Sustainability in Culinary & Hospitality: Reducing Waste in Commercial Kitchens —La Kisha Jordan

Grade Levels
9-12

Estimated Time
10 class periods (55-minute blocks each)

Materials Needed
- Computers or tablets for research
- Projector or screen for video viewing
- Handouts on sustainability concepts
- Food waste bins (for compostable, recyclable, and non-recyclable waste)
- Kitchen scale for weighing waste
- Gloves and hand sanitizer
- Handouts on food waste statistics and sustainability strategies
- PowerPoint presentation: "Sustainability in Hospitality & Culinary Arts"
- Lab supplies (see Day 3)
- Videos:
    - *Why The Future of Cooking is Zero Waste* (YouTube)
    - *How Hotels Are Becoming More Sustainable* (YouTube)
    - *Reducing Food Waste in Restaurants* (YouTube)

Purpose
This lesson will help students understand how sustainability connects to the culinary and hospitality industries by focusing on practical ways to reduce food waste. Students will explore waste reduction strategies, conduct a hands-on waste audit, and develop a sustainability plan for a restaurant or hotel kitchen.

Background Agricultural Connections:
This lesson connects agriculture, culinary arts, and hospitality by demonstrating how reducing food waste conserves resources, minimizes environmental impact, and supports sustainable food systems. Students will analyze how food waste affects supply chains, pricing, and sustainability in hospitality. Local examples include restaurants such as **Mad Mary's**

Steakhouse & Saloon, **Drifters Bar & Grille**, and **La Minestra**, which source ingredients locally and implement sustainable kitchen practices.

Learning Objectives

1.Identify common sources of food waste in culinary and hospitality settings.
2. Conduct a food waste audit to assess waste levels in a simulated kitchen setting.
3. Develop strategies to reduce waste in a restaurant or hotel kitchen.
4. Explain how sustainable practices support local agriculture and reduce costs.

Teacher Preparation:

1. Prepare the PowerPoint presentation and handouts on sustainability.
2. Ensure internet access for video streaming and research activities.
3. Research local establishments practicing sustainability for discussion.

DAY 1 Introduction & Waste Audit

Activities and Procedures:

1. **Warm-up Discussion (10 min):** Ask students to share experiences where they noticed food waste in restaurants, hotels, or at home.

1. **Presentation on** PowerPoint presentation: "Sustainability in Hospitality & Culinary Arts" **(15 min):** Explain food waste's impact on sustainability, agriculture, and business costs. Highlight real-world examples of restaurants and hotels minimizing waste
2. **Video (5 min):** Show a short video on sustainable practices in hospitality (*Why The Future of Cooking is Zero Waste*).
3. **Waste Audit Activity (20 min):**
    - Assign groups to different "kitchen stations" with food scraps from previous cooking labs.
    - Students separate waste into compostable, recyclable, and non-recyclable categories.
    - Weigh and record waste data for analysis in Day 2.
4. **Reflection Discussion (5 min):** What surprised students about their waste findings?

DAY 2-7 Local Sourcing and Food Miles

Activities and Procedures:

1. Review Waste Audit Data (10 min): Discuss findings and patterns.

2. Brainstorm Strategies (10 min): Groups discuss ways to reduce waste in a restaurant or hotel kitchen, focusing on:

- Better portion control
- Repurposing leftovers
- Donation programs
- Sustainable purchasing practices
- Utilizing food scraps for stocks, sauces, or composting programs

3. Sustainability Plan Project (25 min): Each group creates a sustainability plan for a fictional restaurant/hotel, including waste reduction strategies, sourcing options, and marketing ideas.

4. Presentations (10 min): Groups present their sustainability plans.

5. Group Activity: Sustainable Meal Planning (35 minutes)
- Students form groups and plan a meal using local and seasonal ingredients.
- Provide handouts to guide their meal planning.
- Use research from Day 2 to select ingredients and create a menu.

6. Presentation Preparation (10 minutes)
- Groups prepare a presentation on their meal plan, including ingredient choices and sustainability considerations.

- Reflect on the challenges and benefits of planning a sustainable meal.

DAY 8 Presentation and Lab

Purpose:

Allow students to present their meal plans and conduct a food waste analysis lab.

