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| **Title** | Exposing the Roots of Local Food Production |
| **Section of Lesson** | **Lesson Two: Defending the Local Choice**  In this lesson, students will analyze the benefits and debate shortcomings of a local foods system. They will compare the modern food system and local foods systems. |
| **Introduction** | For the past two decades, the American culture has been working its way backwards to an era that provided health, economic, and environmental benefits. An era in which people knew where their food came from and could tell you the name of the person that grew and sold it. The local foods movement is a cultural shift in the American way of life and it is seeking to update past food traditions, but with a modern twist.  In this unit, students will learn about the local foods movement and how they can make a positive difference in their health, economy, and environment by choosing to live and eat locally. The teacher will utilize a variety of instructional methods to inspire a passion for local food. Literacy and curriculum integration is of utmost importance in this unit as students learn to apply the local foods movement to their everyday life.  In this lesson, students will participate in multiple comparison activities and a debate to analyze local food systems and their possible effects on our lives. Students will also work to create a competitive business analysis for a locally owned business. |
| **Curriculum Alignment** | **NC Essential Standards**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Content Area | Grade Level | NC SCS | Lesson 1 | Lesson 2 | Lesson 3 | Lesson 4 | | Science | 6-8 | 6.L.1.2 |  |  | X |  | | Science | 6-8 | 6.L.2.3 |  |  | X |  | | Science | 6-8 | 8.P.2.2 | X | X |  | X | | Science | 3-5 | 3.L.2.1-4 |  |  | X |  | | Biology | 9-12 | Bio.2.1.1 |  | X |  |  | | Biology | 9-12 | Bio.2.2.2 | X | X |  |  | | Earth and Environmental Science | 9-12 | EEn.2.2.1 | X | X |  |  | | Earth and Environmental Science | 9-12 | EEn.2.6.3 | X | X |  | X | | Earth and Environmental Science | 9-12 | EEn.2.8.2 | X | X |  | X | | Civics and Economics | 9-12 | CE.E.1.3 | X | X |  | X | | Civics and Economics | 9-12 | CE.E.1.4 | X | X |  | X | | Civics and Economics | 9-12 | CE.E.1.5 | X | X |  | X | | Civics and Economics | 9-12 | CE.E.1.6 | X | X |  | X | | Social Studies | 3 | 3.G.1.3 | X | X |  | X | | Social Studies | 3 | 3.G.1.4 | X | X |  | X | | Social Studies | 3 | 3.E.1.1 | X | X |  | X | | Social Studies | 3 | 3.E.1.2 | X | X |  | X | | Social Studies | 4 | 4.E.1.1 | X | X |  | X | | Health Education | 6-8 | 6.PCH.3.1 | X | X |  | X | | Health Education | 6-8 | 6.PCH.3.2 |  |  | X |  | | Agriscience Applications | 9-12 | 2.02 | X | X | X | X | | Agriscience Applications | 9-12 | 3.03 |  |  | X |  | | Exploring Agriculture Science | 6-8 | 7.01-7.03 | X | X | X | X | | Exploring Agriculture Science | 6-8 | 9.01-9.02 | X | X |  |  |   **Next Generation Science Standards**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Content Standard | Lesson 1 | Lesson 2 | Lesson 3 | Lesson 4 | | HS-ESS3-2 | X | X | X | X | | HS-ESS3-3 |  | X | X |  |   **Common Core Standards**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Content Standard | Lesson 1 | Lesson 2 | Lesson 3 | Lesson 4 | | ELA-Literacy.RST.11-12.1 | X | X | X | X | | ELA-Literacy.RST.11-12.2 and 12.3 |  |  | X |  | | ELA-Literacy.RST.11-12.7 | X | X | X | X | | ELA-Literacy. RH 9-10.9 |  |  |  | X | |
| **Learning Outcomes** | Students will identify key terms related to local food production and food systems.  Students will compare conventional and local food system structures using available research, price comparisons and a taste-test analysis.  Students will analyze modern literature and relate an author’s viewpoint to his or her everyday lives.  Students will develop a competitive and market analysis for an agriculture business focused on local products. |
| **Time Required and Location** | Time: Three to Four- 90 minute class periods  Location: All activities except for the “Are Local Foods Better for My Wallet? Market Comparison Worksheet,” may be completed inside the classroom. For this activity, there are three options for the location.  -Option One: The class may take a field trip or visit a local farmer’s market during or after class time to find prices for the worksheet.  -Option Two: Students may be required to complete the farmer’s market portion of the worksheet for homework over a one week time period (worksheet assigned at or near the end of Lesson One) and must visit the local market on their own time.  -Option Three: The teacher may visit a local farmer’s market outside of class time and bring back pictures and prices of local produce and agriculture products. |

