Edible Schoolyard NYC Garden Curriculum

Fifth Grade

Biodiversity Game (September)*: Students play a game examining the benefits of biodiversity.

Herbs (October): Students learn about the history and uses of herbs and preserve herbs from our garden.

Who Grew Your Lunch (November)*: Students will read narratives to learn more about the farmers and workers who grow our food.

Amaranth (November): Students learn about the importance of staple crops, then harvest and prepare amaranth, an Aztec staple.

Food Waste (December)*: Students will have a discussion introducing the problem of food waste, and then play a game that breaks down why food waste is happening at each step in the supply chain.

Earth Heroes (December)*: Students read profiles of famous environmental leaders.

5th Grade Project Introduction (January)*: Students select what to plant for the meal at their celebration.

Square Foot Gardening (February)*: Students plan their garden beds using square foot gardening methods.

5th Grade Project 3 (March)*: Students plant, using their planting plans, and begin working on culminating projects.

5th Grade Project 4 (April)*: Students care for their plants and finish culminating projects.

5th Grade Celebration (May)*: Students harvest and prepare food as part of their Celebration.

Pesto Party (June)*: Students make and eat pesto from garden to celebrate graduation.

* Part of current scope & sequence at Edible Schoolyard NYC at P.S. 216

Biodiversity Game

Aim
Students will understand that our society and our plants species are stronger because of our differences. Students will understand the specific benefits diversity gives to the garden and to the ecosystem as a whole.

Summary
Students go on a scavenger hunt re-enforcing the biodiversity of the garden and play a game to demonstrate how diversity is beneficial to plants.

Standards
CCSS: ELA, Grade 5, SL 1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts,* building on others' ideas and expressing their own clearly.

NYS: Science, LA 6.1: Describe how plants and animals, including humans, depend on each other and the nonliving environment.

NYS: Social Studies, 1.1a: Know the roots of American culture, its development from many different traditions, and the ways many people from a variety of groups and backgrounds played a role in creating it.

Materials
- Dry erase board and markers
- Worm sign
- Yellow corn seeds or necklaces
- Multi-colored corn seeds or necklaces
- Biodiversity Scavenger Hunt worksheet
- Seasonal tasting
- Diversity Bingo (optional)

Vocabulary
- biodiversity
- diversity
- companion planting
- monoculture

Procedure: Day One

Opening Circle (10 minutes)

- *Welcome back to the garden! This is one of the most exciting times in our garden. It's a time when you can see all of the diversity it has to offer.*
- Write up the word "diversity" on the board. Ask students to define the word. *This is a very diverse school and very diverse city. There are different languages, different holidays, different foods. This diversity makes us more interesting! We're going to learn all about diversity today.*

Inquiry Activity One (30 minutes)

- *We are going to now learn about the biodiversity of our garden. What does biodiversity mean? "Bio" means "life," so biodiversity relates to the diversity of life in our garden. We're going to play a game to learn about how biodiversity helps us in the garden.*
- Hand out corn necklaces or yellow corn seeds to each student. Give one student a worm sign to wear.
- Tell students that the person wearing the worm sign is a corn worm who eats yellow corn, and everyone else is the same variety of yellow corn. The corn worm will sing a song to choose the corn that it eats: *I am the corn worm! I'm gonna eat you!* If the corn is touched by the worm, they die a quick corn death (represented by students sitting down). At the end of the round, ask students how quickly the corn crop was wiped out
- Collect the yellow corn and pass out multi-colored corn—this time they are a field of mixed corn varieties. This time, when they are touched by the corn worm, they will survive if they have white or red corn. Only the yellow corn will die. Have students predict how this round will be different.
- Play the game and time how long it takes the worm to infect the yellow corn. How many corn plants are left standing?
- Ask students if you were a farmer, which scenario would you choose? Would you grow one variety of corn or several? Why?
- Have students brainstorm other ways biodiversity helps us: more new foods for us to try; growing more plants means we have different nutrients in our food; different foods have different growing seasons, etc.

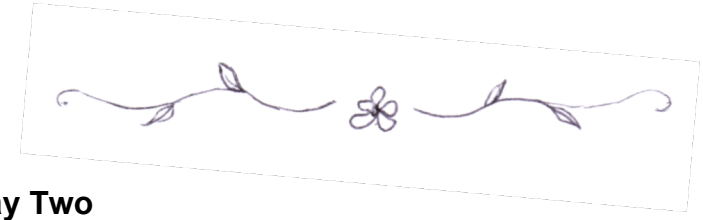
Inquiry Activity Two (15 minutes)

- Hand out Biodiversity Scavenger Hunt worksheets, and model with students how to fill out the worksheet. Students should write and draw the plants that they see that match the various qualifications: a plant that is taller than you, a plant with an interesting texture, etc.
- Send students out in the garden to observe the biodiversity of the garden.

Closing Circle (10 minutes)

- Review students' responses on the scavenger hunt, and highlight the biodiversity that they noted, recapping the benefits of biodiversity.
- Taste a few varieties of the same plant (watermelon radish, green meat radish, Easter egg radish, etc.)—to taste to biodiversity.

- Point out that diversity is important in what we eat as well.



Procedure: Day Two

Opening Circle (10 minutes)

- *Who can remind me what "biodiversity" means?*
- *As we do our garden work today, keep an eye out for diversity in our garden.*

Garden Job (30 minutes)

- If possible, lead a garden job in which students are planting or caring for multiple varieties of plants.

Optional Inquiry Activity:

- Hand out biodiversity bingo and have students find people in the class who match each square, writing their names in the appropriate squares.

Closing Circle (10 minutes)

- *What are some examples of diversity you saw in the garden today?*

Common Core State Standard Extensions

ELA, Grade 5, W 3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive detail, and clear event sequences.

- Students write a recap of the classroom corn worm activity, explaining what happened with and without biodiversity. This account can be fictional—written from the point of view of a farmer, the point of view of the worm, or the point of view of the corn. Or, it can be non-fiction, simply explaining the sequence of events with and without biodiversity.

Other Extensions

- Math: Interview classmates and schoolmates to get a sense of diversity in the school. Tabulate the number of languages spoken, countries of origin religions, etc. and represent this as a table.
- Discuss the two metaphors that have been using for America's diversity: melting pot and mixed salad. Have students write an explanation of each, then pick the one they find more apt. Or, create a new metaphor they think works better.

Find someone who speaks Urdu. Name:	Find someone who has blue eyes. Name:	Find someone who has a sister. Name:	Find someone who celebrates Eid. Name:	Find someone who has a brother. Name:
Find someone who celebrates Easter. Name:	Find a Giants fan. Name:	Find someone who speaks Russian. Name:	Find someone who has more than two sisters or brothers. Name:	Find someone who celebrates Chinese New Year. Name:
Finds someone who speaks Arabic. Name:	Find someone who celebrates Passover. Name:	Find someone who listens to Pit Bull. Name:	Find someone who has brown eyes. Name:	Find someone who plays basketball. Name:
Find someone who eats pizza. Name:	Find someone who watches "iCarly." Name:	Find someone who eats salad. Name:	Find someone who eats a food you've never tried. Name: Food:	Find someone who does not eat pork. Name:
Find someone who is a Yankees fan: Name:	Find someone who listens to Lady Gaga. Name:	Find someone who is a Mets fan: Name:	Find someone who watches "Star Wars." Name:	Find someone who is wearing red. Name:

November 5th Grade

BIODIVERSITY HUNT

Name: _____

Find as many examples as you can of the following things in the garden. Draw and describe each thing that you find. Remember, the more diversity you find, the better!

Animals

Bugs + Insects

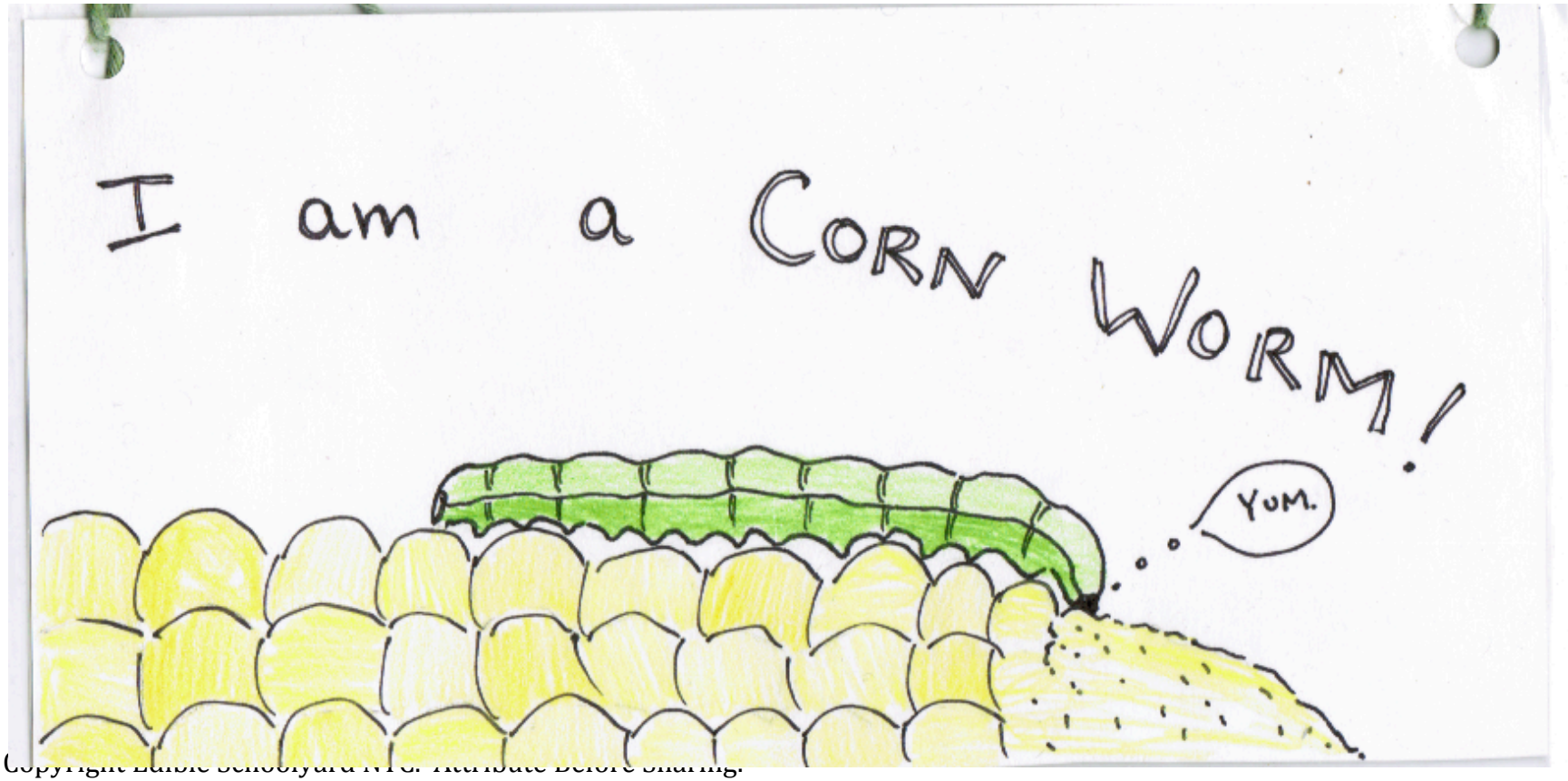
Fruits

Vegetables

Rocks + Soil

Flowers

Grasses



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Herbs

Aim
Students will learn what makes herbs different from other plants and will learn different uses of herbs – culinary, medicinal, etc.

Summary
Students read about the history, botany and function of herbs and use dried herbs from the garden to make teas and bundles.

Standards
CCSS: ELA, Grade 5, RI 1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

NYS: Social Studies, 2.1c: Study about different world cultures and civilizations focusing on their accomplishments, contributions, values, beliefs and traditions.

Materials

- Dry erase board and markers
- Harvested dry herbs
- Empty tea bags
- Burlap or cloth, cut into squares
- Twine or ribbon
- Colored pencils or crayons
- Labels
- Mint-flavored stomach remedy (such as Tums) for demonstration
- History of Herbs handout
- Herbal Field Guide
- Tea tasting

Vocabulary

- herbs
- fragrant
- medicinal

Procedure: Day One

Opening Circle (10 minutes)

- Have students pass sprigs of different dried herbs to smell and/or taste
- Tell students the names of the herbs they have been smelling. *Have you ever heard of these herbs before? What have you used them for? Are you familiar with any other herbs? Why do you think people add herbs to food? Can you think of some other uses for herbs?*
- Write the definition of herb on the board: plants with a strong smell and/or a strong taste, traditionally used for seasoning or medicine.

