Basic Cooking Techniques

Unit: Culinary Science

Problem Area: Nutrition

Lesson: Basic Cooking Techniques

Student Learning Objectives.

Instruction in this lesson should result in students achieving the following objectives:

1. **Name basic cooking techniques.**
2. **Describe cooking uses for small appliances and gadgets.**

Resources.

The following resources may be useful in teaching this lesson:

E-unit(s) corresponding to this lesson plan. CAERT, Inc. http://www.mycaert.com.

"28 Genius Kitchen Gadgets and Tricks," *YouTube*. Accessed July 29, 2019. https://www.youtube.com/watch?v=i-f70JD_-Vo.

Alfaro, Danilo. "Cooking Terms from A to Z for Absolute Beginners," *The Spruce Eats*. Accessed July 29, 2019. https://www.thespruceeats.com/beginner-cooking-terms-and-techniques-2356056.

Alfaro, Danilo. "Moist Heat Cooking Methods," *The Spruce Eats*. Accessed July 29, 2019. https://www.thespruceeats.com/moist-heat-cooking-methods-a2-995848.

The Culinary Institute of America. *The Professional Chef*, 9th ed. John Wiley & Sons Inc., 2011.

"Food Cutting Techniques," *wikiHow*. Accessed July 29, 2019. https://www.wikihow.com/Category:Food-Cutting-Techniques.

Herring, Kelley. "The 10 Best Kitchen Appliances for Healthy Cooking," *Healing Gourmet*. Accessed July 29, 2019. https://healinggourmet.com/healthy-cooking/the-10-best-kitchen-appliances-for-healthy-cooking/.

"How Does a Microwave Work?" YouTube. Accessed July 29, 2019. https://www.youtube.com/watch?v=Jwxm-9X7DZE.

Lee, Shoshanna. "Microwave Cooking: Principles and Best Practices," *Taste Defined*. Accessed July 29, 2019. https://www.tastedefined.com/2009/11/microwave-cooking-principles-and-best.html.

Moncel, Bethany. "Dry Heat Cooking Methods," *The Spruce Eats.* Accessed July 29, 2019. https://www.thespruceeats.com/dry-heat-cooking-methods-a2-1328685.

Equipment, Tools, Supplies, and Facilities

- ✓ Overhead or PowerPoint projector
- ✓ Visual(s) from accompanying master(s)
- ✓ Copies of sample test, lab sheet(s), and/or other items designed for duplication
- ✓ Materials listed on duplicated items
- ✓ Computers with printers and Internet access
- ✓ Classroom resource and reference materials

Key Terms.

The following terms are presented in this lesson (shown in bold italics):

- air fryer
- appliance
- baking
- boiling
- braising
- broiling
- combination cooking
- cooking
- cooking techniques
- deep-frying
- dry-heat cooking
- food huggers
- food steamer
- gadgets
- grilling
- immersion blender
- Instant Pot
- microwave cooking
- moist-heat cooking
- pan-frying
- poaching
- roasting
- sautéing
- simmering
- single-serve blender
- solar cooker
- spiralizer
- steaming
- stewing
- stir-frying
- Toss and Chop
- yogurt maker

Interest Approach.

Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

> *Ask students to name as many cooking techniques as possible. Record the list for students to see. Introduce the idea that all cooking techniques fall into a few categories: dry, moist, combination, and microwave cooking. Display individual*

images of cooking techniques. Have students match each technique displayed with one of the cooking methods.

CONTENT SUMMARY AND TEACHING STRATEGIES

Objective 1: Name basic cooking techniques.

Anticipated Problem: What is food preparation? What are common cooking techniques?

I. Basic Cooking Techniques

Cooking is the preparation of food for eating, especially by applying heat. It takes several well-developed techniques to consistently cook food in a way that is pleasing to the senses. ***Cooking techniques*** are the practical and specialized methods used to cook ingredients. The technique affects how quickly the food cooks, as well as its flavor and texture. Most cooking techniques are useful in cooking meats, pastries, vegetables and fruits, and grains. Food is cooked for several reasons. Cooking tenderizes, softens, and makes food easier to digest. Cooking improves the appearance and flavor of foods. Cooking destroys harmful microorganisms making food safe. Cooking creates variety in meals. Food is cooked in five basic methods: moist heat, dry heat, combination heat, microwave, and solar.

