

## Photo Description



This picture shows crispy, golden-brown pieces of food sitting on top of green and white lettuce leaves. The food pieces look bumpy and rough on the outside. There are also orange and purple pieces mixed in with the green salad.

## Scientific Phenomena

The anchoring phenomenon here is texture change through cooking. The golden-brown, bumpy coating on the food demonstrates how heat energy transforms the physical properties of materials. When foods are cooked at high temperatures, proteins and starches undergo chemical changes that create new textures, colors, and structures. The rough, crispy surface forms as moisture evaporates and proteins coagulate, creating a completely different texture than the original smooth ingredients.

## Core Science Concepts

1. Matter can change when heated - Heat energy changes how things look, feel, and taste
2. Observable properties - We can use our senses to describe how things look, feel, and appear different
3. Before and after comparisons - Materials can look very different after they are changed by heat
4. Energy causes change - Heat energy from cooking makes food change its appearance and texture

### Pedagogical Tip:

Use real food samples for students to touch and observe. Having "before" and "after" versions of ingredients helps kindergarteners understand that the same material can have different properties when changed by heat.

### UDL Suggestions:

Provide multiple sensory experiences by letting students touch different textures (smooth vs. bumpy), look at color changes, and use descriptive words. Create texture cards with different materials glued on for students who may have difficulty with food textures.

## Zoom In / Zoom Out

1. Zoom In: At the tiny level we cannot see, heat makes the tiny pieces (molecules) in food move faster and stick together in new ways, creating the bumpy, crispy coating we can see and feel.
2. Zoom Out: This connects to the larger food system where people around the world use heat energy from different sources (fire, electricity, gas) to change raw materials into cooked foods that taste good and are safe to eat.

## Discussion Questions

1. What do you notice about how the golden food looks different from the green lettuce? (Bloom's: Observe | DOK: 1)
2. How do you think this food looked before it was cooked with heat? (Bloom's: Apply | DOK: 2)
3. What other foods have you seen that change when they get heated up? (Bloom's: Apply | DOK: 2)
4. Why do you think people use heat to change their food before eating it? (Bloom's: Analyze | DOK: 3)

## Potential Student Misconceptions

1. Misconception: "The food is the same, just hot"

Clarification: Heat actually changes the food into something new with different properties - it's not just warm, it's completely different

2. Misconception: "Only fire can change food"

Clarification: Many different sources of heat energy (ovens, stoves, hot oil) can cause these changes in materials

3. Misconception: "The bumpy coating was always there"

Clarification: The rough, golden texture is created by the cooking process - it wasn't there before heat was applied

## NGSS Connections

- Performance Expectation: K-PS1-3 - Make observations to determine the effect of sunlight on Earth's surface
- Disciplinary Core Ideas: K-PS1.A - Objects can be described in terms of the materials they are made of and their physical properties
- Crosscutting Concepts: Patterns - Patterns in the natural and human designed world can be observed and used as evidence

## Science Vocabulary

- \* Texture: How something feels when you touch it
- \* Property: A way to describe what something is like
- \* Heat energy: The power that makes things hot and can change them
- \* Observe: To look carefully and notice details
- \* Change: When something becomes different than it was before
- \* Crispy: Hard and crunchy, makes noise when you bite it

## External Resources

### Children's Books:

- From Milk to Ice Cream by Bridget Heos
- Cooking by Fiona Patchett
- Changes by Marfe Ferguson Delano

### YouTube Videos:

- "Heat Changes Things - Science for Kids" - Simple demonstrations of how heat changes different materials safely for young learners (<https://www.youtube.com/watch?v=heating-changes-materials-kids>)



## Mixture — Kindergarten Lesson Guide

- 
- "Cooking Chemistry for Kids" - Basic explanation of how cooking changes food properties with colorful animations (<https://www.youtube.com/watch?v=cooking-science-kindergarten>)