



Garden Education Curriculum

New Start High School

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Lesson 1 : Introduction to Foodborne Illness



To become a certified food worker, one must understand the importance of preventing foodborne illness. Foodborne illness is caused when people eat food that has harmful chemicals or germs. Most foodborne illness is either food poisonings or foodborne infections.

People often call foodborne illness, food poisoning. Chemicals, bacteria, or certain foods can cause foodborne illness.

Symptoms of foodborne illness are usually noticed within hours of eating and can include vomiting or diarrhea. Foodborne illness does not only occur at restaurants but can occur any place there is handling of food.

The most common instances of foodborne illnesses are not caused by food poisoning. They are caused by foodborne infections that include germs that grow inside and outside our bodies. Common symptoms of foodborne illness include vomiting, diarrhea, fever, headache, and stomach aches. These symptoms can be noticed several hours to several weeks after eating the food. Germs that cause foodborne illness are usually bacteria, viruses, or parasites.

The Center for Disease Control estimates that in the United States about 48 million people get sick and up to 3,000 people die from foodborne illnesses. Following proper food safety practices is essential to maintaining customer safety.

Lesson One



Introduction to Foodborne Illnesses

Learning Objectives:

- Students will be able to understand the many causes of foodborne illnesses.
- Students will be able to identify the importance of clean hands and the meaning of a healthy food worker.
- Students will be able to identify how to avoid the Temperature Danger Zone and help prevent foodborne illness.
- Students will learn several tips to help remember food safety basics.
- Students will be able to recognize their responsibilities as a food worker.

Information for this lesson can be found on the Washington Department of Health website under “Food Safety is Everybody’s Business- Study Manual.”

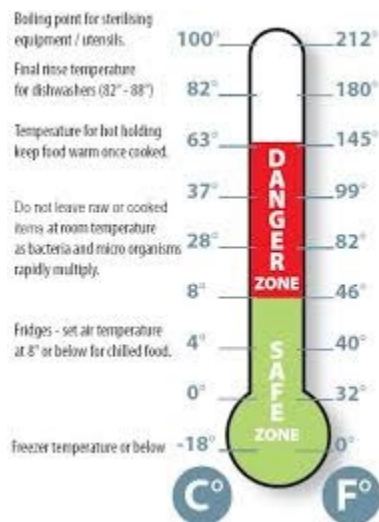
<https://www.doh.wa.gov/CommunityandEnvironment/Food/FoodWorkerandIndustry/FoodWorkerManual/FoodSafetyisEverybodysBusiness#Foodbornellness>

Lesson 1: What are foodborne illnesses and how can they be prevented?

Materials Needed: A chalkboard, Concentration game cards

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to identify the significance of foodborne illnesses and ways to prevent them from occurring.*Students will be able to identify terminology related to foodborne illnesses including food poisoning, highly susceptible populations, and hazards in food. |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">*The teacher will begin the lesson by offering a mini quiz asking students questions about some of the terminology. What do you think foodborne illness means? Why is it important to prevent this illness?* The teacher will then start describing what the definitions of foodborne illness are and why it is so significant to prevent in food service establishments. |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <ul style="list-style-type: none">*The teacher will then discuss different hazards in food including chemical, biological, and physical contaminants.*The teacher will also give examples of each hazard: chemical contaminants-cleaning agents, sanitizers, biological contaminants- parasites, viruses, physical contaminants- jewelry, adhesive bandages. |
| Guided Practice (4 minutes) | <ul style="list-style-type: none">*The teacher will ask the students some of the ways they think that foodborne illness can be prevented.*The teacher will ask the students what the proper handwashing procedures are and when to wear gloves. |
| Independent Practice & Assessment (5 minutes) | <ul style="list-style-type: none">*Students will be broken into groups to each play a game of Concentration where the students will have cards face down to match with the terms discussed in the lesson. Students will be given ten cards each and timed for 5 minutes. |
| Closure (3 minutes) | <ul style="list-style-type: none">*The lesson will end by playing hot potato where the teacher calls out one term to a student they point to and the student follows by giving a brief definition of the term.*The teacher will remind the students of the terminology discussed and begin introducing the next lesson. |

Lesson 2: Temperature Control



Proper temperatures must be used to ensure the safety of potentially hazardous foods. A thermometer must always be used in food handling to ensure food is delivered, cooked, cooled, and stored at the correct temperature.

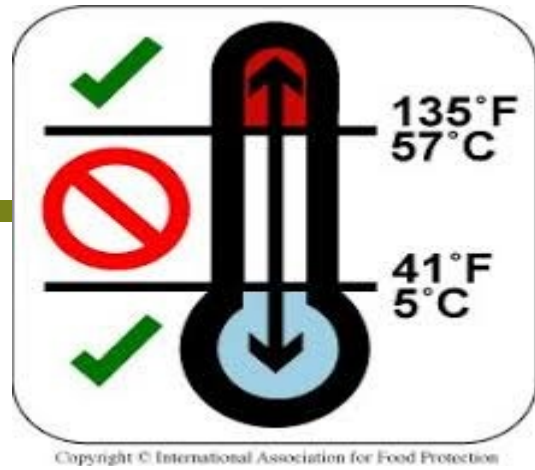
Most bacteria do not grow in hot or cold temperatures. To keep food safe and prevent foodborne illness, cold foods must be kept at a temperature of 41° F or colder. Hot foods must be kept at 135°F or hotter. The range of temperatures between 41°F and 135°F is called the **Temperature Danger Zone**.

When potentially hazardous foods are left in the Temperature Danger Zone, bacteria can grow fast or produce poisons that can make people sick.

By the time you begin preparing a food item it has been through a lot of steps. It has been grown, shipped, purchased, received, and stored before you begin preparation. You may thaw, mix, cook, cool, serve, or reheat the food item. The time that food spends in these steps adds up and can possibly help bacteria grow to dangerous numbers. Cook and work with food quickly to keep it out of the Temperature Danger Zone between 41°F and 135°F.

Potentially hazardous foods may be at room temperature for up to two hours while you are preparing it. When you are preparing food, only take a little bit of the food at a time. Keep the rest of the food hot until you are ready to prepare it. If the food has been left out at room temperature or you do not know how long it has been in the Temperature Danger Zone, you should throw the food away. It may not be safe to eat.

Lesson Two



Temperature Control

Learning Objectives:

- Students will be able to understand the importance of temperature control and the Temperature Danger Zone.
- Students will be able to identify the temperatures associated with different food items for proper food handling procedures.
- Students will be able to identify how to avoid the Temperature Danger Zone and help prevent foodborne illness.
- Students will learn how to use a thermometer.

Information for this lesson and activity can be found on the Washington Department of Health website under “Food Safety is Everybody’s Business- Study Manual.”

<https://www.doh.wa.gov/CommunityandEnvironment/Food/FoodWorkerandIndustry/FoodWorkerManual/FoodSafetyisEverybodysBusiness#Foodbornellness>

Lesson 2: What are proper food handling techniques and the importance of the Temperature Danger Zone?

Materials Needed: Cooking Temperatures Chart, Vocabulary Bingo cards & Markers

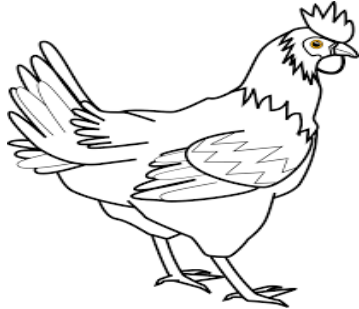
| | |
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| Lesson Learning Target | <p>*Students will be able to understand the importance of temperature control and the Temperature Danger Zone.</p> <p>*Students will be able to identify the temperatures associated with different food items for proper food handling procedures.</p> <p>*Students will be able to identify how to avoid the Temperature Danger Zone and help prevent foodborne illness.</p> <p>*Students will learn how to use a thermometer.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students have they ever heard of the Temperature Danger Zone? And if so, what does it mean?</p> <p>*The teacher will begin the lesson giving a brief overview of the Temperature Danger Zone and why it is important to keep food out of these temperatures.</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>*The teacher will then begin describing the temperatures associated with potentially hazardous foods including various types of meats, produce, and leftover food items.</p> <p>*The students will be given a chart that lists the correct temperatures for potentially hazardous foods.</p> |
| Guided Practice (4 minutes) | <p>*The teacher will ask the students some of the ways they think that the Temperature Danger Zone can be prevented.</p> <p>*The teacher will write a list of foods on the board and each student must guess what temperatures are needed for that specific food item.</p> |
| Independent Practice & Assessment (5 minutes) | <p>*Students will be broken into groups to each play a game of Vocabulary Bingo where the students will have the definitions on their Bingo cards and the teacher will call out the appropriate term to match. Some of the terms on the cards will include definitions of Temperature Danger Zone, and temperatures for proper food handling of potentially hazardous foods.</p> <p>*The group who wins the game will be given a ticket to spend to take a produce item of their choice home from the garden.</p> |

Closure
(3 minutes)

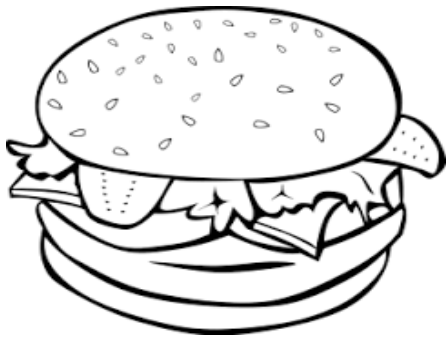
*The lesson will end by playing hot potato where the teacher calls out one term to a student they point to and the student follows by giving a brief definition of the term.

*The teacher will remind the students of the terminology discussed and begin introducing the next lesson.

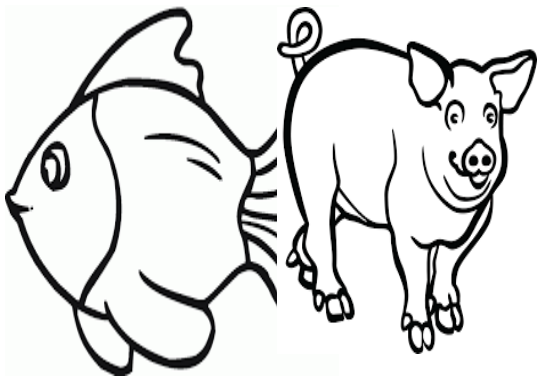
Cooking Temperatures for Potentially Hazardous Foods



165°F (for 15 secs.)- poultry (chicken and turkey), stuffed foods or stuffing, casseroles, all raw animal products cooked in a microwave, and all reheated potentially hazardous foods.





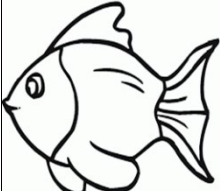
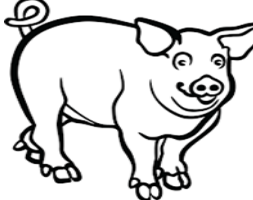

155°F (for 15 secs.)- hamburgers, sausage



145°F (for 15 secs.)- eggs, fish, beef, pork



135°F (for 15 secs.)- Vegetables that will be hot held, packaged ready-to-eat foods (such as hot dogs and canned chili) that are heated for hot holding.

| | | | | |
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| B | I | N | G | O |
| 165°F | 155°F | 145°F | 135°F | 41°F- 135°F |
| TEMPERATURE DANGER ZONE |  CHICKEN | FREE SPACE |  HAMBUR GERS SAUSAG E |  FISH |
| 2 HOURS |  PORK | LEFTOVERS | 4 HOURS |  VEGGIES |
| EGGS | HOT DOGS | 41°F | BEEF | FREE SPACE |

Lesson 3: Hot Holding of Potentially Hazardous Foods

Guidelines for Holding Food

Temperature:

- Hold TCS food at the correct temperature
 - Hot food: 135°F (57°C) or higher
 - Cold food: 41°F (5°C) or lower
- Check temperatures at least every four hours
 - Throw out food not at 41°F (5°C) or lower
 - Check temperatures every two hours to leave time for corrective action



7-4

Keeping Hot Foods Hot:

Cooking

Cooking food to the right temperature is the best way to kill germs that might be in the food. Temperatures must be taken with a food thermometer that is inserted into the thickest part of the food.

