



The Modern Pioneer Cookbook Curriculum

Comprehensive lesson plans to teach traditional food recipes and kitchen techniques to students
K-12

by Mary Bryant Shrader
with Jamie O'Hara



The Modern Pioneer Cookbook Curriculum
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Disclaimer

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Welcome to *The Modern Pioneer Cookbook* Curriculum

Greetings to all my Sweet Friends and Future Modern Pioneers in the Kitchen!

I am so pleased to be able to share this K-12 curriculum with you as a supplement to my new book, *The Modern Pioneer Cookbook*, published by Penguin Random House for their DK imprint. This curriculum is presented with a 3-tiered system with age-appropriate lesson plans corresponding with all 14 chapters of my book. The first lesson plan is for elementary school, the second for middle school, and the third for high school. However, all lesson plans can work together synergistically if educating multiple ages at the same time. I hope this curriculum will be an asset to all adults who wish to teach children traditional cooking skills and learn how our ancestors made the most of what they had. This curriculum, along with my cookbook, will provide children with a lifetime of valuable skills that will allow them to become self-sufficient in the kitchen and rely less and less on processed or commercially pre-prepared foods.

Best of all, any adult can use this curriculum, whether homeschooling or sending children to school outside the home. I spent eight years as a homeschool parent, so I understand how crucial lesson plans can be to go along with a book when teaching children hands-on life skills. And even if you are not homeschooling but want to teach children how to make real food, the traditional homemade way, these lesson plans will also be an asset to you.

As a former homeschooling parent, I often relied on books published by DK. If you have used these books too, you know what a beautiful job DK does, and *The Modern Pioneer Cookbook* is no exception. The text is large and clear, with the photographs beautifully styled and, in the case of food, gloriously appetizing in appearance! And now you have a curriculum to go along with this beautiful book, which will surely become a go-to resource tucked onto your kitchen bookshelf.

The Modern Pioneer Cookbook is a step-by-step guide for how to create a traditional foods kitchen. It is a manual that takes you on a step-by-step journey so that you can be successful at learning how to make traditional foods that are real foods and are properly prepared to maximize nutritional absorption. But it's so much more than this. Learning how to make traditional foods teaches us how to make use of every bit of food we have and to reduce food waste, ultimately leading to a no-waste kitchen.

Through my cookbook, I teach time-honored skills that I am passionate about. I do not want these skills to be lost. Instead, I want to preserve these skills for future generations. As adults, we have a duty to teach our children, nieces and nephews, grandchildren, as well as friends and neighbors how to make traditional foods so they can nourish themselves as well as their future families and friends—and go on to teach others how to make these foods.

This curriculum, used in conjunction with *The Modern Pioneer Cookbook*, will teach children, using grade-appropriate activities, how to:

- * Roast a Whole Chicken
- * Make Bone Broth

- * Render Animal Fats
- * Culture Dairy
- * Pickle and Ferment Vegetables and Fruits
- * Bake Quick Breads, Yeasted Breads, Create a Sourdough Starter, and Bake Sourdough Bread
- * Soak and Sprout Beans, Lentils, and Whole Grains
- * Make Sprouted Flour and Bake Sprouted Flour Breads
- * Make Homemade Condiments
- * Prepare Traditional Superfoods
- * Make Fermented Beverages
- * Make Jam and Home Can Fruits and Vegetables
- * Preserve Food through Drying
- * Make Sweets and Treats with Whole Grain Flours and Whole Sweeteners
- * Use Everything You've Learned to Make Traditional Comfort Food Meals
- * And More!

When my son Ben was a little boy, he loved spending every minute with me in the kitchen. As soon as he was old enough to pull a stool up to the counter, he loved watching me prepare our meals. It was a delight teaching him simple traditional cooking skills appropriate to his age.

As he matured, he loved helping me make soup by placing all the ingredients one by one into the pot. He soon was old enough to handle a knife and became quite the sous chef! Ben enjoyed learning how to make a whole host of traditional foods, from tasty appetizers to roast chicken and even creating a whole grain pizza crust that would bake up crisp.

These memories of teaching Ben how to make traditional foods are so precious to me, and I will cherish them always. I know he will too. We created a special mother-son bond that will last a lifetime. And through this journey together, Ben has learned traditional cooking skills that allow him to feed nutritious foods to himself and his friends, who he enjoys entertaining with his culinary delights! You, too, will see the children to whom you teach these skills flourish in their knowledge and skill at making traditional foods. And I am confident that everyone will treasure the memories created.

