



COOKING WITH RADIATION

Materials

- Microwave
- Mini marshmallows
- 2 sweet potatoes, cooked and cubed
- Saran wrap
- 3 paper plates
- 1 metal fork
- 1 glass bowl
- Sample cup per student
- Plastic spoon per student



FIGURE 1 Sweetpotatoes are full of important vitamins and minerals.

Education Standards

- 5.P.3.1: Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation);
- 5.P.2.3: Summarize properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.

Activity by Marissa Finn (Guilford County Cooperative Extension FoodCorps NC alum)

Time Needed: 45 Minutes

This lesson explores the concepts of radiation by cooking and tasting sweet potatoes!

LET'S DO IT!

Start by reviewing conduction, convection and radiation. Using think-pair-share, have students define and give an example of radiation (Radiation- the transfer of heat through space by waves).

Microwave Sweet Potatoes

1. Place cubed sweet potatoes and a tablespoon of water in a clear bowl and place in the microwave for 5 minutes.

Observing Marshmallows

2. As sweet potatoes are cooking, pass out a piece of paper or journal and an uncooked mini marshmallow to each student. Have students write in their journals, "Describe the marshmallows before they are heated."
3. Give students a few minutes to observe the marshmallows and to discuss what the marshmallows are like with their table groups.
4. Next, students can write, "What do you think will happen to the marshmallow when cooked with radiation?" Give students a few minutes to discuss how the marshmallows may change when heat is added. Have students write their observations in their journals
5. As they are writing, mash the microwaved sweet potatoes and add salt.

TALK IT OVER

1. How did the microwave cook the sweetpotatoes?
2. What happened to the marshmallows when you cooked them?

Microwave Marshmallows

6. Gather students around the microwave. Place one mini marshmallow per student on a paper plate and microwave the marshmallows for 30 seconds.
7. Observe the marshmallows. Discuss what happens as heat through radiation is applied - the marshmallows expand. Open the microwave, and discuss what happens as the marshmallows are cooled - they quickly contract.

Discuss Observations

8. Ask students to write in their journals, "What kind of heat transfer did we apply to our sweet potatoes and marshmallows? What happened to the marshmallows when we microwaved them?"

Tasting

9. As students are writing in their journals, place a small scoop of sweet potato and marshmallow in a sample cup for students to taste. If time is left over, head to the garden to harvest herbs to sprinkle on top (rosemary, chives, oregano would all work well).
10. Observe the sweet potatoes using five senses: allow students to think-pair-share about how the sweet potatoes look, smell, feel and sound.
11. When everyone is ready, say, "bon appetit, you may eat!" as a class, and taste!

3. Did you like the recipe?
4. Do you think you could cook something healthy at home?