Inquiry Activity One (15 minutes)

- *Before people had medicines from the drugstore, they used herbs to treat all kinds of problems.*
- Distribute "History of Herbs" reading. *In fact, people have been using herbs as medicine for thousands of years. See if you can tell from this reading what herbs we still use today.* Give students a minute to read. *Now turn and talk with your partner about one treatment that surprised you and one treatment that we still use today.* Help them get in pairs and talk.
- After they have talked for a minute, take their answers.
- Pass around mint-flavored stomach drug and let the students look at them. *Can anyone tell the herbs that are in these medicines from the drugstore? Yes, it has mint in it because mint soothes people's stomachs. Mint is one of the herbs we will use today to make tea.*
- *But herbs are also used because we like the way they smell and taste. Today we're going to use herbs that we harvested in the fall to make some products that you can take home and give as gifts. Some of you will be creating bundles of herbs for cooking. Others of you will be using herbs to make tea bags. And all of you will have a chance to make and decorate a label for your bundle or your tea bag.*
- *You might notice that the herbs we are using look a little different from the way they looked when they were growing in the garden.* (Hold up an example). *Can anyone tell what we have done to this herb? Does anyone know why we dry herbs? Drying food is one way to preserve them, something that we need to do in the winter as food from the garden is no longer available.*
- *For this activity, you are going to be artists and experts. As artists, you will decorate your tea packets or culinary herb labels. As experts, you will be including at least two interesting facts from these herb guides.*
- Pass out herb guides and offer support for the more difficult elements of the reading.
- *When you are being artists and experts, you will have the chance to pick the facts that most interest you.*
- *And, of course, you will also have a chance to make a bundle or a tea bag.*

Inquiry Activity One (20 minutes)

- Split the students into two groups. At each station, tell students the varieties of herbs that will be available to them, and have them read in their Herbal Field Guide about those options.
- One group of students can make culinary herb bundles while the other makes tea bundles. Alternately, you could have the whole class do the same job, choosing from the options below.

Inquiry Activity One, Option A

- Measure and cut out burlap squares and ribbons.
- Strip the leaves of the herbs from their stems.
- Place the stems in a compost container
- Choose which herbs to use in the bundle based on smell of other preference.
- Place a few pinches of herbs into the center of a burlap square.
- Make a bundle out of the square and tie with a ribbon.
- Use the field guides to create labels for their bundles: tell students to illustrate their labels and include at least one fact about the herbs.

Inquiry Activity One, Option B

- Strip the leaves of the herbs from their stems
- Place the stems in a compost container.
- Place a few pinches of herbs into a tea bag.
- Fold the tea bag over. Fasten with string or ribbon.
- Use the field guide to decorate the envelope for the tea bag: tell students to include at least one fact about the herbs.

Closing Circle (10 minutes)

- Share out an herbal tea tasting.
- *Who can remind me what an herb is? What are some of the herbs we used today? What are some of the way people have used herbs throughout history?*
- If you have had students learn about the herbs they used to make tea for the class, they can share this information.

Procedure: Day Two

Opening Circle (10 minutes)

- *Who can remember what we studied last time? What do we use herbs for? Did anyone make their tea or use their cooking herbs?*

Garden Job (30 minutes)

- Lead students in a seasonally appropriate gardening job. If possible, work in a section of the garden where you can introduce students to some of the herbs they used during the previous day.

Closing Circle (10 minutes)

- Ask students to recap their garden work.
- *Did anyone see any of the herbs in the garden that we used in our tea or for cooking?*

Common Core State Standard Extensions

ELA, Grade 5, Writing 7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

- Pick one herb to research. Where is it from? What are some of the traditional uses of this herb? What are some of its current uses?

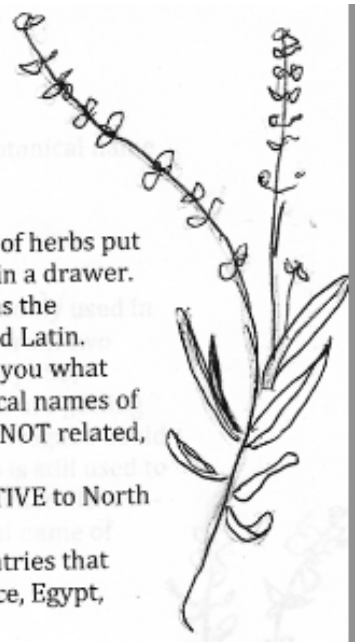
Other Extensions

- Math: You are making a tea that has ¼ tsp. mint, ½ tsp. lemon verbena and 1/8 tsp. anise hyssop. How much of each ingredient will you need to make a quadrupled recipe?
- Have students research a particular herb more in-depth and write up a poster or an info sheet on that herb.

Field Guide to Herbs

Before you begin: some words which might be new!

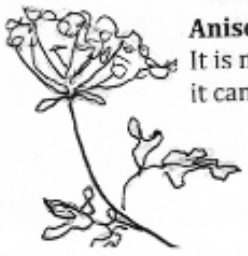
1. *Potpourri*: Pronounced "poh-pour-REE." A potpourri is a bunch of herbs put together in a bowl or a pouch to make a nice smell in a room or in a drawer.
2. *Botanical name*: Every plant has a scientific name, also known as the botanical name. Botanical names are usually in a language called Latin. These Latin words might be difficult to pronounce, but they tell you what family a plant belongs to. For example, if you look at the botanical names of lemon verbena and lemon balm, you will discover that they are NOT related, even though they have a similar name in English.
3. *Native*: Where something is originally from. A plant that is NATIVE to North America is originally from North America.
4. *Mediterranean*: The Mediterranean region includes all the countries that border the Mediterranean Sea. Some examples are: Italy, Greece, Egypt, Albania and Israel, although there are many more.



Lemon verbena:
Originally from Chile, it was brought to Europe in the 1700's to be used as perfume. Tea made from lemon verbena can help you feel sleepy before bed. Because of its lemony smell, lemon verbena is popular in *potpourris*. It is also still used for making perfume. The botanical name of lemon verbena is: *aloysia triphylla*

Lemon balm:
Originally from the Mediterranean region, Ancient Greeks called it "melissa," which means bee, because they believed that lemon balm would attract bees. Although it has a wonderful smell, lemon balm is not widely used in cooking. Lemon balm tea is supposed to relieve headaches. The smell of lemon balm is meant to help with nervousness and depression. And, the ancient Greeks were right: bees love lemon balm! The botanical name of lemon balm is *melissa officinalis*

Mint:
Mint is originally from Europe but now grows in North America, Australia and Japan. It has been found in Egyptian tombs that are more than 3000 years old. There are many different varieties of mint, including spearmint and peppermint, as well as less known kinds like pineapple mint and water mint. Mint is a very hardy plant and can easily take over a garden. Mint is commonly used to flavor gum, candy, ice cream, toothpaste, mouthwash and medicine. Mint oil and mint tea are helpful in treating upset stomachs. The botanical name of mint is *mentha*.



Anise hyssop:
It is native to North America, and its flowers attract bees and butterflies. As a spice, it can be used to flavor salads, fruit salads, and savory dishes. Because of its scent—

it smells like licorice—anise hyssop is often used in *potpourris*. The botanical name of anise hyssop is *agastache foeniculum*.

Oregano:
Oregano is native to the Mediterranean region—where it is very commonly used in cooking—but it now grows all over the world. The name "oregano" is from two Greek words: *oros*, which means mountain, and *ganos*, which means joy. So, oregano means "joy of the mountain." In Greece, men and women who are getting married wear crowns made of oregano. Ancient Greeks believed that oregano could prevent poisoning and they also used it in cleaning products. Oregano is still used to treat cuts and toothaches. Oregano is also an ingredient in a lot of familiar dishes—especially tomato sauces that we eat on pizza and pasta. The botanical name of oregano is *origanum*.

Thyme:
Pronounced "time," thyme is mostly grown in the Mediterranean region. It was used by ancient Egyptians to turn dead bodies into mummies. People in the Middle Ages believed that if you drank a tea made from thyme, you would be able to see fairies. Thyme is part of a bundle of herbs which are often used in French cooking. Tea made from thyme can be used as a mouthwash, and it is used as an ingredient in some toothpastes. The oil from thyme is poisonous, though, so be careful! The botanical name of thyme is *thymus*.

Sage:
The botanical name of sage is *salvia*, which comes from a Latin word that means, "I save" or "I heal." People for thousands of years have used sage as medicine. In Roman times, gathering sage was a special job. The person who did this job needed to have clean clothes and clean feet, and they needed to make a sacrifice of food before they began their work. The Chinese considered sage so valuable that they were willing to trade 3 boxes of tea for one box of sage. If you cook meat with sage, it will help kill off any bugs that might be in there. It is also used to flavor oils and vinegars. Sage helps with sore throats and infected gums too.

Rosemary:
Rosemary is native to the Mediterranean region. It's old Latin name means "sea-dew" because it likes to grow near the sea. Rosemary has long been thought to help prevent illness. People used to burn it in hospital rooms to make the air more pure. They wore pouches of rosemary around their necks and put it in the handles of their walking sticks to try and prevent illness. In modern times, people rub rosemary oil in their skin to keep mosquitoes away. They also rub it on their heads to provide relief from headaches. Rosemary is also commonly used in cooking. The botanical name of rosemary is *rosemarinus*.

History of Medicinal Herbs Hand-Out

More than 3000 years ago, the Chinese used an herb called *ephedra* to help with respiratory (breathing) problems. Today, *ephedra* is used in drugs that treat asthma. More than 2000 years ago, the Babylonians used *mint* for digestive (stomach) problems. Today *mint* is added to many stomach medicines you can buy in the drugstore. Also more than 2000 years ago, Indians used the herb *turmeric* to treat all kinds of health problems. Today, modern research shows that *turmeric* fights cancer in some animal studies.

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Mint tea is helpful
in treating upset
stomachs. The botanical
name for mint is
Mentha.
Mint
Tea
from Edible Backyard
Mint is originally from
Europe but now grows
in North America,
Sage: The

Who Grew Your Lunch?

Aim
Students will understand that farmers and farm workers face many challenges, including hard working conditions and low pay.

Summary
Students will read narratives to learn more about the farmers and workers who grow our food.

Standards
CCSS: ELA, Grade 5, RI1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

CCSS: ELA, Grade 5, RI6: Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.

Materials
- Dry erase board and markers
- Paper bags
- Food Items Cards (Grapes, Tomato, and Lettuce)
- Seasonal tasting

Vocabulary
- farm worker
- acre

Procedure: Day One
Opening Circle (10 minutes)
- *Welcome back, gardeners. Today, we're going to learn a little bit more about the lives of the people who grow our food.*
- *Almost three-quarters of our food is grown on farms that are larger than 1,000 acres.* Give students some sort of scale to understand how big an acre is. For example, a city block is usually about 5 acres.
- *If you own a farm that is 1,000 acres or larger, do you think you can do all the work yourself? No, you need to hire people to help you do the work. A person who works on a farm, but who doesn't own a farm, is called a "farm worker."*

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- Discuss other differences between small farms and large farms.

Inquiry Activity One (30 minutes)

- *Now, we're going to learn a little more in-depth about who might grow the food that we eat. Every group is going to get a paper lunch bag. In the paper lunch bag are some pretend "food items."* Show students an example.
- *These food items are ordinary things that we might eat for lunch. On the back of each one, we are going to read a story about someone who grew the food or otherwise helped to get the food to us.*
- *In the readings, some of the people are farmers, and some of them are called "farm workers."* Remind students of the definition of "farm workers."
- Tell students that they should read all of the narratives in their lunchbag and then answer, in their group, the questions on the board.
- Write the following questions on the board for students to discuss:
  - *What surprised you about these stories?*
  - *What are some of the things that the farmers and farm workers liked about farming?*
  - *What are some of the challenges the farmers and farm workers faced in these stories?*
  - *Do all of the farmers and farm workers face the same challenges?*
- Discuss students' responses as a whole group, and answer any questions they might have.

Closing Circle (5 minutes)

- Share a seasonal tasting.
- *Our discussion today told us that farmers and farm workers really work hard to grow our food. Maybe when we say, "Thank you, gardeners, thank you, cooks!" we can really appreciate and be grateful for the work that they do!*

Procedure: Day Two

Opening Circle (10 minutes)

- Welcome students back to class.
- *What did we talk about the last time we were together? Do you remember anything that surprised you or interested you about our conversations?*

Garden Job (30 minutes)

- Lead students in a seasonal garden job. As you do, ask students to check in about their experience of doing their work. Make connections to what it might be like to do this job on a farm. *Do you think they would do this job the same way on a very big farm? How might it be different?*

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Closing Circle (5 minutes)

- Have students share back with the class their experiences of their garden work, as well as their connections to farms, farmers, and farm workers.