Thank you so much for being on this traditional foods journey with me and keeping these cooking skills alive by learning and implementing them, as well as teaching others. It's now time to learn how to be a Modern Pioneer in the Kitchen. Let class begin!

Love and God Bless,

Mary

Mary Bryant Shrader

Author of *The Modern Pioneer Cookbook* and creator of the Mary's Nest YouTube channel and website

About *The Modern Pioneer Cookbook Curriculum*

The Modern Pioneer Cookbook is dedicated to teaching traditional cooking techniques in a modern context. Relying on simple ingredients and ancestral wisdom, author Mary Bryant Shrader encourages us to be modern pioneers as we embark on our traditional foods journey and learn how to make bone broth, ferments, sourdough, cultured dairy, and more. As Mary points out, our ancestors had great knowledge about how to maximize the nutritional value of real, whole foods and minimize waste throughout the four seasons. The goal of *The Modern Pioneer Cookbook Curriculum* is to impart these skills to generations of future cooks.

The Modern Pioneer Cookbook Curriculum is a comprehensive educational companion to *The Modern Pioneer Cookbook*. Each lesson features a different recipe from the cookbook, as well as discussion questions, engaging activities, and cross-curricular connections to math, science, history, and more. Children and adults of all ages will enjoy digging deeper into the topics of *The Modern Pioneer Cookbook*, becoming experts in traditional cooking methods and their health benefits. The best part? Tasting all the delicious foods and beverages you will make!

Who can use *The Modern Pioneer Cookbook Curriculum*?

The Modern Pioneer Cookbook Curriculum can be used by homeschooling families, parents who want to supplement their children's public or private school education, classroom teachers, community educators, and self-teaching adults! Like with the recipes in *The Modern Pioneer Cookbook*, you are encouraged to make these lesson plans your own.

Where can I get *The Modern Pioneer Cookbook*?

To use this curriculum, you will need a copy of *The Modern Pioneer Cookbook* (ISBN 978-0744077421) by Mary Bryant Shrader. This bestselling cookbook is published by Penguin Random House under their DK imprint. You can find this cookbook at your local bookstore, and you can also order it on the web from your favorite retailer at <https://marysnest.com/my-cookbook/>.

What is the structure of the curriculum?

The Modern Pioneer Cookbook Curriculum is structured into three grade bands (K-4, 5-8, and 9-12) and organized according to the 14 chapters of *The Modern Pioneer Cookbook*. There are 42 lessons in total.

What is the structure of each lesson?

Each lesson consists of a discussion, an activity, and a recipe. Sometimes the activity is as simple as making a chart or drawing. In other lessons the activity might be a hands-on science experiment. In addition to these three main parts, at the end of each lesson is a list of optional interdisciplinary extensions. These are brief questions or prompts that connect the lesson content to other subjects, such as writing, math, science, and history.

How long does each lesson take?

These lessons are not designed with time limits in mind. Many of the recipes require a lot of waiting because traditional foods do a lot of sitting! For example, fermentation takes days from the time you start to the time you get to taste. The discussion part of the lesson can be as long or as short as you like. If you want a longer discussion, ask all the suggested questions, and keep your students engaged with examples from personal experience. The interdisciplinary extensions at the end of each lesson provide opportunities to spend much more time on each chapter. Go with the flow of your needs, student interests, and schedule restraints to figure out how much time to spend on discussions and activities.

Can I switch out the recipe in a lesson for something else?

Yes, but try to make it a recipe from the same chapter. Also, keep in mind that in some lessons, the discussion and activity are directly related to the recipe.

Are the grade bands flexible?

Yes. Each lesson is designed with an age group in mind, but all lessons are practical enough to be used for all age groups. You can facilitate all 42 lessons in any order you like. For example, you might work on all fourteen K-4 lessons first, then all 5-8 lessons, and finally all 9-12 lessons. Or, you might work from K-4 to 9-12, one chapter at a time.

Each grade band's lessons are connected to a different pair of themes. The K-4 grade band's themes are homemade food and low-waste kitchens. The 5-8 grade band's themes are real, whole foods and seasonal eating. The themes of the 9-12 grade band are maximizing the nutritional value of food and preserving food for self-sufficiency.

