

Lesson 1.2: Handwashing, the Danger Zone, and Cross Contamination

Unit: Unit 1, Kitchen Skills and Smart Eating (Nutrition and Wellness) **Topic:** 1.1 Safe and Clean: Kitchen Safety and Sanitation **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 sink (a no-kitchen version is below)

Standards

- NYS module line: NYS N&W 1. Culinary Management b) Demonstrate safety and sanitation procedures when handling food and equipment
- CTE theme line: CTE HSW 2. Disease Prevention b) Demonstrate the use of prevention measures such as hand washing, sanitation and waste disposal, proper food handling and storage, and environmental controls to reduce disease risk
- 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: Students apply principles of food safety and sanitation.
- CDOS Standard 3a Universal Foundation Skills: Personal Qualities
- National FCS 3.0: 14.4.1 Examine the conditions and habits that keep food safe to eat.
- National FCS 3.0: 14.4.5 Examine what causes foodborne illness, which foods are risky, and how to prevent it.

Enduring understanding and essential question

Big idea: The germs that make people sick from food are invisible, so the only protection is a routine you do every time, whether or not you can see a reason. **Essential question:** If you cannot see germs, how do you know your food is safe?

Objectives

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

1. (Low) Without notes, list the six steps of proper handwashing in order and state the temperature danger zone (40 F to 140 F) and the two-hour rule.
2. (Mid) Given a kitchen scenario card, classify it as safe or not safe and explain which rule it follows or breaks (handwashing, danger zone, or cross contamination).
3. (High) For each “not safe” card, propose a fix that would make the same task safe, and defend it to the team.

Vocabulary

Tier 2 (general academic): contaminate, transfer, classify, routine Tier 3 (FACS): bacteria, foodborne illness, temperature danger zone, two-hour rule, cross contamination, ready-to-

eat food, sanitize. See the unit vocabulary list (Vocabulary 01.md) for Turkish, Portuguese, and Spanish.

Materials and setup

- Glitter lotion (hand lotion mixed with fine craft glitter in a small tub), or a bottle of plain lotion plus a shaker of glitter, enough for one student's hands. *[Sal: if glitter is banned in your room, use washable tempera paint thinned with water; it shows the same thing and washes out of the sink.]*
- One clean serving spoon and one clean bowl for the demo
- A sink with soap, warm water, and paper towels, or a basin with two pitchers of water for the no-sink version
- Safe or Not Safe scenario cards, cut apart, one set per team: Handout 01.02 - Safe or Not Safe Scenario Cards.md (16 cards)
- Two labeled sorting mats per team: "Safe" and "Not Safe" (a sheet of paper with the word on it is enough)
- One "Fix It" strip per team (a half sheet where the team writes the fix for each "not safe" card)
- A food thermometer to hold up during the danger zone slide *[Sal: the one you will use in labs, so they see it now]*
- Slides: Slides 01.02 - Handwashing, the Danger Zone, and Cross Contamination.md
- Timer visible to the class
- Setup notes: mix the glitter lotion before class and test it on your own hands so you know how long it takes to wash off with soap. Put the card sets in envelopes so the sort takes ten seconds to hand out. Allergy check: no food is handled today; check that no student has a skin sensitivity to the lotion before choosing the volunteer.

Pre-assessment

The Lesson 1.1 exit cards told you how many students could name the danger zone (most cannot). The do now today asks about handwashing time, which almost every student overestimates. Use both to decide how slowly to take Step 2.

Do now and hook (Time: 5 min)

On the board: "How many seconds does it take to wash your hands the right way? Write your guess. Then write one time today when you should have washed your hands and did not."

Debrief in one minute: hand vote on 5, 10, 20, or 30 seconds. Tell them the answer is 20 seconds of scrubbing, about the time it takes to sing the alphabet slowly, and that most people stop at 6.

The hook is the glitter demo (Step 1). Say: "Germs are invisible. For the next five minutes, I am going to make them visible."