A. MOIST HEAT: ***Moist-heat cooking*** is a cooking method that transfers heat to food via water or steam. These methods enhance the natural flavor of foods.
   1. ***Poaching*** is a moist-heat method of cooking in which food is simmered in water, or a flavorful liquid, in an open or covered pan, until the food is tender.
   2. ***Steaming*** is a moist-heat method of gently cooking food by placing food in a perforated basket above boiling water. Steaming adds no fat or calories. Seasonings can be added to the liquid to contribute to the flavor of steamed items.
   3. ***Boiling*** is a moist-heat method in which food is cooked in heated water (or other liquid), at a temperature at which the liquid is bubbling and turning to vapor.
   4. ***Simmering*** is a moist-heat method of cooking food in liquid at a temperature close to boiling, but not hot enough to create bubbles.

B. DRY HEAT: ***Dry-heat cooking*** methods transfer heat to food via air, fat, metal, or radiation. Browning and caramelizing give foods a rich flavor.
   1. ***Sautéing*** is a dry-method of cooking that involves quickly cooking tender foods (e.g., filet mignon, shellfish, onions, and garlic) on the stovetop in a small

amount of fat over high heat. Low-sodium broth, cooking spray, and water can be substituted for oil.

2. ***Stir-frying*** is a dry-heat method of cooking in which small, uniform pieces of food are fried in a wok, or a large nonstick frying pan, over high heat, with a small amount of oil. This type of cooking often involves broccoli, carrots, water chestnuts, sugar snap peas, bean sprouts, and more.
3. ***Deep-frying*** is a dry-heat method of cooking in which food is submerged in hot fat or oil.
4. ***Pan-frying*** is a dry-heat method of cooking in which food is cooked in a small amount of fat over direct heat.
5. ***Baking*** is a dry-heat method of cooking in which food is placed in a dish, roasting pan, or sheet pan (without added fat) in a hot, dry oven. Food may be cooked covered or uncovered.
6. ***Broiling*** is a dry-heat method of cooking that exposes food to direct, intense radiant heat from above. Broiling enables fat to drip away from the food. Grilling has similar results.
7. ***Roasting*** is a dry-heat method of cooking that exposes food to prolonged high heat in an oven. Use of a rack in the roasting pan allows the fat to drip out of the meat. Roasting may require basting to prevent food from drying out.
8. ***Grilling*** is a dry-heat method of outdoor cooking that exposes food to direct heat, enabling the fat to drip away. Before grilling, food items can be marinaded to add taste and texture. Foods selected for grilling must be inherently tender. As a healthier alternative, lemon juice and herbs can be substituted for barbecue sauce.

C. COMBINATION: ***Combination cooking*** is a method that incorporates both dry- and moist-heat techniques.

1. ***Braising*** is a combination-heat method of cooking in which food is browned on the stovetop and then placed in an oven, with a small amount of liquid, to continue cooking. Braising is an excellent method for tenderizing cheaper and tougher cuts of meat.
2. ***Stewing*** is a combination-heat method of cooking that requires searing meat and vegetables, and then simmering the mixture slowly in a small amount of liquid.

D. MICROWAVE: ***Microwave cooking*** is rapid cooking that occurs when high frequency microwaves are passed through food or liquid. The waves penetrate food, causing food molecules to vibrate and generate heat. Because water easily absorbs microwaves, food with high water content cooks rapidly. Fat absorbs the microwave energy slower than water, so foods that are a mixture of fat and water cook unevenly. The cooking time is short and microwaves do not brown food.

E. SOLAR: A ***solar cooker*** is a device that cooks food using the heat from the sun. The most common design is a box oven that uses reflective material (such as aluminum foil) to reflect the sun's rays into an insulated box. The box, constructed from cardboard or metal, traps the heat and maximizes heat retention. No electricity or firewood is necessary. Solar cookers typically reach temperatures

above 300°F and are suitable for baking, roasting, and simmering. They can cook meat, boil water, and bake bread. Solar cookers are lightweight, portable, and inexpensive. However, they are useless on a cloudy day, and inefficient on a cold and/or windy day.

Teaching Strategy: *Many techniques can be used to help students master this objective. Use VM–A for the Interest Approach and to illustrate basic cooking techniques. Use VM–B to discuss microwave cooking. Assign the students to small groups. Have them find one or two recipes for every cooking method discussed and print them out for later use in the Lab Sheet A (LS–A) activity. Students can share their findings with the class. If time permits, show selected cooking technique videos from YouTube, or create something for your class in the lab as a demonstration.*

Objective 2: Describe cooking uses for small appliances and gadgets.

