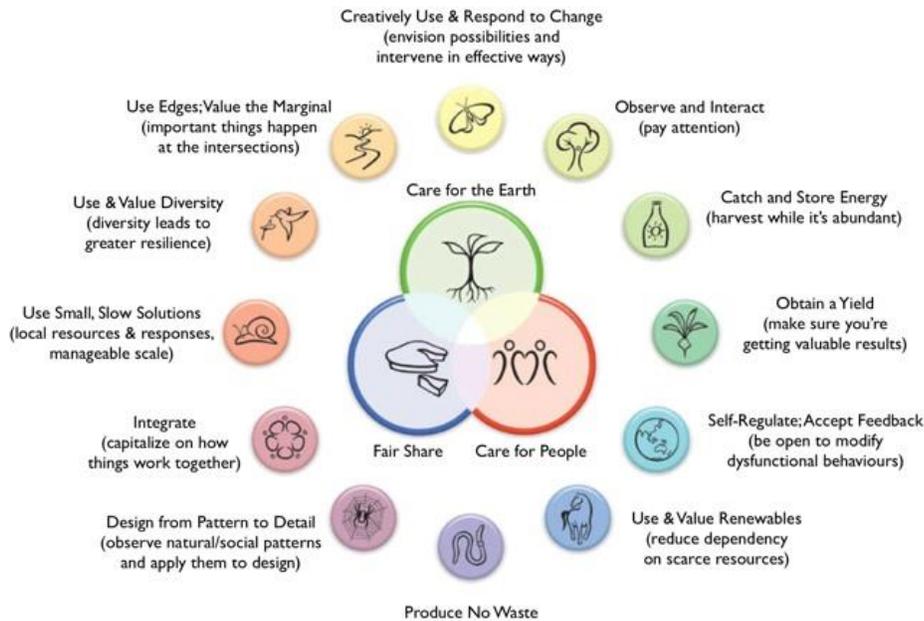


Permaculture Power

~A unit guideline for teachers~

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*Permaculture is a system of agriculture and social design principles centered around simulating or directly utilizing the patterns and features observed in **natural ecosystems**. Other terms associated with permaculture are edible forest gardening, permanent agriculture, regeneration, or “no till” garden.*

The goal of this school based permaculture unit is to assist schools in preparing to teach a class or group of students the characteristics of permaculture. Permaculture gardens become permanent parts of a landscape, so please seek prior administrative approval and/or school board approval before starting this unit. Permaculture gardens dive deeper into soil restoration and can easily incorporate not only science concepts but also to many other cross-curricular concepts found throughout a school.

Grade level: Third grade and up

(This guideline was based on work done at Woodstock Elementary School with a third grade class of 22 students.)

Unit title: Permaculture Power

Length of Unit: 7 days

Timeline: 6-7 weeks plus, depending on how many times per week the class meets. If the class is not in session there will be other planning meetings that will take place. It is also best to lay down your layers (sheet mulching) in the fall so that the grass underneath dies and the soil continues to rejuvenate. Planting can take place in the spring.

Essential questions:

1. Define characteristics~ What is permaculture? What is the difference between a regular food producing garden and a permaculture garden?
2. Human Benefit and experience an established garden~ How can humans benefit from using the permaculture concept?
3. Design-Looking at your school’s area and deciding one what design might work best for your landscape. What are some different examples of a permaculture garden? What plants would you like to include in our school’s design?
4. Use Google Drawing as a way to start to design your garden. What would the pathways looks like? What plants would be planted near and away from each other? Are there other features that should be included in the design?
5. Plotting the site and collecting the materials-What makes the site you have chosen the best site for this type of garden? What weather patterns will our garden see throughout the seasons? How might this effect growth in the garden?
6. Build day-What does it look like to build a garden using a teamwork approach? Should we just dive in or do we need to create certain jobs for our groups?
7. Planning for the future-Take a look at what we built, can you predict what our garden will look like in the future? What

Students will understand:

Third Grade	3-LS1 From Molecules to Organisms: Structures and Process	Life Cycles -birth - growth - reproduction -death	Observations in the Permaculture Garden of the full cycle of a plants or insects life cycles
	3-LS2 Ecosystems: Interactions, Energy, and Dynamics	Animals form groups that help members survive.	Comparing the “forest garden” nature of the Permaculture Garden to a forest ecosystem.
	3-ESS2 Earth's Systems	Weather patterns Climate	Data tables representing seasonal weather conditions
	3-ESS3 Earth and Human Activity	Weather hazards and solutions	Make a claim about the merit of a Permaculture design solution - evaluate different design solutions to reduce weather hazards and conditions.

Students will be able to (~NGSS science and engineering practices):

-Identify permaculture characteristics and be able to design a small garden.

Assessments of learning:

How are students going to show that they understand, know and can do the above things?

Consider NGSS PEs, formative assessments, summative assessments, and performance-based assessments.

- Science Journal
- Presentations of garden designs
- Presentation of final design and purpose of garden

Activities to support learning targets:

<p>Day 1-Define characteristics <i>What is permaculture? What is the difference between a regular food producing garden and a permaculture garden?</i></p> <ul style="list-style-type: none"> • Class Discussion about permaculture, the sheet mulching layers and why this type of garden is an example of a natural ecosystem. 	<p>Day 2-Human Benefits & Fieldtrip <i>How can humans benefit from using the permaculture concept?</i></p> <ul style="list-style-type: none"> • Travel to UU church permaculture garden and begin exploring an established permaculture garden. Touch, taste, and journal observations 	<p>Day 3- Design Exploration <i>What are some different examples of a permaculture garden? What plants would you like to include in our school's design?</i></p> <ul style="list-style-type: none"> • Looking at your school's area and deciding one what design might work best for your landscape. 	<p>Day 4- Start to design your garden <i>What would the pathways looks like? What plants would be planted near and away from each other? Are there other features that should be included in the design?</i></p> <ul style="list-style-type: none"> • Use Google Drawing as a way to start to design your garden.
<p>Day 5- Plotting the site and collecting the materials</p> <ul style="list-style-type: none"> • Materials would include cardboard with no staples or tape, straw, manure or compost and woodchips or bark mulch for top layer. If assembling in the fall, plants will be added in the spring. 	<p>Day 6- Build day-</p> <ul style="list-style-type: none"> • Use the sheet mulching layering method. 	<p>Day 7-Planning for the future</p> <ul style="list-style-type: none"> • Using your journal, record what the garden looks like now and make predictions of what it will look like in the future. Draw both pictures side by side as a comparison. 	

Supporting resources: (websites, book titles, videos, human resources, etc.)

Local Resources

The Woodstock Permaculture Group-Woodstock UU Church

The Four Winds Nature Institute

The Woodstock Inn-Kelly Way Gardens-Ben Pauly

Marsh-Billings-Rockefeller National Historical Park

Books

Falk, Ben. *The Resilient Farm and Homestead: An Innovative Permaculture and Whole Systems Design Approach*. White River Junction, VT: Chelsea Green Pub., 2013. Print.

Hemenway, Toby. *Gaia's Garden: A Guide to Home-scale Permaculture*. White River Junction, VT: Chelsea Green Pub., 2009. Print.

Websites (there are many other websites out there for learning about permaculture)

<http://permaculturenews.org/>

<https://permacultureprinciples.com>