Common Core State Standard Extensions

ELA, Grade 5, W7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

- Have students interview someone in the community who grew up on a farm or who used to be a farmer. Students can generate their own questions and then write a summary of the interview.

Other Extensions

Math: Look at some charts and graphs about farms, farmers, and farm workers over time. These could include the number of farms in the past 100 years, the number of farmers in the past 100 years, or the number of farm workers in the past 100 years. Students can then summarize and write about trends that they notice from the graphs. Students may also be able to write a hypothesis about why these trends exist. Why might the number of farms be decreasing?

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Grapes

These grapes were grown by a farm worker named Isabel. Isabel was born in Mexico, but she came to the United States to work on farms.

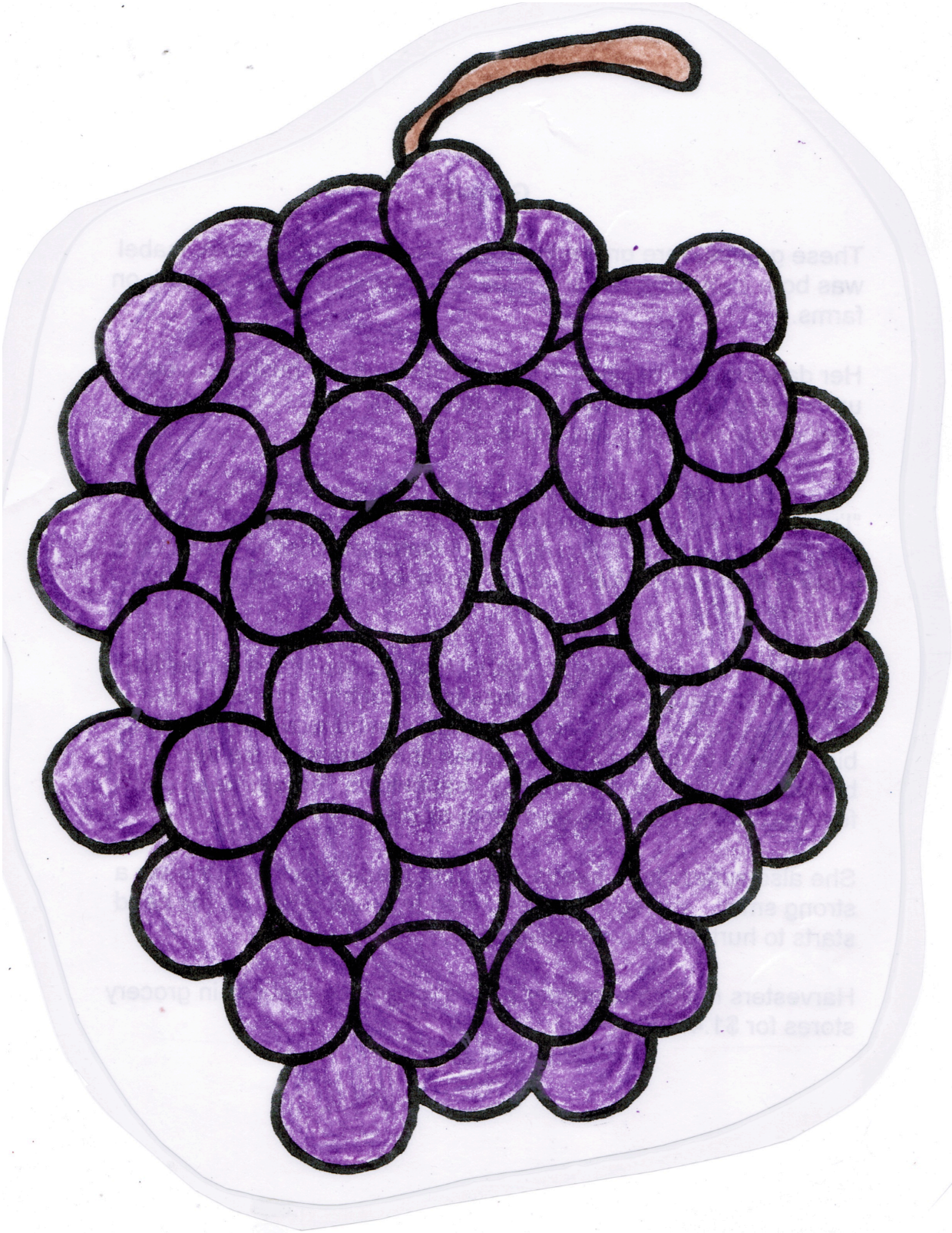
Her days usually begin at 4:30 a.m. She and her husband wake up, make a few tacos for lunch and brew up coffee before making their way to the fields and orchards.

“There are a lot of people who can’t take this work,” she says. “I’ve seen that people who just arrived and take this work, they quit. They don’t like it. It’s hard.” But Isabel and her husband take pride in their work. “We’ve done it for a long time, and we know how to do it.”

During her time in the fields, Isabel has learned that a grapevine can live for many years. But it has to be cut back correctly year after year. Isabel says, “we have a lot of hand movement. We use big scissors to cut the little branches and cutters for the big branches.” At the end of the day, Isabel says, “sometimes I don’t feel my hands. I feel like an animal bit me.”

She also suffers from headaches from the pesticides. “It’s such a strong smell,” she says. “When I start to breathe that in, my head starts to hurt, and I feel nauseated.”

Harvesters make 5 cents per pound for grapes that sell in grocery stores for $1.40.



Lettuce

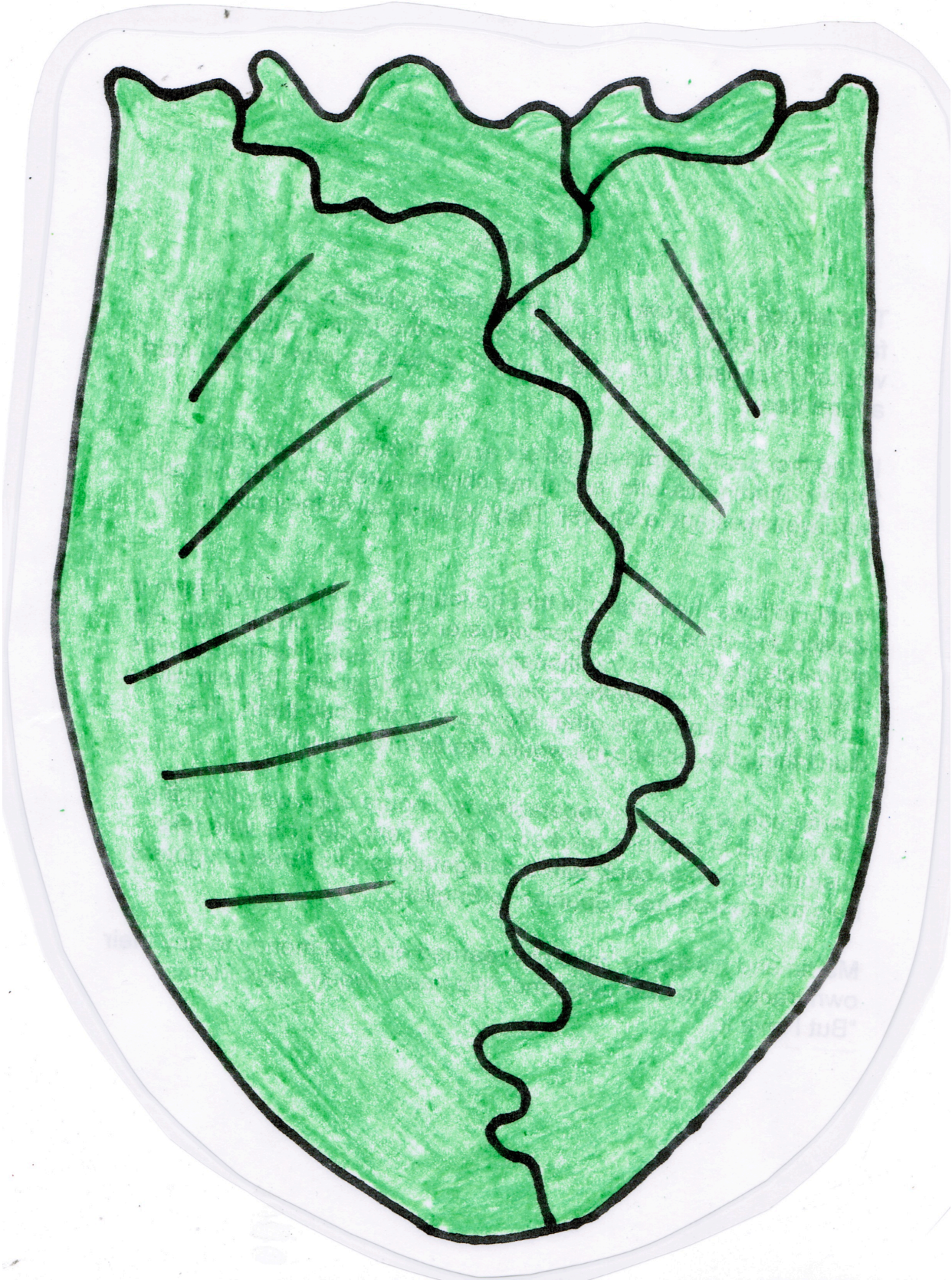
This lettuce was grown by a farmer named Martin. Martin was a farmer in Mexico. When he first came to the United States, he worked in construction. Then he took a class to learn how to start a farm here.

In the first year, Martin rented six acres of land from another farmer. Martin, his wife, and three children grew all of their crops with two rakes and a shovel. They watered all of their plants by hand.

Martin follows the traditions that he learned on his family's farm in Mexico. He does not use pesticides or chemicals on his farm. He grows plants that are traditional to Mexican food, like hot peppers and tomatillos. "I grew them because I'm Mexican," he said with a proud grin. "I knew the other Mexicans would buy them. But I didn't think the Americans would like them so much."

Martin has to drive his vegetables two hours each way from the farm to sell in farmer's markets in New York City. His wife tells customers how to cook with the vegetables. His three daughters help to translate from Spanish to English.

Martin and his family have now earned enough money to buy their own tractor and their own land. "It's heavy work," says Martin. "But I love it."



Tomato

This tomato was grown by Angelina. Angelina is a farm worker in Florida.

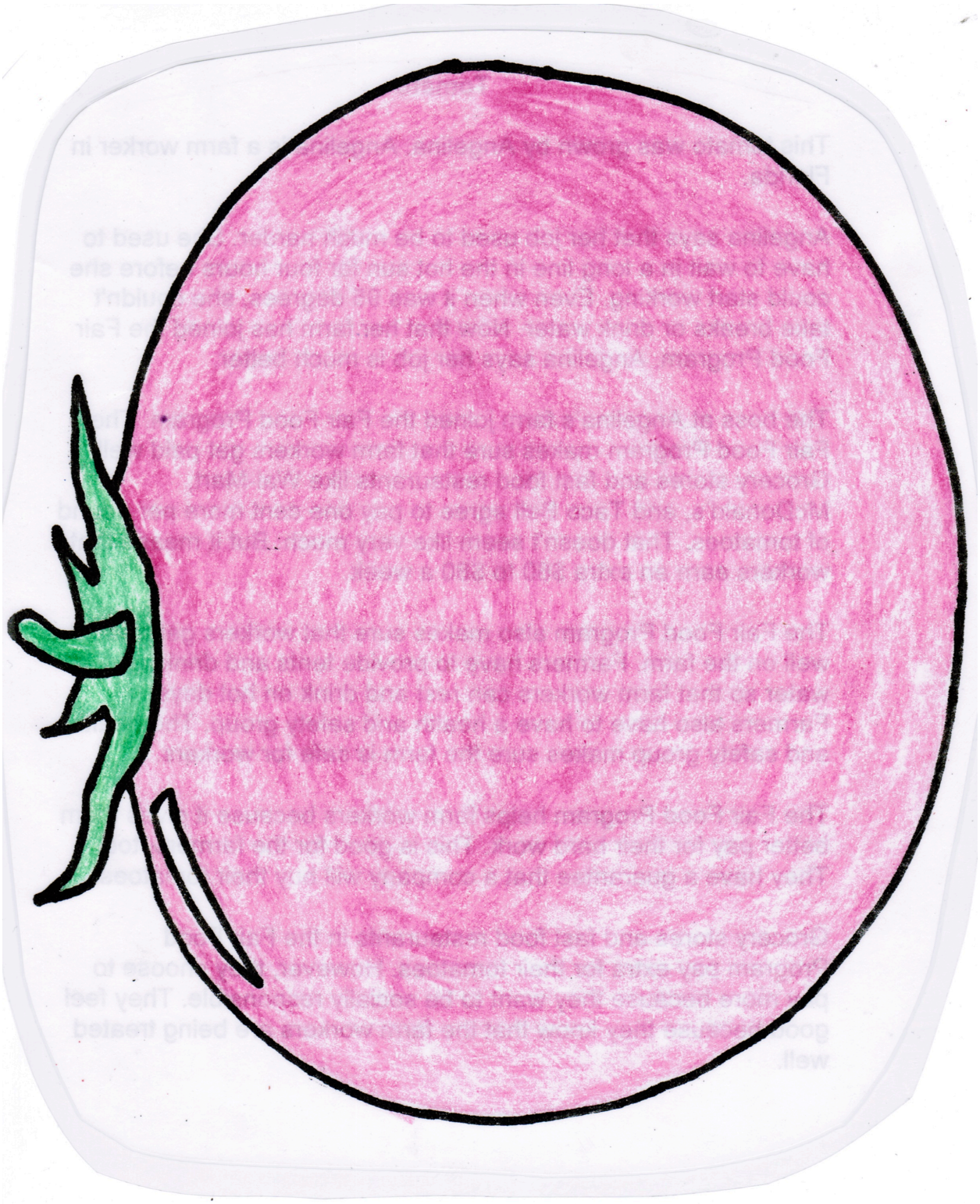
Angelina says that her job used to be much harder. She used to have to wait in a long line in the hot sun for four hours before she could start working. Even when it was 95 degrees, she couldn't take breaks or drink water. Now that her farm has joined the Fair Food Program, Angelina says her job is much better.