Procedure

Step	Teacher will	Students will	Time
1. Demo: the glitter germ	Put glitter lotion on one volunteer's hands and say the glitter is raw chicken juice. Have the volunteer shake hands with two students, pick up the serving spoon, touch the bowl, and push back their hair. Turn the lights on the results: ask the class where the "chicken" is now. Then have the volunteer rinse with water only for five seconds. Show the hands (glitter still there). Then wash with soap for 20 seconds. Show again.	Watch, then call out every place they see glitter (hands, spoon, bowl, hair, the second and third student). Count the surfaces.	6 min
2. Direct instruction: three rules	Teach the three rules on the slides, one at a time. (1) Handwashing: wet, soap, scrub 20 seconds including backs, between fingers, and under nails, rinse, dry with a paper towel, turn the faucet off with the towel. When: before handling food, after raw meat or eggs, after the bathroom, after touching your face, hair, or phone, after coughing or sneezing, after the	Take notes on the slide outline (three boxes: Hands, Zone, Cross). Say the handwashing steps back as a class, using fingers to count six steps.	10 min

	trash. (2) Danger zone: bacteria grow fastest between 40 F and 140 F; some kinds double every 20 minutes. Two-hour rule: food left in the zone more than two hours gets thrown out, one hour if the room is over 90 F. Hold up the thermometer. (3) Cross contamination: germs travel from raw food to ready-to-eat food on hands, cutting boards, knives, towels, and sponges. Raw meat goes on the bottom shelf of the fridge. In this room the only raw animal food we handle is eggs, and eggs count.		
3. Learning activity: Safe or Not Safe station sort	Hand out the card envelopes and mats. Rules: read every card aloud in the team, decide as a team, place it on a mat, and for every “not safe” card write the fix on the Fix It strip. Start the timer. Circulate with the clipboard checklist. When the timer ends, use the reset cue.	Sort 16 cards into Safe and Not Safe. Write a fix for each Not Safe card. Argue when they disagree; the recorder writes the final call.	10 min
4. Share and debrief	Read the four cards that teams most	Report a call and a fix. Vote with	5 min

	often get wrong (see the teacher key). Ask one team for its call and its fix, then ask the room to agree or disagree with a thumb. Correct on the spot. End with the count: how many cards did each team get right out of 16?	thumbs. Fix any cards on their mats that they got wrong.	
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Questions to ask

Monitor understanding:

- Which step of handwashing did the volunteer skip the first time, and what did the glitter show?
- Is 100 F inside or outside the danger zone? Is a fridge at 38 F inside or outside?
- The cutting board touched raw egg. Then it touched bread. What just happened, and what is it called?

Deepen learning:

- Why does a restaurant kitchen make cooks wash their hands even when they look clean?
- You take a sandwich to school in a backpack at 7 a.m. and eat it at 12:30. Is it safe? What would change your answer?
- Why do you think we wash the cutting board instead of just wiping it with the towel?

Check for understanding

Clipboard checklist during Step 3: for each team, a yes or no on “reads each card before placing it,” “states a rule when placing a card” (hands, zone, or cross), and “writes a fix that would actually work.” A team with three yeses is ready for the exam items on this lesson. A team that places cards without stating a rule gets a visit and one card re-sorted out loud with the teacher.

Closure (Time: 4 min)

3-2-1 exit card: 3 times you must wash your hands in a kitchen, 2 numbers from today (the danger zone limits and the two-hour rule count as numbers), 1 example of cross contamination you have seen at home or in a restaurant. Three students read one line aloud. Sort the cards into “got it” and “needs more.” Anyone who cannot give the two temperature numbers gets a sticky note with them for the front of the FACS folder.

Differentiation and supports

- ELL: the three rules are each on one slide with one picture (hands, a thermometer, a cutting board). The word bank on the scenario cards includes raw, cooked, wash, and towel in Turkish, Portuguese, and Spanish (see Vocabulary 01.md). Sentence starter for the Fix It strip: “This is not safe because . **To fix it**, .” Pair each ELL student with a partner who reads the cards aloud.
- IEP and 504 (general): cards are read aloud in teams so no student sorts alone; the recorder role can rotate so a student who does not write is still a full voter; the handwashing steps are printed as a six-picture strip taped by the sink all year; extended time on the exit card.
- Grade 6 support: the sort uses 12 cards (drop cards 7, 11, 14, and 16, which need the two-hour rule reasoning); the Fix It strip has the sentence starter printed on it.
- Grade 8 stretch: teams also write which of the three rules each card tests and rank the “not safe” cards from most to least likely to make someone sick, with one sentence of reasoning that uses the words bacteria and ready-to-eat.
- UDL checkpoint used: multiple means of representation (the glitter demo makes an invisible idea visible before it is explained in words) and multiple means of action and expression (students sort physical cards and speak their reasoning instead of writing a paragraph).
- No-kitchen or no-sink alternative: the demo uses a basin and two pitchers of water, one for the water-only rinse and one for the soap wash, and a bucket to catch the water. Everything else in the lesson happens at tables. If the room has no sink at all, the handwashing steps are practiced as a dry run with hand sanitizer, and the teacher says out loud that sanitizer is a backup, not a replacement, when hands are visibly dirty.

