LESSON PLAN: Repurposing cafeteria food waste

LESSON DETAILS		
NAME OF ACTIVITY: Reducing Food Waste by preparing Homemade Spice Blends and Fruit Leather	**PURPOSE:** Students will learn how to reduce food waste by preparing different products in food labs. Students will make spice blends using dried peels collected from uneaten cafeteria fruits such as oranges, apples, and pears. Students will explore flavor combinations, food preservation methods, and practical culinary applications for their spice blends. To utilize the whole fruit students will prepare fruit leather with the pulp and inside of the products used for herb and spice blends.	**GRADE LEVELS:** High School (9-12) **LESSON LENGTH:** 2 classes*. *See notes regarding suggested times for each activity.

ASSESSMENTS:

Lab Planning Sheet will contain research about student ideas for blends, correct use of blends, food preservation methods and facts about food waste.

Lab Grade based on student engagement with project, hands-on activity portion and creation of a unique spice blend and high quality fruit leather.

Lab Reflection Write Up will show students understanding of food waste reduction, proper spice use and proper food preservation.

BACKGROUND AGRICULTURAL CONNECTIONS:

Sustainability in the Food System. Food preservation standards focusing on food safety during holding of produce and ensuring the food supply remains safe from production to consumption. Food waste and the ability to understand the food recovery hierarchy and achieve one of the most preferred methods, feeding hungry people.

STANDARD(S):

NC Foods & Nutrition 2

1.02 Understand causes of foodborne illness.

1.03 Understand purchasing and receiving protocols for food safety.

1.04 Understand contributing factors to foodborne illness.

1.05 Understand how to maintain safe food facilities.

1.06 Understand food safety equipment.

3.01 Understand the Local Food System

4.01 Analyze recipes to modify cooking techniques and ingredients to develop a healthy and a well-balanced menu.

OBJECTIVE:

- Students will learn to dry, grind, and mix fruit-based spice blends.

- Students will learn to preserve fruit into fruit leather.

MATERIALS:

- Orange, apple, and pears (collected from cafeteria waste or donated fruit)
- Dehydrator or oven
- Parchment Paper
- Blender, Food Processor, Immersion Blender
- Mortar and pestle or spice grinder
- Small containers or spice jars
- Measuring spoons
- Labels and markers
- Mixing bowls
- Internet for Research
- Sample recipes using fruit-based spices (e.g., spiced teas, rubs for meats, or baking mixes)
- Scissors
- Small Jars, Ziptop bags

TEACHER PREPARATION

Collect unused fruit from the cafeteria.
Create a slide set for food preservation.
Grocery Shop for ingredients.
Prepare a reflection prompt slide.

PROCEDURE

Opening (15+ minutes):

Begin discussion by talking about food waste in schools and the environmental impact. Relate to previous lessons on food waste.

Ask students to brainstorm suggested ways to reuse unused food items from the cafeteria, leading to the idea of making spice blends.

Explain the lab objectives. Learn how to flavor foods by drying, grinding, and mixing fruit-based spice blends. Students will learn to preserve fruit into fruit leather.

Direct instruction (minutes):

- Introduce the key concepts of the food recovery hierarchy and food preservation.
- Have students complete quick research to gather ideas on ways to utilize preserved oranges, apples, and pears.

- Have students pair and share their research.
- Students return to their original table group and share what they found and learned from their partner.
- Use a slide set to relay key information on food preservation.
    - Show different drying methods (dehydrator vs. oven at low heat).

Guided Practice (20 minutes):

- Students will research spice blends and create a recipe to use in lab.

Hands-on Activity (1 lab period):

Before beginning lab:
-Review safe food handling.
-Demonstrate how to wash and prepare fruit peels for drying.

Drying Process:

If drying in the lab, explain that it takes several hours (pre-dried samples can be provided for grinding and blending). **Depending on class timing, a mini lab before the actual lab to dehydrate the peels may be a good option.*

Grinding and Mixing:

Grind dried peels into fine powder.
Let students experiment with blending different fruit powders and adding complementary spices (e.g., cinnamon, ginger, cloves) to prepare their researched flavor blend. **Partners or kitchen groups can combine to create one spice blend if this is preferred.*

Tasting & Recipe Exploration

Have students smell each prepared spice blend and taste. *Consider utilizing crackers, popcorn, rice, pasta, fruit slices or a complimentary food to allow students to focus on the flavor of the blend.

Prepare a food product utilizing your spice blend. Set up a buffet to taste test and evaluate products.

Each student critiques spice blends prepared and offers suggestions for uses.

Students type up a well-written recipe including tips and optional uses to share with peers and the school.

Vote on the best tasting blend(s) to prepare for packaging and sale.

Packaging:

- Have students label and store their spice blends.
- Discuss shelf life and storage recommendations.

Lab Reflection (15-20 minutes):
Have students create a reflection slide in their portfolio. Have a whole group discussion as students finish answering questions and debrief the lab.
Sample prompts to answer include:

What was the most surprising part of this activity?

How can you apply this technique at home?

How does reducing food waste contribute to sustainability?

Extension:
Research global food waste issues and solutions.
Develop a marketing idea for selling homemade spice blends.
Experiment with other food scraps (e.g. vegetable peels) for sustainability projects.

REFERENCES/RESOURCES

USDA for food preservation info
ServSafe

NOTES