

How Can You Change the Smell and Taste of Food?



Focus: Students use their senses to discuss and observe ways the smell and taste of food can be changed.

Specific Curriculum Outcomes

Students will be expected to:

- 19.0 investigate ways that materials can be changed to alter their smell and taste [GCO 1/3]
- 20.0 follow a simple procedure [GCO 2]
- 1.0 pose questions that lead to exploration and investigation [GCO 2]

Performance Indicators

Students who achieve these outcomes will be able to:

- use their senses to demonstrate and describe how food can be changed to alter its smell and taste
- make gelatin according to teacher's directions

NOTES:

Attitude Outcome Statements

Encourage students to:

- be open-minded in their explorations [GCO 4]
- work with others in exploring and investigating [GCO 4]

Cross-Curricular Connections

English Language Arts

Students will be expected to:

- communicate information and ideas effectively and clearly, and to respond personally and critically [GCO 2]
- use writing and other forms of representation to explore, clarify, and reflect on their thoughts, feelings, experiences, and learning; and to use their imaginations [GCO 8]

Getting Organized

Program Components	Materials	Before You Begin	Vocabulary
• Science Card 7 • IWB Activity 7 • BLM <i>What My Senses Tell Me</i> (p. 16) • BLM <i>Procedural Organizer</i> Literacy Place: <i>Making Ice Cream</i> (Shared Reading–Sequencing Strategy Unit)	• variety of condiments plus apple slices and/or soup samples • students' Science Journals • food or beverage samples • flavoured gelatin powder packages (1 per small group) • cooking utensils for making gelatin • set gelatin in a disposable container (1 per student) • plastic spoons (1 per student) • students' Science Folders • lemon juice • sugar • water • small plastic or Styrofoam cups • spoons	• Make enough flavoured gelatin to give each student at least two spoonfuls to taste.	• smell • taste

Safety

- Ensure students are not allergic to apples, flavoured gelatin, or any other food used for tasting.
- Remind students to always waft odours to the nose and sniff.

Science Background

- We use both our tongue and nose to taste food. Our nose detects the odours of foods, and our brain combines the odours with taste sensations to give us a taste experience.

- When we can't use our nose to help us taste—such as when we have a cold—food seems to have less flavour.

Possible Misconceptions

- If students are asked to identify the body parts they use to taste food, most will likely say they use their mouth or tongue. It is very unlikely that students will know that both the tongue and nose work together to create taste sensations. Students can test this by plugging their nose before tasting a food or beverage sample.

ACTIVATE

Silly Changes

Model a situation where you add an unusual ingredient, such as ketchup, to a glass of milk. Ask:

- How might adding the ketchup change the smell of the milk?
- How might it change the taste of the milk?
- What other changes might you notice?

Invite students to suggest other silly ingredients that could be added to the milk to change its smell and/or taste.

Altering Foods

Display Science Card 7. Invite students to look at the images on the card. Discuss any of the materials that may be unfamiliar to students and ask them to identify the materials as sweet, sour, salty, or bitter. Then discuss how the various condiments and spices might change the smell and taste of the apple slices and/or the soup. Provide prompts such as:

- How would the addition of something sour change the smell and taste of the soup?
- What material would you add to the apple slices to make them taste sweeter?
- How much of a material would need to be used to change the smell and taste of a food? How could you find out?
- How else could the food be changed?
- Do you have any questions?

Students' questions can be placed on sticky notes or cards and added to the I Wonder Wall.

You might wish to place Science Card 7 at the Curiosity Centre along with some (or all) of the materials shown and invite students to investigate how the materials change the smell and taste of apple slices and/or soup.



IWB Activity:

- Use Activity 7:
*Changing the smell
and taste of food*,
slide 1, to reveal
the names of the
condiments shown
on Science Card 7.
Invite students to
use slide 2 to match
condiments with
various foods and
explain how they
would change the
smell and taste of
the food (see the
Teacher's Website).



CONNECT



Sampling Foods

Organize students into pairs and provide each pair with a sample of a food or beverage before and after it has been changed. For example, you might hand out fruit juice before and after dilution with water, instant oatmeal before and after the addition of boiling water, peppercorns before and after grinding, or grapes and raisins (dehydrated grapes). Invite students to smell and taste their samples. Students can record their observations in their Science Journals. Ask:

- **How did your first sample smell? How did it taste?**
- **What did you notice about the second sample? How was it different?**
- **How was it changed? How do your senses help you to know this?**
- **Can you think of another way the sample could have been changed?**
- **Would you need a tool to change the sample?**

Making Flavoured Gelatin

Tell the students that they are going to work in small groups to follow a simple procedure to make flavoured gelatin. (Alternatively, you might choose to make instant pudding.) Remind students to look closely at the material in each stage in order to find out how adding water to a food can change its smell and taste. Pause to allow students to describe the smell and taste of the material at various steps in the procedure. Students might also offer descriptions of the appearance and texture at each stage.