Feel free to tweak or customize each lesson to meet the needs of students of different ages and abilities. For example, if you're doing a K-4 lesson with teens, you might skip over some vocabulary definitions that they already know. On the other hand, if you're doing a 9-12 lesson with a younger child, you might skip some of the more complicated terms or nutrition concepts. At the beginning of each chapter, there are some relevant notes about using more than one lesson or working with different age groups.

Can students of different ages work together on this curriculum?

Absolutely! This curriculum works well for homeschooling families or community classes with students of different ages. Cooperating in the kitchen is an additional (and very valuable) skill that gets reinforced when students work together on these lessons.

How should I prepare to facilitate these lessons?

To prep, read through the lesson, including the recipe and any assigned reading from *The Modern Pioneer Cookbook*. Make sure you have the materials you need, including the equipment and ingredients for the recipe. If you are working with time constraints, make some notes about how much time to allot for each part of the lesson. Finally, if needed, make some differentiation notes to accommodate students of different ages, abilities, and backgrounds.

About Mary Bryant Shrader

I'm a former New York City Girl, now a Modern Pioneer, living the simple life with my sweet husband in the Texas Hill Country. And I've been a Modern Pioneer in the Kitchen, making Traditional Foods for over 25 years.

I publish traditional nutrient-dense cooking videos on my Mary's Nest YouTube channel at <https://www.youtube.com/MarysNest> and my website at <https://marysnest.com>. I currently have almost 1 million subscribers and over 56 million views on my videos.

My bestselling book, *The Modern Pioneer Cookbook*, is published by Penguin Random House under their DK imprint. You can find my cookbook at your local bookstore, and you can also order it on the web from your favorite retailer at <https://marysnest.com/my-cookbook>

Learn more about me at <https://marysnest.com/about>

About Mary's Nest

Do you want to be a Modern Pioneer in the Kitchen, and be part of the Traditional Foods Movement? If so, you've found a home at Mary's Nest!

Through detailed video tutorials and recipes on my YouTube channel and website, I'll teach you how to make Traditional "Nutrient Dense" Foods, including Bone Broths, Cultured Dairy, Ferments, Sourdough Bread, and More.

Stay in Touch with Mary's Nest

1. Subscribe to My YouTube Channel for Traditional Foods Videos (Free) (<https://www.youtube.com/MarysNest>) - When you subscribe, be sure to click on the notification bell that will let you know each time I upload a new video.
2. Subscribe to Mary's Traditional Foods Newsletter (Free) (<https://marysnest.com/newsletter>) - Get a free 36-page eBook for signing up: How to Stock Your Essential Traditional Foods Four-Corners Pantry.
3. Join the Traditional Foods Kitchen Academy (Optional Paid) (<https://marysnest.com/join-the-traditional-foods-kitchen-academy>) - For more detailed videos, live streams, and exclusive members-only perks, join my YouTube membership community.
4. Order *The Modern Pioneer Cookbook* (Optional Paid) (<https://marysnest.com/my-cookbook>) - Get a printed book of Mary's nourishing recipes from a Traditional Foods Kitchen. This bestselling cookbook is published by Penguin Random House with their DK imprint.

I look forward to having you join me in my Texas Hill Country Kitchen!

Get Notified of Future Curriculum Updates

The current version of the curriculum is available from the Mary's Nest website at <https://marysnest.com/>. To be informed of future updates to the curriculum, subscribe to the Mary's Traditional Foods Newsletter (Free) at <https://marysnest.com/newsletter>. Future issues of the newsletter will have a curriculum section informing you of updated versions you can download.

Mary's Nest - Traditional Cooking for the Modern Pioneer - Bone Broths, Ferments, Sourdough and More!

YouTube: <https://www.youtube.com/MarysNest>

Website: <https://marysnest.com/>

The Modern Pioneer Cookbook: <https://marysnest.com/my-cookbook>

Social Media: @marysnest

Scope and Sequence

Note: All page numbers refer to *The Modern Pioneer Cookbook*.

