

FARM TO FOOD TRUCK

facilitator's guide



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**CHALLENGE
RATIONALE**



CHALLENGE RATIONALE

Two percent of the U.S. population is directly involved in production agriculture. Too often, people do not truly understand where their food comes from. This challenge addresses the lack of awareness around agriculture production and the process that food takes from farmer to consumer. The final product of this challenge is to create a food truck that analyzes the farm to fork process. Through this challenge, students will become more aware about how food travels from the farm to their community through this exciting challenge.

ESTABLISHING THE CHALLENGE

Identify a Problem

Americans enjoy an affordable and abundant food supply thanks to farming and ranching families. The families involved in production agriculture make up 2% of the U.S. population. Farms and ranchers come in all different sizes and with different production practices. Farm and ranches across the country provide safe low-cost products for American consumers. “One U.S. farm feeds 168 people annually in the U.S. and abroad.” The future of farming is a growing concern in America as the average age of farmers increases, the number of individuals entering the farming occupation decreases, and the global population dramatically increases causing a higher demand for food produced annually. Through this challenge, students will become more informed about food production and sourcing.

Response to Problem

With the challenge of the general population being disconnected from where their food comes from, your team has been selected to design a food truck that addresses the journey of food from farm to food truck.

This solution must address the following needs:

- Track where the food for your menu comes from.
- Provide a cost analysis for food items.
- Understand labeling and marketing of food items.
- Emphasize sourcing local ingredients when possible.

Success will be determined by

- Construction of a food truck menu of three to five items based on a selected food truck theme.
- Creation of a budget for all items needed for the menu.
- Providing an analysis of the farm to food truck journey for all ingredients in one menu item.
- Producing a marketing campaign that advertises the foods sourced in your food truck business.



**STANDARDS
ADDRESSED**



NEXT GENERATION SCIENCE STANDARDS

www.nextgenscience.org

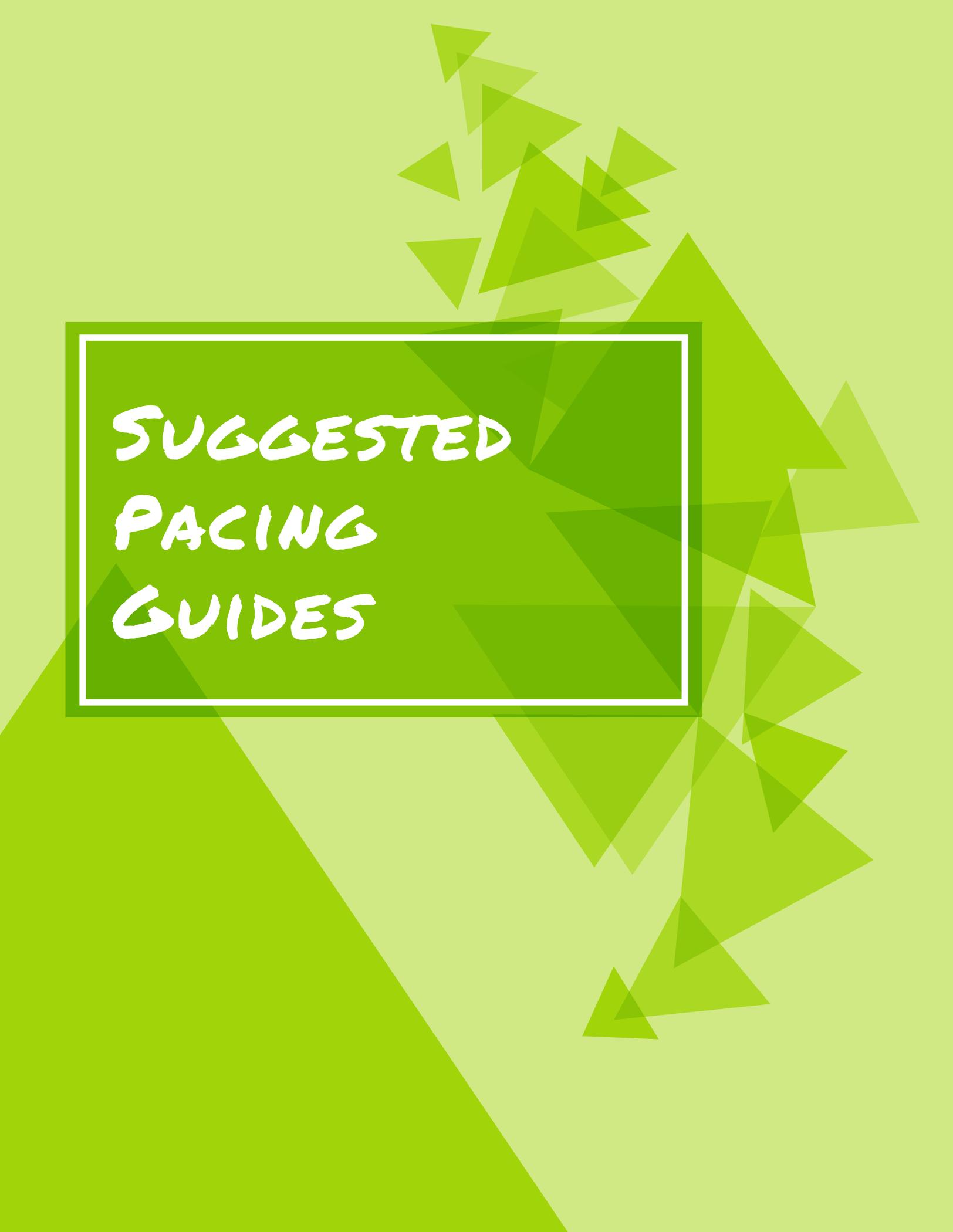
- **5-LS2-1** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
- **5-ESS3-1** Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.
- **MS-PS1-3** Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- **MS-LS2-1** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-3** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
- **MS-LS2-4** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS2-5** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- **MS-ESS3-3** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- **MS-ESS3-4** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.



