

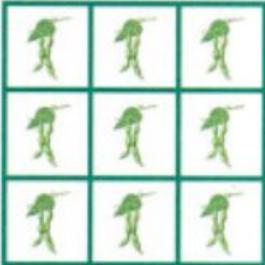
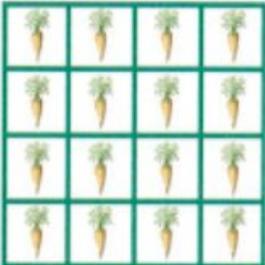
# Square Foot Gardening Resources

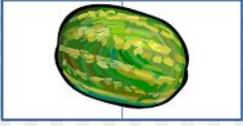
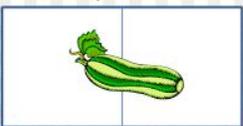
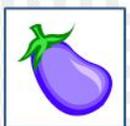
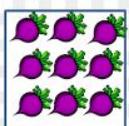
## What is a square foot garden?

A square or rectangular raised bed is ideal for a square foot garden. Science, math, and engineering are easily integrated when creating and designing a square foot garden with students. Square foot gardening is a simple method for planting seeds in a specific way in a raised bed garden within square foot sections.

Planting in a square foot garden has a specific method. There are many charts available, illustrating how many seeds should be planted in a 1 foot square. Seed packages will tell you how much space is needed for that particular plant.

Here are some visuals we have found:

PLANT SPACING			
<p><b>Extra Large</b> 1 Plant Placed 12 inches apart: Broccoli</p> 	<p><b>Large</b> 4 Plants Placed 6 inches apart: Leaf Lettuce</p> 	<p><b>Medium</b> 9 Plants Placed 4 inches apart: Bush Bean</p> 	<p><b>Small</b> 16 Plants Placed 3 inches apart: Carrot</p> 

<b>XL</b> 1 plant per 2 square feet	<b>L</b> 1 plant	<b>M</b> 4 plants	<b>S</b> 9 plants	<b>XS</b> 16 plants
Watermelon 	Tomato 	Lettuce 	Bush bean 	Radish 
Zucchini squash 	Eggplant 	Basil 	Beet 	Carrot 
Pumpkin 	Broccoli 	Marigold 	Spinach 	Onions 
Melon Winter squash Summer squash	Cabbage Cauliflower Cucumber Okra Pepper	Corn Parsley Potato Strawberry Turnip		

Here are some pictures of a rectangular square foot garden with 16 squared areas created at EcoLand. This was created by using 2 - 8 foot 2x4's along with 2 - 2 foot 2x4's.



## TEKS and PreK Guideline Alignment

### Science

<p><b>VI.B.1.</b> Child identifies and describes the characteristics of organisms.</p> <p><b>K.2A</b> Child asks questions about organisms, objects, and events observed in the natural world.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• describes color, size, and shape of organisms.</li> <li>• describes animal's' needs for food, water, air, and shelter or plants' needs for water, nutrients, air, and light.</li> <li>• uses the tools of science (hand lens and measurement tools) to observe and discuss plants and animals.</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• ask questions regarding plants and animals.</li> <li>• asks questions about seasonal changes in the neighborhood trees and organisms</li> </ul>
<p><b>VI.B.2.</b> Child describes life cycles of organisms.</p> <p><b>K.2B</b> Plan and conduct simple descriptive investigations such as ways objects move.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• plants seeds, then observes, discusses, and records plant growth.</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• plants seeds, then observes, discusses, and records plant growth.</li> <li>• investigates as plants grows towards the sunlight.</li> </ul>
<p><b>VI.B.3.</b> Child recognizes, observes, and discusses the relationship of organisms to their environments.</p> <p><b>K.9B</b> Examine evidence that living organisms have basic needs such as food, water, and shelter for animals, and air, water, nutrients, sunlight, and space for plants.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• discusses how animals and humans depend on plants (birds eat seeds, cows eat grass, humans eat vegetables).</li> <li>• observes, discusses, and records living organism (spiders, insects, worms, snails, birds) in their natural environments to learn about their habits.</li> <li>• observes, discusses, and records seasonal changes in the neighborhood trees and organisms</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• discusses how animals and humans depend on plants (birds eat seeds, cows eat grass, humans eat vegetables).</li> <li>• observes, discusses, and records living organism (spiders, insects, worms, snails, birds) in their natural environments to learn about their habits.</li> <li>• observes, discusses, and records seasonal changes in the neighborhood trees and organisms</li> </ul>
<p><b>VI.C.1.</b> Child identifies, compares, discusses earth materials, and their properties and uses.</p> <p><b>K.7C</b> Child gives examples of ways rocks, soil, and water are useful.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• observes, discusses, and compares earth materials (rocks, soil, and sand) using hand lenses, sieves, water, and balances.</li> <li>• identifies the importance of soil, sunlight, air, and water to plant growth.</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• identifies the importance of soil, sunlight, air, and water to plant growth.</li> </ul>

