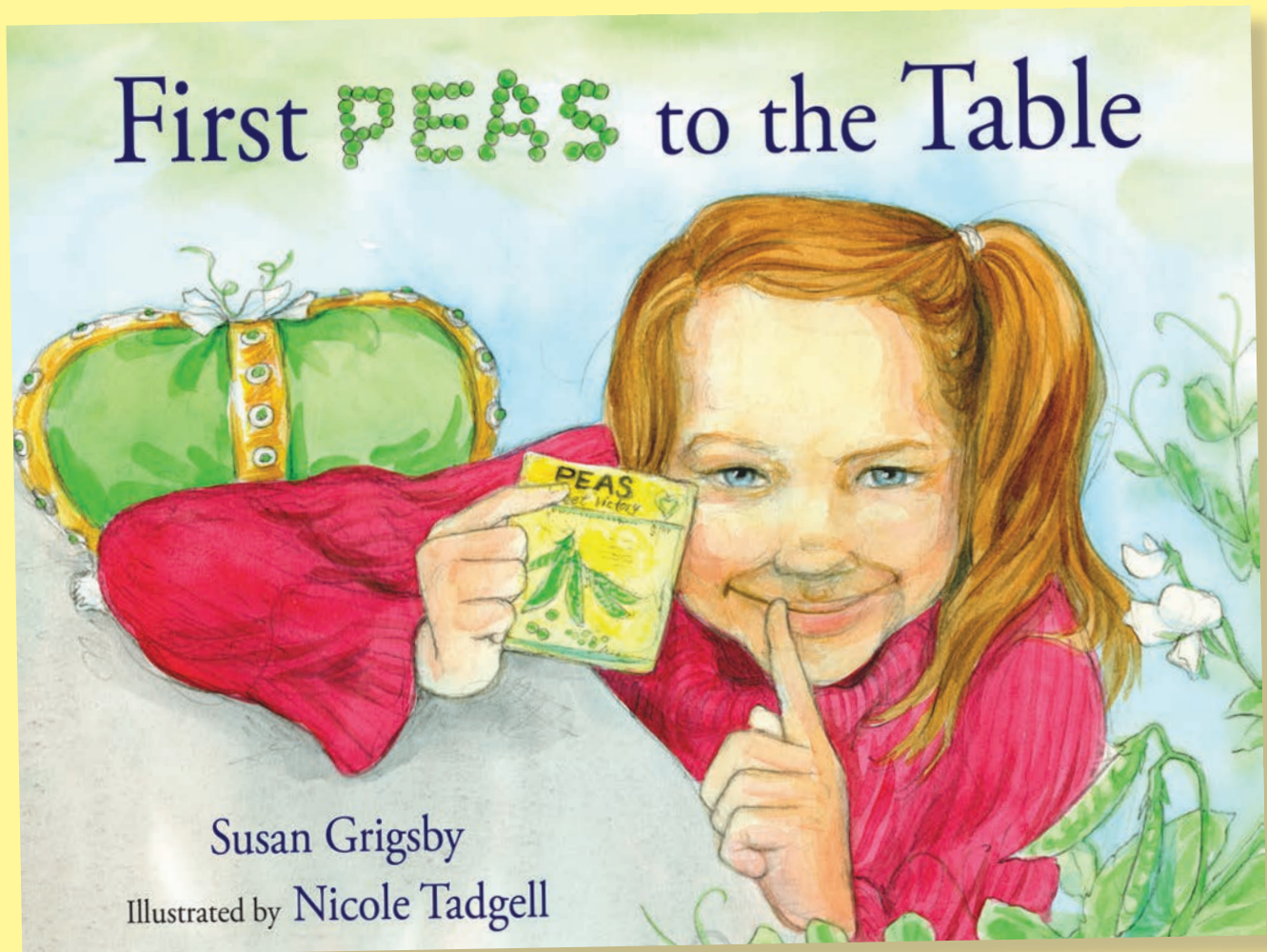


A Teacher's Guide for  
First Peas to the Table:  
How Thomas Jefferson Inspired a School Garden



Guide written by Susan Grigsby  
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# How Did Shakayla Win the Contest?

