

Farm to Table

Lesson Objective & Summary

Objective: In the first lesson, students will identify the geographical sources of US grown produce and will chart their origins on a map. Students will calculate and compare the costs of preparing one recipe with produce grown from a local garden verses the same recipe made with imported produce from a big-box grocery store.

In the second lesson, students will develop a small business plan using relevant facts, concrete details and unique ideas intended to appeal to a potential funder/grantor. Students will provide clear reasons for their choices, and will demonstrate an understanding of the concepts “import” and “export”.

Summary: In the first lesson, students will watch [Costa Rica Exports](#), [Food Finds: Mumbai Edition](#), and [Product of Azerbaijan](#) and will discuss the ways food reflects the culture of the people who eat and cook it. Students will trace the origins of the ingredients in a typical meal, a vegetable potpie, and will explore the disadvantages of importing produce that could otherwise be grown and purchased in their local community. Students will cross compare the cost of making a vegetable potpie from local produce with making the same dish using produce imported from other states.

In the second lesson, students will write a grant proposal seeking funding for a small food truck business. This proposal will include a one-page narrative/description, a budget detailing expenses for ONE month and a creative poster/signage illustrating why their business idea is worthy of funding.

Standards & Benchmarks

From the Common Core Standards for Language Arts

- Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.
(Common Core Standards for English Language Arts, Grades 6-8, Research to Build Present Knowledge)
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through selection, organization, and analysis of relevant content.
(Common Core Standards for English Language Arts, Grades 6 – 8, Text Types and Purposes)

From the NY State Standards for Visual Art

- Students will understand and use sensory elements, organizational principles, and expressive images to communicate their own ideas in works of art.

Grade Level:
Middle School

DURATION:
2 Lessons

SUBJECTS:
English Language Arts,
Geography, Visual Art

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From the NY State Standards for Health, Physical Education, and Family and Consumer Science

- Students will understand and be able to manage their personal and community resources. *(Standard #3)*

From the NY State Standards for Social Studies and Geography

- Students will use a variety of intellectual skills to demonstrate their understanding of the geography of the interdependent world in which we live—local, national, and global—including the distribution of people, places, and environments over the Earth's surface. *(Standard #3)*

Background Information for Educators

The food we eat every day comes from a variety of places in our world. Much of the produce we eat in the United States can be traced back to large farms in places where the climate and population allow for the necessary weather conditions and available space to harvest large yields of fruits and vegetables. Most big-box grocery stores purchase their produce in bulk from these large farms, thereby increasing their “carbon footprint” as a result of transport distances. In order to preserve the food for shipping, the produce is frequently sprayed with insecticides and preservatives not typically used in smaller, more locally owned farms.

Many people have started to prefer organic food whenever possible. Organic food is food that has been grown or made without the use of any chemicals, like pesticides and preservatives. As a result, farmers' markets have become increasingly popular in recent years because of their significant offering of organic food. As of the date of this publication, trends indicate that in some cases local farmers' markets have rivaled and sometimes surpassed the price-point for organic vegetables typically available in mainstream, big-box grocery stores. But in every case, growing your own food or purchasing produce directly from a local grower continues to be the least expensive.

According to the Agricultural Marketing Resource Center, California continues to be the leader in fresh vegetable production in the United States. This state accounted for more than 48 percent of national production and more than 50 percent of the value. Florida was the next largest producer of fresh vegetables, followed by Arizona.

In addition to domestic imports, the United States is a primary consumer of food imported from other places in the world. As the population has grown, so has the demand for imported food. According to the US Department of Agriculture, the percentage of imported food consumed in the United States is nearly 20% of our total consumption. In 2013 Americans imported more than 23 million pounds of vegetables and 30 million pounds of fruit. Now that's a lot of produce!