COMMON CORE MATH

<http://www.corestandards.org/Math/>

- **CCSS.MATH.CONTENT.5.OA.A.2** Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
- **CCSS.MATH.CONTENT.5.NBT.A.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
- **CCSS.MATH.CONTENT.5.NBT.A.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- **CCSS.MATH.CONTENT.7.EE.A.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
- **CCSS.MATH.CONTENT.7.SP** Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.



**SUGGESTED
PACING
GUIDES**



MIDDLE-SCHOOL SCHOOL-YEAR PROGRAM

This sample pacing guide is created for a 90-day calendar with a 45-minute class. This is only a recommendation. The facilitator can modify it to meet their needs based on scope of project and time available.

Design Process Step	Timeline
Identify	5 days
Imagine	8 days
Design	5 days
Create	6 days
Test & Improve	61 days
Share	5 days

MIDDLE-SCHOOL SUMMER-SCHOOL PROGRAM

This pacing guide is created for a 20-day calendar with a 3-hour block. This is only a recommendation. The facilitator can modify it to meet their needs based on scope of project and time available.

Design Process Step	Timeline
Identify	2 days
Imagine	2 days
Design	2 days
Create	3 days
Test & Improve	9 days
Share	2 days



AFTER SCHOOL- SCHOOL YEAR PROGRAM

This sample pacing guide is created for 2 days a week for an 18-week semester. All days are calculated with a 90-minute timeframe. This is only a recommendation. The facilitator can modify it to meet their needs based on scope of project and time available.

Design Process Step	Timeline
Identify	2 days
Imagine	2 days
Design	2 days
Create	5 days
Test & Improve	21 days
Share	5 days

AFTER SCHOOL- SUMMER SCHOOL YEAR PROGRAM

This pacing guide is created for a 20-day calendar with a 3-hour block. This is only a recommendation. The facilitator can modify it to meet their needs based on scope of project and time available.