## The First Peas to the Table Discussion Questions: Critical Thinking; Forming and Testing a Hypothesis

In the story, Shakayla wins the contest. Discuss the questions below with the class to hypothesize how she might have won.



1. Maya's first group of successful pea plants was planted on March first. What is the earliest date on which Shakayla's peas could have been planted? (Hint: On what day did the students receive their seeds?)
2. Can you write a mathematical sentence to determine how much older Shakayla's plants could have been compared to Maya's? What is the answer?
3. Why did the first group of seeds that Maya planted fail?
4. Maya kept Jefferson's note about soaking the pea seeds a "secret." Do you think that Shakayla may have also read about that idea? Where might she have found the information?
5. Thomas Jefferson would test many different varieties of the same plant to determine things like which ones grew fastest, tasted best, and yielded the most food. Different varieties of a plant can grow at different rates. How many varieties did Maya plant? How many varieties did Shakayla plant? Do you think that some of the pea varieties could have grown faster than others? Can you look at some seed packets (or seed sites on the internet) to investigate this further?
6. What kind of books does Maya see Shakayla carrying home? Why do you think she was reading them?
7. What factors do you think might have helped Shakayla to win the contest? Think beyond the story in the book to come up with additional answers. Make a class list, noting which are supported by clues in the book and which are based on individuals' knowledge of plants' needs.
8. Ask the class to use the list (#7) and form some hypotheses that they could test in the classroom or school garden. Discuss how to set up the experiments and record the data. Then let students test their ideas.

*National Science Education Standards: Science as Inquiry A1 & A2; C1 Characteristics of Organisms; C3 Organisms and Environments*

*Bloom's Taxonomy: Critical Thinking Questioning Strategies*

*Common Core State Standards / Mathematics: Describing situations and solving problems with addition and subtraction; representing and interpreting data.*

# Word Detectives

Using the story text and illustrations for clues, match each word below to its meaning.

- |                      |   |
|----------------------|---|
| 1. emerald (p 6)     | A. a soft, wet, pulpy mass  |
| 2. agriculture (p 6) | B. the act of winning a game, contest, or battle                      |
| 3. science lab (p 7) | C. a toy that spins around, like a pinwheel                           |
| 4. victory (p10)     | D. a framework of light wood or metal used to support climbing plants |
| 5. mush (p 13)       | E. to move and replant a plant in a new place                         |
| 6. transplant (p 18) | F. a place where scientific experiments and research are done         |
| 7. whirligig (p 18)  | G. a bright green precious stone                                      |
| 8. trellis (p 19)    | H. the gathering of a plant that one grows for food                   |
| 9. harvest (27)      | I. the science or practice of farming                                 |

Answer Key: 1-G; 2-I; 3-F; 4-B; 5-A; 6-E; 7-C; 8-D; 9-H

*Standards for English Language Arts and Literacy: Vocabulary Acquisition K-5*



## Feed the Soil ... Feed the Plants .... Feed the Planet

Thomas Jefferson knew that healthy soil yielded healthy plants, resistant to insects and disease. One way to improve the soil is to add composted yard and plant food waste. Experiment in the classroom or school garden by planting seeds in different proportions of garden soil mixed with compost, employing the scientific method of testing a hypothesis through experimentation. Incorporate math concepts of measurement and presentation of data.

### **Another way to feed plants is by giving them compost tea:**

Fill a container with one part aged compost to four parts water. Allow this to sit uncovered for six to seven days, stirring occasionally. Then strain off the liquid and use it to water your plants. An old sock or stocking can serve as a strainer. Alternatively, a sock makes a great “tea bag” – which avoids having to strain the tea at all! After you’ve poured off the liquid, return the compost to the garden bed or compost bin. Consider comparing the growth of a plant given compost tea to one given plain water and record the results. You could also try experimenting with different strengths of compost tea.