Anticipated Problem: What are appliances? What are gadgets? What are appliance and gadget trends?

II. Kitchen appliances and gadgets

Food preparation may need to be done before cooking begins. This may involve tasks such as cleaning, peeling, chopping, slicing, measuring, and mixing ingredients. Appliances and gadgets make preparation and cooking tasks easier. Kitchen appliances include big ticket items (such as a dishwasher), and smaller countertop appliances (such as a toaster). There are an extraordinary number of kitchen gadgets, designed for a singular purpose. Gadgets tend to be small and relatively inexpensive. These appliances and gadgets represent only a small number of those on the market.

A. APPLIANCES: A ***kitchen appliance*** is a piece of equipment, usually electric, used to perform a specific function in a kitchen. Appliances are created in various materials, color, shapes, sizes, and styles. Small kitchen appliances are designed to be used on kitchen countertops. Countertop appliances typically have one specific function (toasting, blending, spiralizing, etc.), but others, such as a stand mixer, serve multiple purposes.

1. An ***air fryer*** is a countertop appliance that cooks foods by circulating hot air with a fan in contrast to deep fat frying meats, potatoes, fish, etc. Rapid Air Technology is the process that cooks the food: a heating element on top and a convection fan below ensures enough heated air to cook the food. Air fryers and bakers have increased in popularity primarily because they produce the flavor of deep-fried food, without the oil.
2. An ***immersion blender*** is a hand-held device, resembling a stick with blades at the end of it, that is used to blend and/or purée. They can quickly blend a smoothie, a soup, a sauce, or a salad dressing. Immersion blenders are not new to the kitchen, but they have become increasingly popular. These tools come in all price ranges. The best choice of an immersion blender depends on the intended tasks.

3. A single-serve blender is also an option to blend smoothies and shakes. In contrast to a regular-size blender, a ***single-serve blender*** is a jar (ranging in size from 14 to 32 ounces) placed over blades, that is used to efficiently prepare one serving of a smoothie or shake. There is no need to transfer the drink into another container. The jar can be taken on the go or it can be refrigerated.
4. An ***Instant Pot*** is a multi-cooker that performs as a slow cooker, electric pressure cooker, rice cooker, steamer, yogurt maker, sauté/browning pan, and warming pot. This appliance makes cooking faster and more convenient. As the use of Instant Pots has increased, numerous cookbooks and websites have featured recipes to use with an Instant Pot.
5. A ***yogurt maker*** is a small countertop appliance, electric or non-electric, for making yogurt. A non-electric model requires the cook to find another way to heat the milk.
6. After years of microwave popcorn dominance, popcorn poppers have become popular again. Both an air popper and a stove top popper can be used to make fresh popcorn quickly. Popcorn toppings can be added, as desired.
7. A ***spiralizer*** is a device that operates like a huge pencil sharpener to create noodle-like strands from vegetables (zucchini, apples, carrots, cucumbers, potatoes, etc.). Sometimes called "produce pasta," spiralized vegetables serve as an option to pasta, which is high in carbohydrates. The trend that started as a way to use garden zucchini and reduce carbs, has turned into a creative appliance for homes and restaurants. Vegetarian and vegan restaurant chefs use spiralizers to create healthy dishes.
8. A ***food steamer*** is an electric countertop appliance for home kitchens (or a piece of floor mounted equipment in a food service facility) that cooks food with steam heat in a closed device, or with steam heat under pressure. Because steamers cook without the addition of any extra fats or calories, they are a healthy method of cooking. Food steamers are convenient. They are more efficient than using a double boiler, a steamer insert, or a bamboo steamer.

B. GADGETS: ***Gadgets*** are mechanical or electrical hand-held devices that have a singular practical use. Some examples of gadgets are a lime squeezer, a herb mincer, a garlic press, etc. They are considered specific 'kitchen technology.' Because there are numerous gadget options, consumers must decide which single-use gadgets give the best value for the money.

1. ***Berry storage baskets*** are small ceramic, vented bins in which berries are washed and allowed to drain without the berries sitting in water. Their appearance is similar to the paper type sold in groceries produce departments. Some types have a removable inner basket that allows air circulation. Berry baskets are an example of the growing number of kitchen gadgets designed to extend the shelf life and quality of food, in this case by keeping condensation separate from the food. Another version is a fresh herb keeper that works in much the same way as the berry storage baskets to extend the shelf life of fresh herbs by creating a mesh barrier between the herbs and any condensation.