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*Below are a few ideas for life, physical, and earth science activities in the classroom garden. Please scaffold these ideas to the age appropriateness of your students.*

### Life Science

- What are the differences between living and nonliving things? How are humans like plants? How are they different? Distinguish and describe differences and similarities.
- How does a plant grow? Observe the life cycles of plants using fast-growing plants in your classroom.
- What do plants need to grow? Do all plants need the same things? Study the various conditions that different plants need to grow. Compare the things people need to the things plants need. Create experiments investigating what happens when plants are exposed to different amounts of light, water, air, space, and nutrients.
- How do plants reproduce? How do seeds work? Dissect flowers and seeds. What factors influence germination of seeds? Create experiments to investigate how light, heat, and moisture affect germination.
- Discuss how plants adapt for survival. Research adaptations of seeds for dispersal and adaptations of flowers for attracting pollinators. Observe pollinators in the garden.
- Investigate the impact of environmental changes on plants.
- Study wildlife and insects along with their habitats.
- Investigate food chains and webs. Demonstrate how plants are the primary source of energy for all food chains.

### Earth Science

- Create a garden weather station. Record daily measurements and compare conditions with plant growth.
- How are some soils different from others? Compare and contrast the properties of different types of soils (density, air spaces, presence of living organisms, composition, texture, smell, appearance).
- Simulate soil erosion in your classroom garden. Observe the difference in soil loss when water is splashed on a tilted, planted pot, and on a tilted, unplanted (but soil-filled) pot.

### Physical Science

- Simulate the water cycle in the indoor garden by covering it with a “dome” of clear plastic. Study and observe the transpiration, evaporation, and condensation of water.
- What are the properties of different types of light? Cover pots with cellophane of different colors to screen out all but one wavelength of light from plants. Observe plant growth.

## Math

<p><b>V.A.1.</b> Child knows that objects, or parts of an object, can be counted.</p> <p><b>K.2C</b> Count a set of objects up to at least 20 and demonstrate that the last number said tells the number of objects in the set regardless of their arrangement or order.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• places objects to be counted in a row and begins counting.</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• counts natural numbers, increasing by increments of 1.</li> <li>• correctly orders number words.</li> <li>• demonstrates an understanding of 1 to 1 correspondence.</li> </ul>
<p><b>V.A.8.</b> Child verbally identifies, without counting, the number of objects from 1 to 5.</p> <p><b>K.2E</b> Generate a set using concrete and pictorial models that represents a number that is more than, less than, and equal to a given number up to 20.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• looks at a set of 1–5 objects and quickly says the number of objects without counting (looks at 3 red cubes on the table and says three without counting).</li> <li>• looks at two separate groups of objects without counting and says which group has more, less, or equal numbers.</li> <li>• uses the words “equal,” “more,” “less,” or “fewer” to describe sets of up to 5 objects.</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• uses concrete models to represent numbers with pictures and models.</li> <li>• uses comparative language to describe the relationship between concrete models/ pictures.</li> <li>• represents known numbers with pictures and models.</li> </ul>
<p><b>V.D.1.</b> Child recognizes and compares heights or lengths of people or objects.</p> <p><b>K.2G</b> Compare sets of objects up to at least 20 in each set using comparative language.</p>	<p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• places 2–10 objects from shortest to tallest or tallest to shortest on the table.</li> <li>• uses measurement words that can describe height (“taller,” “shorter,” “longer,” “smaller”).</li> </ul> <p><b>The child:</b></p> <ul style="list-style-type: none"> <li>• uses concrete models, pictures or oral representation to compare numbers 0-20 using terms such as greater than, less than and equal to.</li> <li>• understands that a set of objects does not change value when rearranged.</li> <li>• understands that the last number counted is the value of a set of objects.</li> </ul>

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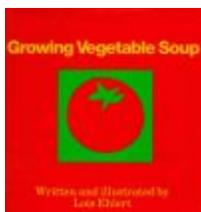
Below are a few ideas for math activities in the classroom garden. Please scaffold these ideas to the age appropriateness of your students.

- Measure the growth rates of plants and display results on different types of graphs. Make predictions regarding future growth. Use standard and nonstandard units of measurement.
- Host a bean race. Plant a number of beans at the base of a trellis and track their growth on a chart. Determine the rate of growth and award the fastest plant a blue ribbon.
- Using information from seed catalogs, predict dates of germination and maturity.
- Plan backward from a desired harvest date to determine when each crop should be planted.
- Measure your garden parameters and calculate the area. Use graph paper to make a map to scale of your garden.
- Chart temperatures of the air and soil in your garden in Fahrenheit and centigrade.
- Determine the weight and volume of soil mix when wet and dry. Determine the volume of soil in a rectangular window box.
- Investigate vegetable prices in a supermarket. Track the amount of produce harvested in your garden and use the market prices to determine the value of your harvest.
- Count the number of seeds planted and the number of seeds that sprout and calculate the germination rate.
- Measure the height of a group of plants and determine the mean, median, and mode.
- Calculate serving sizes of different fruits and vegetables using common cooking supplies.
- Make a recipe that uses fruits and vegetables from the garden and requires various measuring techniques.