Design Process Step	Timeline
Identify	2 days
Imagine	2 days
Design	2 days
Create	4 days
Test & Improve	8 days
Share	2 days



NOTE:

To fulfill the requirements of the challenge, you will need time beyond the allotted program time above. Possible options for competing include:

- Sending the constructed growing structure and related materials home with students wishing to compete (participating in regular progress monitoring of project with facilitator)
- Developing continuation options in an after-school or extra-curricular club with facilitator
- Including parents in the process of continuing the investigation (with option of providing space at school to keep project)



MATERIALS LIST



FARM TO FOOD TRUCK SUGGESTED MATERIALS LIST

The items listed below are suggested materials needed to conduct the challenge. Facilitators and students are encouraged to be creative and inventive in acquiring the materials needed to complete the challenge (e.g., purchased, recycled, donated, etc.).

Materials Required	Suggested Material Options
Computer with internet access	Printer
	Variety of paper (e.g., poster board, presentation board, construction paper, etc.)
	Creative materials (e.g., scissors, glue, etc.)
	Coloring supplies
	Calculator



**FACILITATING
THE
CHALLENGE**



FACILITATING THE CHALLENGE

Each Purple Plow Challenge can be implemented in a variety of methods, timeframes, and programs. Follow the steps below to help determine how this challenge will best fit the current situation and educational environment.

1. Review the Purple Plow “Design Process” and the “Content Packet” documents.
2. Examine the suggested pacing guides to determine ways to integrate the challenge into your specific program.
3. With the timeframe in mind, use the guidance provided in this section to help students progress through the challenge. This guidance includes suggested student prompts, guiding questions for students, signs of step completion, and journaling opportunities. The student prompts, guiding questions, and journal prompts are found in the “Farm to Food Truck Student Guide.” Facilitators or students may determine the method by which they record their research and discoveries found for these prompts and journal reflection questions.



1. IDENTIFY

PURPOSE OF STEP

Define the problem around the disconnect between people and food and how it is affecting life globally, nationally, and locally. Research and consider how others have approached solving the problem. Describe why this problem needs a solution. Determine constraints of the project (e.g., time, resources, etc.).

STUDENT PROMPTS AND GUIDING QUESTIONS

- How are agricultural products processed?
- Why is farming and ranching an important occupation?
- Is there a potential for food sources to run out globally?
- What would happen if Americans ran out of food?
- Why is it important for food sources to be sustainable?
- Are Americans curious about where their food comes from? Why or why not?

SIGNS OF STEP COMPLETION

Students will present a description of the problem to the facilitator. The description should include how this problem affects communities globally, nationally, and locally. The description should also include ways in which others have addressed finding a solution and constraints to be considered (e.g., time, space, resources, etc.).

At the completion of this step, direct students to the reflection questions in the “Farm to Food Truck Student Guide.”



2: IMAGINE

PURPOSE OF STEP

Brainstorm solutions to the problem. List all of your ideas – don't hold back! Discuss and select the best possible solutions.

STUDENT PROMPTS AND GUIDING QUESTIONS

- Where does your food come from?
- What types of food do you eat from countries outside of the U.S.?
- What kinds of foods grow in the local community?
- How does food travel from farms to your community?
- How do growing seasons for crops impact the availability and affordability of food?
- How are food products marketed?
- What type of information can we find on the packaging of a food product?
- How are food labels beneficial to consumers? How could they be misleading?

SIGNS OF STEP COMPLETION

The students will present a list of possible solutions to the identified problem.

At the completion of this step, direct students to the reflection questions in the “Farm to Food Truck Student Guide.”



3: DESIGN

PURPOSE OF STEP

Brainstorm ideas for a food truck based on a theme of your choice. List three to five possible food truck menu items based on your selected theme. Choose one menu item to analyze the ingredients path from farm to food truck. Think of ways to advertise, market, and brand your food truck.

STUDENT PROMPTS AND GUIDING QUESTIONS

- How does cost influence what products consumers purchase?
- How can you identify the journey a food product takes to get from the farmer to the consumer?
- How do eating establishments determine what products to purchase?
- How can a restaurant or food truck keep production costs down?
- How does buying local ingredients directly impact agriculture production?
- Why is maintaining a food budget important for an emerging restaurant or food truck?