Cooking temperatures depend on the type of food.

Microwave

All raw animal products cooked in a microwave must be cooked to an internal temperature of 165°F. The food must be covered to maintain moisture, stirring at least once during cooking, and allowing to stand covered for two minutes before serving. Because microwave ovens do not cook food evenly, it is important to measure the food's temperature in several places. These procedures are also used for foods that are reheated in a microwave.

Hot Holding (135°F or hotter)

Because cooking does not kill all bacteria, cooked potentially hazardous food must be kept hot until served. This way the surviving bacteria will not grow back again. Steam tables, soup warmers, and other hot holding units must be turned on and heated up before hot food is put into them. Use a thermometer to check the temperature of the food. HOT food must be kept 135°F or hotter.

Tips for keeping food hot:

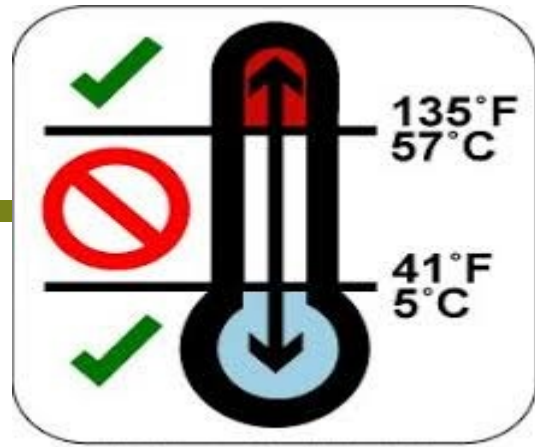
- Cover pans.
- Stir food often to distribute heat.
- Never mix cold foods with cooked foods.

Reheating

Food that is cooked and then cooled may be reheated later to be served again. Properly cooled foods that will be served immediately may be reheated to any temperature.

Cold food that will be hot held must be reheated to at least 165°F quickly (within two hours).

Lesson Three



Hot Holding of Potentially Hazardous Foods

Learning Objectives:

- Students will be able to understand the importance of hot holding potentially hazardous foods.
- Students will be able to identify the temperatures associated with different food items for proper food handling procedures.
- Students will be able to identify how to prepare food items in the microwave and proper procedures for reheating cold foods.

Information for this lesson and activity can be found on the Washington Department of Health website under “Food Safety is Everybody’s Business- Study Manual.”

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Lesson 3: What are the proper ways to keep foods hot and reheat cold foods?

Materials Needed: Assignment Sheet

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| Lesson Learning Target | <p>*Students will be able to understand the importance of hot holding potentially hazardous foods.</p> <p>*Students will be able to identify the temperatures associated with different food items for proper food handling procedures.</p> <p>*Students will be able to identify how to prepare food items in the microwave and proper procedures for reheating cold foods.</p> <p>.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students if they use microwaves. What temperatures do they think food needs to be cooked for microwaved food?</p> <p>*The teacher will begin the lesson giving a brief overview of Hot Holding, Microwaving, and Reheating Cold Foods.</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>*The teacher will then begin describing why it is important to cook and hold hot foods properly. The teacher will also describe how to microwave and ensure foods are cooked to proper temperatures.</p> |
| Guided Practice (4 minutes) | <p>*The teacher will hand out sheets with a dinner creation assignment, where the students will create their own meals while using the proper cooking techniques and food handling temperatures.</p> <p>*The teacher will give a brief reminder of temperatures to the students for hot holding and cooling foods.</p> |
| Independent Practice & Assessment (7 minutes) | <p>*Students will be broken into groups to each create their own menu that includes an entrée, appetizer, and dessert. Each item must be labeled with the proper cooking techniques and hot holding temperatures if necessary. The students will give a brief presentation of their menu items and temperatures.</p> <p>*The group who wins the game will be given a ticket to spend to take a produce item or herbs of their choice home from the garden.</p> |

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| Closure (3 minutes) | <p>*The lesson will end by playing hot potato where the teacher calls out one term to a student they point to and the student follows by giving a brief definition of the term.</p> <p>*The teacher will remind the students of the terminology discussed and begin introducing the next lesson.</p> |

Lesson 4: Cold Holding of Potentially Hazardous Foods



Keeping Cold Foods Cold:

Cold Holding

Remember, bacteria grow quickly when food is in the Danger Zone. Keep cold food cold in a refrigerator, in ice, or other approved method to keep bacteria from growing. When using ice to keep food cold, the ice must surround the container to the top level of the food. **COLD** food must be kept 41°F or colder.

Cold Salads

Potentially hazardous salads made from food at room temperature (such as canned tuna) must be cooled to 41°F within 4 hours of preparation. It is better to make salads and sandwich fillers with cold ingredients when possible.

Thawing

Frozen foods must be thawed safely to keep bacteria from growing. Unsafe thawing can let bacteria grow in the outside layers of the food while the inside layers are still frozen. There are three safe methods for thawing food:

- In the refrigerator. Put frozen food in the refrigerator until it is thawed. This method is the slowest and the safest. Be sure that raw meats are on the bottom shelf or in a container so they do not drip onto other foods.
- Submerged under cold running water. Keep the food covered in cold (70°F or colder), running water until it is thawed.
- As part of the cooking process or in the microwave. Small items, such as frozen burritos, may be thawed while they cook.

Cooling

Cooked leftovers that were not served to customers may be cooled to be served again. Because bacteria can grow quickly in cooling food, cooling is often the riskiest step in food preparation. It is important to cool food through the Danger Zone as fast as possible to keep bacteria from growing. Please take cooling seriously; certain bacteria can make poisons that are not destroyed by reheating temperatures. Improper cooling is a leading contributor to foodborne illness.

There are three approved cooling methods in Washington:

1. Shallow pan method (food no more than 2 inches deep).
2. Size reduction (cutting solid food into smaller pieces).

3. Time and temperature monitored (forcing food to cool in a short amount of time).

Cooling Method 1: Shallow Pan

Divide large containers of food into several shallow pans to cool. This method works well for foods like refried beans, rice, potatoes, casseroles, ground meat, meatloaf, and chili. The steps for the shallow pan method are:

1. Put hot food into shallow pans. Make sure the food is not more than 2 inches thick or deep.
2. Put the pans in the refrigerator on the top shelf where nothing can drip into them.
3. Let air move around the pans – do not stack or cover the pans.
4. Cover the pans after the food is 41°F or colder.

Cooling Method 2: Size Reduction

A large *whole* food like turkey or ham may be cut into slices to be cooled. This method may not be used for meat that is ground or restructured such as meatloaf or gyro meat. The steps for the size reduction method are:

1. Cut the cooked meat into pieces no more than 4 inches thick. Be sure to wear gloves if you handle the food.
2. Spread the slices out on a tray so they are not touching each other.
3. Put the trays in the refrigerator on the top shelf where nothing can drip into them.
4. Let air move around the trays – do not stack or cover them.
5. Cover the pans after the food is 41°F or colder.

Cooling Method 3: Time and Temperature Monitored

Food may also be cooled using a 2-step process as long as you monitor the temperature of the food and make sure it cools down in a certain amount of time.

Step 1: Food must cool from 135°F to 70°F in 2 hours.

Step 2: Food must finish cooling to 41°F within a total of 6 hours.

An example of the 2-step method is called an ice bath. An ice bath works well for soups, sauces, and gravy. Here are the steps for an ice bath.

1. Close the drain in the sink. Put the pot of hot food in the sink.
2. Fill the sink with ice up to the level of the food in the pot. Add cold water to the ice.
3. Stir the food often. Make sure it cools down to 70°F within 2 hours.
4. Add more ice as the ice melts.
5. Finish cooling the food to 41°F within 6 hours.
6. Once the food is 41°F, cover it and put in the refrigerator.

Lesson Four



Cold Holding of Potentially Hazardous Foods

Learning Objectives:

- Students will be able to understand the importance of cold holding potentially hazardous foods.
- Students will be able to identify the temperatures associated with different food items for proper cold food handling procedures.
- Students will be able to identify how to properly cool and thaw various types of foods.

Information for this lesson and activity can be found on the Washington Department of Health website under “Food Safety is Everybody’s Business- Study Manual.”

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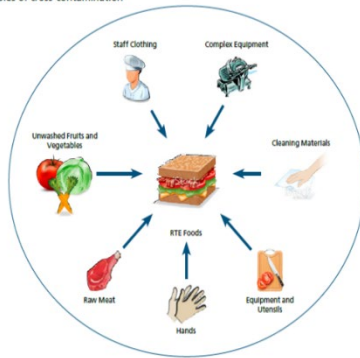
Lesson 4: What are the proper ways to keep foods cold and thaw frozen foods?

Materials Needed: Food magazines, Small Poster Boards (for Vision Boards), Scissors, Glue, Markers

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| Lesson Learning Target | <p>*Students will be able to understand the importance of cold holding potentially hazardous foods.</p> <p>*Students will be able to identify the temperatures associated with different food items for proper cold food handling procedures.</p> <p>*Students will be able to identify how to properly cool and thaw various types of foods.</p> <p>.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students if they like salads and if so, what types of salads do they like. And the teacher will ask if the students know the proper temperature for holding salads. (41°F)</p> <p>The teacher will ask the students what some of their favorite foods to eat that must remain cold.</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>*The teacher will then begin describing why it is important to keep cold foods cold to prevent the development of bacteria. The teacher will also review proper cooling techniques to best cool foods within 4 hours of preparation. The teacher will give a brief demonstration of the shallow pan cooling method to show students how to cool foods quickly and safely.</p> |
| Guided Practice (4 minutes) | <p>*The teacher will begin by asking the students more about salads and how to properly cool foods. What if you cooked a chicken salad with grilled chicken? How would you need to properly cook and cool the chicken to place on your salad?</p> <p>* The students will proceed by thinking about, then answering the salad questions.</p> |
| Independent Practice & Assessment (7 minutes) | <p>*The students will research a recipe from magazines that they want to cook at home, cut out the recipe, and create a vision board of healthy items they would like to prepare. Then the students will give a brief description of how they would cook and cool the foods properly.</p> |
| Closure (3 minutes) | <p>*The lesson will end by reminding the students of the proper ways to cold hold and cool foods.</p> <p>*The students will take their vision boards home and hopefully, cook the recipes they placed on their boards.</p> |

Lesson 5: Prevention of Cross Contamination

Figure 1: Examples of cross-contamination



Cross contamination happens when bacteria from raw foods get onto other foods. Raw meat is the main source of cross contamination. When blood or juice from raw chicken or other meat gets onto a counter, cutting board, utensils, or hands, bacteria can spread to other food. It is important to keep raw meat away from other food.

Tips to avoid cross contamination:

- **Wash hands after handling raw meat.**
- **Wash and sanitize all food-contact surfaces that touch raw meat.**
- **Prepare raw meat in an area away from other foods.**
- **Use a separate cutting board for raw meat.**
- **Store raw meat below other foods in the refrigerator and freezer.**
- **Store meat with a higher cooking temperature (like chicken) *below* meat with a lower cooking temperature (like fish).**

Cleaning and Sanitizing

Cleaning and sanitizing are not the same. Cleaning uses soap and water to remove dirt and food from surfaces. Sanitizing uses chemicals or heat to kill germs. It is important to remember that surfaces that look clean may still have germs on them that you cannot see. Sanitizing reduces these germs to safer levels.