	K-4 Learning Objectives	5-8 Learning Objectives	9-12 Learning Objectives
Ch.1 – The Modern Pioneer	<ol style="list-style-type: none"> 1. Discuss the importance of homemade food and a low-waste kitchen 2. Create a kitchen journal (“Keeping a Kitchen Journal,” p. 27) 3. Roast a whole chicken, following a recipe (“The Right Way to Roast a Whole Chicken,” p. 34-35) 	<ol style="list-style-type: none"> 1. Discuss the importance of real, whole, seasonal food 2. Create a kitchen journal (“Keeping a Kitchen Journal,” p. 27) 3. Roast a whole chicken, following a recipe (“The Right Way to Roast a Whole Chicken,” p. 34-35) 	<ol style="list-style-type: none"> 1. Discuss the importance of (1) maximizing foods’ nutritional value and (2) preserving food as a way to be more self-sufficient 2. Create a kitchen journal (“Keeping a Kitchen Journal,” p. 27) 3. Roast a whole chicken, following a recipe (“The Right Way to Roast a Whole Chicken,” p. 34-35)
Ch.2 – Bone Broths	<ol style="list-style-type: none"> 1. Discuss how making bone broth contributes to a low-waste kitchen 2. List animals parts that can be used to make bone broth 3. Prepare bone broth from chicken scraps, following a recipe (“Roast Chicken Bone Broth,” p. 48) 	<ol style="list-style-type: none"> 1. Discuss how bone broth is an example of real, whole, seasonal food 2. Outline the basic steps of making bone broth 3. Prepare bone broth from different types of beef bones, following a recipe (“Rich & Flavorful Beef Bone Broth,” p. 47) 	<ol style="list-style-type: none"> 1. Discuss how making bone broth is an example of maximizing foods’ nutritional value and preserving food as a way to be more self-sufficient 2. Differentiate between broth, stock, and bone broth 3. Summarize the steps of making bone broth 4. Prepare bone broth from ham hocks and/or pork bones, following a recipe (“Beautiful Skin Bone Broth,” p. 51)
Ch.3 –The Skinny on Fats	<ol style="list-style-type: none"> 1. Discuss how rendered animal fat is a homemade food that contributes to a low-waste kitchen 2. List possible uses for rendered animal fats 3. Prepare leaf lard from pork fat, following a recipe (“Rendering Pork Leaf Fat to Make Leaf Lard,” p. 61) 	<ol style="list-style-type: none"> 1. Discuss how rendered animal fat is a real, whole food that can be eaten seasonally 2. Describe the process of rendering tallow from suet 3. Prepare tallow from suet, following a recipe (“Rendering Suet to Make Tallow,” p. 62) 	<ol style="list-style-type: none"> 1. Discuss the role of rendered animal fat in maximizing food’s nutritional value and preserving food for self-sufficiency 2. Explain the importance of a cooking fat’s smoke point 3. Compare and contrast three types of rendered animal fats: lard, tallow, and schmaltz 4. Prepare schmaltz from chicken fat, following a recipe (“Rendering Chicken Fat to Make Schmaltz,” p. 65)
Ch.4 – The Homemade Dairy	<ol style="list-style-type: none"> 1. Discuss the role of making dairy in a homemade, low-waste kitchen 2. Define curds and whey 3. Prepare cottage cheese from milk, following a recipe (“Easy Stovetop Cottage Cheese,” p. 83) 	<ol style="list-style-type: none"> 1. Discuss how homemade dairy is an example of real, whole, seasonal food 2. List the nutritional benefits of whole milk 3. Prepare clarified butter, ghee, and/or brown butter, following a recipe (“Clarified Butter, Ghee, and Brown Butter,” p. 78-79) 	<ol style="list-style-type: none"> 1. Discuss how ferments are a homemade food that contributes to a low-waste kitchen 2. Create an illustrated pH scale 3. Prepare fermented pickles, following a recipe (“Always-Crisp Fermented Dill Pickle Spears,” p. 98)

