



## Elaborate: Take a Note

### “Toasted Change”

*Changes in Matter Module*

This inquiry-based activity provides students with the opportunity to further expand process skills while emphasizing the importance of collaboration and communication.

This offline skills activity can be completed after participation in the online Take a Note Elaborate.

**Teacher objective:** Students will manipulate matter in one state to observe physical and chemical changes of state.

**Student objective:** Upon completion of this activity, students will be able to identify changes in states of matter.

**Estimated time for activity:** 25 minutes

#### **Materials:**

- Sliced bread (square-shaped bread should be used for math extension option)
- Toaster
- Cinnamon
- Granulated sugar
- Butter
- Plastic knives, one per team
- Plastic spoons, one per team
- Paper plates, one per team

#### **Procedure:**

- 1 Do: Provide students with the opportunity to work with their peers.**
  - a Tell students they will be observing changes in matter using common foods and thermal energy.
  - b Students will conduct this investigation in small groups or teams.
  - c Each team will work together to mix the sugar and cinnamon to make a mixture.
  - d Teams will take turns toasting slices of bread (chemical change) and spreading butter onto the toast (physical phase change, butter melting to liquid).
  - e Students will then sprinkle cinnamon/sugar onto the buttered toast and will cut the toast into four pieces (physical change).
- 2 Discuss: Encourage students to exchange ideas while within their groups.**
  - a Ask students to discuss the changes happening as they conduct the investigation.
  - b Extend this lesson by having students eat the cut cinnamon toast.
  - c Ask them what changes the different substances will make. (*Cinnamon/sugar will dissolve--physical phase change; chewing bread--physical change; digestion of the cinnamon toast--chemical change and become food energy.*)



**3 Communicate: Help students to record their observations and findings through illustration(s).**

- Once all students have finished eating and identifying the changes in matter, have them list the steps onto a chart with headings of “Physical Change,” “Physical Phase Change,” and “Chemical Change.”
- Provide key terms which students can list on their charts.
- Have teams share their data with peers.

**4 Collaborate: Provide students with the opportunity to summarize their experiences and to draw conclusions through a closing activity or discussion.**

Discussion can be guided by the teacher by asking the following:

- Why was toasting the bread considered a chemical change? (*change in particles, cannot be returned to original substance of bread*)
- Why is the cinnamon/sugar called a mixture?
- Could you demonstrate this same investigation for your family and explain the science at work?

**Review:**

At the conclusion of the lesson, remember to review the following key points:

Read the process skill to your students and have them compare what they did to what professional scientists do.

- Scientists learn through observation.  
Direct observation of changes in matter will help support understanding of this concept.
- Scientists compare and contrast what they observe.  
Conducting follow-up with all students provides a valuable extension of the observation activity as students will learn from peers’ findings/reflections as well as their own. Ask, “What did you learn from the other students’ charts?”
- Collecting and recording data are important science process skills.  
Organizing data in charts helps illustrate concept understanding.

**Accommodations:**

If students have difficulty completing the activity, a variety of accommodations can be employed.

- Teams can be determined by the teacher so students can work together.
- The activity can be completed at a center with an aide or with the teacher.

**Math Extension:**

Use this extension option to incorporate second grade math skills into this activity.

Use square bread to include these math extension activities. Include both activities by assigning members of each team different tasks. Students will work collaboratively to decide how each toast slice will be divided.

- Make rows and columns.* Have students cut their toast into rows and columns, forming equal-sized squares. Count to find the total number of squares made.
- Practice making halves, thirds, and fourths.* Have students cut toast slice into two, three, or four equal pieces; describe the pieces using the words halves, thirds, half of, a third of, etc., and describe the whole as two halves, three thirds, four fourths. Allow students to compare how students cut slices (e.g., quarters might be square, rectangular, or triangular) so that they can recognize that equal shares of identical wholes need not have the same shape.