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| **Materials Needed** | Teacher List   * Unit PowerPoint/Notebook Presentation with Video Links (“Feeding Nine Billion”, “Tyson vs. Local,” and “Local vs. Organic”) * Computer and Projector * Speakers for Videos * Review cards: Small Index Cards, scrap pieces of construction paper, recycled paper scraps, or Large “Post-it” Notes * Chicago Tribune Article, one copy for every student * Taste Test Data Analysis:   -Samples of locally produced items and store bought, conventional items for the taste test  -Small plates or napkins for food samples  -Taste Test Data Analysis Spreadsheet   * Materials for “Are Local Foods Better for my Wallet? * Possible visit to a local farmer’s market. * Weekly price advertisements for three local supermarkets OR computer access/laptops for research on up-to-date prices. * Food Dollar Fair Share Articles and Questions for comprehension * Food System Debate guidelines, questions, and rubric * “Shark Tank-Local Edition” Agriculture Business Plan Rubric and Project Guidelines   Student List   * Taste Test Data Survey, one copy per student * “Are Local Foods Better for my Wallet? Worksheet, one copy per student * Animal, Vegetable, Miracle Chapter Two Excerpt, one copy for every 1-2 students * AVM Chapter Two Worksheet, one per student * “Shark Tank-Local Edition” Agriculture Business Plan Rubric and Project Guidelines, focus on market and competitive analysis. * Computer access for competitor research |
| **Safety** | Taste Test: Check for any food allergies prior to the taste test day. Provide samples free of allergens. Ensure that all students wash their hands prior to, during, and after the laboratory assignment  Farmer’s Market Visit: Place students with partners or small groups of three while walking through the market. Establish a meeting place and time for the end of the visit. Provide students with directions in case of an emergency. |
| **Student Prior Knowledge** | Students should be aware of local food system terminology in Lesson One of this unit. They should be able to explain and compare the processes in both a local and conventional food system.  They will need to be able to use correct terminology in the Food System Debate and Market Analysis near the end of this lesson. |
| **Instructional Outline** | Local Versus Conventional Comparison Chart   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Area of Comparison | Local Food Systems | | Conventional Food Systems | | |  | Pros | Cons | Pros | Cons | | Environmental | Fewer miles in transport equals less CO2 emissions. | --- | ---- | More miles in transport from farm and processing facilties. | | Economical | Farmers receive greater percentage of profit.  More money stays in the local economy. | Fewer jobs provided in transportation. | Many jobs provided throughout complex food system. | Profit unevenly distributed to producers.  Profit made by distant or foreign companies. | | Quality | Harvested at ripeness.  Potential increase in nutritional value because food is fresher. | Customers may purchase lower grade products based on experience. (Example: tomatoes with unusual shape) | Only top grade produce and meat may be sold. | Produce harvested when unripe. Chemicals used to ripen. | | Price and Availability | Most often lower than conventional prices when in season. (Prices increase at the beginning or end of a season). | Products completely unavailable when out of season unless they are preserved. | Low prices throughout the year. (May not be as low as products in season).  A variety of produce throughout the year. | Prices are lower at local markets for items in season due to decreased transportation costs. | | Knowledge of Origin | Location of origin is exact. Farm visits are a possibility. | --- | Some markets post country of origin. | Actual grower is most often unknown.  Some produce or meat is unmarked with origin. |   Special Notes for Teacher Input:   * Local and organic goods are NOT the same. Organic growers may ship their produce far away when they sell to larger markets. Many local growers do not use ONLY organic practices. They may use many similar practices as organic growers, but they may also use conventional methods and pesticides. Many local growers are concerned that customers will not like the appearance of organic foods and will return to supermarkets for conventional produce. * Choosing to support local food systems is not always possible for everyone. Local food systems are an integral part of our culture and economy. There is not one simple solution to the global food system, but each person can make their own individual choice. * Example of “Fake” Local Food: For some consumers, the importance of “environmentally sustainable” practices may exclude some products that are produced and consumed within “close” proximity from fitting a local definition. For example, a case study of a certified organic produce grower in southern Idaho found that when the grower sells to Albertsons, a mainstream grocery retailer, the food must be shipped from the farm to a distribution center located 235 miles away inUtah (DePhelps et al., 2005). It can then be shipped back to Idaho for sales in local stores. |