Ch.5 – Pickling and Fermenting	<ol style="list-style-type: none"> 1. Discuss how ferments are a homemade food that contributes to a low-waste kitchen 2. Create an illustrated pH scale 3. Prepare fermented pickles, following a recipe (“Always-Crisp Fermented Dill Pickle Spears,” p. 98) 	<ol style="list-style-type: none"> 1. Discuss the benefits of fermentation and the role of fermented foods in seasonal eating 2. Describe the process of fermentation, including the importance of temperature 3. Prepare fermented red cabbage, following a recipe (“Sweet & Sour Fermented Red Cabbage,” p. 100-101) 	<ol style="list-style-type: none"> 1. Discuss the role of fermentation in maximizing food’s nutritional value and preserving food for self-sufficiency 2. Describe the process of lacto-fermentation and compare it to pickling 3. Prepare sauerkraut, following a recipe (“Sauerkraut,” p. 96-97)
Ch.6 – The Home Baker	<ol style="list-style-type: none"> 1. Discuss the importance of baking in a homemade kitchen 2. Practice identifying and using measuring spoons and cups 3. Prepare a quick brown bread, following a recipe (“Oregon Trail Pioneer Brown Bread,” p. 116-117) 	<ol style="list-style-type: none"> 1. Discuss the importance of baking at home for a real-foods kitchen 2. Describe how bread is made 3. Prepare a sandwich bread using the batter bread technique (“Super Soft No-Knead White Sandwich Bread,” p. 118-119) 	<ol style="list-style-type: none"> 1. Describe the process and benefits of making sourdough bread 2. Discuss the role of sourdough in maximizing food’s nutritional value and preserving food for self-sufficiency 3. Prepare sourdough starter and sourdough boule, following recipes (“100% Hydration Sourdough Starter,” p. 128-129; “Beginner’s No-Knead Sourdough Boule,” p. 132-133)
Ch.7 – Soaking and Sprouting	<ol style="list-style-type: none"> 1. Describe the process of sprouting 2. Discuss the benefits of homemade sprouted foods 3. Prepare sprouted beans, lentils, or whole grains, following a recipe (“How to Sprout Beans, Lentils, and Whole Grains,” p. 158) 	<ol style="list-style-type: none"> 1. Discuss the practice of soaking and drying nuts 2. Explain how to properly prepare nuts 3. Prepare soaked and dried nuts, following a recipe (“How to Soak and Dry Nuts for Better Digestion,” p. 159) 	<ol style="list-style-type: none"> 1. Discuss the importance of reducing phytic acid for maximizing the nutritional value of grains, seeds, and legumes 2. Describe different methods of reducing phytic acid in grains, seeds, and legumes 3. Prepare soaked oat porridge and fermented oat “milk,” following a recipe (“How to Make Soaked Oat Groats and Traditional Fermented Oat ‘Milk,’” p. 163-164)
Ch.8 – Condiments and Flavor Boosters	<ol style="list-style-type: none"> 1. Discuss the role of fermented condiments in a homemade, low-waste kitchen 2. Explain what it means to “shop the perimeter” of the grocery store 3. Prepare fermented ketchup (“Fermented Ketchup,” p. 186) 	<ol style="list-style-type: none"> 1. Discuss the importance of making condiments from real foods 2. Define condiment and list several examples that can be made at home 3. Prepare homemade salad dressings (“Homemade Salad Dressings,” p. 180-181) 	<ol style="list-style-type: none"> 1. Discuss how fermented condiments and homemade flavor boosters help to maximize the nutritional value of food and encourage self-sufficiency 2. Summarize important points about making condiments at home 3. Prepare fermented salsa (“Fermented Salsa,” p. 187)
Ch.9 – Traditional Superfoods	<ol style="list-style-type: none"> 1. Define superfood 2. Discuss the role of superfoods in a homemade kitchen 3. Prepare deep-fried nuggets from frozen beef liver, following a recipe (“Deep-Fried Beef Liver Nuggets with Fermented Ketchup,” p. 	<ol style="list-style-type: none"> 1. Define nutrient and nutrient-dense 2. List examples of nutrient-dense foods 3. Prepare roasted bone marrow, following a recipe (“Roasted Bone Marrow,” p. 200) 	<ol style="list-style-type: none"> 1. Compare and contrast nutrient-rich and nutrient-dense foods 2. Discuss the role of nutrient-rich and nutrient-dense foods in a traditional foods kitchen that seeks to maximize nutrition 3. Prepare mineral-rich broth from vegetables