Food-contact surfaces should be washed, rinsed, and sanitized after each use to remove germs that can cause illness.

Other areas in food establishments, like the floors and walls, should also be kept clean. Keeping equipment and kitchens clean will help reduce workplace accidents and the potential for food contamination.

Sanitizers

Sanitizers are chemicals used to kill germs. Sanitizers must be mixed by following the directions on the label. Soap should not be added to sanitizers. Use test strips to make sure the sanitizer is not too strong or too weak.

The most common sanitizer used in food establishments is a bleach solution made by mixing 1 teaspoon unscented bleach with 1 gallon of cool water.

Wiping Cloths

Wet wiping cloths can be used to sanitize work surfaces that have been cleaned and rinsed. Wiping cloths should be stored in sanitizer when they are not in use. The sanitizer should be changed often because grease, dirt and food pieces make the sanitizer less effective.

Tips for using wiping cloths:

- **Store wiping cloths in clean sanitizer.**
- **Use a different wiping cloth for cleaning up after raw meat.**
- **Use different cloths for food and non food-contact areas.**
- **Clean and rinse dirty wiping cloths before putting them back into the sanitizer.**
- **Use test strips to check the sanitizer strength.**

Lesson Five



Preventing Cross Contamination

Learning Objectives:

- Students will be able to understand the importance of preventing cross contamination.
- Students will be able to identify proper sanitation measures and how to prevent cross contamination.
- Students will be able to identify ways that cause cross contamination.

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Lesson 5: What are the proper ways to sanitize surfaces and prevent cross contamination?

Materials Needed: Washable Paint, Paintbrush, Cutting Board, Paper Towels, Sanitizer Bucket with Sanitizer, Sanitized Towel

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the importance of preventing cross contamination.*Students will be able to identify proper sanitation measures and how to prevent cross contamination.*Students will be able to identify ways that cause cross contamination. |
| Hook/Intro Motivation (3 minutes) | *The teacher will ask the students if they know what cross contamination means? What foods can cause cross contamination? What is the number one food item that causes cross contamination? |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <ul style="list-style-type: none">*The teacher will then begin describing why it is important to prevent cross contamination to prevent bacteria growth. The teacher will ask students if they remember the proper ways to wash their hands.*The teacher will review the difference between cleaning and sanitizing surfaces and equipment. The teacher will review how to properly create a sanitizer solution and test it for its efficiency. |
| Guided Practice (8 minutes) | <ul style="list-style-type: none">*The teacher will begin the lesson by asking for two volunteers. One volunteer will be asked how to properly create a sanitizer solution and then test it to ensure its efficiency. The student will demonstrate the proper method to the class. Then the teacher will tell students that cross contamination is like painting. The teacher will hold a cutting board while a student paints on it.*The teacher will then try to wipe the cutting board with a paper towel to showcase that surfaces still have germs on them if we do not properly sanitize them. Then the student will show how to properly sanitize the cutting board by wiping the surface with the sanitized towel and the paint will disappear showcasing the proper sanitation method. |
| Independent Practice & Assessment (2 minutes) | * The students will be asked to think of ways to prevent cross contamination in their own homes while they are preparing food. |

Closure

(3 minutes)

*The lesson will end by asking students to list proper ways to sanitize surfaces and equipment. The students will be asked to give a brief definition of cross contamination.

Lesson 6: Herbs



Herbs are non-woody, seed-bearing plants. In Washington state, many herbs that grow here are perennials, but there are some herbs that are annuals and must be grown from seeds each year. Most herbs are used for culinary purposes where the leaves, flowers, or seeds are used as a flavoring or garnish in cooking. They can also be used for domestic products, alternative medicines, or cosmetics.

Herbs usually refer to the soft tissues of plants and tend to be milder in flavor. Typical

examples of herbs include basil, parsley, thyme, and cilantro. An herb can be any plant used as an ingredient in food or drink for flavor or preservative properties; in medicine for health-giving properties; or in perfume, cosmetics, or aromatherapy as a fixative, or for flavor or aroma in a cleansing agent.

Spices are usually derived from the tougher parts of plants – the roots, bark, and seeds – and are often strongly flavored. Typical examples of spices include pepper, cinnamon, nutmeg, and ginger.

Most herbs are plants of temperate climates while spices are usually found in tropical climates.

Essential Oils

The reason that herbs smell so wonderful is because they contain essential oils. Essential refers to the essence or aroma of the plants. These essential oils are wondrously varied, each a complex chemical compound that imparts specific flavors and scents. They are usually secreted by specialized glands on the leaves, but they can often be found in flowers, too.

Storing

Herbs lose their flavor and color if not stored properly. Pack the leaves or roots, not too tightly, into a dark glass jar with an airtight screw top after drying the

Lesson Six



herbs. Label with the name and date. Keep in a dark cupboard; nothing destroys the quality of the herb quicker at this stage than exposure to light. Herbs can also be stored frozen by placing the herbs in an ice tray with oil and freezing them overnight. This is perfect for quick meals, all you will have to do is melt the oil cube into a pan and it will release the delicious aroma and taste of the herbs used.

Herbs

Learning Objectives:

- Students will be able to understand the importance of herbs and common uses for the plants.
- Students will be able to identify the top ten culinary herbs.
- Students will be able to identify proper ways to store, clean, and cook with herbs.

Lesson 6: What are herbs and what is the proper way to handle them according to food safety guidelines?

Materials Needed: Top Ten Culinary Herbs Sheet

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| Lesson Learning Target | <p>*Students will be able to understand the importance of herbs and common uses for the plants.</p> <p>*Students will be able to identify the top ten culinary herbs.</p> <p>*Students will be able to identify proper ways to store, clean, and cook with herbs.</p> |
| Hook/Intro Motivation (8 minutes) | <p>*The teacher will ask the students if they use herbs at home or grow any herbs in their own garden? The teacher will then pass out the Top Ten Culinary Herbs Sheet and the students will go on a scavenger hunt around the garden to find the herbs.</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>*The teacher will then ask the students if they know the proper ways to clean and store herbs. The teacher will give a brief demonstration of cleaning the herbs at the garden sink and show that you can place the dried herbs in a mason jar in a cabinet to keep fresh.</p> |
| Guided Practice (8 minutes) | <p>*The teacher will then use the dehydrator to show the students how to dry the herbs. The teacher will also describe other methods of drying herbs including hanging to dry in a dark place or using the microwave method.</p> |
| Closure (2 minutes) | <p>*The teacher will review objects of the lesson and allow the students to pick an herb to take home. The students will tell how they used the herbs in the next class.</p> |

Top Ten Culinary Herbs in USA



Basil



Chives



Cilantro



Dill



Mint



Oregano



Parsley



Rosemary



Sage



Thyme

*** Lavender, Marjoram, Chervil, Lovage, Lemon Balm, Savoy, and Tarragon are less commonly used in American kitchens.**

*** Lemon Grass, kaffir lime leaves, garlic chives, Shiso leaves, Cumin, Dill, Curry Leaf, Bay leaves are all herbs from various cultures.**

Lesson 7: Dehydration



Dehydration is defined as the preservation of many different types of food by extracting the moisture, thereby inhibiting the growth of microorganisms. Dehydration is one of the oldest food preservation techniques and was used by prehistoric peoples in sun-drying seeds. The North American Indians preserved meats by sun-drying slices, the Chinese dried eggs, and the Japanese dried fish and rice.

In ancient times, men used the sun and wind to dry foods. Scientific evidence shows that the Middle East and other oriental cultures dried foods as early as 12,000 B.C. in the hot sun. Vegetables and fruits were also dried during the earliest times. The Romans loved dried fruits and built “still houses” to dry herbs, fruits, and vegetables in areas that did not produce enough strong sunlight for drying. Fire was used as the primary heat source to dry foods as well as smoking.

In 1795, hot dehydration was developed in France. Modern dehydration techniques have been largely stimulated by the advantages dehydration gives in compactness; on the average, dehydrated food has about $\frac{1}{15}$ the bulk of the original or reconstituted product. The need to transport large shipments of food over great distances during World War II provided much of the stimulus to perfect dehydration processes. The advantages of reduced bulk later came to be appreciated by campers and backpackers and by relief agencies that provide food in times of emergency and disaster.

Today, dehydration is used to keep foods fresh and preserve foods for the future. The dairy industry is one of the largest processors of dehydrated food, producing quantities of whole milk, skim milk, buttermilk, and eggs. Many dairy products are spray dried—that is, atomized into a fine mist that is brought into contact with hot air, causing an almost instant removal of moisture content. Many people use a vacuum sealer to preserve fresh fruits or vegetables. Freeze-drying is often widely used where a food item is dehydrated in its frozen state to prevent immediate thawing. The optimal temperature for drying food is 140°F. If higher temperatures are used, the food item will cook and not properly dry. The drying process should never be hurried by raising the drying temperature, as it can cause case hardening where the food cooks on the outside, but moisture is not able to escape on the inside. Case hardening can also cause mold to grow on the food item.

Lesson Seven



Dehydration

Learning Objectives:

- Students will be able to understand the importance of dehydration and common types of dehydration including freeze and spray drying.
- Students will be able to identify proper ways to clean, store, and dry fresh foods and herbs.

Lesson 7: What is dehydration and how do we properly dehydrate herbs?

Materials Needed: Dehydrator, Hand Sink

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| Lesson Learning Target | <p>*Students will be able to understand the importance dehydration and common types of dehydration including freeze and spray drying.</p> <p>*Students will be able to identify proper ways to store, clean, and dry fresh foods and herbs.</p> |
| Hook/Intro Motivation (3 minutes) | <p>*The teacher will then ask the students if they have ever dehydrated anything before and if they have, to list the items. The teacher will ask the students if they can list any common dehydrated items. The teacher will review common dehydrated items including beef jerky, chili powder, onion powder, and banana chips.</p> |
| Teacher Input, Modeling, Introduction of New Material (7 minutes) | <p>*The teacher will begin the lesson by introducing dehydration, its history, and its common uses. The teacher will explain the differences between hot dehydration, freeze drying, and spray drying. The teacher will begin telling the students the activity of the day where the students will be dehydrating their own herbs for recipes in the next lesson. The teacher should mention that dehydrating your own herbs ensures their freshness and ensures that the herbs do not contain pesticides.</p> |
| Guided Practice (8 minutes) | <p>*The teacher will ask the students if they remember the proper handwashing techniques to use before handling food. The teacher will then go over the proper handwashing method: wet hands with warm water, lather with soap, scrub, rinse, grab a towel and dry hands, then turn off the faucet with the towel. Then all the students will wash their hands at the garden sink. The teacher will then show the students how to properly clean the herbs before dehydrating them. Then the teacher will show the students the proper way to use the dehydrator.</p> |
| Independent Practice & Assessment (5 minutes) | <p>* The students will be asked to clean their own handful of herbs in groups of three and then dry them with paper towels. After, the students will each place their herbs in the dehydrator to be dehydrated overnight.</p> |
| Closure (2 minutes) | <p>*The teacher will review the importance and uses for dehydration. The teacher will review the importance of buying herbs in season in bulk, causing the students and families to save money. Remind students that making your own dried herbs at home can be made in the oven on a low temperature or by creating your own dehydrator using a pizza box, or wooden planks and a lightbulb. Show the students the video if you have time.</p> <p>https://www.youtube.com/watch?v=DhG7mGlc6gg</p> |

Lesson 8: Packaging & Storing Dehydrated Foods



Dried foods are subject to insect contamination and moisture reabsorption, therefore, must be stored immediately. The first step of storage is to cool the foods completely. Warm food can cause sweating which can lead to the growth of mold. Pack foods into clean, dry insect-proof containers as tightly as possible without crushing.