*National Science Education Standards: Science as Inquiry A1 & A2; C1 Characteristics of Organisms; C3 Organisms and Environments*





# FRUIT OR VEGETABLE?



Most people consider vegetables to be savory plants and call sweet plants fruits. But in botany, a fruit is defined as a plant that grows from a flower and contains seeds in the portion of the plant that is eaten, such as tomatoes and cucumbers. Thomas Jefferson divided his garden into sections for roots, fruits, and leaves. We also eat stems (celery), bulbs (onions), flowers (broccoli), tubers (potatoes), and seeds (peas)!

Where would Thomas Jefferson have placed the plants listed below? To help the students answer this question, consider bringing in some fresh produce for your students to cut open, examine, and taste.

*National Science Education Standards: C1 Characteristics of Organisms*

Draw a line connecting the name of each plant noted below to the section where Thomas Jefferson would have planted it or draw a picture of each plant in the box that it would go in.

Carrots  
Cabbage

Lettuce  
Radishes

Cucumbers  
Spinach

Peppers  
Tomatoes

Beets

Roots

Fruits

Leaves

# Do a Pea Blossom Dance

When Maya sees her plant's first blossom she does a pea blossom dance. Can you create a dance for the whole life cycle of a pea? Look at the picture from Maya's journal (page 8) to get ideas. Start with a small seed beneath the soil. Sprout open and stretch towards the sun. Open your leaves like a little seedling, then grow and vine around a pole. Blossom and dance in the breeze. As the petals drift away, a pod appears. Let the pod ripen on the vine. What will happen to the seeds when the pod dries? What type of music might you choose to go with your dance?



At the Plantscfe website, in Module 8's media gallery, you can view some great photos depicting the pea life cycle: <http://www.plantscfe.net/en/food/module8.htm>.

*National Science Education Standards: C2 Life Cycles of Organisms; Creative Expressions: Creation/Invention of Dance Movements*

# What's on Your Nickel?

From 1938-2003, Thomas Jefferson was on the front of the nickel and Monticello was on the back. In 2006, the U.S. issued a new nickel with a forward facing Jefferson on the front. Explore the history of money with your students. Ask them to design a coin and to write a paragraph explaining their choices. Some useful sites are: <http://www.kids.gov> (click on "grades K-5", then "Money"); <http://www.usmint.gov/kids>; and the online collections of both the American Numismatic Association (<http://www.money.org>) and The National Numismatic Collection of the Smithsonian Institute.



**Student Instructions:** Putting someone on a coin is a way to honor them. Design your own coin and select someone to put on the front. Create a scale for your drawing to indicate the actual size of the coin. What will you put on the back of your coin and why? What symbols will you use on the coin? How much will the coin be worth and why did you choose that amount? What will the coin be made of? Write a persuasive letter to the U.S. Mint explaining your choices.

*Council for Economic Education: Standard 11 : Money and Inflation*

# Invention Convention

Thomas Jefferson is famous for many accomplishments including creating several inventions. He also enjoyed using other people's new inventions, often providing the inventors with feedback on how their inventions might be improved.



Inventions by Thomas Jefferson include a Moldboard Plow and a Wheel Cipher for sending secret coded messages. His inventions can be explored at this University of Virginia site:

[http://cti.itc.virginia.edu/~meg3c/classes/tcc313/200Rprojs/jefferson\\_invent/invent.html](http://cti.itc.virginia.edu/~meg3c/classes/tcc313/200Rprojs/jefferson_invent/invent.html).

The reason we are able to read so many of Jefferson's letters is that he made duplicates of them using an invention by John Isaac Hawkins called a polygraph machine. Learn more about it at the Monticello site:

<http://www.monticello.org:8081/site/house-and-gardens/polygraph>.