Hands-On Lab – Cooking with Scraps

1. **Lab Introduction:**
   - Explain that students will apply waste reduction techniques by cooking a dish using scraps or imperfect ingredients.
   - Discuss how professional kitchens utilize "ugly" produce, leftover bread, and vegetable trimmings to create soups, stocks, and other dishes.*(see resources for student handout)*

2. **Ingredient Selection & Planning**
    - Provide students with a selection of ingredients (vegetable scraps, bread ends, slightly bruised fruit, etc.).
    - Each group plans a dish using the available ingredients while minimizing additional waste.
3. **Cooking Activity (25 min)**
    - Students work in groups to prepare their dish.
    - Emphasize proper knife skills and safe food handling.
    - Encourage creativity while ensuring waste reduction principles are applied.
4. **Presentation & Tasting (10 min):**
    - Each group presents their dish, explaining how they minimized waste.
    - Taste and provide feedback on flavor, creativity, and sustainability efforts.

Sources

- *Why The Future of Cooking is Zero Waste* (YouTube)
- *How Hotels Are Becoming More Sustainable* (YouTube)
- *Reducing Food Waste in Restaurants* (YouTube)
- National Restaurant Association's Sustainability Guidelines
- PowerPoint: "PowerPoint presentation: "Sustainability in Hospitality & Culinary Arts"
- Sustainability reports from Mad Mary's Steakhouse & Saloon, Drifters Bar & Grille, and La Minestra
- Local Farmers' Market (Pierre's Capital City Farmers Market)
- Drifters Bar & Grill https://www.driftersbarandgrille.com/
- Mad Mary's Steak House https://madmarysteakhouse.com/
- Pierre's Capital City Farmer's Market https://capcitymarket.wordpress.com/about/
- Website with great videos and resources to eventually supplement unit https://learnecprogram.org/presentation/33?utm_source=ad&utm_medium=wat&utm_camp=tp-rfw

Assessment/Evaluation:

- Participation in the waste audit (10 points)
- Completed sustainability plan (15 points)
- Group presentation quality (10 points)
- Hands-on lab execution (15 points)
- Reflection discussion participation (5 points)

Author

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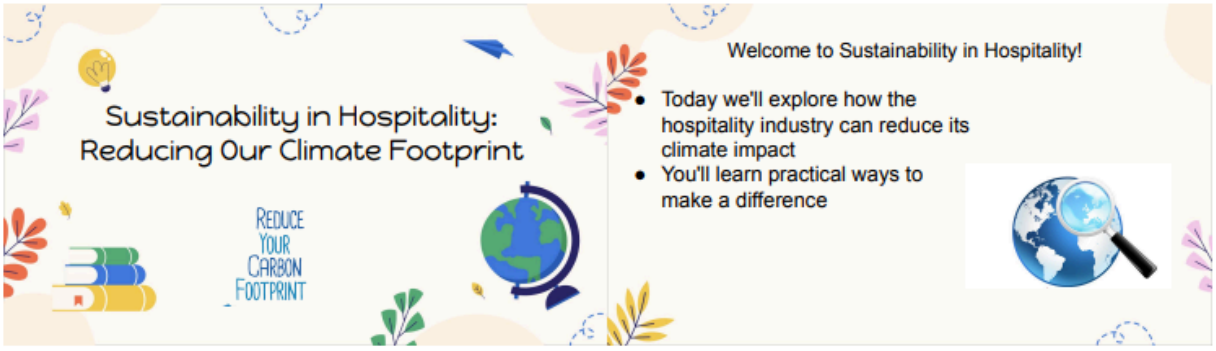
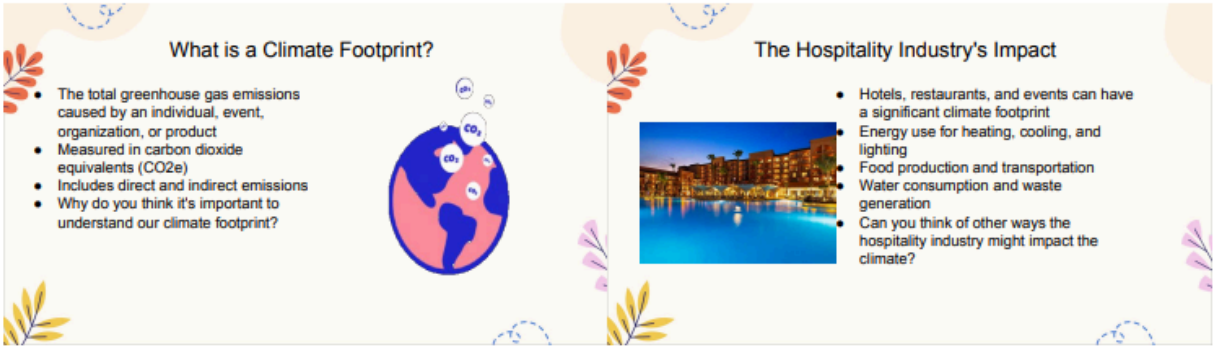
RESOURCES