The boss at Angelina's farm joined the Fair Food Program. The Fair Food Program makes sure that farm workers get paid well. Grocery stores and fast food restaurants like Wal-Mart, McDonald's, and Taco Bell agree to pay one cent more per pound of tomatoes. That doesn't seem like very much. But it means that workers earn an extra $60 to $80 a week.

The Fair Food Program also makes sure that workers get treated well on the farm. Farmers have to provide tents and drinking water so that farm workers can rest and drink on hot days. Farmers also have to have a health and safety group. The health and safety group makes sure the farm is safe for workers.

The Fair Food Program helps farm workers because it gives them better pay for their hard work. This is good for the farmers, too. They have a guarantee that a company will buy their tomatoes.

Grocery stores and fast food restaurants in the Fair Food Program pay extra for their tomatoes. However, they choose to pay more because they want to be socially responsible. They feel good because they know that the farm workers are being treated well.



Staple Foods: Amaranth

Aim
Students will learn about how one staple crop was important both culturally and nutritionally for an ancient civilization.

Summary
Students learn the definition of "staple crop," examine the world's top staple crops, and then work with the ancient staple crop amaranth—winnowing, threshing, making dye.

Standards
CCSS: ELA, Grade 5, RI 1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

ELA, Grade 5, SL1: Engage effectively in a range of collaborative discussions (one on one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

NYS: Social Studies, 2.3a: Understand the roles and contributions of individuals and groups to social, political, economic, cultural, scientific, technological and religious practices and activities.

Materials

- Handout—World's Top 10 Staple Crops
- Bundles of dried amaranth, or fresh amaranth
- Mortars and pestles
- Tablecloths or tarps
- Small bowls or cups
- Paper towels or white dishrags
- Alegria or callaloo for tasting (optional)
- Exit Tickets ("What makes a food a good staple? Why was amaranth a good staple for the Aztecs?")

Vocabulary

- harvest
- thresh
- winnow
- sift

Adapted from ESY Berkley, http://edibleschoolyard.org/berkeley/
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- chaff
- staple crop
- civilization
- protein
- amaranth
- Aztec

Procedure: Day One

Opening Circle (10 minutes)

- *Welcome everyone back to the garden. Today we are going to explore a special kind of plant that is a "staple crop." Does anyone know what a staple crop is?*
- *A staple crop is a food that we eat a lot of. It is a food that we depend on….* Write definition on board or point to it already written.
- *Turn and talk to your neighbor about what would make a plant a good staple crop – what kinds of foods do we depend on? What makes these good foods for us to eat a lot of? What makes a plant something good to grow in our garden?*
- Give students a minute to talk, then call on them for answers. Write answers on the board. Make sure you have these characteristics: nutritious, easy to grow where you live, tasty. The kids might start talking about specific foods rather than characteristics, but these can be the starting point to talk about characteristics.
- *Now turn and talk to your neighbor about staples in your own lives. What are staples of your diet? Of your family's diet? Of the diet in New York? In the US? In your home country if you're from somewhere else?* It's less important that these answers be accurate than that they understand they are talking about food that they or others eat frequently.
- Write down some answers, and where possible, connect from food to crop. Distribute handout, World's Top 10 Staple Crops. *What food grown the most worldwide? How much is grown per year? What food is grown second most?*
- Give the students a minute to read the chart. Assign each pair of students one crop to read about. Have them share facts about their crop.
- Point out that staple crops might not be obvious—such as corn being grown to feed animals rather than people directly, or wheat being part of foods like bread and pasta.
- *Today we are going to be learning about a plant we grow in our garden that was a staple crop 7,000 years ago for the Aztecs. Has anyone heard of the Aztecs? They lived in what is now Mexico.*
- *The plant I'm talking about is called amaranth! Amaranth was a wonderful staple crop for the Aztecs because you can eat both its leaves and its seeds. Its seeds can be popped, boiled or ground into flour. And its seeds have more protein than any other grain – they are 18 percent protein. Also, it grew easily in Mexico, so it was a good way to feed people.*

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- Divide the class into two groups. Each group will harvest and process amaranth.

Inquiry Activity One (30 minutes)

- Have the students harvest some fresh amaranth, or used dried bundles with seeds.
- Divide the kids into groups. Up to four can gather round the mortar and pestle to make dye. The remaining students can winnow and thresh.
- Winnowing and threshing station:
  - Demonstrate how to thresh the amaranth over the table, rubbing the full head of seeds between your hands to make the seeds fall onto the tarp below. Or, students can hit the amaranth flowers against the tarp to shake the seeds loose.
  - Once there is enough grain and chaff on the table, show the students how to gather a small amount in a bowl so they can winnow. Blow lightly on the grain and the chaff so that the chaff flies out of the bowl but the grain stays in. You can demonstrate what happens if you blow too hard (grain flies out of the bowl as well) and encourage students to experiment until the find the best way to do it.
- Dye station:
  - The second group can collect all the bright pink/red chaff and put it into the mortar and pestle. Add a touch of water and have students take turns grinding the chaff into a bright pink paste. Explain how Aztecs, much like Native Americans in this part of our country, would make dye using plants like amaranth. Show students how they can paint their dishrags or paper towels with the amaranth paste.

Closing Circle (10 minutes)

- Recap what the groups did, and remind them about staple crops.
- Give out Exit Tickets: "What makes a food a good staple? Why was amaranth a good staple for the Aztecs?"
- Collect exit tickets.
- If you made alegria or callaloo to bring in, share that as a tasting. Otherwise, any tasting will do.

Procedure: Day Two

Opening Circle (5 minutes)

- Review what the students learned about staple crops and amaranth.

Garden Activity (40 minutes)

- Explain the garden jobs of the day and go out into the garden.

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Closing Circle (5 minutes)

- Recap the day's activities.

Common Core State Standard Extensions

ELA, Grade 5, Writing 7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

- Students can do more research on Aztecs – other agricultural/culinary practices or other aspects of their civilization.

Other Extensions

Math: Students can make charts demonstrating which crops Americans eat – corn, soy, etc.

Students can research other ancient staple crops – the Incas, the Sumerians, Chinese, etc.

Students can research current staple crops around the world.

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World's Top 10 Staple Crops

(*Business Insider*, "The 10 Most Important Crops in the World," Eric Goldschein, 9/20/11, http://www.businessinsider.com/10-crops-that-feed-the-world-2011-9?op=1)

CROP	AMOUNT GROWN EACH YEAR	OTHER INFORMATION
Plantains	34 million tons	Popular in **Central and South America**. Good source of potassium and fiber.
Yams	51 million tons	Mostly grown in **Central and West Africa** with Nigeria producing the most yams in the world. Several African countries celebrate yam harvests.
Sorghum	65 million tons	Grows well in hot, dry places. 5th most important cereal crop in the world.
Sweet Potatoes	110 million tons	Originally from **South America**, now widely grown in **China**. Great source of vitamins A and C. Plants are attacked by very few pests.
Soybeans	230 million tons	Nutritious for humans and… soil! Provides twice as much protein per acre than any other major vegetable crop.
Cassava	232 million tons	Widely consumed in **Africa and South America**. Grows well in dry areas and poor soil.
Potatoes	314 million tons	Originally grown in **South America**, though **China** is now the largest producer in the world. Most widely-grown non-grain crop.
Rice	685 million tons	The source of more than 1/5 of all calories consumed by humans. To grow 1 serving of rice, you need enough water to fill 3 bathtubs.
Wheat	689 million tons	Covers more of the earth's surface than any other crop. Can grow in both cold and dry climates where rice and corn are unable to grow.
Corn	833 million tons	Most produced grain in the world. Staple food for most of **Southern Africa**. However, most of the corn grown does not end up feeding people.

Adapted from EOY Packet [illegible]

Food Waste

Aim
Students will understand why food waste happens, what some of the negative consequences are, and some alternative uses for food waste.

Summary
Students will have a discussion introducing the problem of food waste, and then play a game that breaks down why food waste is happening at each step in the supply chain.

Standards
CCSS: ELA, Grade 5, SL1.C: Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.

CCSS: ELA, Grade 5, SL1.D: Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

Materials
- Landfill visuals
- Two leaves from the garden, one with pest holes, one without
- Cards for food waste game
- Signs for each station of food waste game
- Prepared tasting

Vocabulary
- food waste

Opening Circle (5 minutes)
- Hold up two different leaves for students to see, one of them has been damaged by a pest and the other has not. *I want you to imagine that you're at a grocery store buying some greens. There are two options. I want you to think about which one you would buy and why.* Hold up the two leaves, leaf A and leaf B. Take answers.
- *It sounds like most of you want the greens that look really nice. They don't have any spots or any holes. So if all the customers want leaf A, what*

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happens to the other produce that doesn't look as good? Where does it go?

- Lead students to the fact that all this produce would get thrown away, and that after it gets thrown away it ends up in a landfill. *Does anyone know what a landfill is?*
- *We're going to be talking about this today to investigate what happens to all of the food that we throw away. We are going to investigate how much food is thrown away and some of the different reasons that it is thrown away.*
- *How much food do you think we waste in the U.S.? We waste 40% of all of our food in the U.S.!*

Inquiry Activity One (10 minutes)

- *We're going to start off by looking at where food ends up if it is thrown away.*
- *I have some pictures of landfills with me that I'm going to pass around. Talk about these pictures with the person sitting next to you. Does this seem surprising to you? What have you heard about landfills before? How is it different to put our thrown out food here compared to the compost? Do you have any concerns about how landfills might affect nearby wildlife?*
- After groups have had a short time to discuss, come back together as a group and share out ideas.

Inquiry Activity Two (20 minutes)

- Explain that we are going to do a short demonstration game to investigate food waste as food moves from the garden to our plates.
- Have everyone stand up and come with you to a set location in the garden. *For our demonstration, everyone is going to be an apple. The goal of the game is to make it all the way to the last space in the game—where the apple is eaten, without getting thrown away.*
- Explain that this demonstration will be like a giant board game, and we have to try to move from space to space and make it from the start (the garden/farm) to the very last space (where it is eaten) without getting thrown away.
- At each space, the students pick a card. The cards either say that the student is able to move onto the next space, or they are thrown away (cards will specify a reason). If the student picks a card that says they are thrown away, have them head to the "landfill," a designated spot in the garden where they can watch the rest of the demonstration.
- The game will have 7 different stops along the way: farm, truck, processing facility (explain to the students this is where the produce is washed, it gets a sticker, bagged/wrapped etc.), truck, store, home, and the final stop where it is eaten! Have a sign out for each of these stops, and read the sign out loud as a group so the students will know where the apples are travelling as they go from a farm to being eaten.

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- When someone draws a card that says they end up in the landfill, have them read their card aloud for the group so everyone can hear what happened.
- After the game is over sit back down in the meeting circle to discuss. *Wow, a lot of us were thrown away during that game! There was a lot of food waste! What were some of the different reasons that apples were thrown away?*

Closing Circle (10 minutes)

- End with a tasting. Pass out samples of imperfect produce to the students. Ask them why some people might not want to buy produce that looks like this from the store. *What will happen to it if no one buys it? How do you think it tastes?*
- *What did you learn about food waste today? Did any of these things surprise you?*
- *What can we do with food we don't want instead of throwing it away?*
- *Thanks for helping reduce waste today*

Common Core State Standard Extensions

ELA, Grade 5, RI2: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

- Have students read an article about food waste (https://newsela.com/articles/food-snobs/id/10732/) and discuss as a group.