Assessment

Objective	Standards met	Learning task	Assessment (formative or summative; tool)
1. List the handwashing steps, the danger zone, and the two-hour rule	N&W 1. b); HSW 2. b); Std 1 PI B	Step 2 notes; class recall on fingers	Formative; exit card items 2 and 3 checked for the two temperatures and the two-hour rule; summative on Kitchen Safety Exam items 7, 8, and 9
2. Classify scenarios as safe or not safe and name the rule	N&W 1. b); HSW 2. b); National FCS 14.4.1 and 14.4.5	Station sort, Step 3	Formative; clipboard checklist and the team’s card count out of 16
3. Propose and defend a fix for each	N&W 1. b); CDOS 3a Personal Qualities;	Fix It strip, Step 3;	Formative; Fix It strip scored

unsafe scenario	National FCS 14.4.1	debrief, Step 4	complete, partial, or missing for daily work; the fixes feed the class Kitchen Safety Contract in Lesson 1.4
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The whole topic is assessed summatively on the Kitchen Safety Exam at the end of Lesson 1.4.

Homework

None. Optional: at home, time yourself washing your hands with a phone timer. Tell us tomorrow whether you made it to 20 seconds without counting.

Connections

Inside the building: the school nurse already teaches handwashing for illness prevention; a one-line note to the nurse that FACS taught the 20-second scrub this week lets the nurse repeat it in the same words. Science: the “bacteria double every 20 minutes” fact is a good lead for a science teacher who covers cell division or exponential growth; FACS gives the real-world case, science gives the math.

Sources

- NYS Middle Level CTE FACS Content Module 05, Nutrition and Wellness (nyctecenter.org, June 2018), line 1. b). Copy in 02 Standards/NYS Module PDFs/.
- NYS Middle Level CTE Theme Module 04, Health, Safety, and Wellness, line 2. b). Same folder.
- NYS Learning Standards for Health, Physical Education, and Family and Consumer Sciences (1996), Standard 1, Intermediate, FACS strand. Wording per 02 Standards/STANDARDS SOURCES - web research.md, section 2. *[Sal: confirm against the NYSED PDF.]*
- National Standards for Family and Consumer Sciences Education 3.0 (LEAD FCS Education, 2018), competencies 14.4.1 and 14.4.5.
- Handwashing steps, the 40 F to 140 F danger zone, and the two-hour rule follow the USDA Food Safety and Inspection Service and FoodSafety.gov public guidance (“Clean, Separate, Cook, Chill”). *[Sal: confirm the current USDA page before the site goes public; the numbers have been stable for years.]*
- Sal’s own materials: the pre-cooked meat and eggs-only constraint from the King Kullen menu documents (Education/TeachingWork/LessonPlans) decides which cross contamination examples are used.

Teacher notes

- If time runs short, cut Step 4 to two cards and skip the count. Never cut the soap-versus-water half of the demo; that is the whole lesson in 30 seconds.

- Common mistake: students think the danger zone is where food is safe because it has the word “zone” in it, like an end zone. Say it plainly twice: the danger zone is where bacteria are happy, so we keep food out of it, cold below 40 F or hot above 140 F.
- Common mistake on the cards: the sandwich-in-the-backpack card splits every class. Let them argue, then give the rule: more than two hours in the zone, throw it out, unless it had an ice pack.
- Glitter travels. Have the volunteer wash at the sink, not the counter, and wipe the spoon and bowl yourself. Choose a volunteer who will not mind being the “chicken” for a day; ask first.
- *[Sal: the shared-room story fits here as well as in Lesson 1.4. Food left on counters overnight is the danger zone in real life. Tell as much as you are comfortable with, without names.]*
- The three sink pictures (wet and soap, scrub 20, dry and turn off with the towel) stay taped above the sink all year. Point at them at the start of every lab.