POWERPOINT


Sustainability in Hospitality: Reducing Our Climate Footprint
REDUCE YOUR CARBON FOOTPRINT
Welcome to Sustainability in Hospitality!
Today we'll explore how the hospitality industry can reduce its climate impact
You'll learn practical ways to make a difference


What is a Climate Footprint?
The total greenhouse gas emissions caused by an individual, event, organization, or product
Measured in carbon dioxide equivalents (CO2e)
Includes direct and indirect emissions
Why do you think it's important to understand our climate footprint?
The Hospitality Industry's Impact
Hotels, restaurants, and events can have a significant climate footprint
Energy use for heating, cooling, and lighting
Food production and transportation
Water consumption and waste generation
Can you think of other ways the hospitality industry might impact the climate?

Introducing the Climate Footprint Calculator

Get ready to calculate your own climate footprint

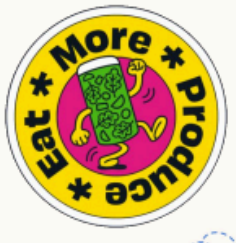
- A tool to measure your personal or business climate impact
- Considers factors like energy use, transportation, and food choices
- Helps identify areas for improvement
- We'll use this to assess our own impact later!

Reducing Energy Use in Hospitality

- Use energy-efficient appliances and lighting
- Implement smart thermostats and occupancy sensors
- Encourage guests to reuse towels and linens
- How might these changes affect a guest's experience?

Sustainable Food Practices

- Source local and seasonal ingredients
- Offer more plant-based menu options
- Implement food waste reduction strategies
- What's your favorite sustainable food practice?



Water Conservation in Hospitality

- Install low-flow fixtures in bathrooms
- Use drought-resistant landscaping
- Implement greywater recycling systems
- Why is water conservation especially important in the hospitality industry?

Waste Reduction Strategies

- Implement recycling and composting programs
- Use reusable or compostable disposables
- Donate excess food to local charities
- What waste reduction strategies have you seen in hotels or restaurants?

Your Turn: Calculate Your Climate Footprint

Global Footprint Network®

- Use the Climate Footprint Calculator to assess your personal impact
- Consider your daily habits and choices
- Identify areas where you can reduce your footprint
- What surprised you most about your results?

Taking Action: Be a Sustainability Champion!

- Share what you've learned with friends and family
- Support businesses that prioritize sustainability
- Consider a career in sustainable hospitality
- How will you reduce your climate footprint starting today?

HANDOUTS
Food Waste Analysis Lab

Objective:
The objective of this lab is to measure and analyze food waste produced during a cooking activity. Students will learn how to categorize waste, understand its environmental impact, and develop strategies for reducing waste in the kitchen.

Materials Needed:

- ☐ Compost bins
- ☐ Recycling bins
- ☐ Non-recyclable waste bins
- ☐ Kitchen scales
- ☐ Food waste logs or data recording sheets
- ☐ Labels and markers
- ☐ Gloves for handling waste
- ☐ Hand sanitizer
- ☐ Clipboards and pens
- ☐ Option: to do an analysis from food waste from previous lab or make a vegetable soup using vegetables *like potatoes and carrots or onions*

Preparation:
1. Set Up Workstations:
Arrange the compost, recycling, and non-recyclable bins in a central location. Ensure that there are clear labels on each bin indicating what types of waste should go into them.

2. Prepare Data Sheets:
Provide each group with food waste logs or data recording sheets. These should include columns for the type of waste (compostable, recyclable, non-recyclable), weight, and notes.

3. Safety Instructions:
Discuss safety precautions, such as wearing gloves when handling waste and using hand sanitizer after the activity.

Procedure:

Step 1: Introduction
Explain the Purpose:
Begin by explaining the purpose of the lab. Discuss the importance of reducing food waste in the culinary arts and its environmental impact. Highlight the difference between compostable, recyclable, and non-recyclable waste.

Group Organization:
Divide the class into small groups, with each group responsible for collecting and analyzing waste from a specific area of the kitchen or a specific type of meal preparation.

Step 2: Waste Collection and Categorization (15 minutes)
Collect Waste:
Have each group collect waste produced during the cooking activity or from pre-sorted kitchen waste. Encourage them to think about common sources of waste, such as vegetable peelings, packaging, and food scraps.

