THE EDUCATION FUND
FOR EXCELLENCE IN MIAMI-DADE PUBLIC SCHOOLS

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Ideas with IMPACT

HEALTH & WELL-BEING

Waste 2 Taste: Transforming Trash 2 Treasure

IDEA PACKET SPONSORED BY:

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Waste 2 Taste:

Transforming Trash 2 Treasure

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Table of Content

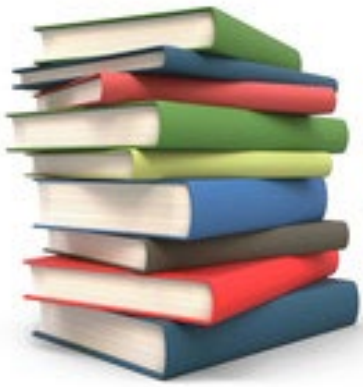
Goals & Objectives:

To empower students to explore the science, technology, engineering, and math behind juicing while promoting healthy eating habits and critical thinking through hands-on experimentation and data analysis.

This project promotes healthy habits by understanding the nutritional value of fruits and vegetables. It will investigate the Science behind extracting juice and how different methods affect yield and quality. It will encourage innovation by designing or improving a simple juice device. Students will apply STEM skills in a real-world application and explore hands on experiments that connects food, health, and engineering. The Learning results from the project will involve sustainability principles, and community building while addressing food waste. This project will empower students to learn practical skills while creating a greener school environment.

Florida Standards

- Matter & Energy in Organism and Ecosystem (SC.6.L.1.4) – Describe the flow of energy through food webs.
- Storage & Function of Organism (SC.6.L.1.6) – Recognize that cells are carry out functions necessary for life.
- Physical and Chemical Change (SC.6.P.8) – Identify physical and chemical changes in matter.
- Ratios and Proportions (MA.6.RP.1,1) – Understand and use ratios, rates, and percentages.
- Data Collection and Analysis (MA.6.DP.1.1) – Collect and organize data then analyze and interpret it using graphs and tables.
- Measurement (MA.6.M.1.1) – Solve problems involving measurement and conversations of units.
- Engineering & Technology (ETS.6-8.3) Use engineering designs process to solve problems and create solutions.
- Health & Nutrition (SC.6.L.4.4) – Understand how nutrients are needed for growth and health.



Course Outline/Overview

This interdisciplinary STEM project will allow students to explore the science, technology, engineering, and math behind juicing. Through hands-on experiments, data analysis, and creative design challenges, students will investigate the nutritional value of fruits and vegetables, measuring juice yields, build simple juicing tools, and present their findings in a culminating Juice Expo. This project promotes healthy lifestyles choices while developing critical thinking, collaboration, and communication.

Students will be able to:

- Understand the nutritional benefits and limitations of juicing.
- Apply scientific methods to test and analyze juice properties.
- Use math skills to measure, calculate, and graph data.
- Design and evaluate a functional juicing device.
- Use digital tolls to present findings and advocate for healthy choices.

Lesson Plan

- **Introduction & Research** (understand the health benefits of fruits and vegetables and the basic of juicing)
    1. Learn about nutrients in fruits and vegetables: What is juicing? Is it healthy?
    2. Discuss benefits and drawbacks of juicing.
    3. Read nutrition labels and compare sugar, fiber, and vitamin content.
    4. Explore how juicers work (manual vs electric)
- **Math & Measurement Experiments** (practice measuring and calculating volume, weight and sugar content while collecting data)
    1. Choose 3-5 fruits and vegetables to juice.
    2. Measure juice yield, sugar content (using nutrition value labels or refractometers), and pH strips.
    3. Discuss ratios (fruit-to-juice), percentages (sugar content), and averages.
    4. Record data in a spreadsheet.
- **Engineering Challenge** (design and test a simple juicer)
    1. Design a simple juicer using recycled or household materials.
    2. Test and compare efficiency with commercial juicers.
    3. Record observations: How much juice? How easy to use? Any improvements?
- **Data Analysis & Presentation** (analyze and visualize data using math and technology sharing findings in a creative format)
    1. Create graphs to show results.
    2. Prepare a digital presentation, video, or poster.
    3. Present findings at the "Juice Expo."

Student Worksheet : Juice Lab Data Collection

Group Name: _____

Class Period:_____

Fruit/Vegetable_____

_____

Weight:_____

_____

Juice Volume(ml):_____

Sugar Content (g):_____

pH:_____

Notes:_____

_____

_____

Calculations:

Average Juice Yield:_____

Fruit-to-Juice Ratio:_____

Sugar per ml:_____

Juice Lab Graphing Worksheet

Graph Type: Bar ☐ Line ☐ Pie ☐

Title:_____

X-Axis Label:_____

Y-Axis Label:_____

Data to Graph:

- Fruit/Vegetable Names
- Juice Volume or Sugar Content

Sketch the graph or use a spreadsheet to create a digital version.

DIY Juicer Design Challenge

Team Name:_____

1. Problem Statement:
   What are you trying to solve with your juice design?

   _____

   _____

2. Materials List:_____

3. Sketch your design:

4. How it Works:_____

5. Test Results:
   - Juice Yield:_____ml
   - Was it easy to use? ☐YES ☐ NO

6. What would you improve?

   _____

   _____

   _____

Resource List

Books:

- Dr. Sebi Juicing Recipe Book 2025: Natural Alkaline Juices to Heal, reduce Inflammation, detoxing and Revitalize Your Body.
- Juicing for beginners: The essential Guide to Juicing Recipes and Juicing for Weight Loss.

Materials Needed:

- Variety of fruits and vegetables
- Juicer
- Measuring cups, scales, pH strips
- Sugar content charts or refractometers.
- Recycled materials for DIY juicer
- Computers/tablets for data entry and presentations.