1. Organize the students into groups and provide each group with a small amount of gelatin powder. Ask students to think about the following questions as they observe the gelatin powder:
 - **What does it look like?**
 - **What does it smell like?**
 - **What does it taste like?**
 - **What does it feel like?**
 - **What does it sound like when you pour it on a piece of paper?**
2. Have students record their observations on BLM *What My Senses Tell Me*. (See page 16.) You may ask students to record only those observations relating to smell and taste or you may ask them to use all five senses to record their observations.
3. Tell students that it's time to add hot water to the powder. Have each group, one at a time, observe what happens to the gelatin after you add hot water to the powder. Invite one of the students to help you stir. Next, add cold water and again have a student help you stir. Ask:
 - **What does it look like?**
 - **What does it smell like?**

The form is titled "What My Senses Tell Me" and includes a line for the student's name. Below the name line, it says "Write or draw what you see, touch, smell, hear, and taste." The form is divided into five sections, each with a small icon representing a sense: "see" (eye icon), "touch" (hand icon), "smell" (nose icon), "hear" (ear icon), and "taste" (tongue icon). Each section has a large empty box for the student to write or draw their observations.

What My Senses Tell Me

Write or draw what you see, touch, smell, taste, and hear.

see	
touch	smell
hear	taste



4. Explain that the next step is to put the gelatin in the fridge to set. Distribute a small amount of the pre-made gelatin to each student. Again, ask students to use their senses to observe the gelatin and to record their observations on BLM *What My Senses Tell Me*. Suggest students use a different coloured pencil for these observations so they can distinguish between their observations of the powder and the set gelatin. You may ask students to record only those observations relating to smell and taste or you may ask them to use all five sense to record their observations. Have students store their completed BLMs in their Science Folders.
5. As a class, discuss how the smell and taste of the gelatin powder changed.
 - How did the gelatin powder smell and taste?
 - What caused the smell and taste of the powder to change?
 - How did it change?
 - What else could you do to change the taste or smell of the gelatin?
 - How might it change if you added fruit before letting the gelatin set in the fridge?
 - Do you have any questions?

Record students' questions on the I Wonder Wall.

Alternatively, students could make juice from frozen concentrate and water, or a fruit drink from flavoured crystals and water. Allow them to smell and taste the materials at various steps in the procedure.

CONSOLIDATE

New Ideas

Ask students to think-pair-share with a partner to develop other potential ways to change a food or beverage to alter its smell and taste. Provide prompts such as:

- What happens to the smell and taste of bread when you toast it?
- How could you change the smell or taste of a glass of water?
- What other foods or drinks could you change?
- How would you make the change?

Have students share their ideas with the whole group. With permission, have students demonstrate one or more of the changes.



Literacy Place Connection:

Revisit or read *Making Ice Cream* by Barbara Hehner to find out how cream can be turned into ice cream. Review the recipe with students and discuss the changes to the materials which take place throughout the process. Ask:

- How do you think the sugar would change the smell and taste of the cream?
- How would the flavourings change it?
- What do you think the ice and salt will do?
- How is the ice cream different than the cream?

Lemonade Recipe

Review a recipe with the students and ask:

- What do you need to include in a recipe?

Lead students to recognize that you need to list the materials with amounts plus the steps in the order to follow.

In small groups, invite students to create a recipe for making lemonade using lemon juice, sugar, and water. Provide students with non-standard measuring tools such as small plastic or Styrofoam cups and spoons along with the materials. Ask them to record how much of each material they used.

Students can refine their recipe through taste testing. Remind them that if they alter the recipe by adding more of any material, they need to update the measurements for their recipe. Distribute copies of BLM *Procedural Organizer* and have students record their recipes using pictures and words. Students can store their completed BLMs in their Science Folders.



EXPLORE MORE

Talk to an Expert

Invite someone who works in the food industry, such as a cook or a chef, to talk to the class. Have them give a brief talk about ways they can change the smell and taste of food. Provide time for students to ask questions. Students might report what they have learned in the manner of their choosing (e.g., a report, a demonstration, or a poster).

Procedural Organizer

How to _____
by _____

You will need:

1.

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2.

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3.

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4.

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