

Lesson 6.6: Cooking Methods, Dry Heat, Moist Heat, and Why

Unit: Unit 6, From Farm to Table (Food Systems and Production) **Topic:** 6.2 Food Preparation Methods and Science **Grade:** 6 to 8 (written at grade 7; see Differentiation for the grade 6 support and grade 8 stretch) **Days:** 1 class period of 40 minutes **Room:** FACS lab with a stove and an oven for the teacher demonstration (a no-kitchen version is below)

Standards

- NYS module line: NYS FSP 1. Basic Culinary Skills a) Apply basic culinary and management skills to the preparation of nutritious food
- NYS module line: NYS FSP 1. Basic Culinary Skills b) Identify common kitchen tools, equipment, and the uses for each
- NYS module line: NYS FSP 2. Food Preparation d) Demonstrate the skills and techniques common to food preparation of the region
- CTE theme line: CTE HSW 4. Classroom and Workplace Safety c) Apply safety practices when using tools, machines, and equipment
- CTE theme line: CTE PSI 1. Problem Solving a) Describe the scientific method of inquiry as it relates to real-world problem solving
- NYS FACS Learning Standard 1 (Intermediate), Key Idea: Students will use an understanding of the elements of good nutrition to plan appropriate diets for themselves and others. They will know and use the appropriate tools and technologies for safe and healthy food preparation.; Performance Indicator A: Students understand the relationships among diet, health, and physical activities; evaluate their own eating patterns; and use appropriate technology and resources to make food selections and prepare simple, nutritious meals.
- CDOS Standard 3a Universal Foundation Skills: Technology
- National FCS 3.0: 8.5.2 Cook with professional skill across a range of methods, from roasting and grilling to braising, poaching, steaming, and baking, on professional equipment.
- National FCS 3.0: 8.5.14 Cook in ways that raise nutritional value, cut calories and fat, and use herbs and spices for flavor.

(FSP 2. d) is cited because the techniques taught here are the ones Lessons 6.8 to 6.10 use on regional dishes. National FCS 8.5.2 lists frying methods that this room never uses; the competency is cited for the method vocabulary, and the lesson names frying only to say we do not do it.)

Enduring understanding and essential question

Big idea: Heat does different things to food depending on whether water is in the way. Dry heat browns and crisps. Moist heat softens and keeps things tender. Picking the wrong one is most of what goes wrong in a kitchen. **Essential question:** Same potato, same twenty minutes, two methods. Why are they not the same food at the end?

Objectives

By the end of this lesson, students will be able to:

1. (Low: understand) Sort nine cooking methods into dry heat and moist heat, and name the tool or piece of equipment each one uses.
2. (Mid: apply) Match eight foods to the best method for each and give one reason per match that names what the heat does to that food.
3. (High: analyze) After the two-way demonstration, compare the same food cooked two ways on color, texture, smell, and taste, and explain the difference using the words browning and moisture.

Vocabulary

Tier 2 (general academic): compare, texture, method, evidence, explain Tier 3 (FACS): dry heat, moist heat, bake, roast, broil, toast, sauté, boil, simmer, steam, poach, browning, tender. See the unit vocabulary list (Vocabulary 06.md) for Turkish, Portuguese, and Spanish.

Materials and setup

- Handout 06.06 - Method Match and Demonstration Record.md, one per student
- One set of nine method cards per group of four (printed from the handout's last page)
- Demonstration option A, potatoes: 2 medium russet potatoes, scrubbed, one pricked and baked at 400 degrees for the period's first 25 minutes and one cut in half with a butter knife and boiled in salted water for about 20 minutes. Needs one small pot, one sheet pan, one trivet, oven mitts, a fork, and paper plates and forks for tasting. Cost about \$1.50.
- Demonstration option B, eggs, if the oven is not available: 4 eggs, two hard boiled in a small pot and two scrambled in a skillet with a teaspoon of butter. Needs one small pot, one skillet, one spatula, one slotted spoon, paper plates and forks. Cost about \$1.50.
- One sanitizing spray and two cloths, plus a tasting protocol: the teacher plates, students take their own portion with their own fork, nobody reaches into a shared pan.
- Slides: Slides 06.06 - Cooking Methods, Dry Heat, Moist Heat, and Why
- Setup notes: the teacher is the only person at the stove and the only person who opens the oven, as in every lesson in this course. Start the oven potato before the period if the oven is slow, or start it at minute 0 and taste at minute 30; the handout's record sheet leaves the taste row for the end either way. Allergy check: potato is low risk; the egg option contains egg, and the butter contains dairy, so run the allergy list the day before and set aside a no-taste role (recorder) with no explanation asked. Nobody is required to taste anything, ever.