Explore inventors: [http://www.invent.org/hall\\_of\\_fame/1\\_4\\_0\\_channels.asp](http://www.invent.org/hall_of_fame/1_4_0_channels.asp)

Invent: The Ad Council has partnered with the United States Patent and Trademark Office and The National Inventors Hall of Fame Foundation to launch a national PSA campaign: <http://www.inventnow.org/>.

Design a climbing plant trellis: Plants such as peas, cucumbers, and scarlet runner beans do best with a support structure to vine up. Look at the different types of trellises that Maya and Shakayla created. Some people use pruned tree branches as trellises. What will you use?

*National Center for History in the Schools, Standard 8: Major Discoveries in Science and Technology*

## Who's been Nibbling in the Garden?

Children aren't the only ones that enjoy eating fresh garden plants. Slugs, birds, beetles, and squirrels, opossum, mice, raccoons, and rabbits are all common visitors. Inspect your garden area to determine likely nibblers.

Using gardening books or the internet, search out ways to deter these hungry nibblers. Motion, noise, and human-like (scarecrows) or snake-like items may scare some garden thieves away. Consider releasing ladybugs or making an organic spray.

Where do the offending creatures fall in your garden food chain or web? Provide your students with the opportunity to research, experiment, and solve the problem of uninvited guests. How will they measure their success? Also, ask them to consider the importance of a balanced ecosystem and the benefits of certain visitors. How might they encourage helpful garden creatures, such as butterflies and bees, to visit the garden?

*National Science Education Standards: Science as Inquiry A1 & A2; C1 Characteristics of Organisms; C3 Organisms and Environments*

## Creative Writing: The Creature's Point of View

Ask your students to each research a creature that might live in your local gardening habitat. Then ask them to imagine, based upon the facts they know, what that creature sees, smells, tastes, hears, touches, and feels. Read together Alice Schertle's poem Invitation from a Mole from her book "A Lovely Thing." The poem, as well as an interview with Ms. Schertle, can be read at this site:

<http://missrumphiuseffect.blogspot.com/2010/04/poetry-makers-alice-schertle.html>.

Ask the students to write a poem in their creature's voice which shows what they experience with their five senses in their habitat.

*The English Language Arts Standards in Reading, Writing, and Research*

## Tongue Twisters – Alliteration in Action

Tongue twisters are created by using alliteration – the repetition of consonant sounds that occur at the beginning of words or in stressed syllables (Peter Piper picked a peck of pickled peppers). Ask the students to find and read aloud the names that Maya chose for her plants. They are noted in the illustrations on pages 15 and 24. What do they notice about the names? Why do they think she chose them?



Ask each child to choose a plant they'd like to grow whose name begins with a consonant. Using that consonant, ask them to divide their paper into three columns and label the columns: Nouns, Action Verbs, and Adjectives. In each column, they should list five or more words that match with that part of speech and begin with the letter they've chosen. If they're stuck, this is a great opportunity to search the dictionary for word treasures. Next, ask them to draw lines connecting some of the most interesting words and to then create a tongue twister. Explain that they may need to add some connecting words so that their sentence makes sense. Let each child say their sentence fast 3 times and challenge the class to repeat, in unison.

Here are some examples:

**I promised Polly, Poppy, and Peace a place in my pea patch.**

**Pretty pearls of peas popped from the pod.**

**Lovely lacey lettuce leaves leaped up from the land.**

## Learn More about Peas – from Pretty Flowers to Tasty Treats!

To learn more about Peas and find fun activities and recipes visit the Food Based Module: Peas on the North Bay Children's Center Garden of Eatin' website page: <http://www.nbcc.net/garden-of-eatin/early-ed>.

Visit the Obama Foodorama blog to read the garden pea recipe cooked at First Lady Michelle Obama's White House Kitchen Garden picnic: <http://obamafoodorama.blogspot.com/2009/06/recipes-for-white-house-kitchen-garden.html>.

Visit the White House Organic Farm Project website to learn about the White House Kitchen Garden and the Thomas Jefferson Bed planted there: <http://www.thewhofarm.org/faq/>.