These days some small businesses and farm-minded entrepreneurs recognize the impact of massive food importation and are making efforts to provide the consumer with alternatives. Many individuals and businesses are eligible to receive grant funding from both public and private sources to launch start-up businesses aimed at generating healthy food on the local level. This money is awarded to people whose mission aligns with that of the funder. Grants that fund farm production and business plans related to healthy food have become an important part of agriculture-based businesses today. Creating a business plan and convincing potential funders of the value of your work, is an important step in applying for a grant. In this lesson students will begin thinking like entrepreneurs and site the reasons why their business idea (a local food truck) is worthy of grant funding.

Also, please note that for the sake of this lesson, the prices quoted for organic produce purchased at a large-scale grocery store have been obtained from the online grocer, Fresh Direct and Whole Foods. Likewise, the prices noted for organic produce purchased directly from a small, local farm reflect the costs of produce grown at Gramps Garden in Sauquit, NY.

Resources below can direct educators to find their own local farm from which you can obtain accurate quotes for your region. Many local farmers are happy to give you current price estimates and even visit with students for a lesson extension. Likewise, many local growers welcome field trip groups, so adding an expeditionary element to your classroom instruction can be as easy as setting up a tour!

Guiding Questions	Key Vocabulary
<p>How much money can you save by purchasing produce grown locally instead of imported produce?</p> <p>Why do you think it is cheaper to purchase from a local farm?</p> <p>Why is organic better than non-organic?</p> <p>Why do you think the government and other large companies might be interested in offering grant money to people wanting to start their own food-based business?</p>	<p>Import</p> <p>Export</p> <p>Organic</p> <p>Produce</p> <p>Grant</p> <p>Carbon Footprint</p>

Lesson Plan 1

Materials Needed: Blank Map of the United States, Colored Pencils or Markers, Calculator

1. Watch the following episodes with the class: [Costa Rica Exports](#), [Food Finds: Mumbai Edition](#), and [Product of Azerbaijan](#).
2. Discuss with students how the foods featured in these videos represent the culture and climate of the people who live in India, Azerbaijan, and Costa Rica. Remind students that nearly every culture in the world can be expressed through the food they cook, which utilizes the resources available to the people of the land.

For example, communities in the Southwestern United States often express a strong Mexican influence due to the relative proximity of Mexico and the foods that grow in this type of climate, like beans and chilies. Likewise, the food in Denmark signifies quintessential Nordic food, rooted in the geography and climate of the region and typically featuring fish, a contribution of the country's seafaring history.
3. Discuss with students the different kinds of foods that represent the culture where you live and tell the students that they are going to work on a project that features a common dish, a vegetable potpie.
4. Using the recipe provided for you at the end of this lesson, list the ingredients on the board with the students and explain that first you need to determine where the ingredients should be purchased.
5. Explain to students that while many of the ingredients on the list can be grown locally during the right season, Americans tend to import produce from the states that have the space and climate to grow the vegetables year round. Importing vegetables from other states often costs the consumer more money due to shipping expenses,

and typically means that the food you buy has been treated with insecticides and preservatives so the fruits and vegetables will last longer.

Lesson Extension Idea: Calculate the distance each of these vegetables travel to reach your local grocery store. (Approximate distances can be calculated by imputing the capital city of each state, and your local city or town into MapQuest or Google Maps websites.

Take It Further: Based on a 7 mile-per-gallon average of a typical 18-wheeler, calculate the approximate fuel cost for one truck to travel from its source to its destination. For Example: If you live in Fonda, NY and your potatoes came from a town near Boise, Idaho, a truck delivering potatoes would have to travel 2,455 miles to deliver the produce. If the truck delivering the potatoes got 7 miles-per-gallon, the truck would use up an estimated 350 gallons on the trip. If the average price of diesel fuel were \$3.66 a gallon, the trip would cost over \$1,281 one way! Explain to the students that the term “carbon footprint” refers to the amount of carbon dioxide released as a result of consuming fossil fuels like gasoline or petroleum. In the case of exporting Idaho potatoes, the carbon footprint is ginormous!