Pre-assessment

The do now asks for a method by name. Count how many students can name more than two. The class that can name only “bake” and “fry” needs Step 1 in full; the class that produces eight method names can move faster and spend the time on Step 3.

Do now and hook (Time: 5 min)

On the board: “List every way you can think of to cook a potato. One word each. Go for six.”

Debrief: build one list on the board from four students. Circle the ones that use water and underline the ones that do not, without saying why yet. Then the hook: point at the oven and the pot, both already going. “Same potato. Same pound, same field, same day. In thirty minutes one of these is going to be brown and crisp and one is going to be pale and soft. Nothing changed but the water.”

Procedure

Step	Teacher will	Students will	Time
1. Direct instruction: two families of heat	Show the two columns. Dry heat: bake, roast, broil, toast, sauté. Moist heat: boil, simmer, steam, poach. Name the tool for each, using the tools from Unit 1 Lesson 1.5 by name. Say the difference in one sentence: dry heat drives water off the surface so the surface can brown, moist heat surrounds the food with water or steam so the surface stays wet and cannot brown. Then the honest note: we do not fry in this room, and the reason is oil temperature, not fun.	Fill the two columns on the handout with the nine methods and the tool for each. Star the three methods they have used themselves.	9 min
2. Browning in plain words	Explain browning without the	Write the browning sentence in their	5 min

	chemistry vocabulary: when the surface of food gets hot and dry, the sugars and proteins in it change into new compounds that are brown and that smell and taste stronger. That is why toast tastes different from bread and why a roasted vegetable tastes different from a boiled one. Water on the surface holds the temperature down, so nothing browns until the water is gone.	own words on the handout. Name one browned food they like and say what it tastes like compared to the unbrowned version.	
3. Learning activity: match eight foods to a method	Release the match task in groups of four using the method cards and the eight food photos on the handout: a chicken breast, a potato, broccoli, rice, an egg, a piece of bread, an apple, and a pound of pasta. Rule: one method per food, and a reason that says what the heat does. Two foods have more than one right answer; let the groups argue.	Match all eight, write the reason, and flag the two foods the group could not agree on.	10 min
4. The two-way demonstration and the compare	Plate both versions. Run the record sheet down the four rows out loud: color,	Fill the four rows of the record sheet for both versions. Taste if they choose to.	9 min

	texture, smell, taste. Hand out portions with the tasting protocol. Ask the compare question and take three answers that use the words browning or moisture.	Write the compare sentence: "The baked one is ___ because ___."	
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Questions to ask

Monitor understanding:

- Is steaming dry heat or moist heat? What is the water doing in it?
- Which of your nine methods needs the oven, and which needs only a burner?
- Rice with no water. What happens?

Deepen learning:

- Boiling a vegetable puts some of its vitamins in the water. Does that mean boiling is a bad method? When would you do it anyway?
- Broccoli can be steamed or roasted. Which would get a middle schooler to eat it, and why?
- Restaurants sear meat in a hot pan before they braise it in liquid. Why bother, if it is going into liquid anyway?
- We do not fry in this room. What could you cook that gets close to the fried version using an oven or a broiler?

Check for understanding

Circulating during Step 3: point at one card in each group's dry heat pile and ask "what is the water doing in that one?" A "got it" answer says there is no water, or the water leaves. A group that puts steaming in the dry pile because there is no liquid touching the food gets the follow-up question rather than the answer, since that is a good mistake and worth ten seconds.

Closure (Time: 2 min)

One line on the exit card: "Dry heat is for , **moist heat is for** , and the food I would cook tomorrow is ___ by ___." Two students read a line. Sort into "got it" and "needs more." The "needs more" pile decides whether Lesson 6.7 opens with the two columns back on the board for thirty seconds.

Differentiation and supports

- ELL: each of the nine methods has a photo and a two-word caption on the slide and on the cards; the tool names carry the pictures from the Unit 1 tool handout; the words

bake, boil, steam, brown, tender, and crisp are on the vocabulary card in Turkish, Portuguese, and Spanish (see Vocabulary 06.md); the record sheet uses four picture icons for color, texture, smell, and taste.