Categorize Waste:
Instruct students to separate the waste into three categories: compostable, recyclable, and non-recyclable. Provide guidance on what belongs in each category:

- ☐ Compostable:** Fruit and vegetable scraps, eggshells, coffee grounds, tea bags.
- ☐ Recyclable:** Clean paper and cardboard, plastic bottles, glass jars, cans.
- ☐ Non-recyclable:** Plastic wrap, greasy or soiled paper products, certain plastics.

Step 3: Weigh and Record (10 minutes)
Weigh Waste:
Using the kitchen scales, each group should weigh the waste in each category. Encourage accuracy in measurement and recording.

Record Data:
Students record the weight of each category on their data sheets. They should also note any observations or questions they have about the waste (e.g., why certain items were categorized a certain way).

Step 4: Analysis and Discussion (10 minutes)
Analyze Data:
Have each group analyze their data to identify the most common types of waste. Discuss the factors contributing to food waste and how it might be reduced.

Group Discussion:
Facilitate a class discussion where each group shares their findings. Questions to consider:
- What was the most common type of waste?
- Which category had the highest weight?
- How could the kitchen practices be adjusted to reduce waste in each category?

Step 5: Reflection and Strategy Development (10 minutes)
Reflection:
Ask students to reflect on what they learned from the lab and how it changes their perspective on food waste. Encourage them to think about how these practices can be applied in other settings.

Develop Strategies:

Instruct each group to brainstorm and propose at least three strategies for reducing food waste in the kitchen. Strategies might include better meal planning, using more of each ingredient, or implementing more effective recycling practices.

Wrap-Up:

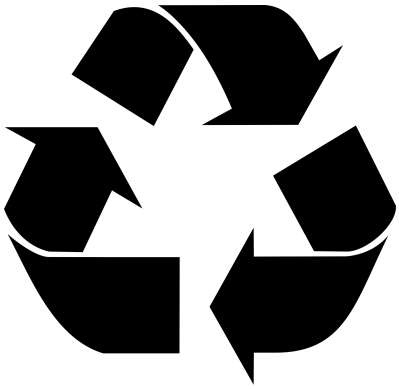
Summary:

Summarize the key takeaways from the lab. Emphasize the importance of waste reduction in promoting sustainability in the culinary arts.

Next Steps:

Encourage students to think about how they can implement these waste reduction strategies in their future cooking activities and daily lives.

Sustainable Cooking Lab Handout



Introduction

In this lab, you will apply sustainable cooking techniques by preparing a dish using food scraps, imperfect ingredients, and environmentally friendly practices. The goal is to minimize food waste while creating a flavorful dish.

Lab Objectives

By the end of this lab, students will:

1. Use food waste reduction strategies in meal preparation.
2. Apply sustainable cooking techniques to create a dish.
3. Analyze how repurposing food waste can reduce environmental impact.
4. Present their dish and explain their sustainability strategies.

Materials Needed

- ☐ Ingredients (food scraps, imperfect produce, surplus items)
- ☐ Cooking utensils and equipment
- ☐ Kitchen scale (for measuring food waste before and after)
- ☐ Recipe planning sheet (provided below)

Procedure

1. *Ingredient Selection*: Choose available food scraps, imperfect ingredients, or surplus items to incorporate into your dish.
2. *Recipe Development*: Plan how you will transform these ingredients into a complete dish (use the template below).
3. *Preparation & Cooking*: Follow your recipe, using sustainable cooking methods to minimize additional waste.

4. *Presentation*: Plate your dish and prepare to explain how you reduced waste and maximized sustainability.
5. *Final Weigh-In*: Measure any remaining waste and compare it to the original food scraps collected.
6. *Reflection*: Answer the reflection questions below based on your experience.

Recipe Planning Sheet

Dish Name:_____

Ingredients Used (List food scraps/imperfect ingredients):

Cooking Method:

Sustainability Techniques Used:

Final Waste Measurement (grams):

Notes

Reflection Questions

1. What food scraps or imperfect ingredients did you use, and how did you incorporate them into your dish?

2. How did your cooking methods help minimize food waste?

3. How did your final waste measurement compare to your initial food scraps?

4. What would you do differently next time to improve sustainability in the kitchen?

5. How can you apply these sustainability techniques at home or in a professional kitchen?

Assessment & Evaluation

Task	Points
Food Waste Audit Participation	10 pts
Sustainable Recipe Plan	15 pts
Cooking Lab Execution	20 pts
Final Dish Presentation	15 pts
Reflection Questions	10 pts
Total	100 pts