Other Extensions

Math: To help students better understand what 40% looks like (the percentage of food in the U.S. goes to waste), pair students up and give them a few small baggies of beans or seeds they can use to count with and work on their fractions. The bags have 50, 25, 10, or 5 beans/seeds. Give the students a worksheet to help them covert 40% into fractions for each of these numbers. Students can count with the seeds and sort them out to help solve different math problems.

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1 FARM

- All food starts out on a farm

but sometimes if food is damaged by pests or doesn't look perfect it is thrown away

2 TRUCK

- Food is transported away from the farm

Sometimes food can get bumped around and damaged on the truck

3 FACTORY

- This is where our apples will be washed, sorted, they'll get a sticker on the outside, and then they'll be put into boxes

More damaged or imperfect apples are thrown out

4 TRUCK

- Apples are transported from the factory to the store on a truck

More apples can be bruised along the way

5 GROCERY STORE

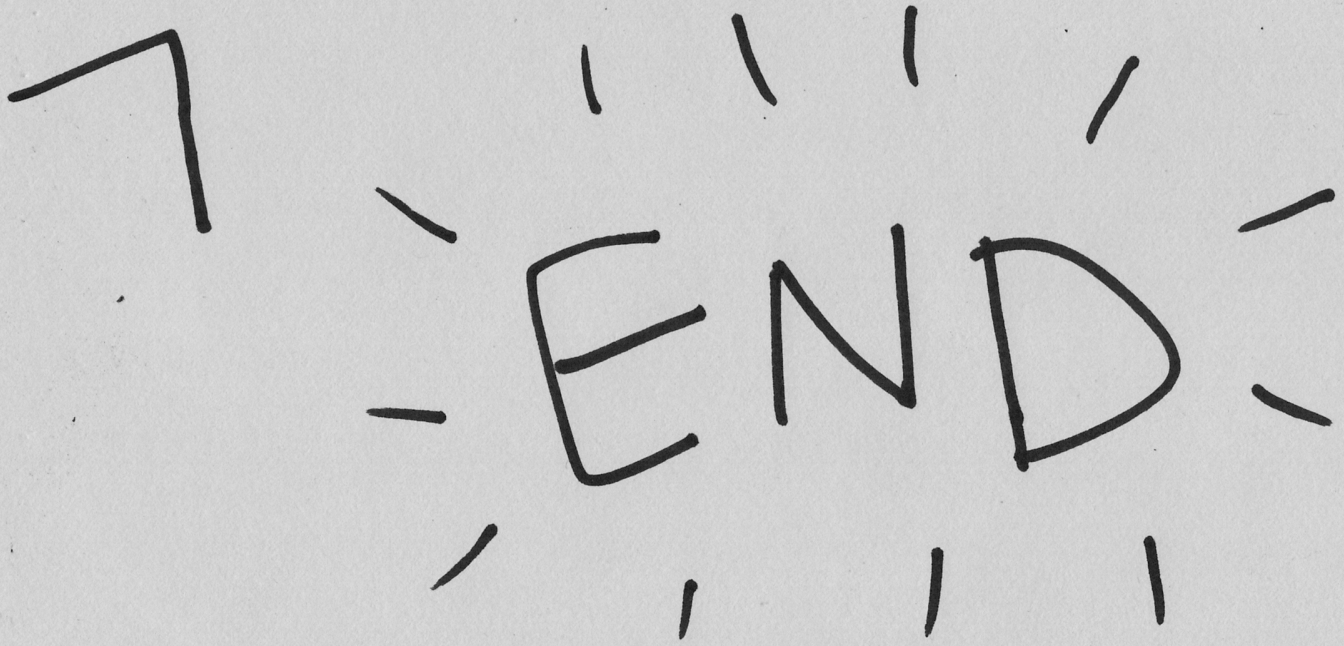
- The apples have made it to the store!

Customers want perfect apples, so the ones that are older, discolored, or bruised won't be purchased

6 HOME

- People bring their apples home from the store

But sometimes we forget to eat things before they go bad!



- These apples are eaten!

truck

farm

truck

processing

home

store

APPLE WAS BRUISED ON THE TRUCK

head to the landfill

PEST DAMAGE!

You are thrown away, head to the landfill

Apple is too small compared to the others so it is thrown out

head to the landfill

Apple is bruised on the truck and i thrown out

head to landfill

Cameron doesn't like apples, whenev his family gives him one he throws it away!

head to the landfill

Apple is misshapen and customers choose not to buy it. Other apples are purchased instead and eventua the apple is thrown out

To the landfill!

Earth Heroes

Aim: Students learn about ways that people have advocated for the environment.

Summary: Students read about different "earth heroes" and create plays based on the readings.

Standards
CCSS: ELA, Grade 5, RI2: Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

CCSS: ELA, Grade 5, RI3: Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

Materials

- Dry erase boards and markers
- Clipboards
- Pencils
- Earth Hero readings
- Play prompts
- Seasonal tasting

Vocabulary

- hero
- heroic
- environmentalist

Procedure: Day One
Opening Circle (5 minutes)

- *Today, we are going to be talking about heroes. What makes a hero? One kind of hero that isn't real is a superhero. What does a superhero do that makes them a hero?*
- List the heroic qualities that students name on the board. *Does anyone here have a special hero? Why are they your hero? Has anyone here ever felt like a hero or done something heroic? What made you feel that way?*

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Inquiry Activity One (10 minutes)

- *Today, we are going to be learning about some special people who are heroes to our earth. Today we are going to be learning about what that means.*
- Break students into groups and pass out the three readings; each group gets a hero. Multiple groups having the same hero is fine. *When you're done with this reading, please answer the questions at the bottom of the reading with your group.*

Inquiry Activity Two (25 minutes)

- *Great! Now you have learned a little bit about these special people and some choices they made to protect the environment. Now you are going to write a play with that information. Does anybody know what a play is? What are the parts of a play?* Elicit from students that plays must have dialogue, characters, plot, action, etc.
- *Today we are going to be writing plays about our earth heroes in new situations. We will give you a problem, and your group's play needs to be about that problem and how your earth hero would solve it. Make sure you answer the questions on your card, but other than that, you can use your imagination. You can add any details and opinions you like.*
- If time permits, students can perform their plays.

Closing Circle (5 minutes)

- *These earth heroes we learned about today lived all around the world. They worked to solve big problems that they saw hurting the environment. But we can also be earth heroes. Our environment here also needs helping, and it is up to us! Does anyone have any ideas about how we could be earth heroes in our neighborhood?*
- If student needs prompting, give a specific example. *What is something you can do if you see someone littering?* Emphasize that as gardeners we are already helping our environment.
- Share a seasonal tasting.

Common Core State Standard Extensions

ELA, Grade 5, W2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- Have each group work on a poster for their classroom that is about their earth hero. Ask each group to include pictures, short blurbs, and one quote from their reading on their posters that explain the work that their earth hero did and why it is important.

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Other Extensions

Science: Ask the students to think about what would have happened if Rachel Carson, Wangari Mathaai, or Chico Mendes had never spoken up. What would have happened to all the bugs and the birds if farmers kept using pesticides and Rachel Carson hadn't noticed what was happening? Or, what would have happened if Chico Mendes never spoke up and all the rubber was drained out of the trees too quickly? What would have happened, and why? Push students to take these ideas further and think about the long-term effects.

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Rachel Carson was born in 1907 in the United States. As a child, she lived on a big farm surrounded by animals. Rachel loved nature, and when she went to college she studied animals and plants.

She wrote very popular books about the ocean, fish, and animals before publishing her most famous book Silent Spring. Rachel wrote this book because she was worried about all of the poison that farmers were spraying to kill the bugs that lived in their farms and ate their vegetables. Rachel was worried about the bad things these poisons might do to the environment. Rachel told the world that these poisons

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were hurting more just the bad bugs. She wrote in the book that good bugs and even birds were being poisoned, too! The farmers who worked in the fields and the people who ate the food that came from the fields were also getting very sick. Rachel wrote that the farmers should go back to using natural ways to keep away the bugs that were eating their plants. The natural ways might not work as well as the chemicals, but they weren't as dangerous.

The work that Rachel did on the book eventually caused some of the poisons to be banned in the United States. Many laws were written to protect the environment following Rachel's books but, even so, many farmers still sometimes use dangerous chemicals and poisons on their farms. Rachel died in 1964. After her death, she was awarded a special medal from the President of the United States.

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Please answer these questions about the reading. Discuss them with your group members:

What problem did Rachel Carson see?

What did she do about that problem?

Why were the farmers spraying their plants with the chemicals?

Do you agree with what Rachel Carson did? Why or why not?

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From greenbeltmovement.org

Wangari Mathaai was born in 1940 in Kenya on the continent of Africa. Where Wangari lived as a child, the land was covered in green trees and plants, and the air was full of birds. Wangari was very smart, and she was sent to college in Kansas in the United States. This was very unusual for Kenyan women at that time. She lived and studied in the United States for many years.

When Wangari finally returned to Kenya she was surprised to find it very different! Most of the beautiful trees were gone. Loggers had cut down the trees to

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sell without saving any for the people, birds, or animals to use. Without the trees holding the earth, the rich soil was blowing away, the animals and birds had no homes, and the people had no wood for cooking.

Wangari decided to take action and started a new organization to teach women in Kenya how to plant and care for trees. She wanted women to run the organization since it was still very difficult for women to get jobs in Kenya. Wangari named the new group The Green Belt Movement because she wanted to fill the country with thick green belts of trees, protecting the soil, providing shade and cleaning the air. Wangari and her Green Belt Movement became protectors of Kenya's trees. Sometimes they even had to fight their own government and army to save the gardens and forests of Kenya, and Wangari was thrown in jail twice by the Kenyan police.

Since The Green Belt Movement was started 40 years ago, they have planted 51 million trees in Kenya. 10 years ago Wangari was given the Nobel Peace Prize, one of the highest prizes in the whole world, for her work protecting the forests. She was the first African woman to ever receive the award. Wangari died in 2011.

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Please answer these questions about the reading. Discuss them with your group members:

Why did Wangari want them to stop cutting down the trees? What reasons did she have?

Why do you think that people were cutting down the trees? What reasons did they have?

What things did Wangari do to protect the trees of Kenya?

Do you agree with what Wangari did? Why or why not?

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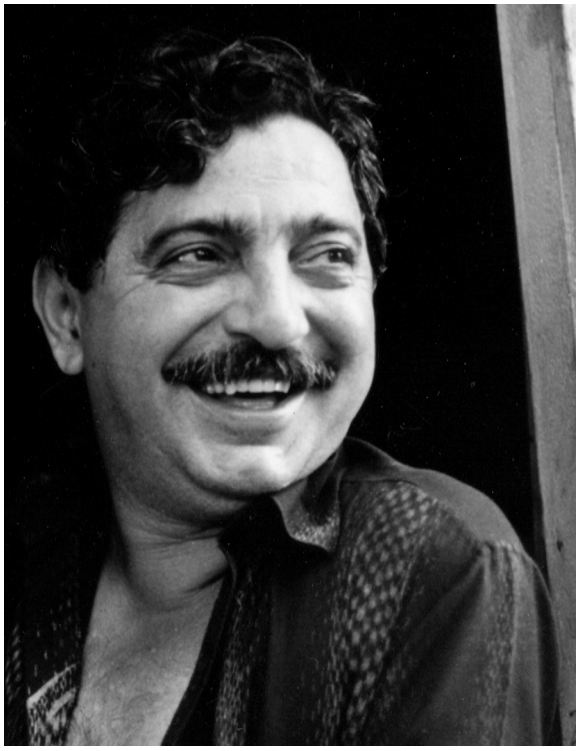

By Miranda Smith, Miranda Productions, Inc. [CC BY-SA 3.0], via Wikimedia Commons

Chico Mendes was born in 1944 in Brazil, a big country in South America. The area where Chico was born is famous for its rainforests full of huge trees. Some of these trees are rubber trees, and the juice of these trees is used to make rubber. Chico's father worked inside the rainforest on a rubber farm. His job was to drain the rubber from inside the trees. Chico's family was very poor, so when Chico turned nine he went to join his father in the forest. There were no schools where Chico lived because the bosses of the rubber forests did not want their workers to become smart. If they became too smart, the bosses worried that they would realize that they were not being paid enough.