Store dried foods in clean, dry home canning jars, plastic freezer containers with tight fitting lids, or in plastic freezer bags. Vacuum packaging is also a good option. Another tip is to pack foods in amounts that can be used all at once. For example, if a recipe calls for 1 cup of Basil, place one cup of Basil in a vacuum sealed bag. Each time a package is reopened, the food is exposed to air and moisture that can lower the quality of the food and result in spoilage.

Dried foods should be stored in cool, dry, dark areas. Recommended storage times for dried foods range from 4 months to 1 year. Because food quality is affected by heat, the storage temperature helps determine the length of storage, the higher the temperature, the shorter the storage time. Most dried fruits can be stored for 1 year at 60°F, 6 months at 80°F. Vegetables have about half the shelf-life of fruits. Dried herbs will keep for 1 year.

Foods that are packaged seemingly "bone dry" can spoil if moisture is reabsorbed during storage. Check dried foods frequently during storage to see if they are still dry. Glass containers are excellent for storage because any moisture that collects on the inside can be seen easily. Foods affected by moisture, but not spoiled, should be used immediately or re dried and repackaged. Moldy foods should be discarded.

Lesson Eight



Packaging & Storing Dehydrated Foods

Learning Objectives:

- Students will be able to understand the significance of storing dehydrated foods.
- Students will be able to identify different ways to store dehydrated foods.
- Students will be able to identify the shelf life of dehydrated food items.

Lesson 8: How do we safely store dehydrated foods?

Materials Needed: Glass jars, vacuum sealer, vacuum sealer bags

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the significance of storing dehydrated foods.* Students will be able to identify different ways to store dehydrated foods.*Students will be able to identify the shelf life of dehydrated food items. |
| Hook/Intro Motivation (3 minutes) | * The teacher will ask the students if they know how to store the dehydrated food items. The teacher will give the students hints by having the glass jars and vacuum sealed bags laid out. |
| Teacher Input, Modeling, Introduction of New Material (7 minutes) | * The teacher will begin the lesson by grabbing the herbs out of the dehydrator and showing the students how to store them. The teacher will show the students how to store the herbs in a jar first. Then the teacher will show the students how to use the vacuum sealer to seal and maintain freshness of the herbs. The teacher will notify the students that dried foods keep from 4 months to 1 year. And if the herbs are stored properly, they will keep for one year dried. |
| Independent Practice & Assessment (5 minutes) | * The teacher will allow the students to grab their herbs from the dehydrator and store them into glass jars and vacuum sealed bags. |
| Closure (2 minutes) | * The teacher will review the lesson and remind the students why it is important to store the herbs and dehydrated foods properly. |

Lesson 9: Cooking with Dried Herbs



Herbs are tasty additions to any recipe. From fresh and pungent Mediterranean leaves to mild salads, from sweet spices to fiery peppers, the range of flavors in herbs is extremely wide. Culinary plants and spices work on the taste buds sitting on your tongue, helping to increase the amount of saliva in your mouth, which in turn improves the way food is digested immediately. Another important aspect of taste is linked to the sense of smell, well-flavored foods smell good even before you get to the table and makes your mouth water – again, preparing for digestion. Research has shown that what you think you are tasting is in fact, 80 percent of what you are smelling and 20 percent of what is registered by your tongue, why is why food is so bland when you have a cold or blocked nose.

Herbs can add optimal flavor to various dishes and recipes. To properly substitute dried herbs for a recipe that uses fresh herbs, use three times less dried herbs in the recipe. For instance, if a recipe calls for 1 tablespoon fresh rosemary, use 1 teaspoon dried rosemary to substitute.

To release flavor, dried herbs are best rehydrated. Add either at the beginning of cooking, or about 20 minutes before the end. Try mixing herbs with 1 tsp of oil and leaving for 10-15 minutes before using in dressings, marinades, or sauces. Instead of sprinkling dried oregano on a pizza, steep in a little oil and use as a drizzle.

Dried herbs are also a useful way to cut down on salt in a recipe. Whenever possible, add them during the cooking process so the flavors can meld properly into the recipe.

Lesson Nine, Ten, & Eleven



Cooking with Dried Herbs

Learning Objectives:

- Students will be able to understand the different uses of dried herbs.
- Students will be able to identify different ways to use dried herbs in various recipes.
- Students will be able to identify ways to substitute dried herbs for fresh herbs in a recipe.
- Students will be able to create their own Ranch Dressing, Italian seasoning and dressing, and Taco Seasoning and identify recipes to use with the ingredients created.

Ranch Dressing Recipe

¼ tsp. Salt

¼ tsp. Black Pepper

1 tsp. Dried Parsley

½ tsp. Dried Dill

½ tsp. Dried Chives

¾ tsp. Garlic Powder

¾ tsp. Onion Powder

1 cup mayonnaise

½ cup Sour Cream

1 cup Buttermilk

2 Tbsp. Dill Pickle Juice



Instructions:

1. Mix the spices together.
2. Combine the seasonings, mayonnaise, sour cream, buttermilk, and pickle juice and whisk until smooth.
3. Refrigerate for at least one hour or overnight for flavors to combine and then serve chilled. Enjoy!

<https://easyfamilyrecipes.com/homemade-ranch-dressing/>

Lesson 9: How do we use dried herbs in a recipe?

Materials Needed: Ranch Dressing Recipe, Measured Ingredients for Ranch Dressing, Measuring Cups, Whisks, Bowls, Utensils, Carrots and Celery for Snack to go with Ranch

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the different uses of dried herbs.* Students will be able to identify different ways to use dried herbs in a recipe.*Students will be able to identify ways to substitute dried herbs for fresh herbs in a recipe.*Students will be able to create their own Ranch Dressing and identify recipes to use with the dressing. |
| Hook/Intro Motivation (5 minutes) | * The teacher will begin the lesson by telling the students how to substitute dried herbs in a recipe. The teacher will say, “Today we are going to use dried herbs in a recipe by making a yummy herb ranch dressing.” |
| Teacher Input, Modeling, Introduction of New Material (7 minutes) | * The teacher will then give a brief demonstration of how to make the ranch dressing. First, the teacher will begin by mixing the seasonings and chopped dried herbs together. Then, the teacher will stir the sour cream, buttermilk, mayo, and dill pickle juice together. Lastly, the teacher will add the herbs and seasonings to the ranch dressing. |
| Independent Practice & Assessment (7 minutes) | * The students will be broken up into groups of three and get to make their own ranch dressing for snack. The students will follow the instructions given by the teacher earlier and prepare their ranch dressing accordingly. Then the students will be able to have a brief snack with carrots, celery, and the ranch dressing they prepared using dehydrated herbs from the garden. |
| Closure (2 minutes) | * The students will enjoy their snacks while the teacher reminds the students of substituting dried herbs in a recipe. |

Lesson 10: How do we use dried herbs to make Italian Seasoning and Dressing?

Materials Needed: Italian Seasoning & Dressing Recipe, Italian Seasoning mix Ingredients, Measuring spoons, Measuring cups, Containers (for Seasoning), Mason jars (for dressing)

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the different uses of dried herbs.* Students will be able to identify different ways to use dried herbs in a recipe.*Students will be able to identify ways to substitute dried herbs for fresh herbs in a recipe.*Students will be able to create their own Italian Seasoning and Dressing and think of recipes to use with the ingredients. |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">* The teacher will explain that the students will be using dried herbs to create their own Italian dressing for salads, marinades, or dishes like roasted potatoes.*The teacher will ask the students what ingredients from the garden do they think are in Italian dressing. |
| Teacher Input, Modeling, Introduction of New Material (12 minutes) | <ul style="list-style-type: none">*The teacher will give a brief demo showing the students how to first make their own Italian seasoning mix using dried herbs and ingredients and then from the mix, Italian dressing. |
| Independent Practice & Assessment (7 minutes) | <ul style="list-style-type: none">*The students will break into groups of three and start to prepare their Italian seasoning mix. After preparing the mix, the students will use their Italian seasoning to create Italian dressing in personal-sized mason jars. Each student will have their own mason jar of Italian dressing to take home. |
| Closure (8 minutes) | <ul style="list-style-type: none">* Students will be asked what recipes they plan to make with their Italian dressing and what kind of recipes could they make with the seasoning mix. Students will be asked what other types of recipes interest them that include herbs.*The teacher will ask one student to help julienne onion and pick fresh garlic cloves to dehydrate for the next lesson. |

Italian Seasoning & Dressing Recipe

1 Tablespoon Onion Powder

1 Tablespoon Garlic Salt

1 Tablespoon Sugar

1 Tablespoon Salt

1 Tablespoon Dried Oregano

1 teaspoon Dried Basil

¼ teaspoon Dried Thyme

1 Tablespoon Dried Parsley

1 teaspoon Pepper

¼ teaspoon Celery Seed



Instructions:

1. **Mix all seasonings together and store in an airtight container.**

Dressing:

2 Tablespoons Italian Seasoning Mix

½ cup White Vinegar

2/3 cup Olive or Canola Oil

2 Tablespoons Water

Instructions:

1. **Place all ingredients together in a mason jar and shake well. Enjoy!**

<https://hip2save.com/recipes/homemade-zesty-italian-seasoning-dressing-packet/>

Lesson 11: How do we use dried herbs to create our own Taco Seasoning?

Materials Needed: Taco Seasoning Recipe, Bowls, Whisks, Measuring spoons, Mason Jars

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the different uses of dried herbs.* Students will be able to identify different ways to use dried herbs in a recipe.*Students will be able to create their own Taco Seasoning and think of recipes associated with the seasoning. |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">*The teacher will ask the students if they have ever used taco seasoning before and if so, what recipes have they used with the seasoning.*The teacher will start listing out recipes you can make with taco seasoning including nachos, tacos, seasoned meats, and even potatoes. |
| Teacher Input, Modeling, Introduction of New Material (7 minutes) | <ul style="list-style-type: none">* The teacher will give a brief demo of how to make the Taco seasoning.*The teacher will also discuss that the recipe used onion and garlic powder. The teacher will show the students how to make their own by using a spice grinder and dried onion and garlic. |
| Independent Practice & Assessment (7 minutes) | <ul style="list-style-type: none">*The students will each gather their own taco seasoning ingredients and be handed dried onion and garlic to grind themselves. After gathering the ingredients, the students will each follow the recipe and make their own seasonings. Each student will place their seasoning mix into personalized mason jars to take home. |
| Closure (2 minutes) | <ul style="list-style-type: none">* The teacher will give an overview of the lesson and ask students what other recipes they think can use dried onion or dried garlic powder. |

Taco Seasoning

- 1 teaspoon Garlic Powder**
- 1 teaspoon Onion Powder**
- 1 teaspoon Dried Oregano**
- 1 teaspoon Black Pepper**
- 4 Tablespoons Chili Powder**
- 1 Tablespoon Corn Starch**
- 1 Tablespoon Paprika**
- 1 Tablespoon Salt**
- 2 Tablespoons Cumin**



Instructions:

- 1. Measure and gather all ingredients.**
- 2. Mix all ingredients in a bowl with a whisk. Place in an airtight container for storage. Enjoy!**

<http://foodtasia.com/homemade-taco-seasoning/>

Lesson 12: Product Development & Marketing



New product development helps businesses diversify target customer ranges and expand into new market segments. Upon developing a new product, a marketing strategy can help you connect your customers to new products before they are distributed by building interest surrounding the product.