| **Teacher Preparations (Required)** | * Review the Unit PowerPoint/Notebook Presentation with Video Links * Prepare a computer, projector, and speakers for the PowerPoint and videos * Prep Materials:   - Prep Review cards: Small Index Cards, scrap pieces of construction paper, recycled paper scraps, or Large “Post-it” Notes  - Chicago Tribune Article, one copy for every student  - Food Dollar Fair Share Article and Questions for comprehension  - Food System Debate guidelines, questions, and rubric  - “Shark Tank-Local Edition” Agriculture Business Plan Rubric and Project Guidelines. - -  - Provide computer access for competitor and market research.   * Prep for Taste Test Data Analysis:   -Purchase and prepare samples of locally produced items and store bought, conventional items for the taste test  -Small plates, cups, and toothpicks for food samples  -Taste Test Data Analysis Spreadsheet   * Prep materials for “Are Local Foods Better for my Wallet? * Obtain Weekly price advertisements for three local supermarkets OR computer access/laptops for research on up-to-date prices. * Obtain pictures or evidence of local food prices, if a visit to a market is not an option. * Complete paperwork for a possible visit to a local farmer’s market. |
| **Activities** | **Engage (DAY ONE)**   1. “Food for Thought” or Starter Questions: 5 min   -Use the following as a starter question or open discussion for the beginning of class:  Imagine that it is July and you visit both a farmer’s market and a local grocery store. At which location do you think you can purchase a watermelon for a lower price? Why do you think so?  -After students have answered, explain that you will be exploring the truth to their answers in this lesson.  (Use the Unit PowerPoint as a guide/source of links for the remainder of the lesson.)  2. Feeding Nine Billion Video and Reflection 15 min  -Distribute the “Feeding Nine Billion Worksheet.” This worksheet contains questions for reflection as well as the script for the video in order for students to follow the video.  -Using the Unit PowerPoint or the “Feeding Nine Billion” Worksheet play the video for your students.  -Allow students a few minutes to answer the reflection questions. Hold a class discussion on the answers for the video. Remind students that there are always two sides to every issue. This lesson will focus on exploring all “sides” of the local foods movement. Students will learn the pros and cons of local and conventional food systems.  **Explore**   1. Notes and Videos on the Local versus Conventional Food System 20-30 min   -Using the Unit PowerPoint, allow students to record the chart on the pros and cons of local foods and conventional foods. Discuss the items in the chart.  -Play the “Tyson versus Local” and “Local versus Organic” videos. Discuss student feelings, assumptions, and summaries of each video. You may have students record a reflection in their notebooks.   1. Food Fights: Chicago Tribune Article 15 min   -Distribute the article and reflection questions. Allow students time to complete the assignment.  -Discuss student answers.   1. “Let’s Chew on it”: Review for end of first class period 5-10 min 2. Distribute each child a review card. 3. Instruct them to write the following on their card: 4. Name and Date 5. What is an advantage to *local food systems* that you feel outweighs an advantage to *conventional food systems*? Why? 6. What is an advantage to *conventional food systems* that you feel outweighs an advantage to *local food systems*? Why? 7. Students should complete their card, share it with one partner, and then turn it in to the teacher.   **Explain (DAY TWO)**   1. “Food for Thought” or Starter Questions: 5 min   -Use the following as a starter question or open discussion for the beginning of class:  1. List one disadvantage to local food systems.  2. Do you think local food systems are sustainable in terms of economics? Why or why not?  -Discuss student answers. Lead a discussion on the importance of comparing the pros and  cons of local and conventional food systems for themselves. Tell them that the next few  activities in the lesson are or them to decide the advantages and disadvantages of local foods  for themselves.   1. Are Local Foods Better for My Wallet? A Farmer’s Market and Supermarket Price Analysis   -This assignment involves two parts. First, students must visit a farmer’s market, interview local farmers, and complete the pricing for a sampling of the produce at the market. Then, students must identify supermarket prices in the classroom.  -Students may visit a farmer’s market on their own time, the teacher may collect samples and prices, OR you may take a class field trip to a local farmer’s market. If students are the complete the worksheet on their own, provide them with at least one week to complete the assignment. Many local farmers’ markets are only open for one to two days during the week.  -Provide students with access to local supermarket advertisements or provide access to the internet. Students should find prices for items as similar as possible to items purchased at the farmer’s market.  -When all students have completed the assignment, allow students to share the results in small groups. Then, discuss the outcome as a class. Discuss any discrepancies.   