# Learn More about Thomas Jefferson and Read his Garden Journal

To learn more about Thomas Jefferson, visit the Thomas Jefferson Foundation's website at:  
<http://www.monticello.org>.

You can read from Jefferson's actual Garden Book: photographed images are on the Massachusetts Historical Society's website at:  
<http://www.masshist.org/thomasjeffersonpapers/garden>.





**Word Detectives:** page 3 of educator's guide

Directions: 1) copy 1 copy of terms for each student or several sets for students to work in groups or at stations 2) Cut apart (optional: laminate. 3) students can match vocabulary term with definition. 4) to further lesson ask students to use the term in a sentence or to write their own story using the terms correctly.

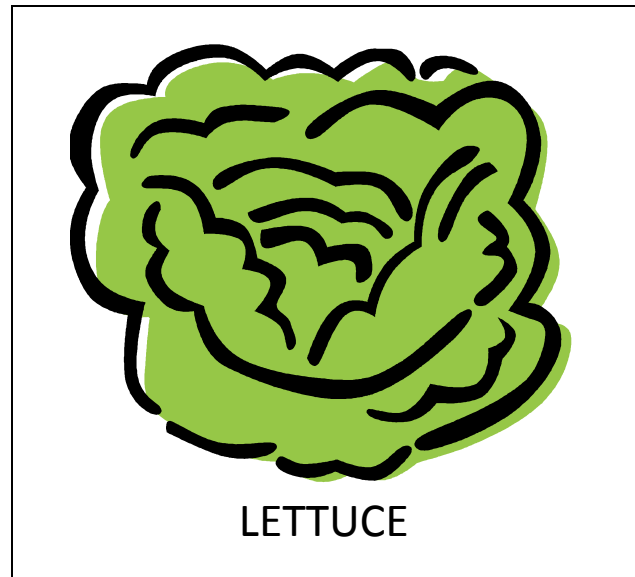
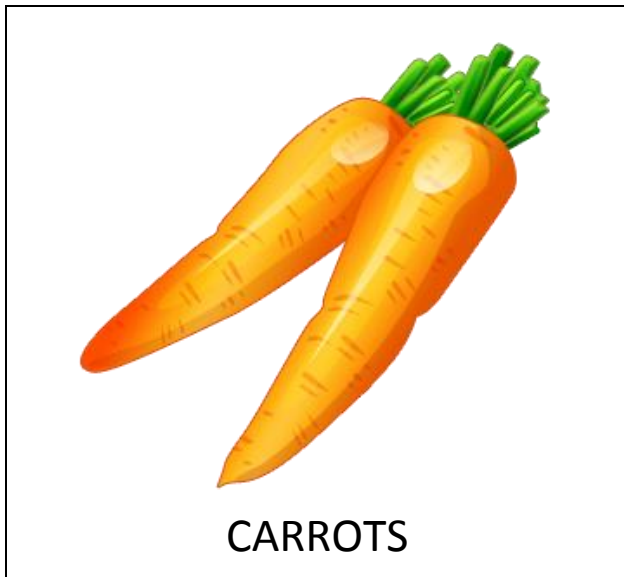
Emerald	A soft, wet, pulpy mass
Agriculture	The act of winning a game, contest or battle
Science lab	A toy that spins around, like a pinwheel
Victory	A framework of light wood or metal used to support climbing plants
Mush	To move and replant a plant in a new place
Transplant	A place where scientific experiments and research are done



Whirligig	A bright green precious stone
Trellis	The gathering of a plant that one grows for food
Harvest	The science or practice of farming

**Fruit or Vegetable?** Page 4 of educator's guide

Directions: 1) of the following 5 pages copy or print one copy per student or create sets for students to work in small groups or at stations. 2) Cut apart (optional: laminate) 3) students can match the image to the type of fruit or vegetable