The marketing strategy for your business should strengthen all touchpoints, use customer data to deliver personalized targeting, and your company should reinforce the brand from every angle. The customer experience should be the focus across each stage of building your marketing strategy.

If your company is developing new products or making improvements to classic designs, your product marketing strategy helps new customers gain interest. It's important to know how your products compete against your competitors. This can be done through market research. When starting a business it is critical to the business's success to adjust your business's culture around a brand and allocate funds for your marketing strategy.

Some traditional marketing methods include TV, radio, and print ads combined with digital marketing methods such as websites, social media, and emails. These methods help to reach a large audience quickly at low costs, and with fewer resources. Your customers should be kept in mind during the whole marketing and brand strategy process.

A product marketing strategy prepares your business to allocate funds and resources, evaluate risk, and provide time management for your product before it reaches new market segments. Your business strategy should clearly define your product, set goals for product launch, set pricing, and above all account for the customer experience across each stage of the process.

Key Tips for an Effective Marketing Strategy:

1. **Start Product Marketing Early**
 - ✓ Before you begin marketing your product, it's imperative that you define your product. Unless you are a major brand name, customers do not react well to ambiguity.
 - ✓ Some questions you may ask when developing your marketing strategy:

- ✓ **What does your product do or what type of service does your business provide?**
- ✓ **How does your business compare to your competitors?**
- ✓ **What values does your business have that sets you apart from your competitors?**
- ✓ **Consumers are most concerned with the price, quality, function, and availability of your product.**
- ✓ **Test your customers: Gauge reactions, complete surveys, and collect data about your product should be the first aspect of your marketing strategy.**

2. Share on Websites & Social Media

- ✓ **After testing your product in focus groups, build a strong online presence for your business.**
- ✓ **Add an opt-in email feature on your website to collect more information about consumer preferences and generate interest at the same time.**
- ✓ **Build an Instagram, Facebook, and Twitter page to keep your consumers excited and intrigued about your products or services.**

3. Get your Team on Board!

- ✓ **Make sure to listen to your employees, they may have great ideas about your products or services.**
- ✓ **Ensure that all employees are informed and excited about your products or services.**

4. Set Goals & Plan Your Budget

- ✓ **How much time and resources are you willing to spend for the launch of your business?**
- ✓ **Make sure to assign teams/employees to various tasks to ensure an on-time start date.**

5. Product Marketing Support

- ✓ **Develop content, brochures, business cards, videos, and materials to support your product.**

6. Promote!

- ✓ **Your marketing channel should be a cross-channel collaboration. Use email, web, social media, SEO content, websites, and new digital strategies to reach your target audience.**

Lesson Twelve



Product Development & Marketing

Learning Objectives:

- Students will be able to understand the purpose of product development and marketing.
- Students will be able to identify ways to market products and develop a marketing strategy for a new business.
- Students will be able to create their own marketing strategy by using tools from the lesson.

Lesson 12: How do we create a Marketing Strategy?

Materials Needed:

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the purpose of product development and marketing.* Students will be able to identify ways to market products and develop a marketing strategy for a new business.*Students will be able to create their own marketing strategy by using tools from the lesson. |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">*The teacher will ask the students if they know what a marketing strategy is?* The teacher will ask, “Did you know that all businesses have to create a marketing strategy to be successful?”*The teacher will ask the students, “If you were to start a business what type of business would it be?” |
| Teacher Input, Modeling, Introduction of New Material (7 minutes) | <ul style="list-style-type: none">* The teacher will begin explaining the definition and meaning behind a marketing strategy and why it is important for new businesses.*The teacher will describe various businesses you can start by using herbs from the community garden including herbal teas, soaps/lotions, herb salts, and seasonings to name a few. |
| Independent Practice & Assessment (10 minutes) | <ul style="list-style-type: none">*The students will each get into groups of three. Each group will be asked to create a marketing strategy for a product using herbs from the garden. The student’s marketing strategy should include: their business name, target market, budget, and marketing initiatives like social media or websites for their business. |
| Closure (10 minutes) | <ul style="list-style-type: none">* The groups will each present their business ideas and discuss about their marketing strategies. |

Lesson 13: Permitting Regulations



To properly start a food business, there are permitting regulations depending on the state, city, or county the business resides in.

A **Cottage Food Permit** allows a resident of Washington state to prepare foods that are not potentially hazardous such as baked goods, candies, jams, jellies, preserves, fruit butters, dried spice blends, or dry tea blends in their primary residential kitchen. This permit only allows business owners to sell to consumers, not to wholesale facilities or accounts. Gross sales of cottage food products cannot exceed \$25,000 annually. To gain this type of permit, a business owner must apply before conducting any business and must submit water supply testing information, food worker card, masters business license, floor plan of kitchen, labeling and packaging for products, cleaning and sanitation procedures, sales plan, and if necessary, a child and pet management plan.

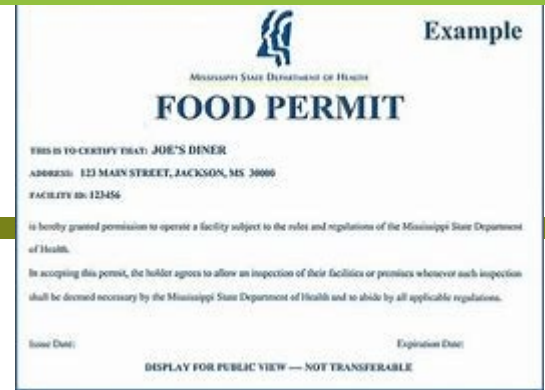
A **Food Processors License** is the handling or processing of any food in any manner of preparation for sale for human consumption. This includes dried fruits, herbs, teas, baked goods, cider, salad mixes and many other food products which are processed for sale or distribution and food that is custom processed for another party. It also includes repacking foods that are taken from one container in an unwrapped state and transferred and repacked into another container.

You Need a Food Processor License if your Business Falls into one of These Categories:

- ✓ You cook, bake, freeze, slice, dehydrate, smoke, roast coffee beans, bottle water or repackage any type of food
- ✓ You process/package food for someone else
- ✓ You make shelf-stable, low acid canned food i.e.; canned vegetables, canned fish, retorted pouches (vegetable or fish), bread or cake in a jar and chocolate sauce
- ✓ You further process finished dairy products (i.e. cheese cutting, flavored dairy products, ice cream desserts)
- ✓ You process dietary or nutritional supplements that do not make health claims
- ✓ You process food that contains no more than 2% cooked or 3% raw USDA meat ingredients by weight

- ✓ **You process more than 1,000 poultry annually**
- ✓ **You are a licensed Food Service retail bakery inspected by a local health jurisdiction and sell more than 25% of your gross sales off-site**
- ✓ **You are a licensed Winery or Brewery that produces non-alcoholic products**

Lesson Thirteen



Permitting Regulations

Learning Objectives:

- Students will be able to understand the purpose of permitting in the state of Washington and which permits apply to their business.
- Students will be able to identify ways to apply for permits for food-related businesses.
- Students will be able to create their own ideas for an herb-related business.

Lesson 13: Which types of permits do we need to start an herb business?

Materials Needed: Paper, Pencils, Markers, Colored Pencils

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| Lesson Learning Target | <p>*Students will be able to understand the purpose of permitting in the state of Washington and which permits apply to their business.</p> <p>* Students will be able to identify ways to apply for permits for food-related businesses.</p> <p>*Students will be able to create their own ideas for an herb-related business.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students if they know what types of permits are needed to start a food business?</p> <p>* The teacher will ask, “Did you know that the state of Washington requires that food businesses have certain types of permits?”</p> <p>*The teacher will ask the students, “What type of regulations do you think are included in food permits?”</p> |
| Teacher Input, Modeling, Introduction of New Material (7 minutes) | <p>* The teacher will begin explaining what types of permits are required for food-related businesses in Washington state. The teacher will specifically mention that if we were to start an herb business using dried herbs, we would need to rent or have a commercial kitchen.</p> <p>* The teacher will mention that there are other types of permits like the Cottage Food Permit, where you can sell foods that are not potentially hazardous from your residential kitchen.</p> |
| Independent Practice & Assessment (10 minutes) | <p>*The students will each get into groups of three. Each group will be asked to draw a logo for their herb business and design an elevator pitch that describes their products, target market, and the details of the business.</p> |
| Closure (10 minutes) | <p>* The groups will each present their business logos and discuss their elevator pitches with the class.</p> |

Lesson 14: Harvesting Herbs for the Food Bank



When harvesting herbs, it is important to harvest them carefully and specifically to each plant. For the top ten culinary herbs (mentioned earlier) there are different ways to harvest each herb, ensuring optimal flavor and aroma.

Basil needs to be thoroughly watered the night before harvesting to ensure it soaks up all the moisture and the leaves stay fresh longer. Harvest basil right before the plant starts to bud and the flowers start to bloom, also known as bolting. Basil is best harvested after the morning dew has dried. To properly harvest basil, you must pinch or cut each stem just above the second set of leaves. Cut the tips of the branches weekly or cut the entire plant just above the second set of leaves monthly. Pinch off any flower spikes right away.

The perfect time to harvest chives is when the leaves are large enough to be clipped and used. To properly harvest the herb, gather the leaves into a bunch and cut them with sharp scissors. Make sure not to cut too close to the bulb or they will not grow back. Make sure to cut from the outside of the bunch first.

For cilantro, you must harvest the herb once a week to prevent bolting or the herb going to seed. To properly harvest, trim the whole stem near ground level but be careful never to cut the center stem. Make sure to harvest the outer leaves first so the newer, inner leaves can continue growing. Only harvest one-third of your plant at a time.

To harvest dill, you must cut the tender feathery leaves close to the stem. Like basil, dill should be cut after the morning dew has dried. Do not wash dill because the aromatic oils and flavor will be washed away. The flavor of dill is best when cut the same day it is used.

To harvest mint, you can basically cut the leaves when the plant is needed. You can either cut the top stems of mint with scissors or by nipping with your fingers. You must cut the top leaves first to encourage to grow further down the stem. Never strip the plant of all its leaves. You can harvest mint 2-3 times in its growing season.

To harvest oregano, wait until the morning dew has dried, and if you can, harvest oregano on a warm morning. This way the oils and flavors will be the most concentrated. For the best flavor, harvest oregano just as the flower buds form. To properly harvest oregano, cut to just the base of a set of leaves so the plant

can grow new branches in the area. Oregano is one of the only herbs that has a better, stronger flavor after it is dried!

To ensure that you harvest parsley correctly and at the right time, make sure the stems have 3 segments. Harvest continuously until your plant's color fails usually around late fall or early winter. Parsley will grow indoors all winter, but if your parsley grows outdoors, you should harvest the whole plant before the frost hits. Snip your harvest from the base of the plant to encourage more growth. Cut leaves from the outer portions first so your parsley can focus on growing new leaves from the center of the plant. If you remove too many leaves from the wrong part of your plant, your herbs will not collect enough sunlight to continue growing.

Harvest rosemary after new growth has generated, about 6 weeks after planting. Do not cut any parts that appear woody, as this will damage the plant.

To harvest sage, pinch off leaves as needed. Stop harvesting in early fall so that the plants can harden off for winter.

Like most woody, stemmed herbs, thyme is best harvested right before it blooms. For the best flavor, harvest thyme in the morning after the dew has dried. Cut the stems just before the growth node to increase growth and ensure a constant supply of fresh, delicious thyme. Thyme can have soft or woody stems. Soft stems are best cut up and thrown into your recipe with the leaves, whereas woody stems should be removed. Alternatively, you can tie the wooden stems together and toss the whole bunch into your recipe – this is a great option if you are cooking a roast or soup.