6. Provide the students with more than one resource for pricing out the necessary ingredients from a big-box grocer. Students can get quotes from Fresh Direct online, from an actual trip to the mainstream grocery store with a friend or family member, or from advertisements printed and made available by a grocery store in your area.
7. Using a blank map of the United States ask the students to color the states producing the most vegetables.
8. Based on the price of produce at both the mainstream grocer and a local farm, ask the students to estimate the price of making a vegetable potpie. Ask the students to assume they have none of the ingredients to start; everything must be purchased. (The price for all ingredients not available from a local farm must be purchased from a traditional big-box grocery store. Approximate costs for these items have been listed in the table below for your convenience.)
9. Given the prices provided in the table below, this recipe would cost \$56.70 if all of the ingredients were purchased at a big-box grocer. The recipe would cost \$44.77 if all of the produce required to make the recipe were purchased from a local farmer and the remaining ingredients from a big-box grocer. That's nearly at \$12.00 difference.

Lesson Plan 2

Materials Needed: Budget Document (provided), Notebook Paper, Pencil, Calculator, Markers/Crayons/Paint and Cardboard or Construction Paper (other decorating items like glitter, pictures from magazines and/or fabric are optional)

1. Watch the following episodes with the class: [Food Finds: Singapore Edition](#), [Food Finds: Mumbai Edition](#), and [Product of Azerbaijan](#) and discuss with the students how markets and town centers that sell locally prepared food like the ones in the videos are often the financial life force for people living in these communities.
2. Tell the students that they are going to start their own food truck business selling personal-size vegetable potpies. Explain that in order to get their business started they need to raise enough money to purchase the ingredients and advertise their product.
3. Explain to the students that there is a grant available to entrepreneurs starting new food related businesses, and if awarded they would receive \$5,000 to launch their food truck business.

4. Break the students into groups of three or four and explain that together they will need to create a grant proposal based on the requirements of the funder. Students should:
- Include the name of their business.
 - Describe their food truck business idea in one page or less. Applicants should be sure to identify and include...
 - how their business will impact the greater community. (provide jobs, generate an greater interest in healthy food, etc.)
 - where they will get their ingredients from. (local grocery store, local farm or a personal garden, etc.)
 - a rationale for why they will or will not import their ingredients from distant sources.
 - FACTS!
 - Fill out the budget document (at end of document) and list their overall expenses, excluding labor costs, for six months. Assume that they will need to make a fresh batch of vegetable potpies five days a week for 25 weeks.
 - The vegetables listed in the recipe will be used up each day, but the seasonings, olive oil, breadcrumbs, etc. will only need to be purchased once a week.
 - NOTE – If necessary, teachers can work on this budget document together with the class as a whole, offering mathematical support where needed.
 - Create a sign that you will post outside of your food truck. The sign should be catchy to look at, and should address sensory elements like taste, sight and smell.

Lesson Extension Ideas

Create a competition at your school for the best grant submission. Ask other teachers, administrators and/or school staff members to help you review the submitted requests for funding, and use the Assessment/Evaluation Guidelines as a tool to determine who will be awarded the mock grant. Students can be asked to “pitch” their ideas to a panel of evaluators in a public setting. The winner can be awarded a small credit to a local farm, free entry to a local botanical garden or some other school-based incentive like a “homework-free week”.

Assessment/Evaluation Guidelines

Does the business plan/grant narrative include a rationale for why the applicant chose to purchase their produce from one source over another?

Does the narrative include facts about locally grown vegetables verses those purchased at a mainstream grocer?

Does the narrative reflect on how this small business would impact the larger community?

Are the calculations in their budget document correct?

Does their visual aid/poster include elements of sight, taste and smell as they relate to a vegetable potpie?

Vegetable Potpie Recipe

Background: Europeans perfected the potpie as a savory way to keep the meat and veggies inside moist. Since arriving in the United States the potpie has had many incarnations, and can be traced back to farming communities in the Northeast, specifically the Dutch communities thriving in the farmlands of Pennsylvania. Today the potpie is a hearty meal served throughout the country and around the world, generally in regions where the produce is plentiful and fresh.