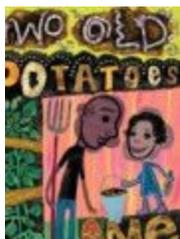
## Additional Resources

- <http://squarefootgardening.org/> - this is full of great starter ideas!
- [http://www.csgn.org/sites/csgn.org/files/CSGN\\_book\\_0.pdf](http://www.csgn.org/sites/csgn.org/files/CSGN_book_0.pdf) - Wonderful document!! Gardens For Learning: Linking Gardens to School Curriculum is the resources cited above. This document gives in depth cross-curricular ties, justifications for creating, and planting, maintaining, and sustaining your garden.
- [http://www.slideshare.net/WayneHBurleson/african-gardening-for-life-power-point-small-file-pdf-format?qid=639cc947-ff00-405f-8d05-e378b410e047&v=&b=&from\\_search=5](http://www.slideshare.net/WayneHBurleson/african-gardening-for-life-power-point-small-file-pdf-format?qid=639cc947-ff00-405f-8d05-e378b410e047&v=&b=&from_search=5) -This is a powerpoint full of square foot gardening ideas from around the world. If you need help encouraging community volunteers just show them this powerpoint!

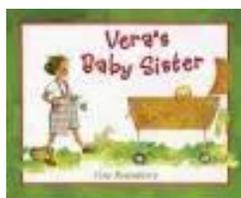
## Sample Children's Literature



**Growing Vegetable Soup** by Lois Ehlert. Describes the steps involved in growing vegetables and making vegetable soup (recipe included). This book fills a niche; it is a good book for getting very young kids excited about growing vegetables.



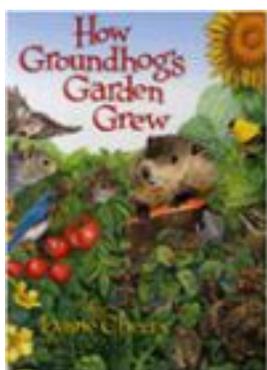
**Two Old Potatoes and Me** by John Coy and Carolyn Fisher. A satisfying story about a girl and dad who try growing potatoes for the first time. *Two Old Potatoes and Me* is nicely paced with graphic, playful illustrations.



**Vera's Baby Sister** by Vera Rosenberry. A wonderful story about a girl, Vera, whose house is filled with noise when her baby sister arrives. Vera's grandpa helps Vera plant a bean tent, which serves as a quiet space where Vera can go to be alone. *Vera's Baby Sister* realistically describes the feelings that can accompany the arrival of a new sibling and has a sweet ending.



**Garbage Helps Our Garden Grow: A Compost Story** by Linda Glaser and Shelley Rotner. A clear introduction to composting, with photographs of kids gardening. Pair this with *Compost Stew* by Mary McKenna Siddals and Ashley Wolff, an upbeat rhyming book that lists everything that can be composted.



**How Groundhog's Garden Grew** by Lynne Cherry. When Little Squirrel discovers Groundhog eating veggies from a neighbor's garden, he decides to teach Groundhog to grow his own vegetable garden. Lynn Cherry has incorporated a ridiculous amount of information about how to garden into this story. If you are looking for one book to read to your kids before planting your own vegetable garden, this is an excellent choice. Lovely illustrations.

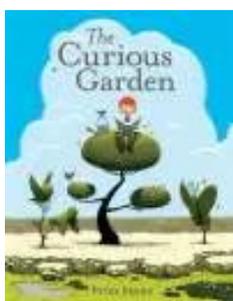


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**Flower Garden** by Eve Bunting and Kathryn Hewitt. A rhyme about young girl who surprises her mother by planting flowers in a flower box. A great book to share with young children and city dwellers.



**Planting a Rainbow** by Lois Ehlert. A fantastic concept book that describes a child and mother planting a flower garden and introduces kids to flowers and colors. *Zinnia's Flower Garden* by Monica Wellington is another charming story to introduce slightly older kids to flower gardening.



**The Curious Garden** by Peter Brown. A magical story about a young boy who discovers a patch of wildflowers growing on an abandoned railway. When the boy cares for the wildflowers, they begin to thrive and transform the city. Peter Brown has imagined and created an extraordinary green city that my children are delighted to visit. For another whimsical story about gardening, see *My Garden* by Kevin Henkes.