	202)		and herbs, following a recipe ("Super Mineral Broth," p. 204-205)
Ch.10 – Good "Bug" Beverages	<ol style="list-style-type: none"> 1. Discuss the benefits of making beverages at home 2. Define electrolytes 3. Prepare switchel, following a recipe ("Haymaker's Switchel Punch," p. 214) 	<ol style="list-style-type: none"> 1. Discuss the importance of using real-food ingredients in the beverages we drink 2. List the benefits of probiotic-rich beverages 3. Prepare a shrub beverage, following a recipe ("Pineapple Mojito Shrub Mocktail," p. 215) 	<ol style="list-style-type: none"> 1. Discuss the importance of homemade probiotic beverages for maximizing nutritional value and working towards self-sufficiency 2. Compare and contrast various probiotic beverages 3. Prepare a ginger "bug," following a recipe ("Homemade Ginger 'Bug," p. 216)
Ch.11 – Preserving Foods with Home Canning	<ol style="list-style-type: none"> 1. Discuss the benefits of home canning in a homemade, low-waste kitchen 2. Identify basic canning supplies 3. Use the water bath canning method to preserve several jars of jam, following a recipe ("Low-Sugar Old-Fashioned Pioneer Berry Apple Jam," p. 229-231) 	<ol style="list-style-type: none"> 1. Discuss the benefits of home canning in a real-foods, seasonal kitchen 2. List the steps of water bath canning 3. Use the water bath canning method to preserve pears, following a recipe ("How to Home Can Fresh Fruit (with No Sugar)," p. 234-235) 	<ol style="list-style-type: none"> 1. Discuss the benefits of home canning for self-sufficiency 2. Describe the process of water bath canning in detail 3. Use the water bath canning method to preserve tomatoes, following a recipe ("How to Home Can Tomatoes," p. 236-237)
Ch.12 – Preserving Foods by Drying	<ol style="list-style-type: none"> 1. Discuss the role of drying foods in a homemade, low-waste kitchen 2. Define dehydrate 3. Prepare dried apple slices, following a recipe ("How to Dry Apple Slices," p. 256) 	<ol style="list-style-type: none"> 1. Discuss how drying foods can support the goal of eating real, whole foods seasonally 2. Explain how drying works to preserve food 3. Prepare dried citrus slices, following a recipe ("How to Dry Citrus and Citrus Peel," p. 254-255) 	<ol style="list-style-type: none"> 1. Differentiate between low-moisture herbs that can be air-dried and high-moisture herbs that must be dried in an oven or dehydrator 2. Discuss how drying foods can support efforts to be more self-sufficient 3. Prepare dried herbs, following a recipe ("How to Dry Fresh Herbs," p. 248-249)
Ch.13 – Sweets and Treats	<ol style="list-style-type: none"> 1. Discuss the role of baking in a homemade kitchen 2. Decide how to moderate sweets and treats 3. Prepare whole-grain cookies, following a recipe ("Whole Grain Cowboy Cookies," p. 265) 	<ol style="list-style-type: none"> 1. Discuss why home baking is important in a kitchen that uses real, whole foods 2. Distinguish between whole and refined sweeteners 3. Prepare graham crackers, following a recipe ("Old-Fashioned Cinnamon Graham Crackers," p. 266-267) 	<ol style="list-style-type: none"> 1. Discuss how home baking supports the goal of self-sufficiency 2. List ways to maximize the nutritional value of homemade desserts 3. Prepare apple pie, following a recipe ("Maple Sugar Apple Pandowdy," p. 268-269)
Ch.14 – Traditional Comfort Food Meals	<ol style="list-style-type: none"> 1. Describe the culinary techniques of dredging and breading 2. Prepare breaded whitefish, following a recipe ("Panfried Breaded Whitefish with Homemade Tartar Sauce," p. 291) 3. Summarize what they have learned about making homemade traditional foods and minimizing waste 	<ol style="list-style-type: none"> 1. List health benefits of salmon 2. Prepare a baked salmon and vegetable dish, following a recipe ("Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables," p. 292) 3. Summarize what they have learned about eating seasonally and cooking with real, whole foods 	<ol style="list-style-type: none"> 1. Describe the origins of chili 2. Prepare chili con carne, following a recipe ("Budget-Friendly Southwestern Chili con Carne," p. 286-287) 3. Summarize what they have learned about maximizing food's nutritional value and preserving food for self-sufficiency

Safety and Supervision

- ALL STUDENTS MUST BE SUPERVISED IN THE KITCHEN AT ALL TIMES.
- Teach your students health and safety guidelines for the kitchen. These include:
 - Wash hands before preparing food.
 - Start with clean surfaces and cooking tools.
 - Keep long hair tied back.
 - Don't wear scarves or draping fabric.
 - Be very careful around hot surfaces and sharp knives.
 - Wash hands after working with raw beef, pork, poultry, and fish.
- It isn't necessary, but you might consider looking into child-size tools for smaller hands. For example, you can find chef's knives and finger guards specifically made for students, as well as child-size oven mitts.