2. ***Double steamers*** (or two-tier steamers) are gadgets for microwave ovens that allow the cook to prepare two separate dishes at one time. For example, a cook could place vegetables in one layer of the steamer and place fish in a second separate layer. Both foods cook via steam simultaneously.
3. A ***herb de-stemmer*** is a hand-held gadget that quickly removes the tough stems attached to herbs by pulling the leafy stems through the appropriately sized stainless steel hole in a BPA-free plastic holder. Thyme, oregano, cilantro, parsley, and even kale, collard greens, and Swiss chard can be de-stemmed. De-stemming by hand takes time and this gadget makes it effortless.
4. ***Food huggers*** are silicone caps that fit over cut fruits and vegetables and open cans of food, in order to seal in freshness. Food huggers are BPA- and Phthlate-free containers. They keep cut foods (such as apples and lemons) from discoloring and they keep open cans of food from drying out. Food huggers come in numerous shapes. They are an alternative to plastic bags, foils, and cling wrap.
5. The ***Toss and Chop*** is a combination of salad tongs and scissors that enable the cook to place all the salad ingredients in a bowl, and then cut the salad in the bowl while tossing. The blades do not damage the bowl and they do not need sharpening. The handles lock shut for safe storage. The Toss and Chop comes in two sizes: small (for single-serving bowls) and large (for entrée and family size salads).
6. A fruit and vegetable ***corer*** is a special curved and serrated knife gadget that removes cores and seeds. The sharp serrated blade is inserted into the food item, rotated, and the seeds and core pulled out. There is also an electric version of the corer available that works in the same manner.
7. A ***yolk extractor*** is a hand tool that separates yolk from white. Yolk extractors are available in various materials (plastic, stainless steel, silicone) and in various shapes (cartoon egg, fish, and pig). This tool makes it easy to eliminate the yolks and cook with the whites. The simple silicone tools require the cook to crack the egg and then 'suction' it up with the tool. A quick squeeze removes the yolk from the egg.

Teaching Strategy: *Many techniques can be used to help students master this objective. Use VM–C to discuss small appliances. You may add appliances and gadgets or ask your students to research and present other trending appliances and gadgets. Assign LS–A.*

- **Review/Summary.** Use the student learning objectives to summarize the lesson. Have students explain the content associated with each objective. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle.

- **Application.** Use the included visual master(s) and lab sheet(s) to apply the information presented in the lesson.

Evaluation.

Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is provided.

Answers to Sample Test:

Part One: Matching

1. e
2. j
3. a
4. g
5. d
6. c
7. i
8. h
9. b
10. f

Part Two: Multiple Choice

1. a
2. c
3. b
4. c
5. d
6. b
7. a
8. c
9. d
10. c

Part Three: Short Answer

1. Answers may vary but should include some of the following:
   Cooking tenderizes and softens food.
   Cooking makes food easier to digest.
   Cooking improves the appearance and flavor of foods.
   Cooking destroys harmful microorganisms.
   Cooking creates variety in meals.
2. Food is cooked in five basic ways: moist heat, dry heat, combination heat, microwave, and solar.

Sample Test

Name _____

Basic Cooking Techniques

Part One: Matching

Instructions: **Match the term with the correct definition.**

a. baking
b. broiling
c. braising
d. deep-frying
e. pan-frying
f. poaching
g. roasting
h. sautéing
i. steaming
j. stir-frying

_____1. A dry-heat method of cooking in which food is cooked in a small amount of fat over direct heat

_____2. A dry-heat method of cooking in which small, uniform pieces of food are fried in a wok, or a large nonstick frying pan, over high heat, with a small amount of oil

_____3. A dry-heat method of cooking in which food is placed in a dish, roasting pan, or sheet pan (without added fat) in a hot, dry oven

_____4. A dry-heat method of cooking that exposes food to prolonged high heat in an oven

_____5. A dry-heat method of cooking in which food is submerged in hot fat or oil

_____6. A combination-heat method of cooking in which food is browned on the stovetop and then placed in an oven, with a small amount of liquid, to continue cooking

_____7. A moist-heat method of gently cooking food by placing the food in a perforated basket above boiling water

_____8. A dry-method of cooking that involves quickly cooking tender foods on the stovetop in a small amount of fat over high heat

_____9. A dry-heat method of cooking that exposes food to direct, intense radiant heat from above

____10. A moist-heat method of cooking in which food is simmered in water, or a flavorful liquid, in an open or covered pan, until the food is tender

