telford at The Farm in Byron Bay, NSW, Australia*

## Design principle 11:
Use edges and value the marginal

Balconies, the footpath verge and the edge of the driveway are just a few of the spaces that can be productive. Herbs like nettle and dandelion can be foraged from the edges of footpaths or unused plots of land.



*Photo by David Holmgren from his book RetroSuburbia- the downshifer's guide to a resilient future. Melliodora Publishing 2018.*
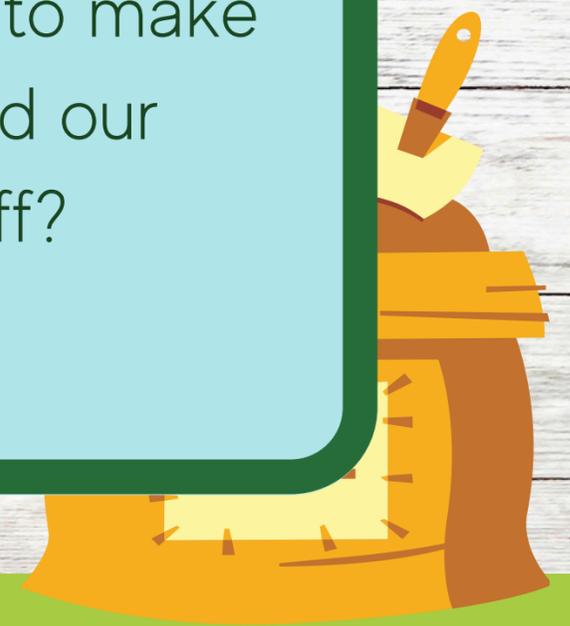
**Design principle 12:**
Creatively use and respond to change

Nature, like human society, is constantly changing. As we absorb the shocks going on in the world, what changes do we need to make that leaves ourselves and our communities better off?

*Photographed at Fair Harvest in Western Australia by Jodie Lane*

# REFERENCES

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Thank for your attention