SPACE FOOD

- **Grade Level: K-12**
- **Focus Area: Science, Engineering, History**
- **Time: 30-45 Minutes**

ACTIVITY INTRODUCTION

Embark on a scientific journey exploring the world of space food by conducting simple experiments at home. With the guidance of a parent, children will gain insights into the evolution of space cuisine and the scientific principles behind preserving food for space travel.

BACKGROUND INFORMATION

Imagine munching on tubes of paste in space like Yuri Gagarin did on his groundbreaking journey. The Mercury astronauts grappled with freeze-dried foods that stubbornly resisted rehydration. Project Gemini swooped in with shrimp cocktails and toast, giving astronauts a tastier orbiting experience. Thanks to the Apollo missions, hot water became the hero, making rehydrated meals more appetizing. Today, space food has reached new heights with dehydrated wonders and dishes like meatloaf and coconut cream pie, all stored in pouches similar to your grocery store finds. It's not just about the science – international palates shine as Russian pickled fish, Japanese sushi, and more join the cosmic cuisine party.

STUDENT REAL-LIFE CONNECTIONS

- How do you think astronauts ate in space during the early days of space travel?
- What challenges did they encounter with the food they brought on their missions?
- How might scientists have improved space food to make it more suitable for astronauts?

ACTIVITY OBJECTIVES

- Discover the evolution of space food and its significance for astronauts.
- Understand the basics of food preservation techniques for space travel.
- Conduct simple experiments to observe the effects of different food preservation methods.

MATERIALS

- Various food items (e.g., slices of fruit, crackers, instant oatmeal)
- Plastic zip-closure bags (1 box)
- Oven or microwave (1)
- Table or counter space (1)
- Notebook (1)
- Pen (1)

ACTIVITY DIRECTIONS

1. Discuss the idea of eating in space and how astronauts faced challenges due to microgravity.
2. Explore different preservation techniques like dehydration, heat treatment, and irradiation. Talk about their importance for space food.
3. Select a preservation method to try at home. For example, you could dehydrate fruit slices or heat-treat instant oatmeal.
   a. If you would like to research various food preservation methods you can visit the following websites
      - National Center for Home Food Preservation
      - A Guide to Home Food Preservation
4. With your parent's help, follow the chosen preservation method for your selected food item. Make sure to document the initial appearance, texture, and taste.
5. Over the next few days, observe the changes in your preserved food. Record any differences you notice in your notebook.
6. Share your experiment outcomes with your parent. Discuss how the preservation method affected the food and why it might be important for space travel.
7. Think about the challenges astronauts face in space and how these preservation techniques could help them enjoy nutritious meals.

RESOURCES

National Center for Home Food Preservation. (n/a). National Center for Home Food Preservation. https://nchfp.uga.edu/#gsc.tab=0

Masterclass. (2021, July 29). A Guide to Home Food Preservation: How to Pickle, Can, Ferment, Dry, and Preserve at Home. MasterClass. https://www.masterclass.com/articles/a-guide-to-home-food-preservation-how-to-pickle-can-ferment-dry-and-preserve-at-home

TECH STYLE: STUDENT ACTIVITY SHEET

Directions: Test your created space-worthy material using the methods described below. Record your observations and thoughts.

Insulation Test

- Place an ice cube inside your space-worthy material.
- Observe and record how long it takes for the ice cube to melt.
- Think about how this property could be important for protecting astronauts in space.

Observation:

Reflection: How might this insulation property help astronauts during spacewalks or in the spacecraft?

Flexibility Test

- Gently bend and twist your space-worthy material.
- Note how easily it bends and whether it returns to its original shape.
- Consider why flexibility is important for materials used in spacesuits.

Observation:

Reflection: Why do you think flexibility is important for spacesuit materials?

Reflectivity Test

- Shine a flashlight onto your space-worthy material and observe how light interacts with it.
- Think about how reflectivity could be valuable in space.

Observation:

Reflection: Why might astronauts need materials that reflect light in space?

Strength Test:

- Gently tug nd pull your space-worthy material to test its strength.
- Record whether it feels sturdy or fragile.
- Consider why strength is crucial for spacesuit materials.

Observation:

Reflection: Why might astronauts need materials that reflect light in space?

Overall Impressions

- Describe your space-worthy material in a few words (e.g., flexible, insulating, strong).
- Explain why you think these properties are important for space exploration.

Description:

Reflection: How did creating this material make you think about the challenges of designing astronaut gear for space adventures?