Part Two: Multiple Choice

Instructions: **Circle the letter of the correct answer.**

1. Broiling and _____ have similar results.

   a. grilling
   b. braising
   c. roasting
   d. poaching

2. A moist-heat method in which food is cooked in heated water (or other liquid), at a temperature at which the liquid is bubbling and turning to vapor is _____.

   a. simmering
   b. braising
   c. boiling
   d. steaming

3. A cooking technique that may require basting to prevent food from drying out is _____.

   a. grilling
   b. roasting
   c. braising
   d. baking

4. A de-stemmer gadget is typically used to remove stems from _____.

   a. grapes
   b. apples
   c. herbs
   d. flowers

5. A countertop appliance that cooks foods with hot air using a heating element above and a circulating fan below is a/an _____.

   a. immersion blender
   b. Instant Pot
   c. food steamer
   d. air fryer

6. Quickly cooking tender foods on the stovetop is called _____.

   a. stir-frying
   b. sautéing
   c. steaming
   d. grilling

7. A countertop device that operates like a huge pencil sharpener to create noodle-like strands from vegetables is a/an _____.

    a. spiralizer
    b. single-serve blender
    c. immersion blender
    d. corer

8. A multi-cooker that performs as a slow cooker, electric pressure cooker, rice cooker, steamer, yogurt maker, sauté/browning pan, and warming pot is a/an _____.

    a. food steamer
    b. air fryer
    c. Instant Pot
    d. yogurt maker

9. Dry-heat cooking methods transfer heat to food via _____.

    a. air, fat, microwaves, and radiation
    b. infrared, fat, microwaves, and metal
    c. metal, air, radiation, and steam
    d. air, fat, metal, or radiation

10. Berry storage baskets are small ceramic, vented bins in which berries are washed and allowed to drain _____.

    a. in a colander
    b. with a towel in the bottom of the basket
    c. without the berries sitting in water
    d. without touching other berries

Part Three: Short Answer

Instructions: **Answer the following.**

1. What are three reasons to cook food?

2. What are the five types of cooking methods?

COOKING TECHNIQUES

Cooking techniques effect how quickly the food cooks, as well as its flavor and texture.

MICROWAVE COOKING

What do you notice about the surface of the chicken cooked in the microwave versus the one cooked in a standard oven by dry heat?

SMALL APPLIANCES

Countertop appliances typically have one specific function, (frying, blending, spiralizing, etc.), but others, such as an Instant Pot, serve multiple purposes.

LS–A

Name _____

Demonstrate a Cooking Technique Using an Appliance and a Gadget

Purpose

The purpose of this activity is to create a dish using one of the cooking techniques, a small appliance, and a gadget.

Objectives

1. Create a dish that uses a cooking method and a cooking technique highlighted in the lesson.
2. Provide a taste test for your classmates and your instructor.
3. Evaluate the feedback of your classmates and your instructor.
4. Write an analysis of your dish, which includes the feedback that you received and a short description of what you learned about the cooking method, the cooking technique, and the impact of the small appliance and gadget on the preparation of the recipe.

Materials

- lab sheet
- pen or pencil
- paper
- recipe and ingredients for the selected recipe
- kitchen equipment (e.g., pots and pans, oven, knives, and more)
- tasting supplies (e.g., flatware, plates/bowls, napkins, etc.)

Procedure

1. Work independently, or with a partner, to complete this lab activity.
2. TASK #1: Select a recipe that uses a cooking technique based on one of the cooking methods: moist, dry, combination, or microwave. Your recipe selection should also require the use of a small kitchen appliance (not necessarily only those discussed in this lesson) and a kitchen gadget. (For example, a vegetarian "spaghetti" that uses a spiralizer appliance and de-stemmer gadget for the sauce.) Attach a copy of your recipe to this lab sheet.
3. TASK #2: Prepare the recipe.
    a. Sample the product. Adjust any seasonings.
    b. Provide samples to your classmates and instructor.
    c. Ask for their feedback based on the following characteristics:
        (1) Taste
        (2) Texture
        (3) Visual Appeal
        (4) Calorie Count (if applicable)
        (5) Presentation (appearance, arrangement)
4. TASK #3: Write an analysis of your dish, which includes the feedback that you received and a short description of what you learned about the cooking method that you used. Discuss how that method impacted the outcome. (E.g., What is it about the cooking method that made it a good choice for this recipe?) How did the small appliances and gadgets assist in the creation of the recipe?
5. Turn your completed lab sheet, feedback analysis, and written description in to your instructor.