1. Food Dollar Fair Share Article and Reflection 15 min   -Distribute this article and reflection questions. Allow students time to read individually.  -Discuss the article in partners or as a class.  (Possible DAY THREE Lesson if an entire class period was used for the Farmer’s Market field trip. May need to insert a “Food For Thought” Starter Question.)   1. Taste Test Lab 90 min   -Prep all materials prior to the lesson. This includes food samples, plates, napkins, toothpicks, cups, sensory ballots, and student worksheets. Use the NC Season Produce Availability Chart to select food samples for the lab. Make sure to purchase three food items from both a local food source and a conventional food source, such as a supermarket.  -Use the “Teacher Key” to walk students through a discussion. Instruct students to write the correct information in their laboratory report. Try to lead them in the right direction for creating the laboratory instructions. Discuss the difference in variables and the need for validity of the research.  -For your own records, select one of the rounds for each food sample to be a “control round.” This round should only contain conventional food samples. Do not tell students the control round until after the lab has been completed.  -Allow students to complete the lab with a partner.  -Display the “teacher recording chart” found in the “teacher key.” Inform students of the control round. Create graphs and charts that compare the results from the control round with the local and conventional food samples.  -Discuss the results with students. Hypothesize other areas that foods could be compared in a laboratory experiment.  **Elaborate**  (Possible Day Four Lesson. May need to insert a “Food for Thought” Starter Question.)   1. AVM Chapter Two Excerpt: 25-30 min   You may read the entire chapter for this lesson, or just read the excerpt. The excerpt begins in page 29 with “The asparagus plant’s life” and ends at the bottom of page 31.  -Divide students into small groups and allow them to “popcorn read” through the excerpt.  -While students read, post the following questions for students to either record on notebook paper or inside of their notebooks. They should answer them at the conclusion of their reading.  -Provide access to the NC Season Produce Availability Chart. Students may need this to complete their assignment.  2. Shark Tank- Local Edition Business Plan 60-90 min  - Allow students to work with their business partners to complete the “Target Market,  Description of Competition, and Marketing” sections of their business plan. Evidence of work  completion should be turned in and used for assessment.  -You may wish to provide time for students to share their Marketing examples with the class.  This could extend the lesson time.  **Evaluate (see Assessment)**  (Possible Day Five Lesson. May need to insert a “Food for Thought” Starter Question.)   1. Food System Socratic Seminar/Debate 45-60 min   -Use the worksheet and rubric as a guide to lead the class in a debate concerning the information gained from lessons one and two of this unit.  -Make sure students are seated in a manner that improves discussion between each other. Try to remain as a facilitator in the activity.  -Record student’s participation and use the record to determine an assessment grade. |
| **Assessment** | **Evaluate with Formative Assessments**:   * Chicago Tribune Questions for Reflection * Food Dollar Article Questions for Reflection * AVM Chapter Two Worksheet and Reflections * “Shark Tank- Local Edition” Agriculture Business Plan- Market and Competitor Analysis   **Evaluate with Summative Assessments for the Lesson**:   * Food System Debate: Participation and quality of discussion |

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| **Critical Vocabulary** | A short list of valuable terms is as follows (See the Instructional Outline category in Lesson One for the full terms and definitions):   1. Local Foods 2. Food Mile 3. Organic 4. Sustainable 5. Food System 6. Locavore 7. CAFO 8. Conventional Agriculture 9. Processed Food 10. Minimally Processed Food |
| **Community Engagement** | Farmer’s Market Visit: Independently, or as a class, students may visit a local market to complete the “Are Local Foods Better for my Wallet?” worksheet. This is a great opportunity for students to engage in a conversation with local producers. Encourage students to ask questions about the farm from which the produce or meat came. |
| **Extension Activities** | **Unit Extension Activities**: For examples of unit long extension activities, view the “Extension Activities for the Unit and Beyond” document found in the “Unit Materials.”  **Lesson Two Extension**:  Guest Speakers: Farmer Spotlight  Invite two local farmers to speak to your class- separately or jointly. One farmer should grow and sell local produce at markets or to local consumers. One farmer should grow row crops or raise livestock and sell their products to large companies.  Formulate a list of questions with students prior to the guest speakers arrival. Encourage students to ask questions to help understand the realities and advantages to each of their careers. |