Lesson Fourteen



Harvesting Herbs for the Food Bank

Learning Objectives:

- Students will be able to understand how to properly harvest the top ten culinary herbs.
- Students will be able to identify ways to harvest the herbs for sale and for the White Center Food Bank.

Lesson 14: How do we properly harvest herbs?

Materials Needed: Scissors, Bags or Baskets for Harvesting Herbs

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand how to properly harvest the top ten culinary herbs.* Students will be able to identify ways to harvest the herbs for sale and for the White Center Food Bank. |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">*The teacher will ask the students if they know how to properly harvest herbs.* The teacher will ask, “Did you know each herb has a special way for harvesting it?”*The teacher will ask the students, “What types of herbs do you think are easiest to harvest?” |
| Teacher Input, Modeling, Introduction of New Material (10 minutes) | <ul style="list-style-type: none">* The teacher will begin explaining and giving a demo in the garden of how to harvest the top ten culinary herbs. The teacher will ask the students to name the herbs as they pass by them and name some recipes you can make with the herbs.*The teacher will mention that we can harvest these herbs to use for our business or send to the White Center Food Bank so that others can enjoy them as well. |
| Independent Practice & Assessment (10 minutes) | <ul style="list-style-type: none">*The students will each get into groups of three. Each group will be asked to harvest 2 herbs to dehydrate for our spice blends and for the food bank. Each group will be asked to harvest a bunch of each of the herbs. |
| Closure (7 minutes) | <ul style="list-style-type: none">* The teacher will remind the students of the importance of harvesting herbs correctly and harvesting them at the right times. |

Lesson 15: Food Security in Seattle



Food security means that all people at all times have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life. Food insecurity is when people do not have access to healthy food.

Currently, about 13% of adults experience food insecurity. Seattle families with children experience higher rates of food insecurity at about 22% to 51% of low-income families with children. Consistent statistics have shown that people of color, lower-income, less educated, and those who identified as lesbian, gay, or bisexual more commonly reported experiences of food insecurity.

A food desert is an area with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower income neighborhoods and communities. Food deserts are also categorized by their distance to fresh, nutritious, and affordable food as at grocery stores or markets. If a neighborhood does not have a grocery store within walking distance, it is most likely labeled as a food desert.

Some areas labeled as food deserts in Seattle are Delridge, South Park, Georgetown, and High Point. These areas all possess qualities of lower income residents, longer travel times to healthy food retailers, and a higher percentage of unhealthy food retailers.

The Institute of Agriculture and Trade Policy defines food justice as: “The rights of communities everywhere to produce, possess, distribute, access, and eat good food regardless of race, class, gender, ethnicity, citizenship, ability, religion, or community.” The Food Justice movement envisions a food system that is inclusive, community-led, and participatory, without the exploitation of people, land, or the environment. It identifies and acts to remove the significant structural inequities that exist within our food and economic systems. Food Justice activists seek to establish healthy, resilient communities with equitable access to nourishing and culturally appropriate food.

Lesson Fifteen



Food Security in Seattle

Objectives:

- Students will be able to understand the definitions of food security, food insecurity, food deserts, and food justice.
- Students will be able to identify qualifiers of food insecurity and food deserts.
- Students will be able to understand the purpose and importance of food justice.

Lesson 15: What is food security, food insecurity, and food justice mean and why are they important?

Materials Needed: Paper, Pencils, Colored Pencils, Markers

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| Lesson Learning Target | <ul style="list-style-type: none">* Students will be able to understand the definitions of food security, food insecurity, food deserts, and food justice.* Students will be able to identify qualifiers of food insecurity and food deserts.* Students will be able to understand the purpose and importance of food justice. |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">*The teacher will ask the students if they know what food security means?* The teacher will ask, “What do you think food justice means?” |
| Teacher Input, Modeling, Introduction of New Material (10 minutes) | <ul style="list-style-type: none">* The teacher will begin explaining the definitions of food security/food insecurity, food deserts, and food justice. The teacher will specifically talk about how some areas of Seattle are food deserts including Delridge, South Park, Georgetown, and High Point.*The teacher will ask, “So what do you think are ways for the people in food deserts to get access to fresh, nutritious food?” Some of the students may comment that the residents can drive to another grocery store that is further away or possibly go to a food bank if they do not have the resources to purchase fresh foods.. |
| Independent Practice & Assessment (10 minutes) | <ul style="list-style-type: none">*The students will each get into groups of three. Each group will be asked to think of two ways to prevent food insecurity and their definition of food justice. Each group will be asked to draw their ideas to prevent food insecurity and draw a picture representing their definition of food justice. |
| Closure (7 minutes) | <ul style="list-style-type: none">* The teacher will remind the students of the importance of food justice and definitions of food insecurity and food deserts. |

Lesson 16: White Center Food Bank History



WHITE CENTER FOOD BANK

The White Center Food Bank began in the mid-1970's as an emergency response to assist struggling families and individuals in the greater White Center and Highline areas during a major economic downturn. Much like today, many in the community were facing difficult economic conditions that left them in need of food resources.

In 1982 the White Center Emergency Food Association was formally incorporated and is today known as the White Center Food Bank, serving 57,989 individuals (19,569 families) in 2017. White Center as a geographic area has been subject to many changes in its micro-economic climate from influxes and growth of various immigrant groups to periods of rebirth in its business core. Current programs include daytime, evening, and seniors-only food distributions; Mobile Food Bank Program for seniors and disabled clients; a Baby Pantry for diapers, formula, baby foods and more; culturally relevant food grown onsite; community demonstration gardens and P-patches, cultural foods buying program, grocery rescue and a community connector providing customers with other resources that they need. Intake services are provided in five languages, and all written materials are provided in six languages.

Currently, the food bank has served about 6,000 people and almost 105,000 pounds of food! The New Start Community Garden is the food banks number one source for organic, locally grown produce. Last year, the garden donated an estimate of about 2,300 pounds of fresh produce. This year the garden hopes to donate even more, once the tomatoes and squash plants are ready.

Donating to the food bank takes a lot of time, planning, and effort. Not only does the garden have to prepare their crops for donations, the garden staff must also plan for volunteer support. Volunteers range from ages 5-85, so just about anyone can help volunteer at the garden.

Learning how to grow food in a community garden can help provide food for families in difficult times, like during a pandemic. Community gardens help give healthy food access to people in the community that may need it the most.

Lesson Sixteen



White Center Food Bank History

Objectives:

- Students will be able to understand the purpose of the White Center Food Bank.
- Students will be able to identify the importance of the White Center Food Bank.
- Students will be able to understand the purpose of the New Start Community Garden and how it is used to provide produce to the White Center Food Bank.

Lesson 16: What is food security, food insecurity, and food justice mean and why are they important?

Materials Needed: Scissors, Gardening Gloves

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| Lesson Learning Target | <ul style="list-style-type: none">*Students will be able to understand the purpose of the White Center Food Bank.*Students will be able to identify the importance of the White Center Food Bank.*Students will be able to understand the purpose of the New Start Community Garden and how it is used to provide produce to the White Center Food Bank |
| Hook/Intro Motivation (5 minutes) | <ul style="list-style-type: none">*The teacher will ask the students if they have heard of the White Center Food Bank.* The teacher will begin by giving a brief history of the food bank and explaining why it is important. |
| Teacher Input, Modeling, Introduction of New Material (10 minutes) | <ul style="list-style-type: none">* The teacher will begin explaining the activity for the day. The teacher will give a brief demo of how to harvest common food items in the garden using scissors and gardening gloves.*The students will be asked to play a scavenger hunt where they are given certain produce items to find to harvest for the food bank. |
| Independent Practice & Assessment (10 minutes) | <ul style="list-style-type: none">*The students will each get into groups of three. Each group will need to find 3 produce items and gather them for the food bank. |
| Closure (7 minutes) | <ul style="list-style-type: none">* The teacher will remind the students of the importance of the food bank and how the community garden relies on volunteers to help the produce donation run smoothly. The teacher will give some statistics about the White Center Food Bank including how the garden donates about 60 pounds of produce weekly currently to the center, how donating requires a lot of planning and extra help from volunteers ages 5-85, and donating also requires a lot of community support from volunteers. |

Lesson 17: How to Create a Recipe



A recipe is a set of instructions used to prepare a certain food or dish.

A recipe should include:

- The name of the dish/recipe
- A list of ingredients with the exact quantities of each ingredient
- A method of preparation that describes how the dish is supposed to be cooked and prepared. This includes mentioning the recipe's cooking temperature or cooking methods.
- The yield or number of servings the recipe produces

Recipes are important because they give specific details about preparation for a certain dish. It is important when creating recipes to remember these five steps:

1. **Start with what you already know-** When you are creating new recipes, it is important to start with flavors you already know and have experience with. For example, if you know cinnamon works well with French toast, it may be a good idea to create a Brioche French Toast recipe.
2. **Research other recipes for inspiration-** Look to Pinterest, Youtube, cookbooks, magazines, and other resources to gain inspiration for your next recipe. Once you have a recipe, or a few recipes, that are like what you want to create, take what you learned from them and then adapt them to your method of preparation.
3. **Gather your Recipe Testers-** Having another pair of eyes on a recipe allows you to gain valuable insight on flavors and textures, as well as feedback on the cooking process and taste of the dish. Ask multiple people to test your recipe and make sure to ask for constructive feedback, so that you can improve the recipe for the better.
4. **Be Patient-** Be patient with the process. There may be sometimes when a recipe fails, but as you progress and continue testing each recipe, you will be sure to have a positive win.
5. **Keep it Legal-** The ingredients of a recipe cannot be copyrighted. Make sure to write your own instructions and ingredients. Before you publish your recipe, make sure to check for copyrighting regulations.

Lesson Seventeen



How to Create a Recipe

Objectives:

- Students will be able to understand the purpose of creating and writing their own recipes.
- Students will be able to identify ways to write their own recipes that include aspects of their culture.

Lesson 17: How do we create a recipe that is related to our culture?

Materials Needed: Cookbooks, Paper, Pencils, Computers/Laptops

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| Lesson Learning Target | <p>* Students will be able to understand the purpose of creating and writing their own recipes.</p> <p>*Students will be able to identify ways to write their own recipes that include aspects of their culture.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students if they have ever created their own recipe, and if so, what is one of their favorite ones that they have created?</p> <p>* The teacher will ask the students, “What do you think needs to be included in a recipe?”</p> |
| Teacher Input, Modeling, Introduction of New Material (10 minutes) | <p>* The teacher will begin explaining what items need to be included in a recipe: the recipe title, quantity of different ingredients, and the method of preparation or cooking instructions.</p> <p>*The teacher will begin explaining the activity for the day where the students will be asked to research recipes related to their culture online. The teacher will give examples of recipes by passing around various cookbooks that the students can use as guidelines for developing their own recipes.</p> |
| Independent Practice & Assessment (10 minutes) | <p>*Each student will be asked to find a recipe related to their culture and share a story related to the recipe. Students will have some time to research different recipes during the lesson but will take the activity home as they write their own recipes.</p> |
| Closure (7 minutes) | <p>* The teacher will remind the students of the needed materials to include in their recipes. Each student will tell what recipe they are thinking of bringing to the next class.</p> |

Lesson 18: Food & Culture



Food is an essential part of everyone's lives and not just a means for survival. Food provides nutrients to our bodies so that we can be healthy. Different cultures have a variety of foods that they consume and make part of their everyday lifestyle. Food is often used to connect cultural identity.

Not only does food nourish the body, it also can strengthen the bonds between individuals. Food plays a major role in defining family roles, rules, and traditions. Food helps us to discover attitudes, practices, and rituals surrounding food items and it sheds light on our beliefs about others and ourselves.