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Chico was worried that the bosses of the rubber farms were not taking care of the rubber trees or the rainforest. If they took out the rubber too fast, then the rubber trees would die. If the trees died, then all the people who worked with the trees would lose their jobs, and the birds and animals would lose their homes. Chico thought the bosses were being unfair and killing the trees to make more money without thinking about nature or their workers. He suggested other ways of farming: taking better care of the rubber trees and also planting lots of different kinds of plants so that the animals and people could eat from the rainforests. He also wanted the children to be able to go to school so that someday they could own farms, too. Slowly, with Chico's hard work, these ideas started to spread.

Many people supported Chico's work. He was flown on a plane to the United State to meet important politicians in the government and share his ideas about how to take better care of the forests. Chico was given many awards for his work, but the bosses of the rubber farms were not always so happy with him. One night, one of them came to Chico's house and killed him. The Brazilian government honored Chico's life and his amazing work by creating a new agency with the special job of protecting the rainforests.

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Please answer these questions about the reading. Discuss them with your group members:

What problems did Chico see happening in the rubber forests?

What did he do to try and fix those problems?

Why do you think that one of the bosses killed Chico?

Do you agree with what Chico did? Why or why not?

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Wangari Maathai sees a logger about to cut down a large, old tree.

Make sure the dialogue in your play includes this information:

1. Why is the logger is cutting down the tree?
2. Why is it a problem to cut down the old tree?
3. What is one solution that Wangari can give the logger?

Rachel Carson sees a farmer spraying chemicals on his tomato plants.

Make sure the dialogue in your play includes this information:

1. Why is the farmer spraying chemicals on his plants?
2. Why is it a problem that he was spraying his plants?
3. What is one solution that Rachel can give the farmer?

Chico Mendes sees a rubber farm boss ordering his workers to take too much rubber from the trees.

Make sure the dialogue in your play includes this information:

1. Why is the farm boss taking so much rubber from the trees?
2. Why is it a problem that he is taking so much rubber?
3. What will it mean to the animals and insects that live in the tree?
4. What is one solution that Chico can give the boss?

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5th Grade Project: Introduction

Aim
Students will actively participate in a decision-making process to choose what plants they would like to grow as part of their culminating 5th grade unit.

Summary
Students read summaries about plants that could be grown as part of their culminating 5th grade unit. Students write and perform plays including information from these summaries. Based on these plays, students vote to select the plants that they would like to grow.

Standards
CCSS: ELA, Grade 5, SL4: Report on a topic or a text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS: ELA, Grade 5, SL1: Engage effectively in a range of collaborative discussion (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts,* building on others' ideas and expressing their own clearly.

Materials
- 5th Grade Field Guide sheets
- Blank paper and pencils
- Ballots
- Seasonal tasting

Vocabulary
- seasonal
- days to harvest

Procedure: Day One
Opening Circle (5 minutes)
- *Welcome back to garden class. Today, we are starting a project that all of you are going to be a part of. Now that you are fifth graders, you've been gardening and cooking for many years. You are going to be in charge of a whole meal from start to finish. You are going to choose what you want to*

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plant, plant it yourselves, harvest it, and prepare it in the kitchen. We're going to be doing this project from now until May.

- Write up the names of the several options on the board. *This is not a list of everything that we can grow in our garden. Why aren't there tomatoes and cucumbers on this list, for instance? They are not in season in the spring. They grow in the summertime, and our project will take place in the spring, when it is too cold for tomatoes and cucumbers to grow.*
- *Are some of these foods unfamiliar? Today we are going to learn more about each of these so that you can make an educated vote.*

Inquiry Activity One (20 minutes)

- Explain to students that you are going to break them into groups. Each group will be responsible for teaching the rest of the class about one of the plant choices. To do so, they will write a short play to present this information.
- Tell students that each group will get a field guide with information about their plant. They will be responsible for reading it, choosing the information to present, and writing the play. One person will be the recorder for the group. Show them that their field guide also has a checklist of information that they must include in their play.
- Give students several minutes to write their short plays.

Inquiry Activity Two (15 minutes)

- *Now it's time to perform your plays!*
- Have each group come up and present. Highlight some of the important information from their plays. *I loved how you showed that the mizuna is spicy!*

Closing Circle (5 minutes)

- *Now, it's time to vote on the plants that you would like to grow. You can vote for three choices.* Based on your garden space, indicate how many plants you would like them to select on their ballots.
- *Even if your plant isn't chosen in the vote, I want all of you to know that you presented really good information in your plays. It's making it hard for me to choose!*
- Pass out ballots for students to complete.
- *Next time we see you, we'll reveal what we are going to plant!*

Procedure: Day Two

Opening Circle (5 minutes)

- Remind students about what they did last time. If you would like, reveal the results of their vote.

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Garden Job (30 minutes)
- Lead a seasonal garden job, such as seed starting.

Closing Circle (10 minutes)
- Have students review the garden jobs that they did today.
- Share a seasonal tasting.

Common Core State Standard Extensions

ELA, Grade 5, W7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.
- Have students do their own research on the plant that they are presenting.

Other Extensions

Math: Using the information on seed packets, have students figure out when they would need to plant each plant in order to harvest by the beginning of June.

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Green Leaf Lettuce

Lettuce comes in many different flavors and colors. One of the most common kinds is green leaf lettuce. Lettuce was first grown to use as medicine, but by 400 B.C. the Greeks were eating it as well. Romans believed in eating salad at the end of the meal to make you sleepy, while in later times, people began eating lettuce at the beginning of the meal to increase their appetites. Many Chinese varieties of lettuce are grown to be cooked, but green leaf lettuce is most commonly eaten raw. It is crunchy and often has a mild flavor. Lettuce is ready to harvest 30 days after planting.

Skit Checklist
Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

Red Leaf Lettuce

If you are looking to add color to your meal, this is an ingredient to consider! Red leaf lettuce is really not red, but is instead a purple color that extends down the leaf. Red leaf lettuce is mild, like green leaf, but adds a different look to your salad. Red lettuce can come in varieties such as “Mascara Lettuce,” “Flame Lettuce,” “Red Leprechaun Lettuce,” and “Red Velvet Lettuce.” Lettuce is ready to harvest 30 days after planting.

Skit Checklist
Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

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Mizuna

Mizuna is originally from China, but it has been grown for hundreds of years in Japan as well. It is sometimes called “Japanese mustard.” Mizuna has a stronger flavor than green or red leaf lettuce. Some people think it tastes a little like mustard or pepper. Mizuna is easy to grow in most soils, and some gardeners consider it pretty enough to plant on the edges of flower beds. Its green leaves have a spiky look, which could add an interesting texture to your meal. Mizuna flowers are also edible. It takes 40 days to grow to maturity.

Skit Checklist

Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

Ruby Streaks Mustard

The leaves of the Ruby Streaks mustard are a deep purple with green stems. Mustard will add color and a strong, almost spicy flavor to your food. Mustard is in the same family as cabbage, and the greens are popular throughout Asia, where they are often cooked and eaten in stir fry. They are also very tasty raw, though. Like mizuna, Ruby Streaks mustard leaves have a spiky look to them. Their flowers are also edible. It takes 40 days to grow to maturity.

Skit Checklist

Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

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Radishes

Maybe you would like to include roots in your salad. If so, consider adding radishes. In fact, the word “radish” comes from the Latin word “radix,” which means “root.” People have been eating radishes since pre-historic times. You can even find pictures of radishes in ancient Egyptian tombs! Radishes come in many different colors, shapes, and sizes. Depending on the variety, they can take 30-50 days to grow. They can be mild or spicy, but they are always very crisp and crunchy and can add great texture to your salad.

Skit Checklist

Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

Pea Shoots

Pea shoots are the leaves and stems of the young pea plant, and these are some of the first salad greens we can eat in the spring. Some people believe pea shoots actually taste like spring! They also taste a little like peas, but with a leafier, crunchier feel. The word “pea” used to be “pease,” and it comes from the Indian word “paisa,” which means “small coin.” The pea plant is also great for the garden, since it adds nitrogen – an important nutrient – back into the soil. The pea pods take 60 days to develop, but the leaves and stems can be harvested earlier, after about 30 days.

Skit Checklist

Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

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Scallions

Scallions are also known as green onions or spring onions. They are from the same plant family as onions and taste like onions, but with a milder flavor. When you eat the scallion, you are eating the white bulb and parts of the green leaves. The young plants can be harvested at 60 days. In Vietnam, scallions are an important food eaten at Tet (the New Year). In some Jewish households, scallions are a playful part of the holiday known as Passover – people hit one another with the scallions during the holiday dinner.

Skit Checklist

Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

Hakurei Turnips

Technically you are not really eating the root of the Hakurei turnip, however, but actually a swollen part of the bottom of the stem – so you can add another plant part to your salad! These white turnips are considered ideal for salad. Some people describe the flavor as sweet and fruity, like an apple, and they have a nice crunch. They are ready to harvest after 40 days. Hakurei turnips might be a good new food for you to try! Turnips were one of the first foods to be *cultivated* (grown by humans) – starting about 4,000 years ago in Europe.

Skit Checklist

Be sure to answer all of the following questions in your skit.

- ☐ What is the name of your plant?
- ☐ What part of the plant do we eat? (root, leaf, stem, flower)
- ☐ How long does it take to grow from seed to harvest?
- ☐ What is something unique or interesting about this plant? Why would it be a good addition to our plant part salad?

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Campaign for Salad Ballot

You can vote for **up to three choices.** Place a check mark next to your selections.

- ☐ Lettuce, green leaf
- ☐ Lettuce, red leaf
- ☐ Mizuna
- ☐ Ruby streaks mustard
- ☐ Radishes
- ☐ Pea shoots
- ☐ Scallions
- ☐ Hakurei turnips

Why do you think we should plant these vegetables in our Campaign for Salad? Circle **one of your choices,** and explain why you chose that vegetable.

_____

_____

_____

We will count up the results for our next class!

Campaign for Salad Ballot

You can vote for **up to three choices.** Place a check mark next to your selections.

- ☐ Lettuce, green leaf
- ☐ Lettuce, red leaf
- ☐ Mizuna
- ☐ Ruby streaks mustard
- ☐ Radishes
- ☐ Pea shoots
- ☐ Scallions
- ☐ Hakurei turnips

Why do you think we should plant these vegetables in our Campaign for Salad? Circle **one of your choices,** and explain why you chose that vegetable.

_____

_____

_____

We will count up the results for our next class!

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5th Grade Project: Square Foot Gardening

Aim
Students will understand that different plants need different amount of space and will draw their own planting plans based on that knowledge.

Summary
Students will use rulers and square foot paper to map out how to plant a square foot. Students will calculate harvest yields based on their work.

Standards
CCSS: Math, Grade 5, MP4: Model with mathematics.

CCSS: Math, Grade 5, MP5: Use appropriate tools strategically.

Materials
- Dry erase board and markers
- Pencils
- Rulers
- Square foot drawn on paper, or 12 x 12 inch sheet of paper
- Square Foot Planting worksheet
- Seasonal tasting

Vocabulary
- square foot

Procedure: Day One
Opening Circle (10 minutes)
- Welcome students to garden class, and remind them about their culminating project.
- If you have not already done so, reveal the results of their vote last month.

Inquiry Activity One (30 minutes)
- *Do all plants need the same amount of space? Why or why not?* Explain that, because plants grow different sizes and at different speeds, both above and below ground, they have specific space needs.
- *Today, we are going to make planting plans for the specific vegetables you've chosen to grow. You will figure out how to plant a garden bed in order to maximize growing space. Since we live in the city and our space*

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is limited, we need to make smart decisions about how we grow. Today we are going to use a method called square foot gardening.

- Show visual of square foot drawn up on the board. *Who knows what a square foot is? The sides are even, and each side is 12 inches long.*
- *Let's do an example. Let's pretend that I am growing carrots. On my planting directions, it says that I have to plant 16 seeds in a square.* On the board, write up: "16 plants per square foot."
- *What would happen if I planted all 16 seeds in this one little spot? Why is that a bad idea?*
- *How do I make sure that my seeds are spread out? We are going to make rows and columns in our square foot. How many rows and how many columns do I need to make? Here's a hint: what times what equals 16? We will need 4 columns and 4 rows.*
- *To make up the rows, how can I divide up my 12 inches into 4 sections? What is 12 inches divided by 4? That means I need to draw a line every 3 inches – at 3 inches, 6 inches, 9 inches, and 12 inches.* Demonstrate this with a ruler on the board. Do the same with the columns. Make a small dot in the center of each section to demonstrate where the seed will go.
- *Let's say I did this differently. Let's figure out a different plan. What are another two things you could multiply to get 16?* Draw out a different box beside the first, this one with 8 columns and 2 rows. *Which planting plan looks like it has more space?*
- First, have students work on their Square Foot Planting worksheets to model out the different ways they could arrange rows and columns. Check their work. If students struggle trying to decide which arrangement offers the plants the most space, remind students to measure both horizontally and vertically to check and see which plan offers the most space.
- Next, have students make a map of their square foot bed. Go over for students what steps they'll need to do for this activity: writing their names and the name of their plant on the paper; drawing out the lines to divide their square foot into sections; marking where the seed will be planted; and measuring with a ruler to double-check their spacing. Demonstrate on the board how to measure between the seeds, to double-check that their distance is correct.
- Hand out materials, and circulate to help students as needed.