SIGNS OF STEP COMPLETION

The students will develop the start of a business plan for a successful food truck. Based on a selected theme, they will identify three to five food items to include on the food truck menu. There should be an emphasis on locally sourced ingredients if possible. Students will select one menu item to outline the farm to food truck process for all ingredients. They will also have ideas developed for the potential marketing tool for the business plan.

At the completion of this step, direct students to the reflection questions in the “Farm to Food Truck Student Guide.”



4: CREATE

PURPOSE OF STEP

- Develop the budget for your food truck, including a cost analysis of items needed.
- Design a flyer or advertisement for your food truck.
- Provide a flow chart of the journey that highlights each step in the process of getting the food products from farm to food truck for all ingredients for one menu item.

STUDENT PROMPTS AND GUIDING QUESTIONS

- How do you create a budget for the menu on your food truck?
- In what ways can you advertise your food truck?
- What are the different ways you can map the journey food products take to get to you?
- Revisit any of the previous steps for clarification or refinement as needed.
- Consider the parameters of the challenge and what needs to be accomplished for it to be successful.

SIGNS OF STEP COMPLETION

Students will present a first draft of the business plan to the facilitator.

At the completion of this step, direct students to the reflection questions in the “Farm to Food Truck Student Guide.”



5: TEST + IMPROVE

PURPOSE OF STEP

Discuss your business plan with a group of your peers for review. Get feedback on changes and improvements that could be made, any missing components, and decide how recommendations can be used to modify and change your business plan, if needed.

STUDENT PROMPTS AND GUIDING QUESTIONS

- How successful was the business plan in addressing the Farm to Food Truck challenge requirements?
- Were there any missing project components from the business plan?
- How successful do you feel the food truck menu provided was supporting the chosen theme?
- In what ways were local ingredients used to develop the menu?
- Was the Farm to Food Truck process complete? Did it highlight the one menu item selected?
- Were the sources of the one menu item ingredient identified accurately?
- Was the food truck budget calculated accurately?
- Based on their marketing/advertising tool, would you purchase the food truck menu items?
- What suggestions do you have for improvements to their business plan?
- What changes will you make to your design, based on feedback from your peer reviewers?



SIGNS OF STEP COMPLETION

Students will make any changes and provide a list of improvements they made to their business plan. They will begin to develop the final presentation of their business plan for the Farm to Food Truck challenge.

At the completion of this step, direct students to the reflection questions in the “Farm to Food Truck Student Guide.”



6: SHARE

PURPOSE OF STEP

Communicate what was learned. Share your business plan and discuss the ways in which consumers can become more familiar with where their food comes from.

STUDENT PROMPT AND GUIDING QUESTION

- Develop a presentation of your final business plan, food truck design, improvements made throughout challenge, and menu cost analysis.

SIGNS OF STEP COMPLETION

Students will present what was learned through the design process. They will share how the business plan addresses the problem along with key aspects of the food truck design and menu items.

At the completion of this step, direct students to the reflection questions in the “Farm to Food Truck Student Guide.”



EXTENSION POSSIBILITIES

- Partner with a local restaurant to discuss how they budget for and purchase their menu items.
- Visit a farm or ranch in your local community to find out how they contribute to the food system.
- Visit a food pantry in your local community to find out where their food comes from.
- Meet with your cafeteria staff to find out how they purchase food on a budget.
- Meet with your cafeteria staff to plan a menu based on your food truck menu and help prepare and share the meal with students and staff.
- Prepare your food truck menu for students, staff, or members of the community as a fundraiser. Donate the funds to a local charity that works on reducing hunger in your community.
- Partner with a food preparation and/or nutrition class to prepare your food truck meal.
- Partner with a physical education, health, and/or nutrition class to determine the nutritional value of your food truck menu.
- Go to a local food processing corporation to find out the ways in which they work with commodities to make or develop new products.

THIS RESOURCE IS
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REFERENCES

¹U.S. Department of Agriculture, Economic Research Service. (2016). *Food security in the U.S.: Key statistics and graphics*. Retrieved from <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics/#foodsecure>