Culture refers to the set of values, rituals, knowledge, language, habits, lifestyles, attitudes, beliefs, folklore, rules, and customs that identify a group of people at a specific time. Culture is not material objects or other tangible objects in a society. Food is a large part of culture because it connects certain people over a food item that is related to the history of their culture or upbringing.

For example, in African culture most cuisines include locally grown cereal grains, available fruits and vegetables, as well as meat and milk products. There are many countries in Africa, and depending on the location there are different food traditions that occur in each country.

In Mexican culture, some staple foods include those like avocados, tomatoes, corn, and beans. Some traditional holidays that are celebrated with special foods include: Pasadas (Christmas parties) served with buñuelos (fried pastries with sugar), or Dia de los Reyes (Day of Kings) served with rosca (ring-shaped bread).

These are just some of the cultures that celebrate holidays with food.

Lesson Eighteen



Food & Culture

Objectives:

- Students will be able to understand why food is so important to culture.
- Students will be able to identify ways to relate to their own culture by designing a recipe that their family eats together.

Lesson 18: Why is food and culture so important?

Materials Needed: Recipes (created by the students)

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| Lesson Learning Target | <p>*Students will be able to understand why food is so important to culture.</p> <p>*Students will be able to identify ways to relate to their own culture by designing a recipe that their family eats together.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students what types of foods they eat for certain holidays. “What types of holidays do you celebrate during the year?”</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>* The teacher will begin explaining to the student’s different cultures and foods associated with special holidays like African and Mexican culture (mentioned above).</p> |
| Independent Practice & Assessment (10 minutes) | <p>*Each student will have the opportunity to present their recipes to the class and describe a story that coincides with the recipe. The students will also describe how to prepare the recipe, and if needed, the teacher will make copies of the recipes to give to other students.</p> |
| Closure (7 minutes) | <p>* The teacher will remind the students of the importance of food and culture. The teacher will give a brief story about foods from their culture and showcase a recipe they grew up preparing.</p> |

Lesson Nineteen



How to Start a Food Blog

Objectives:

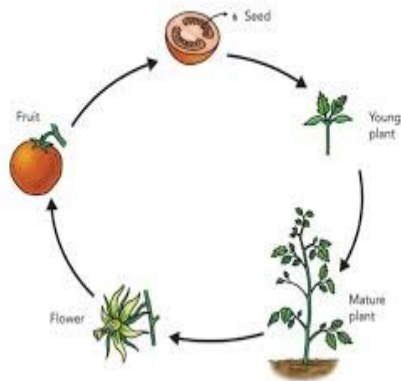
- Students will be able to understand the purpose of a food blog.
- Students will be able to identify ways to create their own blog posts by posting about the cultural recipe they created.

Lesson 19: What does it require to start a food blog?

Materials Needed: Paper, Pencils, Markers, Laptops/Computers

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| Lesson Learning Target | *Students will be able to understand the purpose of a food blog. *Students will be able to identify ways to create their own blog posts by posting about the cultural recipe they created. |
| Hook/Intro Motivation (5 minutes) | *The teacher will ask the students if they have ever read a food blog. “If so, what were some of your favorite recipes and aspects of the blog?” |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | * The teacher will begin explaining to the students the purpose of starting a food blog and what it requires to start a food blog including a working computer and a WordPress site. |
| Independent Practice & Assessment (10 minutes) | *Each student will be asked to take out their recipes from last week and design a blog post with details of the food recipe and a story tied to their culture. Students will be given paper, pencils, and markers so that they can draw and design how their first blog post on the Shark Garden Facebook page will look. |
| Closure (15 minutes) | * Each student will be asked to write their blog post on the Shark Garden Facebook page that includes one recipe and a story tied to their culture. |

Lesson 20: Life Cycle of a Seed



Plants are living things; they grow and reproduce just like other living things. They follow a process that includes the starting of a new life, growing, and reproduction stages. All plants start their lives from seeds and then grow to a mature plant.

Seeds can be also called the babies of plants. Seeds contain the embryo of the plants with necessary food and an outer coating for protection. Seeds are dispersed and “planted” in many ways including by river, air, animals, and humans. When seeds fall onto rich soil, they

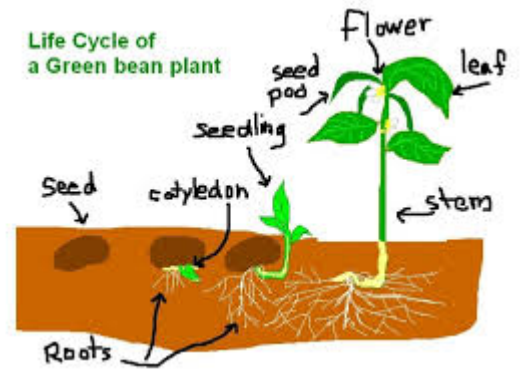
germinate and begin their life cycle.

When the conditions in the soil are right, the seed germinates. This means that the seed breaks its outer shell and begins growing its first roots and leaves. When the first signs of life from a seed appears out of the soil, it is called a seedling.

When plants become mature, they start to make flowers and pollen. As the pollen reaches the female part of the plant (the ovary), it fertilizes the cells inside it and produces seeds. The newly created seeds disperse across the land and begin their new life as a plant. The cycle of the plant continues, and new plants are produced.

Some plants do not contain seeds or produce flowers. Instead these seedless plants reproduce by the spores of the parent plants. Spores are the portion of the plant remaining. New plants are then produced by the spores and continue to grow.

Lesson Twenty



Life Cycle of a Seed

Objectives:

- Students will be able to understand the life cycle of a seed and seedless plants.
- Students will be able to identify ways to grow a plant from seed.

Lesson 20: What is the life cycle of a seed?

Materials Needed:

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| Lesson Learning Target | <p>*Students will be able to understand the life cycle of a seed and seedless plants.</p> <p>*Students will be able to identify ways to grow a plant from seed.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students if they know the life cycle of a seed. And if so, what are some of the components of a seed life cycle? Do you know how seedless plants grow?</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>* The teacher will begin explaining the life cycle of a seed and why it is important for our food system today to collect and treasure seeds.</p> |
| Independent Practice & Assessment (10 minutes) | <p>*Each student will be asked to draw a life cycle of a seed chosen from different packets of seeds (given by the teacher). Each student will draw the life cycle of their seed and write a short description of how long it takes to reach each stage. Students can use books and a laptop or cellular device to find out information about their particular seed.</p> |
| Closure (25 minutes) | <p>*Each student will be asked to give a brief presentation of their seed and its life cycle. The teacher will begin explaining the students' take-home project where they will record the seed life cycle at home by planting their own seeds.</p> |

Lesson 21: How to Grow Herbs & Vegetables from Seed



Growing vegetables and herbs from seed requires a lot of effort, but there are several advantages for using this method. They include:

More varieties of plants are available as seeds than from full-grown plants.

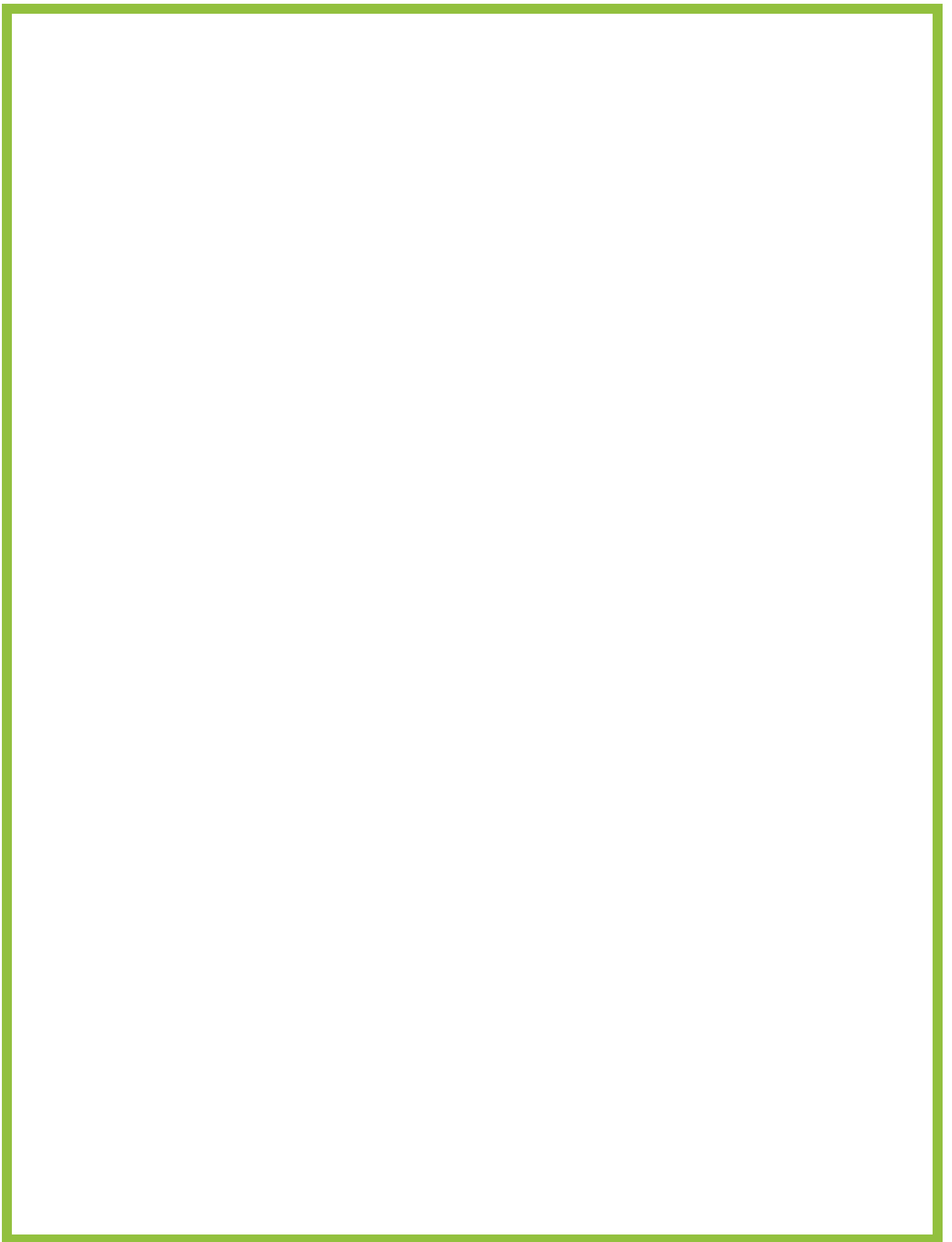
It's more affordable to buy seed packets versus a full-grown plant.

When you grow your own plants, you are getting a known quality.

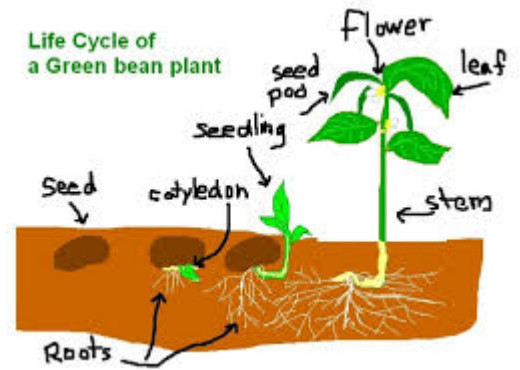
If you are starting to grow a plant from seed, the next question to ask yourself is whether to start the seeds indoors or outdoors. The answer depends on plant quantities, how much space you must devote to indoor gardening, and the length of the plant's growing season. Plants begun indoors have a higher survival rate of those begun outdoors.