| **References** | Eng, M (2010) Food Fights: Locavores, Conventional Food Fans Battle Over Benefits. Chicago Tribune. Retrieved from <http://articles.chicagotribune.com/2010-09-02/news/ct-met-eating-local-20100901_1_farmers-markets-food-stamps-locavore-challenge>  Eshel, G. & Martin, P. (2006) Diet, Energy, and Global Warming. Earth Interact, 10, 1-17.Retrieved from <http://journals.ametsoc.org/doi/full/10.1175/EI167.1>  Farm Aid (2015) Giving Farmers Their Fair Share. Retrieved from <http://www.farmaid.org/site/apps/nlnet/content2.aspx?c=qlI5IhNVJsE&b=6281749&ct=9339719> |
| **Supplemental Information** | Videos in Presentation:  -Local Food Systems and Feeding Nine Billion <https://feedingninebillion.com/video/local-food>  -Local vs. Organic <https://www.youtube.com/watch?v=pO-Qhc4BuRc>  -Tyson vs. Local <https://www.youtube.com/watch?v=_IWL-Q8FfdI> |
| **Author Info** | **Kenan Fellow:**  April Pittman is an agriculture teacher at Gray’s Creek High School in Cumberland County, North Carolina. April teaches basic agriculture education courses, advanced agriculture studies, and two levels of horticulture, or plant science, to all grade levels. She has been teaching for seven years and loves the Gray’s Creek community. April graduated with a B.S. degree in Agriculture Education from North Carolina State University in 2008, a M.S. degree in Agriculture Education from North Carolina A & T University in 2012, and was recognized as a National Board Certified Teacher in 2014. Along with her two agriculture teaching partners, April advises the Gray’s Creek FFA Chapter. This chapter, ranked second out of over 300 FFA chapters in the state of North Carolina, focuses on community service, the development of career skills, and agriculture promotion activities.  April has a passion for helping others learn about gardening, agriculture, and the local foods movement. You may contact her with questions or feedback at aprilpittman@ccs.k12.nc.us.  **Mentors:**  SheaAnn Dejarnette is the Extension Agent for 4-H Youth Development in Robeson County and is fortunate to lead a great team that provides programming for youth between the ages of 5-18. She also serves on the Robeson County Fair Board and helps organize all youth shows and exhibits for the fair. Her programming includes school enrichment in STEM, health and nutrition, In-school and After-School clubs, Summer Fun, Camping, Animal Science, Volunteer Coordination, County Programs, Program Funding, Community Service Opportunities, and Organizational Partnering.  Shea holds a B.A. degree in Communications from Mary Baldwing College, a M.A. degree in Broadcast Journalism from Walden University, and is currently working in a doctoral program in Philosophy and Nonprofit Management with Walden University.Shea has a passion for helping young people meet their fullest potential. For any questions concerning 4-H or youth programs, contact her at [shea\_ann\_dejarnette@ncsu.edu](mailto:shea_ann_dejarnette@ncsu.edu).  Janice Fields serves as the Family and Consumer Science Agent in Robeson County, North Carolina. She is responsible for provide programming in the areas of Food Preparation, Nutrition and Wellness, Food Safety, Food Preservation and Housing. Janice is a strong supporter of the local foods movement- she even grinds her own local grain for flour in her daily bread making. Her 25 years of experience in the classroom have provided her with valuable skills for teaching the public about home canning and eating a nutritious, local diet. Janice would love to answer any questions related to canning or home food preparation and may be reached at [janice\_fields@ncsu.edu](mailto:janice_fields@ncsu.edu).  Casey Hancock is a Community Resource Development Extension Agent focusing on Local Foods and Tourism Development in Robeson County. Her main responsibilities include building capacity for the local food system through education for farmers and consumers alike, as well as helping to develop tourism opportunities through educational programming to support the local economy. Casey graduated with a BS in Environmental Studies and Sustainability from the University of Vermont. Before joining Cooperative Extension, she served with national non-profit FoodCorps in New Hanover and Brunswick counties (NC) to build and maintain school gardens, develop and teach garden-based nutrition and science lessons to 3rd graders, and support and feature local foods in the school cafeterias. She may be contacted via email at [casey\_hancock@ncsu.edu](mailto:casey_hancock@ncsu.edu).  Mack Johnson has served as the Horticulture Extension Agent in Robeson County, North Carolina for two years. Before entering the extension field, he obtained a Bachelor’s degree in Biology and farmed for 18 years with his family. Then, he served as Registered Sanitarian for the Robeson County Environmental Health Service for 14 years. He has a passion for home gardening and helping others find solutions to their gardening woes. He may be reached at [mack\_johnson@ncsu.edu](mailto:mack_johnson@ncsu.edu). |