Closing Circle (10 minutes)

- *Now that we've figured out how to plant our individual square feet, let's figure out how much we will plant in a whole bed.*
- Draw up an example of a square foot bed, based on the dimensions in your school garden. *How many square feet are in this garden bed?*
- Choose an example of one of the plants that students will be growing. *Let's figure out how many lettuce plant will grow in one bed. If I can plant 4 lettuce plants per square foot, and I have 30 square feet, how many lettuce plants can I grow in the whole bed?* Have students figure out how to do this math problem.

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- Repeat with as many examples as you can, time allowing. If possible, go through and calculate the quantity of each that you will plant.
- *Wow! We're going to plant a lot of food! Get excited about planting!*
- Finish with a seasonal tasting.

Common Core State Standard Extensions

ELA, Grade 5, W2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- Students describe why they use the square foot planting technique and why they space plants out. Have students describe what happens when plants don't get enough space.

Other Extensions

Math: Have students use the information on seed packets and their garden planning grids to determine the expected yields of the vegetables they chose to plant in the garden. How many pounds of salad do they expect overall? If they want to feed each student 3 oz. of salad, and if there are 500 students, how many pounds of salad do they need to grow?

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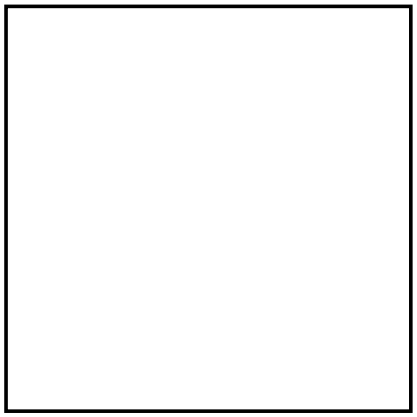
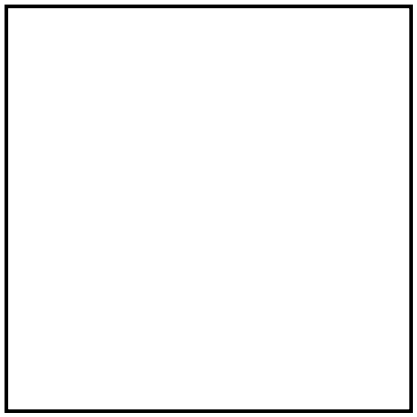
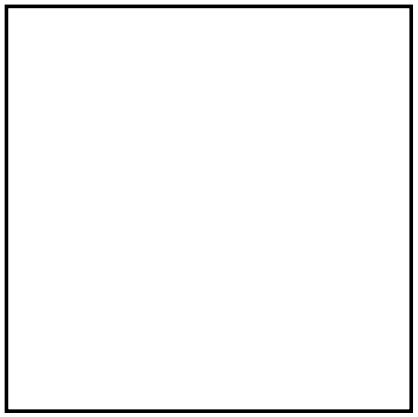
SQUARE FOOT PLANTING: RADISHES! **NAME: _____**

You need to plant **16 radishes** into a square foot.

What are different combinations that multiply to equal 16?

_____X_____ _____X_____ _____X_____
(rows) (columns) (rows) (columns) (rows) (columns)

In each square, make a grid with rows and columns. Inside each box, use an X to mark where you would plant the seed.

For each square, use a ruler to measure the distance between the Xs. Measure in both directions.

Circle the combination where the Xs have the most distance between them.

SQUARE FOOT PLANTING: TURNIPS! **NAME: _____**

You need to plant **9 turnips** into a square foot.

What are different combinations that multiply to equal 9?

_____X_____ _____X_____
(rows) (columns) (rows) (columns)

In each square, make a grid with rows and columns. Inside each box, use an X to mark where you would plant the seed.

For each square, use a ruler to measure the distance between the Xs. Measure in both directions.

Circle the combination where the Xs have the most distance between them.

SQUARE FOOT PLANTING: GREEN LEAF LETTUCE! **NAME: _____**

You need to plant **4 green leaf lettuce plants** into a square foot.

What are different combinations that multiply to equal 4?

_____X_____ _____X_____
(rows) (columns) (rows) (columns)

In each square, make a grid with rows and columns. Inside each box, use an X to mark where you would plant the seed.

For each square, use a ruler to measure the distance between the Xs. Measure in both directions.

Circle the combination where the Xs have the most distance between them.

SQUARE FOOT PLANTING: RUBY STREAKS MUSTARD! **NAME: _____**

You need to plant **4 ruby streaks mustard plants** into a square foot.

What are different combinations that multiply to equal 4?

_____X_____ _____X_____
(rows) (columns) (rows) (columns)

In each square, make a grid with rows and columns. Inside each box, use an X to mark where you would plant the seed.

For each square, use a ruler to measure the distance between the Xs. Measure in both directions.

Circle the combination where the Xs have the most distance between them.

SQUARE FOOT PLANTING: RED LEAF LETTUCE! **NAME: _____**

You need to plant **4 red leaf lettuce plants** into a square foot.

What are different combinations that multiply to equal 4?

_____X_____ _____X_____
(rows) (columns) (rows) (columns)

In each square, make a grid with rows and columns. Inside each box, use an X to mark where you would plant the seed.

For each square, use a ruler to measure the distance between the Xs. Measure in both directions.

Circle the combination where the Xs have the most distance between them.

5th Grade Project: What's Your Story?

Aim
Students will choose from a variety of projects to share personal experience and knowledge from garden and kitchen class.

Summary
Students will generate content for projects and will begin to create skits, comic strips, posters, plays, newspapers, picture books, and essays.

Standards
CCSS: ELA, Grade 5, W1: Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

Materials

- Dry erase board and markers
- Garden Final Project worksheet
- Project checklists
- Pencils
- Blank and lined paper in many sizes
- Markers or other coloring supplies (optional)
- Seasonal tasting

Vocabulary

- environment
- pollution
- food footprint
- resources

Procedure: Day One
Opening Circle (5 minutes)

- Explain why we are not planting yet. *What's happening with the weather outside?* In the meantime, explain that they will be creating projects to express all that they've learned in our years of garden and kitchen class.
- *First, we are going to brainstorm some information to present in our projects. The question we are trying to answer is: Why is growing and cooking our own food better for ourselves and for our environment?*

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Inquiry Activity One (15 minutes)

- Write up answers to the question above on the board. Use leading questions below to gather information. End when you have a good quantity of points -- 10 to 15 to choose from is best.
  - *What are some ways in the garden that we conserve resources? How does compost help us put less garbage in the trash? How is getting our food in our garden better than getting our food from the other side of the world? How is getting our food in our garden better than getting our food from the grocery store all wrapped in plastic?*
  - *Why is it better to grow many kinds of plants, rather than just one kind? Why is it better to eat many kinds of plants, rather than just one kind? Why is it better to eat many parts of plants (leaves, roots, stems, seeds), rather than just one kind?*
  - *What are some of the special ways that people have used plants throughout history and today?*
  - *How do we show respect for all the plants and animals in our garden? At some farms and gardens, they spray chemicals to kill weeds and to kill pests -- how is our way healthier for our bodies and for our environment?*
  - *How do we eat and share food with each other? How does that make you feel? Why is it important to eat and share our food this way?*
  - *How does food from our garden taste? What are the benefits of cooking our food ourselves?*
  - *How do you think it will help you in the future (in middle school, as an adult) to know how to grow and cook food?*

Inquiry Activity Two (20 minutes)

- Introduce the project. Write up the seven options that students can use to present their project: poster, skit, essay, comic strip, newspaper, song, or picture book. *Before we actually start, we are going to make a first draft, to decide on what information we want to share in our project.*
- Pass out and walk through the Garden Final Project worksheet first, explaining each question. Tell students that after they finish answering the questions, the teacher will double check their work. After that, they can decide what kind of project they will want to do, and they'll get a checklist that will help them make sure they include all the necessary information in their project.
- Suggest that they do a rough draft of their project first. They can start drawing their poster in pencil first, or start writing a draft of their essay that they can make edits on, etc. Tell students how many total class periods they will have to work on the project.
- Let students start on their worksheets, then check them as they finish. Hand out materials as necessary. Hand out markers or other permanent materials after checking rough drafts.

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Closing Circle (5 minutes)

- Congratulate students on their good work. *Next time we see you, we'll continue working on our projects!*
- Share a seasonal tasting.

Procedure: Day Two

Opening Circle (5 minutes)

- Remind students that they will be continuing on their projects.

Inquiry Activity (30 minutes)

- Let students work independently on their projects, circulating to help and check student work as needed. Hand out materials as students need them.
- If students are finishing first drafts, have them check their checklists to be sure all information is included before proceeding to the next draft.
- Alternately, if you have the space and materials, students can start some of their plants indoors, in preparation for planting in April. Reference the starting seeds lesson plan. Students will still have time to work on their projects in April.

Closing Circle (10 minutes)

- Congratulate students on their good work. Tell students what to expect during next garden class, and explain the next steps that they'll need to complete to finish their projects.
- If time allows, students can share out their work.

Common Core State Standard Extensions

ELA, Grade 5, SL4: Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

- Have students prepare to present their work orally. Invite audience members to come and hear students speak about their experiences.

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5th Grade Celebration! Final Project

Step One: Information—Answer questions 1, 2 and 3.

1. Describe your best experiences in the garden and kitchen:

2. What is one way you have changed after having classes in the garden and the kitchen?

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3. Explain to someone why the vegetables you planned and grew (and will prepare) will be good for your body and good for the earth. **USE THE INFORMATION THAT IS WRITTEN ON THE BOARD!**

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Step Two: Pick a project! You can do a:

- Poster
- Skit
- Persuasive letter or essay
- Comic strip
- Newspaper
- Song
- Picture book for children

Step Three: Make your project! Follow the check-list for your project!

<u>If you do a poster, it needs to:</u>

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen
- ☐ Include five facts from question 3
- ☐ Have clear and colorful pictures, and be easy to read and understand

<u>If you do a skit, it needs to:</u>

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen
- ☐ Include five facts from question 3
- ☐ Be written in dialogue form and be interesting to the reader or the audience

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If you do a persuasive letter or essay, it needs to:

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen
- ☐ Include five facts from question 3
- ☐ Use persuasive language and your best spelling, word choice and punctuation

If you do a comic strip it needs to:

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen
- ☐ Include five facts from question 3
- ☐ Have clear and colorful pictures and be written neatly and with your best spelling, word choice, and punctuation

If you do a newspaper, it needs to:

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen.
- ☐ Include five facts from question 3
- ☐ Have headlines and pictures, be neat and clear, and use your best spelling, word choice and punctuation

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If you do a song it needs to:

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen.
- ☐ Include five facts from question 3
- ☐ Have a catchy tune and clear lyrics

If you do a children's picture book, it needs to:

- ☐ Include information from question 1 about your experiences in the garden and the kitchen
- ☐ Include information from question 2 about how you have changed after having classes in the garden and the kitchen
- ☐ Include five facts from question 3
- ☐ Have clear and colorful pictures and be written neatly and with your best spelling, word choice, and punctuation

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5th Grade Project: Inside and Out

Aim
Students will complete their individual projects, reflecting on their experiences in the garden and kitchen. Students will participate in meaningful garden work that cares for the plants that they will be harvesting in May.

Summary
Students continue their work on their projects, both out in the garden and inside the classroom.

Standards
CCSS: ELA, Grade 5, SL4: Report on a topic or a text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS: ELA, Grade 5, SL1: Engage effectively in a range of collaborative discussion (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts,* building on others' ideas and expressing their own clearly.

Materials

- Garden Final Project worksheet
- Project checklists
- Pencils
- Blank and lined paper in many sizes
- Markers or other coloring supplies (optional)
- Supplies and equipment needed for garden job
- Seasonal tasting

Vocabulary

- harvest

Procedure: Day One
Opening Circle (5 minutes)

- Welcome students back to garden class. Explain that during this month, they will be continuing both the projects that they began last month, as

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well as the gardening work that they need to do for their plants. (The order of Day 1 and Day 2 is flexible, depending on weather and on how much time students need for their projects.)

