Lesson plan: Making smoothies, Preference test and Triangle taste test

This unit incorporates three different inquiry-based lessons in which students create, test, and distinguish three different types of smoothies using procedures similar to those done in a food science laboratory. In Lesson 1 students complete a set of steps to create their samples. In Lesson 2 students use their samples to conduct a preference test. Finally, in Lesson 3, students use the scientific method to analyze their interpretations of each sample preference.

Sequence
Lessons 1-3 of 'Can You Taste the Difference?'

Time
Two 50-minute class periods, or one extended class period (100-120 minutes)

Grade Level
7-12

Materials

Lesson 1:
- 65g frozen fruit sample #1
- 65g frozen fruit sample #2
- Hand blender, or table-top blender
- 60mL fruit juice
- 240 mL soy milk or 1% milk
- Mixing cup or bowl

Lesson 2:
- 20mL of Sample A (for each tester)
- 20mL of Sample B (for each tester)
- Plastic cups
- Water
- Preference Taste Ballot (found in Lesson 3)

Lesson 3:
- Sample A
- Sample B
- Plastic cups
- Water
- Preference Taste Ballot
- Triangle Taste Test Cards

Objectives/Target
Students will create two samples of fruit smoothie for the purpose of taste-testing.
Students will conduct a preference test to determine which sample of fruit smoothie they prefer.
Students will analyze smoothie samples to distinguish the sample that is different.

Vocabulary
Fruit sample, preference test, sensory science, taste test

Prior Knowledge
Little background knowledge is required for students to be engaged in Lessons 1-3. The teacher may want to

explain the purpose of completing the lab and the taste tests by reading the General Information at the start of each lesson. Students should understand that the procedures they complete are replicated in a food science laboratory.

5E Plan

Engage
Begin by engaging your students in a classroom discussion about some of their favorite foods. Press your students to consider whether their favorite foods are "created" in a lab after trial and error, or if their favorite foods exist naturally with no alteration needed.

Consider watching one of many taste test videos on YouTube that would relate best to your students.

Ask your students if any of them have ever been a part of a taste test before, and have them explain it to the class if they have.

Explore
A) Have your students complete the laboratory procedure in Lesson 1. Students will be divided into groups and will produce different samples of smoothies for taste testing in Lessons 2 and 3. While students are completing the laboratory procedure, be sure to ask guiding questions throughout, eliciting student-to-student interaction and student-to-content interaction.

B) After students have created their samples they should move on to Lesson 2 of this unit. For Lesson 2, students should follow the laboratory procedure presented in the student document.

For recording data, students must use the Taste Test Ballots from Lesson 3

Explain
For the Explain section of this unit, students should move on to Lesson 3. For Lesson 3 students will use the Taste Test Cards to re-mix different samples of their original samples for sensory testing. Please remind your students to follow the laboratory procedures outlined in the Lesson 3 student document.

Have your students discuss the differences between the taste test in Lesson 2 and the taste test in Lesson 3. It is advised to use a graphic organizer, or students may record their observations and data in the blank space provided on the Lesson 2 and Lesson 2 student documents.

Extend
Have your students compare their results from the taste test and the sensory test from Lessons 2 & 3 to the Significance Tables provided on the bottom of each lesson. Engage your students in a classroom discussion about the variables that could change the results of each test, including:

- Ingredients used
- Personal preference
- Time of day
- Level of hunger
- Strength of scent/taste of samples

Evaluate
Evaluation of student understanding should be completed throughout Lessons 1-3. Ask your students guiding questions to ensure they understand the purpose of each laboratory procedure. In addition, have your students answer the reflection questions:

- What impact do taste tests and sensory tests have on the production of certain foods?
- What does it mean when food producers don't reach high enough preference percentages?