- IEP and 504 (general): the method sort is a card task, so no writing is needed to show the sort; the record sheet can be completed with circled choices instead of sentences; a student who should not be near the stove records from the seat farthest from it; sensory note: the potato in the oven smells strong, and any student may open the door of the room or move seats without asking; nobody tastes anything they do not want to taste and no reason is required.
- Grade 6 support: six methods instead of nine (bake, broil, sauté, boil, steam, poach) and six foods instead of eight. The compare sentence has a frame with both words already in it.
- Grade 8 stretch: add the two methods this room cannot do (grilling and frying) to the sort and answer where each belongs and why we skip them. Stretch students also answer the harder question in writing: name one food that uses both families in one recipe, and say the order and the reason.
- UDL checkpoint used: multiple means of representation (a live two-way demonstration plus photos plus the printed columns) and multiple means of engagement (the tasting is a choice, and the two undecidable foods in Step 3 are designed to be argued about).
- No-kitchen alternative: run the demonstration as a comparison of two foods brought in already cooked. Buy a baked potato or a roasted vegetable from the deli and a boiled or steamed version of the same food, or bring toast and plain bread, which makes the browning point with no heat in the room at all. The record sheet, the compare sentence, and the method sort are unchanged. A second option is the microwave version: one potato microwaved wrapped in a damp paper towel (which behaves like moist heat) and one microwaved bare and finished in a toaster oven if one is available.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. Sort nine methods and name the equipment	FSP 1. b); HSW 4. c); CDOS 3a Technology	Two columns, Step 1; method cards, Step 3	Formative; handout checked for nine methods in the right family with a tool each
2. Match eight foods to a method with a reason	FSP 1. a); FSP 2. d); Std 1 PI A; National FCS 8.5.2	Match task, Step 3	Formative; clipboard question during Step 3; handout scored complete, partial, or missing for daily work. Assessed

			summatively on the Cooking Methods Check, items 1 to 6
3. Compare the same food two ways and explain the difference	FSP 2. d); PSI 1. a); National FCS 8.5.14	Demonstration record and the compare sentence, Step 4	Formative; the sentence must use browning or moisture. Assessed summatively on the Cooking Methods Check, items 7 and 8 (Assessment 06.2 - Cooking Methods Check.md)

Homework

None. Optional: watch an adult at home cook one thing and write down which method they used and why they said they chose it.

Connections

Science: browning and evaporation are chemistry and physics, and the science teacher can take the same demonstration further with temperature readings. Lesson 6.7 turns this lesson's observation skill into a controlled experiment, which is the science teacher's own language. Health: cooking method changes fat and vitamin content, which is a five-minute overlap with the health teacher's nutrition unit. *[Sal: if the science teacher has an infrared thermometer, borrowing it for this demonstration makes the dry-versus-moist point visible in numbers.]*

Sources

- NYS Middle Level CTE FACS Content Module 06, Food Systems and Production (nyctecenter.org, June 2018), lines 1. a), 1. b), and 2. d). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Module 04, Health, Safety, and Wellness, line 4. c); Theme Module 05, Problem Solving and Innovation, line 1. a). Same folder.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 1, Intermediate, FACS strand, Performance Indicator A. Wording per 02 Standards/STANDARDS SOURCES - web research.md, section 2. *[Sal: confirm against the NYSED PDF.]*
- CDOS Intermediate Standard 3a Universal Foundation Skills, Technology. Same file, section 3.
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competencies 8.5.2 and 8.5.14.
- Unit 1, Lesson 1.5, for the tool names used in Step 1.

- Sal's own constraints, applied here: no knives beyond butter knives and kitchen shears, no frying, the teacher handles the oven door and drains anything hot.

Teacher notes

- Start the oven potato first, before the do now, or it will not be ready. If the oven is slow, bake it during the previous period and reheat it, and say so out loud rather than pretending it just came out.
- If time runs short, cut Step 2 to one sentence on the board and keep Step 4. The demonstration is the lesson.
- Common mistake: students call sauté a moist method because the pan has butter or oil in it. Fat is not water, and fat gets hotter than water can, which is exactly why things brown in it. That is the thirty-second answer.
- The pot of boiling water is the only real hazard. Nobody carries it, nobody drains it. The teacher does both, and says so while doing it, which is a preview of Lesson 6.8.
- Save the two plated potatoes for the review before the Cooking Methods Check if they survive the period, or take a photo. The photo is a better quiz review than any slide.
- *[Sal: your students have been asking to use the stove since Unit 1. Naming which methods they will personally run in Lessons 6.8 and 6.9 at the end of this lesson buys you a quiet Step 4.]*