- *The theme of this month is Inside and Out. The work that you do outside in the garden makes a difference, because it helps the plants to grow and be ready for harvest next month. But the work you do inside makes a difference, too, because it helps you to tell the story about your own experiences and to teach other people about what you know.*

Garden Job (30 minutes)

- Lead students in a garden job related to their culminating project.
- If students have not already planted outdoors, it is most likely time for them to do so. Reference the lesson plans for planting seeds or transplanting. Have students use their planting plans from February to plant in square foot beds, and allow them as much autonomy as possible. If time allows, you could also have students amend or mulch beds. Reference the amending and mulching lesson plans.
- If students have already planted outdoors, you can lead them in one of several jobs, depending on the plant needs. Reference the amending, mulching, watering, or weeding lesson plans.

Closing Circle (10 minutes)

- Ask students to reflect back on their garden work. *What did we do today in the garden? Why did we do this job? How is this job going to get our plants ready to harvest in May?*
- Share a seasonal tasting.

Procedure: Day Two

Opening Circle (5 minutes)

- Welcome students again, and congratulate them on their good work in the garden during the previous class. Tell them that today is their final chance to work on their projects.

Inquiry Activity (30 minutes)

- Let students work independently on their projects, circulating to help and check student work as needed. Hand out materials as students need them.
- If students are finishing first drafts, have them check their checklists to be sure all information is included before proceeding to the next draft.

Closing Circle (10 minutes)

- If time allows, students can share out their work.

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- *When we see you in May, it will be time to harvest the food that you have grown. We can't wait to make it with you!*

Common Core State Standard Extensions

ELA, Grade 5, W1: Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

- Students can write a letter to the editor explaining why we should all be eating more food from the garden in general, and the food they are growing in particular.

ELA, Grade 5, W7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

- Students can do more research on one of the topics they have studied in garden class: the impact of eating meat, the ingredients in processed food, the importance of biodiversity.
- Students can interview several people about their food cultures and write about their findings.

Other Extensions

Math: Have students use the information on seed packets and their garden planning grids to determine the expected yields of the vegetables they chose to plant in the garden. How many pounds of salad do they expect overall? If they want to feed each student 3 oz. of salad, how many pounds of salad do they need to grow? (There are about 500 students in the school).

Math: Have students create scale maps of the garden.

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5th Grade Project: Celebration!

Aim
Students will be able to clearly present about their experiences in the garden and kitchen.

Summary
Students harvest and process the food they have grown and prepare for their kitchen celebration.

Standards
CCSS: ELA, Grade 5, SL4: Report on a topic or a text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS: ELA, Grade 5, SL1: Engage effectively in a range of collaborative discussion (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts,* building on others' ideas and expressing their own clearly.

Materials

- Supplies and equipment needed for harvesting
- Supplies and equipment needed for washing, processing, and weighing (optional)
- Gallery Walk worksheet and pencils (optional)
- Materials for art project or classroom decoration (optional)

Vocabulary

- harvest

Procedure: Day One
Opening Circle (5 minutes)

- *5th graders, we are so proud of you and all the work that you have done. It's time to harvest our food and prepare for our celebration!* Explain the order of events for the next two classes. (The order of Day 1 and Day 2 is flexible, depending on weather and when the kitchen portion of the lesson is scheduled.)

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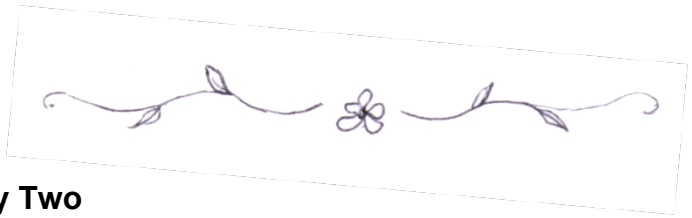
Garden Job (30 minutes)

- Lead students in a harvest of their food. Reference the harvesting lesson plan.
- If you have a large group, some students can harvest while others can wash, process, and weigh.
- Instead of doing a formal tasting, you can allow students informally to taste some of what they have grown.

Closing Circle (10 minutes)

- Ask students to reflect back on their garden work. *How does it feel to see the plants that you chose all grown up? How did doing this project make you feel?*



Procedure: Day Two

Opening Circle (5 minutes)

- Welcome students back to garden class.
- *The next time we see you, it will be time to prepare the food that you harvested. We can't wait to celebrate all the good work you have done over the years in the garden and the kitchen!*

Inquiry Activity (35 minutes)

- Choose an activity that will appropriately prepare students for their final celebration, based on their previous progress on their projects.
- One option is to have students share their projects with one another. Hang students' projects around the room. Have students use the Gallery Walk worksheet and circulate around the room to read and compliment each other's projects. Another option is to have students share in pairs or small groups and offer each other positive feedback on each other's work.
- Alternately, if students need more time to work on their projects, this is their last chance to work on them.
- Students can also do other smaller art projects to prepare the kitchen for their celebration: make bouquets, make decorations, make placemats, etc.

Closing Circle (5 minutes)

- If students reflected on each other's projects, have each student share out a compliment that they would like to give another student on their project.
- *The food is harvested, the room is ready, and we are ready to make food and celebrate with you in the kitchen classroom!*

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Common Core State Standard Extensions

ELA, Grade 5, W7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

- Tell students that they need to convince their mayor or to another elected official that all schools should have gardens. Tell them that they need to write a persuasive letter to their elected official. Have them do research to gather evidence in favor of their argument. Collect and send student letters.

Other Extensions

Math: Prior to their kitchen class, have students calculate out how much they will need of each ingredient in order to provide for all of their guests. If they are making a salad dressing that requires ½ tsp of salt for 6 people, how much salt will they need to make a salad dressing for 30 people?

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GALLERY WALK

Name: _____

While you look at your classmates' projects, look for the following items and fill in the blanks.

1) What is something new you learned about a classmate from their project?:

_____

_____

_____

Project author: _____

2) What is a topic you would like to learn more about after reading about it in a project?:

_____

_____

_____

Project author: _____

3) One compliment you would like to give to a project:

_____

_____

Project author:_____

4) One compliment you would like to give to a project:

_____

_____

Project author: _____

5) One compliment you would like to give to a project:

_____

_____

Project author: _____

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Pesto Celebration

Aim
Students will demonstrate their gardening and cooking skills to make pesto.

Summary
Students read about the history of basil, then prepare pesto using ingredients from the garden.

Standards
CCSS: ELA, Grade 5, RI1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.

NYS: Social Studies, 2.3a: Understand the roles and contributions of individuals and groups to social, political, economic, cultural, scientific, technological and religious practices and activities.

Materials

- Boiled potatoes, cut in half
- Scissors
- Parmesan cheese
- Olive oil
- Salt
- Basil
- Garlic
- Bowls
- Graters
- Salad spinners
- Cutting boards
- Mortar and pestles
- Butter knife
- Tray
- All About Pesto worksheets
- Pesto Facts worksheets
- Clipboards
- Pencils

Vocabulary

- pesto

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Procedure: Day One

Opening Circle (5 minutes)

- *Today, we want to say thank you to all of the time and hard work you have given in our garden. As 5th graders, you have been the leaders in this garden and so now, before you go on to middle school, it is time to celebrate all you've done and learned in the garden.*
- *We are going to harvest ingredients from the garden, make ourselves some pesto, and have a pesto party!*

Inquiry Activity One (15 minutes)

- *Before we make our pesto, each of you is going to become a pesto expert. I am going to give each of you a card with one fact about pesto. Read your cards to yourselves. Look up at me when you are done reading. Raise your hand if you have any questions about what is on your card.*
- Hand out cards, give students time to read them, and circulate if necessary to answer questions.
- *OK, now you need to teach each other what you know about pesto. I have five questions about pesto for you to answer. One of your classmates has the answer to every question on this sheet. You need to walk around and talk to your classmates. You tell your classmate what you know about pesto from your card, your classmate tells you what he or she knows.*
- Model this with one another.
    - Vera: *Hi, Mirem. Did you know that pesto is made almost entirely of an herb called basil? Other ingredients are added for flavor: garlic, parmesan cheese, and pine nuts. Olive oil is added to make it smoother and more sauce-like.*
    - Mirem: *Cool! But did you know that the word "pesto" comes from the Italian "pestare" which means to grind? Another word that comes from "pestare" is the pestle, from the mortar and pestle we use to grind our pesto and many other things.*
    - Vera: *Awesome! Let's look on this sheet of paper and see if we were able to answer any of these questions."*
    - Mirem: *You just told me the answer to number one—the ingredients in pesto.*
    - Vera: *And you told me the answer to number two—where the word pesto comes from. So, now all we have to do is make a check mark here next to the two questions we have answered."*
    - Mirem: *Cool. We don't need to write down the answers?*
    - Vera: *Nope, we can just put a check next to each question as we find the answers.*
- Hand out clipboards with questions and pencils and tell the students to get to work talking with one another and finding the answers to the five questions. Tell them once they know the answers to all five questions, they can return to their seats.

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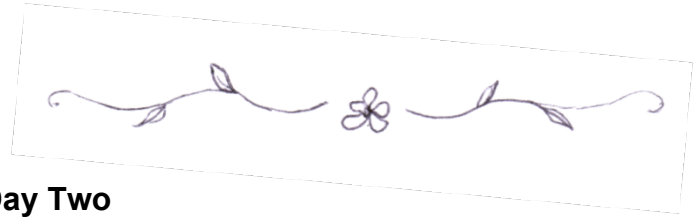
- Circulate and help the students talk to one another. Ham it up so that they feel comfortable making this somewhat artificial conversation.
- When the students are all done, return to the circle and ask each of the questions on the clipboards, calling on different students for the answers.

Inquiry Activity Two (20 minutes)
- Split class into two groups.
- Harvest the amount of basil or other herbs that you will need.
- Take students back to prep stations. Divide into groups so that some students wash and spin basil, some grate cheese, and some smash garlic in mortar and pestle. Once the basil is dried, students can use scissors to cut it into smaller pieces.
- Once cut and grated, add the basil and cheese to the mortar and pestles. Let kids rotate through so everyone gets a chance to use the mortar and pestles. Have a few students add a small amount of olive oil and salt.
- While students get seated back in the large group, use the butter knife to put pesto on the potatoes.

Closing Circle (5 minutes)
- Have students review all the steps they took to bring their pesto from the garden to their plates.
- Share the pesto tasting together.



Procedure: Day Two

Opening Circle (5 minutes)
- *Today is your last day in the garden! We are going to miss you, but we are so glad you are here to participate one last time as our students!*
- Recap pesto activity.
- Introduce garden activity.

Garden Job (30 minutes)
- Lead students in a seasonal garden job. As much as possible, let students be in charge of the work.

Closing Circle (10 minutes)
- Have students work in small groups to share a favorite or most memorable garden experience or lesson from over the years.
- Share out answers as a whole group.
- *What wisdom would you pass on to incoming students about the garden and kitchen?*
- Share out answers.

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Common Core State Standard Extensions

ELA, Grade 5, W3: Write narratives to develop real or imagined experiences or events, using effective technique, descriptive details, and clear event sequence.

- Recap some of the highlights of your experiences in the garden and the kitchen classroom. You can choose what to write about. Some possible topics are: fun times you had in the garden, interesting facts you discovered in the garden or the kitchen, skills you learned from garden or cooking class, foods you ate that you might not have tried before, what you will miss from the garden or the kitchen, anything you might try to continue with gardening or cooking after you leave elementary school.

Other Extensions

Math: If it takes 3 cups of herbs and five cloves of garlic to make pesto for your class, how many cups of herbs and how many cloves of garlic will we need to feed the entire school? Hint: there are 24 classes in the school.

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All About Pesto

1. What are the ingredients in pesto? Which ones come right from our garden?

2. Where does the word “pesto” come from?

3. Who invented pesto?

4. How long have people been eating pesto?

5. Wait, I thought Italians ate their spaghetti with tomato sauce. Am I wrong about that?

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Pesto Facts

- Pesto is made almost entirely of an herb like basil. Other ingredients are added for flavor: garlic, parmesan cheese, and pine nuts. Olive oil is added to make it smoother and more sauce-like.

- The word “pesto” comes from the Italian “pestare” which means to grind. Another word that comes from “pestare” is the pestle—from the mortar and pestle we use to grind our pesto and many other things.

- Pesto was invented by Italians in the city of Genoa. Basil grew very well in their soil, and they needed to figure out a way to eat it.

- People were eating pesto in the days of the Roman Empire, which means it has been around for about 2000 years.

- Italians never ate, grew or even saw tomatoes until after 1492. That’s because tomatoes are from America, and no one in Europe had ever seen one until after Columbus first went there. That means that the tomato sauce we eat on Italian food like pizza and spaghetti is sort of new. Before that, Italians were eating sauces like pesto.

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