

**CLASSROOM ACTIVITY**

Sustainable School Meals

OBJECTIVES

Students will:

- **Research** and **identify** the components of a sustainable food plan.
- **Assess** the sustainability of their own school cafeteria.
- **Develop** an action plan to increase the sustainability of their school cafeteria and the meals it serves.

OVERARCHING QUESTION

How can cafeteria meals and practices become more sustainable?

ACTIVITY SUMMARY

Students will step into the careers of school sustainability manager, program manager, and process managers as they focus on the sustainability of their school cafeteria. After performing research to better understand the key characteristics of a sustainable food plan, students will assess these qualities in their own cafeteria. They will then apply what they have learned as they create an action plan to decrease the environmental impact and increase the sustainability of their school lunches.

MATERIALS

- Devices with internet access, at least enough for half the class
- *Designing Solutions Handouts*, one per student
- Device with the ability to project video, one for the instructor

TEACHER PREP

Before this activity, try to speak with someone in your school's food services to obtain as many details as possible about a recent meal. A menu will suffice but if you can get additional details—such as the food brands or the source of the produce, meats, etc.—it will be even better!

CHALLENGE

1. On the board, list the components of one meal that your school cafeteria recently served. Provide as many details as possible.

Then ask students to review the meal and consider: If you were to assess the sustainability of our school cafeteria, what factors would you take into account?

2. Explain that in a cafeteria with sustainable food practices, nutritious food is provided for all in a way that is profitable (economically sustainable), benefits students (socially sustainable), and has a neutral or positive impact on the environment (environmentally sustainable).
3. Tell the class that today they will be challenged to develop a plan to *increase* the environmental sustainability of their cafeteria lunches. Distribute one Designing Solutions' Handout to each student and elaborate on the challenge by reading aloud the bullets listed under *Step 1: Define the Challenge*.
4. Explain that students will be divided into groups of three to complete this challenge. Students in each group will take on the role of a program manager, a process engineer, and a school sustainability manager. To help students better understand each role, explain that:
 - Program managers work to lead teams to make sure that complex projects are completed on time. Play the Program Manager Career Profile Video available at <https://stemcareerscoalition.org/careers-portal> and encourage students to listen for other responsibilities of this career that relate to the challenge.
 - Process engineers work to ensure that systems work as efficiently as possible. Play the Program Manager Career Profile Video available at <https://stemcareerscoalition.org/careers-portal> and encourage students to listen for other responsibilities of this career that relate to the challenge.
 - Sustainability managers are becoming more common across all kinds of organizations and companies. This role's primary responsibility is to reduce their organization's environmental impact by analyzing everything from energy consumption, recycling standards, pollution output, food, and waste patterns, etc.

Reiterate that these three careers will collaborate to focus on the environmental sustainability of the meals served in the school cafeteria. Then give groups a moment to assign a career to each group member..

5. Then prepare student groups to perform research to better understand the challenge.
 - Write the following websites on the board:
 - cdc.gov/sustainability/lifestyle/index.htm
 - sustain.ucla.edu/our-initiatives/food-systems/the-case-for-plant-based/
 - epa.gov/sustainable-management-food/sustainable-management-food-basics#what
 - Explain that groups will have about 15 minutes to gain a better understanding of the main components of a sustainable food system.
 - Encourage students to divide the research responsibilities and begin their research with the websites on the board.
 - When the research session concludes, students will share what they learned, use this knowledge to assess their cafeteria's practices, and ultimately develop a plan for improvement.

DESIGN

1. Bring the class back together and explain that it's time to assess the sustainability of their school's food services and develop a solution to the challenge.

2. Call on a student to read the handout's *Step 2: Create a Design* section aloud. Explain that as groups complete these steps, they should continue to look at the challenge through the eyes of their specific career as they collaborate to reduce their cafeteria's environmental impact. Also inform the class that:
 - The school lunch written on the board should be used in their analysis. They may use the internet to research where the food in this meal originated, if needed.
 - Students' own anecdotal cafeteria experiences—such as how much waste seems to be produced, how many vegetarian options are usually available, etc.—can also play a role in their analysis.
3. Tell the class that they will have about 20–25 minutes to complete the *Design* portion of this handout. At the end of this time, they should be ready to share, explain, and justify their sustainable food plan!

SOLVE

1. When there are about 10–15 minutes left in the class period, pair student groups together. Instruct each group to briefly share their action plan with each other, including their reasoning behind each step. Remind the class that these justifications should be rooted in research and observations of their cafeteria.
2. Then read the *Step 3: Analyze Solutions* portion of the handouts and reiterate that students will be challenged to optimize their own action plan based on what they learn from their peers. Encourage groups to ask each other thorough questions so they fully understand each other's ideas before they integrate them into their own plans.

STANDARDS

Next Generation Science Standards

- Earth and Human Activity:
 - HS-ESS3-4: Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
 - Disciplinary Core Ideas:
 - ESS3.C: Human Impacts on Earth Systems: The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. (HS-ESS3-3)
 - ETS1.B: Developing Possible Solutions: When evaluating solutions, it is important to take into account a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts. (secondary to HS-ESS3-2), (secondary HS-ESS3-4)
- Engineering Design:
 - ETS1-3: Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Step 1: Define the CHALLENGE

Your challenge is to:

1. Research and summarize the components of a sustainable food system.
2. Assess the sustainability of your school cafeteria based on the meal shared by your teacher, as well as your own background knowledge and experience.
3. Develop a plan to make your school cafeteria, and the meals it serves, more environmentally sustainable.

As you complete your research and identify key components of a sustainable food system, jot notes below.

Step 2: Create a DESIGN

Overview: Share and discuss what you just learned about the components of a sustainable food system. Then apply this knowledge as you work with your group to develop a sustainable food plan for your cafeteria that improves or builds upon your school's current practices.

Requirements: Your plan must include:

1. **Overview:** What are the key characteristics of an environmentally sustainable food system?
2. **Analysis:** Based on these characteristics, does your school cafeteria appear to be operating sustainably?
3. **Action Plan:** Detail at least three steps your school can take to move toward a more sustainable cafeteria and explain *how* each step will reduce your school's environmental impact.

Jot notes below and then complete your plan in a format of your choice on a separate piece of paper.

Step 3: Analyze SOLUTIONS

Consider the action plan presented by your peers and the reasoning behind the steps they included. If you were to incorporate one element from their action plan into your own, what would it be? Work as a group to consider which component could further improve your plan's sustainability. Describe the reasoning behind your decision below.