Seven Steps of Seed Sowing:

1. **Prepare the containers.** Clean with well-diluted bleach (nine parts water to one-part bleach). Punch drainage holes in the bottom of your container and then line with a layer of newspaper.
2. **Prepare your growing medium.** If you are using soilless growing media, Powell recommends dampening it. Place it in a plastic bag and add four parts water to one-part soil. Mix well by squeezing the bag. Result should be damp, but not wet.
3. **Fill containers.** In addition to your growing medium, you may want to add a layer of sand to promote drainage. Fill pots or flats to within 1/4 inch of the top with your potting mix and level the surface.
4. **Sow your seeds.** The easiest way to avoid mixing things up is to plant only one variety of seeds per container. Powell says, "as a general rule of thumb, seeds should be covered to three times their diameter." Read the directions on the seed packet for specific planting instructions.
5. **Label containers.** Label each container with what seed you are planting, date planted, expected date (range) of germination. Also, mark a calendar with your plants germination dates which will make planning easier, Powell says.
6. **Water.** If you've pre-moistened your growing medium, you can skip this step. Otherwise, water to moisten, but do not saturate the soil.
7. **Cover containers.** Cover seed trays with plastic wrap or place them inside a plastic bag. The idea behind covering the container is to keep moisture levels constant. Seeds are sensitive to the amount of water they receive. Too much water or too little water will greatly affect your success rate. Remove the cover once the seeds have germinated to prevent plant diseases such as damping off.



Lesson Twenty-One



Growing Herbs & Vegetables from Seed

Objectives:

- Students will be able to understand how to grow herbs and vegetables from seeds.

Lesson 21: What is the proper way to grow vegetables and herbs from seed?

Materials Needed: Plant pots or cups, Soil, Spray Bottles, Plastic wrap or Plastic bags

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| Lesson Learning Target | *Students will be able to understand how to grow herbs and vegetables from seeds. |
| Hook/Intro Motivation (5 minutes) | *The teacher will ask the students if they have ever grown any vegetables or plants from seeds. If so, what methods did you use? |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | * The teacher will begin explaining how to grow vegetables and herbs from seeds. The teacher will mention that it is better to grow herbs and vegetables indoors first (if you can). |
| Independent Practice & Assessment (10 minutes) | *Each student will be asked to grab one seed packet from the teacher and will begin the sowing process of their particular seed. The students will be asked to follow the seven steps discussed in the lesson and must label their seeds. |
| Closure (20 minutes) | *Each student will be asked to give a brief presentation of their seed and its life cycle. The students will also give brief progress reports of their seed project at home. |

Lesson 22: How to Propagate Herbs from Cuttings



Propagation is creating new plants from a variety of sources: seeds, cuttings, bulbs, and other plant parts. There are three main ways to propagate herbs: through seeds, cuttings, and division. Most plants can be started by all three methods. For herbs, the quickest way to get more plants is from

stem cuttings.

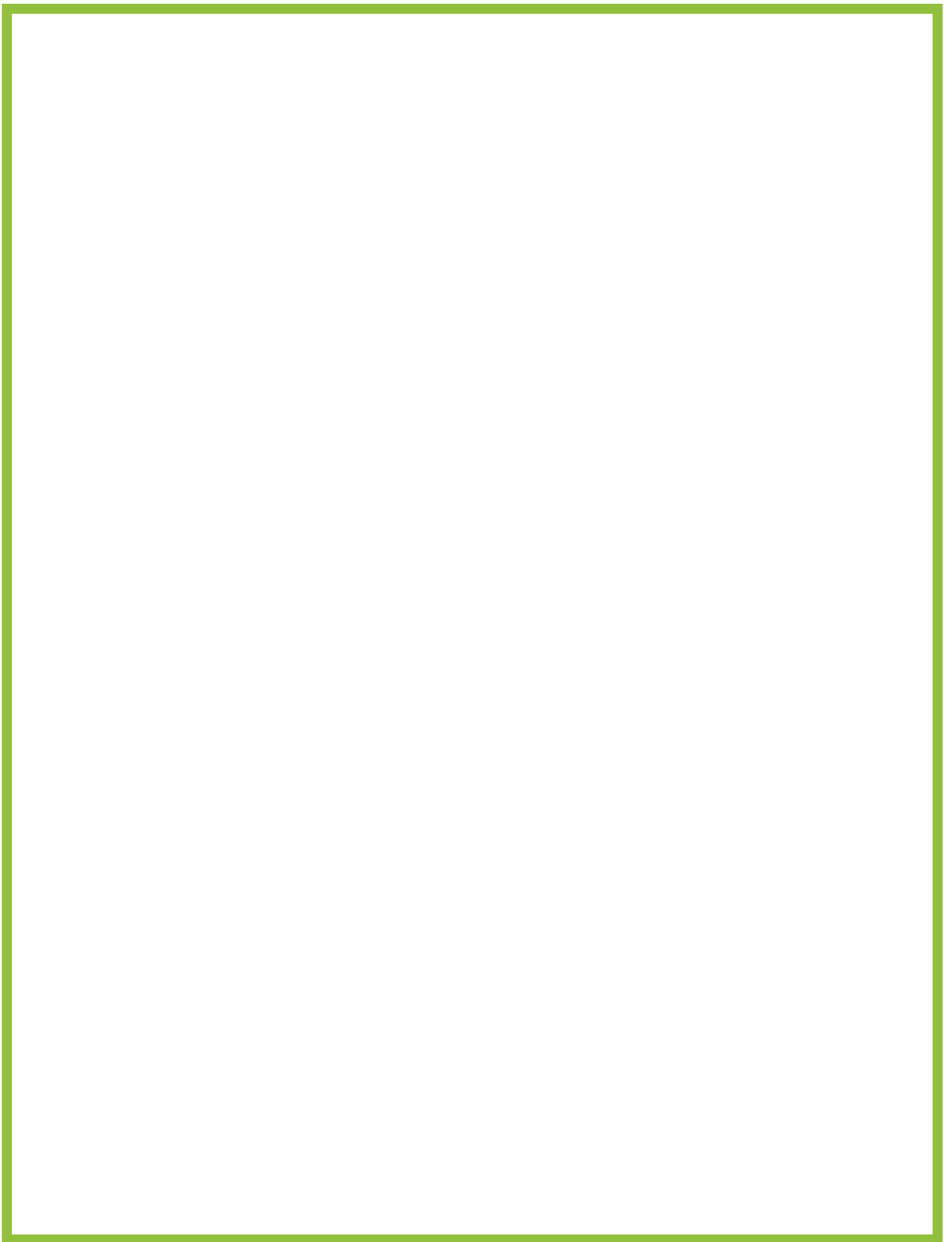
The best time to take a cutting from your plant is during its active growing season between spring through fall. Be sure to take cuttings of herbs that are not actively flowering. If the herb does contain flowers, you will have to remove them before replanting the cuttings.

To properly cut the herbs for cuttings, you need to identify the softwood and hardwood sections. The softwood section is usually lighter in color and has a flexible stem. This is also called new growth. While the hardwood section is darker in color and has a tough sometimes wooden-like stem. It is best to take your cuttings in the morning, as it will put less stress on the herb plant. Make sure to cut under the node where the leaves join the stem. Take a 4-6 inch cutting of the plant. Pinch off the leaves of the bottom 2 inches of the plant so that new roots will emerge.

After you have made the cuttings, you will need to either place the cuttings in a growing medium or a glass of water to encourage new roots to form. For both methods, you will need to cover the cuttings with plastic to help them retain moisture.

Place the cuttings in a glass and fill it with enough water to cover the stems. No leaves should be in the water. Cover the jar of cuttings with a plastic zip bag and set it in a bright area. The cuttings should develop enough roots in about 3-4 weeks. At this point, you can pot them up.

You can also plant your cuttings directly in pots with growing medium. Use a soilless growing medium (the same kind you use for seed starting) for the cuttings. To speed up the rooting process, you can dip the stems in rooting hormone before you pot them up. Once potted, water the cuttings and cover with a plastic zip bag. The cuttings will root in 3-4 weeks.



Lesson Twenty-Two



How to Propagate Herbs from Cuttings

Objectives:

- Students will be able to understand the process of propagating herbs from cuttings.
- Students will be able to practice propagating herbs.

Lesson 21: What is the proper way to propagate herbs from cuttings?

Materials Needed: Plant pots, mason jars, water, Gardening Scissors

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| Lesson Learning Target | <p>*Students will be able to understand the process of propagating herbs from cuttings.</p> <p>*Students will be able to practice propagating herbs.</p> |
| Hook/Intro Motivation (5 minutes) | <p>*The teacher will ask the students if they have ever propagated any type of plants before?</p> <p>*The teacher will begin explaining the definition of propagation.</p> |
| Teacher Input, Modeling, Introduction of New Material (5 minutes) | <p>* The teacher will then show the method of propagating herbs by cutting herbs in the Shark Garden and then showcasing both methods for propagation.</p> |
| Independent Practice & Assessment (10 minutes) | <p>*Each student will be asked to gather their own cuttings to propagate. Each group will either be assigned propagation by water or propagation by growing medium. Each group will need to gather the cuttings and perform the method based on their medium.</p> |
| Closure (20 minutes) | <p>*Each student will be asked to give a brief presentation of what they plan to eventually prepare with their propagated herbs.</p> |

Lesson 23: Herbs & Pollinators



Herbs are some of the most useful plants in nature. They can be used in food, medicines, and even in skin care.

Bees, birds, butterflies, and other insects love herbs. These animals known as pollinators help plants grow and reproduce.

Bee populations have been shrinking in many areas. Many gardeners are trying to help pollinators by planting plants that encourage them to be healthy. Herbs with the most nectar bring bees to the garden. Bees love nectar-filled herbs such as thyme, comfrey, oregano, lemon balm, lavender, and rosemary.

Honeybees find flowers by their color and not their smell. Annual herbs are more important for butterflies, especially swallowtails. Annual plants are plants that must be replanted each year.

Pollinators are necessary for a huge amount of the world's food production, but European honeybees are especially important.

European honeybees are the kings of pollinators. But other kinds of bees can often be accidental pollinators. Honeybees are also greater in number and more active than other pollinators.

Bees must collect syrup and pollen from early spring through late autumn to support a healthy bee colony. That means gardeners should plant many kinds of flowers and herbs to lengthen the flowering season.

Lesson Twenty-Three



Herbs & Pollinators

Objectives:

- Students will be able to understand the importance of pollinators and their relationship with herbs.

Lesson 23: Why are herbs and pollinators so important?

Materials Needed: Instruction Sheet, Lavender & Various Flowering Herbs, Soap Ingredients, Essential Oils, Soap Molds

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| Lesson Learning Target | *Students will be able to understand the importance of pollinators and their relationship with herbs. |
| Hook/Intro Motivation (5 minutes) | *The teacher will ask the students if they know why pollinators are so important? *The teacher will begin explaining the relationship between pollinators and herbs. |
| Teacher Input, Modeling, Introduction of New Material (15 minutes) | * The teacher will then discuss the purpose of herbs for pollinators and why they are so important. Then the teacher will begin explaining that we can use the flowers and essential oils of herbs to make beauty products like soaps or lotions. *The teacher will give a quick demo of how to create soap using flowers and essential oils from herbs from the garden. |
| Independent Practice & Assessment (15 minutes) | *Each student will be asked to gather their ingredients and flower of choice to use for their specialty-made soap bars. *Each student will begin making their own soap and follow the methods and instructions on the sheet handed out. |
| Closure (10 minutes) | *As the soap hardens in its mold, each student will tell their favorite part about the Shark Garden and what their favorite lesson has been so far. |

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