Makes two pies, 12 or more servings

- 8 medium potatoes
- 2 tablespoons extra-virgin olive oil
- 1 large onion, quartered and finely chopped
- 4 cups of diced vegetables such as:
 - cauliflower
 - broccoli
 - carrot
 - zucchini or yellow summer squash
- 2 tablespoons unbleached white flour
- 1 cup vegetable stock (homemade or store bought)
- 1 1/2 tablespoons all-purpose seasoning blend (such as Mrs. Dash)
- 1 teaspoon chopped and dried thyme
- 1/4 cup minced dried parsley
- Salt and freshly ground pepper to taste
- Two 9-inch prepared good-quality pie crust, preferably whole grain
- 1 cup fine whole grain bread crumbs
- Paprika for topping

Cook or microwave the potatoes in their skins until done. When cool enough to handle, peel them. Dice four of them and mash the other four coarsely. Set aside until needed.

Preheat the oven to 350° F.

Heat the oil in a large skillet. Add the onion and sauté over medium heat until golden. Add the vegetables, layering quicker-cooking vegetables like zucchini over longer cooking ones like cauliflower, broccoli, and carrots. Add a bit of water; cover and cook until the vegetables are tender but not overdone, about 5 minutes.

Sprinkle the flour into the skillet, then pour in the stock. Add the optional nutritional yeast. Cook for a minute or two, stirring constantly until the liquid thickens. Stir in both the diced and mashed potatoes. Heat through gently. Stir in the seasoning blend, thyme, and parsley. Season with salt and pepper. Pour the mixture into the pie crust and pat in.

Sprinkle the breadcrumbs evenly over each pie, then top with a sprinkling of paprika. Bake for 35 to 40 minutes, or until the crust is golden. Let the pies stand at room temperature for 10 minutes or so, then cut into wedges and serve.

Vegetable Potpie Shopping list

note: The following prices are from a grocery store in New York City in May 2014.

Item	Where it's from	Cost of organic item from big-box grocer	Cost of organic item if purchased directly from local farmer
Potatoes	Ontario, Canada	\$ 3.99 / lb	\$.50 / lb
Cauliflower	California	\$4.49 / head	\$2.00 / head
Carrots	California	\$3.49 / lb	\$1.00 / lb
Zucchini	Sonora, Mexico	\$3.49 / lb	\$1.00 / lb
Broccoli	California	\$3.99 / lb	\$2.00 / lb
Yellow Onion	Georgia	\$1.69 / lb	\$1.00 / lb
White Flour	Vermont	\$5.00 / bag	---
Vegetable Stock	Oregon	\$4.39 / 32 ounces	---
Mrs. Dash Seasoning	---	\$3.60 / bottle	---
Dried Parsley	---	\$1.20 / bottle	---
Dried Thyme	---	\$1.20 / bottle	---
Salt	---	\$1.00 / can	---
Pepper	---	\$2.70 / can	---
Paprika	Hungary	\$1.20 / bottle	---
Bread Crumbs	---	\$3.30 / bag	---
Olive Oil	Italy	\$12.99 / 34 ounces	---

Additional Resources

US Census Bureau - Lists imports and exports of goods into and out of the United States.
http://www.census.gov/foreign-trade/Press-Release/current_press_release/exh15.pdf

Fresh Direct - Online big-box grocer
<https://www.freshdirect.com/index.jsp>

Local Harvest - Connects people looking for good food with the farmers who produce it.
<http://www.localharvest.org>

Agricultural Marketing Resource Center - Lists the states producing the highest yields of specific produce in the US and connects agriculture based entrepreneurs to grant opportunities.
<http://www.agmrc.org/> -

US Department of Agriculture - Provides import values of edible products (food and beverages) entering U.S. ports and their origin of shipment.
<http://www.ers.usda.gov/data-products/us-food-imports.aspx#25435> -