

Photo Description



This image shows an egg cooking on a hot black frying pan above a blue flame. The white part of the egg (called the egg white) is getting firm and solid, while the yellow part in the middle (called the yolk) is still soft. Heat from the stove is making the egg change!

Scientific Phenomena

Anchoring Phenomenon: Heat transfer and the effects of thermal energy on matter

Why It's Happening: When the hot pan touches the cold egg, thermal energy (heat) moves from the hot pan into the egg. This heat causes the proteins in the egg to change shape and bond together, making the liquid egg white turn into a solid. This is called a physical change—the egg looks and feels different, but it's still an egg. The blue flame is burning fuel (natural gas or propane), which creates heat energy that warms the pan.

For kindergarteners, the simple explanation is: The hot stove makes the egg get warmer and harder.

Core Science Concepts

- **Thermal Energy (Heat):** Energy that makes things warm. Heat always moves from something hot to something cold. The hot pan is giving heat to the cold egg.
- **States of Matter and Change:** When heat is added to some things, they change. The raw egg is mostly liquid (runny), but heat makes it become solid (firm). This shows that heat can change how things look and feel.
- **Energy Sources:** The flame is a source of energy. We can see the blue flame releasing energy as light and heat.
- **Cause and Effect:** The flame heats the pan !' the pan heats the egg !' the egg changes texture and appearance. Students can observe that something (heat) caused a change (solid egg).

Pedagogical Tip:

For Kindergarten, avoid the term "heat transfer." Instead, use simpler language: "The hot pan is making the egg warm," or "The stove gives heat to the egg." Let students observe the visible changes (color, texture) rather than focusing on invisible heat movement. Cooking is a relatable, engaging phenomenon that children experience in their homes!

UDL Suggestions:

UDL Strategy - Multiple Means of Representation: Provide a real, safe cooking demonstration (or video clip) so visual learners see the change. Use descriptive language and let students touch (safely) a warm (not hot) pan so kinesthetic learners understand warmth. Create a simple photo sequence showing "raw egg !" cooked egg" for students who need visual supports.

Discussion Questions

1. "What do you notice happening to the egg as the pan gets hotter?" (Bloom's: Observe/Remember | DOK: 1)
 - Encourages direct observation of the phenomenon.
2. "Why do you think the egg white turned from runny to hard?" (Bloom's: Understand | DOK: 2)
 - Builds understanding of cause-and-effect with heat.
3. "What other foods have you seen change when grown-ups cook them? How did they change?" (Bloom's: Understand/Apply | DOK: 2)
 - Connects to students' real-world experiences and prior knowledge.
4. "What do you think would happen if we waited even longer to cook the egg? Why?" (Bloom's: Analyze/Predict | DOK: 3)
 - Encourages prediction and deeper thinking about ongoing thermal change.

Extension Activities

1. Safe Cooking Exploration (Supervised Demonstration)
 - Set up a simple, supervised cooking station where students observe different foods being heated (crackers toasting, marshmallows melting, or water warming—no open flames near children). Use teacher demonstration only. Have students draw or dictate observations of how each food changes with heat. This builds vocabulary and observational skills safely.
2. Warm vs. Cold Sensory Activity
 - Provide safe, age-appropriate items: a warm (not hot) washcloth, a cool spoon, a lukewarm cup of water. Let students carefully touch each and describe: "This is warm," "This is cold," "This is in between." Use temperature-related vocabulary throughout. This develops understanding of thermal energy in a tactile, safe way.
3. Story & Picture Sequencing
 - Read a simple book about cooking (see resources below). Show picture cards of: raw egg !' cooking egg !' cooked egg. Have students arrange the pictures in order and dictate or draw what happens at each stage. This reinforces cause-and-effect thinking and sequencing skills.

NGSS Connections

Grade K Performance Expectation:

- K-PS1-1: Plan and conduct investigations to provide evidence that vibrations make sound and that objects can be seen only when light is available. (Note: While this standard addresses light and sound, thermal energy observations connect to K-ESS2-1 below.)

Relevant Disciplinary Core Ideas:

- K-PS3.A - Objects can be moved by pushing or pulling. Pushing or pulling can change the speed or direction of moving objects. (Energy and forces context)
- K-PS3.B - Humans and animals use food to get energy to move and grow. (Energy in everyday life—cooking and food)

Crosscutting Concepts:

- Cause and Effect - Simple cause-and-effect relationships (heat causes the egg to change)
- Energy and Matter - Energy can be observed in many forms; heat makes things warm

Science Vocabulary

- * Heat: Energy that makes things warm. Heat comes from fire, the sun, and hot things.
- * Thermal Energy: Another word for heat energy that makes things hot or warm.
- * Cook (or Cooking): Using heat to change food so we can eat it safely.
- * Flame: The bright, hot part of fire that we see when something is burning.
- * Change: When something looks, feels, or acts different than before.
- * Temperature: How hot or cold something is.

External Resources

Children's Books:

- The Egg by M.P. Robertson (a creative, engaging story about an egg)
- Cooking with Henry and Mudge by Cynthia Rylant (shows cooking and food transformation)
- From Seed to Plant by Gail Gibbons (includes images of heat and growth, suitable for extension)

YouTube Videos:

- "Cooking Eggs - Simple Science for Kids" (2-3 minutes)
 - A short, child-friendly video showing eggs cooking with clear visual changes.
 - https://www.youtube.com/results?search_query=cooking+eggs+kids+science (Search for age-appropriate versions; verify link before classroom use)
- "Heat and Temperature for Kids - Science Lesson" by Crash Course Kids (3-4 minutes)
 - Colorful, engaging introduction to heat and temperature with relatable examples.
 - <https://www.youtube.com/watch?v=phJTWMn8pzE> (Verify content is Kindergarten-appropriate before showing)

Teacher Tip: Always prioritize student safety when using heat sources. Use video demonstrations, teacher-led activities, or virtual exploration if direct access to cooking appliances is not feasible in your classroom. The key is helping Kindergarteners observe and describe visible changes caused by thermal energy.