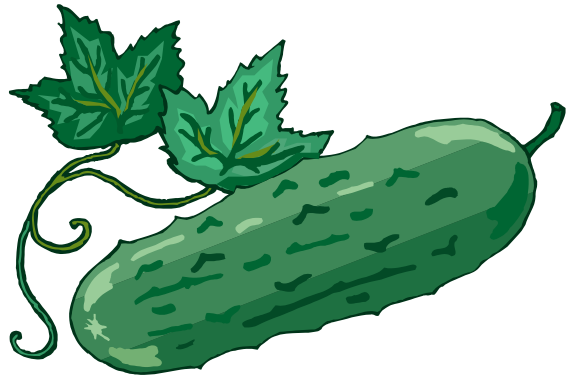








CABBAGE



CUCUMBERS



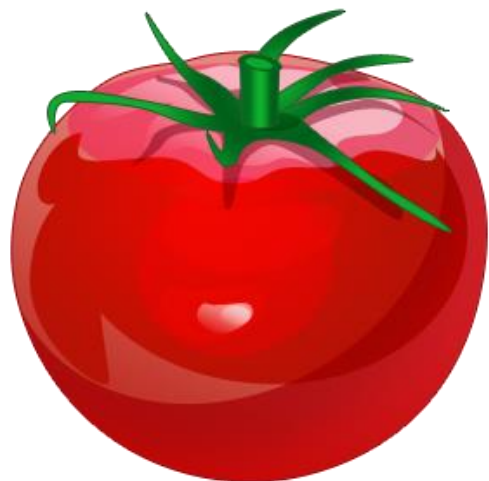
PEPPERS



RADISHES



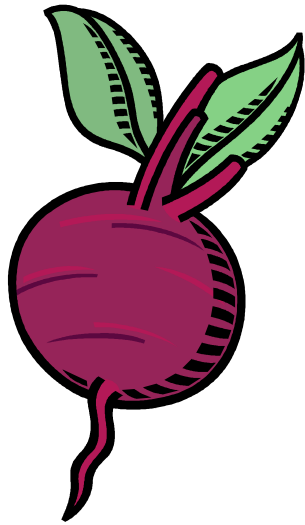
SPINACH



TOMATOES



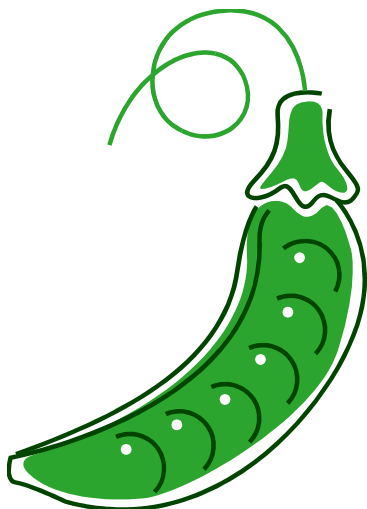




BEETS



CELERY



PEAS

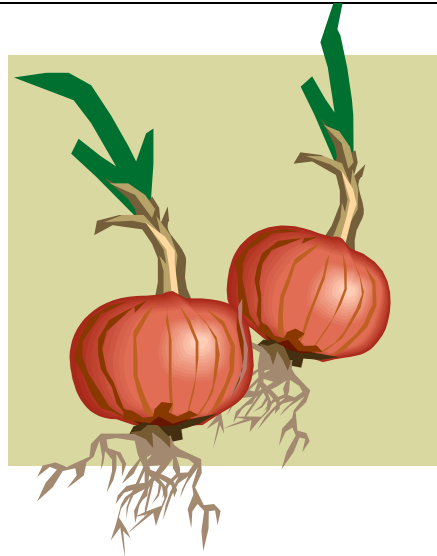


POTATOES





BROCCOLI



ONION

**ROOTS**

**FRUITS**

**LEAVES**





**STEMS**

**SEEDS**

**TUBERS**

**FLOWERS**

**BULBS**





**Tongue Twists – Alliteration in action:** p 7 of educator’s guide.

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