Basic Knife Skills

- Keep your cutting board from sliding around, especially when your students are using knives. Wet a kitchen towel or paper towel and lay it flat underneath the cutting board.
- Have your students practice gripping the knife handle firmly. They should have the chance to hold the knife and feel its weight before starting to cut with it.
- Teach your students to use a claw grip with the hand holding the food to be cut. They should curl their fingers underneath their knuckles as they grip the food with their fingertips. The knuckle of the middle finger will rest against the side of the knife. This protects the rest of the hand.
- Give your students chances to practice the correct cutting motion. They should rock the knife from its tip to its heel. Remind them to keep the tip of their knife down on the cutting board, so it becomes a habit.
- Before cutting a round vegetable, first make a flat side (such as by cutting it in half). This allows for a more stable grip.

Chapter 1 – The Modern Pioneer

Chapter 1 of *The Modern Pioneer Cookbook* focuses on the characteristics of the traditional foods kitchen. A traditional foods kitchen has six main qualities or elements:

1. Most foods are homemade
2. Little to no food is wasted
3. Real, whole foods are used
4. Foods are eaten seasonally
5. The nutritional value of food is maximized through preparation
6. Foods are preserved to encourage self-sufficiency

The first two points are taught in the K-4 lesson, the second two are taught in the 5-8 lesson, and the last two are taught in the 9-12 lesson.

K-4: Homemade Food and Low-Waste Kitchens

The K-4 lesson focuses on two elements of the traditional foods kitchen: minimizing waste and making as much food as possible from scratch. Families will create a kitchen journal and roast a whole chicken.

5-8: Real, Whole Foods and Seasonal Eating

The 5-8 lesson focuses on two elements of the traditional foods kitchen: using real, whole foods, and eating seasonally. Families will create a kitchen journal and roast a whole chicken.

9-12: Maximum Nutritional Value and Preservation for Self-Sufficiency

The 9-12 lesson focuses on two elements of the traditional foods kitchen: preparing food to maximize its nutritional value and preserving food so that we can be as self-sufficient as possible. Families will create a kitchen journal and roast a whole chicken.

A note on using all three lessons

Feel free to facilitate all three Chapter 1 lessons for your family, starting with K-4 and working your way up to 9-12. However, for this chapter, be aware that all three lessons have you creating kitchen journals and roasting a whole chicken.

How many times you make roast chicken is up to you. Some families may choose to make the recipe only once, and use the other lessons for the discussions and interdisciplinary extensions. But if you have a large family, you like a lot of leftovers, or you simply want your students to repeat and reinforce these skills, you might welcome the chance to roast chickens again and again with your students!

When it comes to the kitchen journal, consider letting your older students create their own. On the other hand, if you think one kitchen journal for the entire family makes the most sense, that's fine, too!

K-4: Homemade Food and Low-Waste Kitchens

Overview

The K-4 lesson focuses on two elements of the traditional foods kitchen: minimizing waste and making as much food as possible from scratch. Families will create a kitchen journal and roast a whole chicken.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of homemade food and a low-waste kitchen
2. Create a kitchen journal (“Keeping a Kitchen Journal,” p. 27 of *The Modern Pioneer Cookbook*)
3. Roast a whole chicken, following a recipe (“The Right Way to Roast a Whole Chicken,” p. 34-35 of *The Modern Pioneer Cookbook*)

Materials

- Blank notebook, journal, or binder (to be designated as a kitchen journal)
- Art supplies to decorate kitchen journal
- Freezer-safe bags or containers for bones and scraps

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Cast iron skillet or roasting pan with rack
- Cutting board and knife
- Saucepan (optional, for giblets)
- Kitchen twine
- Pastry brush
- Meat thermometer (optional)
- Serving utensils and platter
- Ingredients: whole chicken, carrots, onion, butter, herbs, salt, pepper

Vocabulary

- **Modern:** present-time, recent
- **Pioneer:** one of the first people to do something; one of the first people to explore or live in a new place
- **Homemade:** made at home; made from scratch; not bought at the store
- **Waste:** throwing away things that could be used
- **Recipe:** a list of ingredients and directions for making a food dish

Discussion

1. Tell your students that today they will begin a new homeschooling program—in the kitchen! Show them your copy of *The Modern Pioneer Cookbook* and give them a chance to leaf through it. Tell them that you will be making recipes from this cookbook, together. Ask them to share what they're most excited about, and what they think might be difficult or scary.
2. Together, read the title: *The Modern Pioneer Cookbook*. Ask them if they know what *modern* and *pioneer* mean. Guide your students to arrive at these definitions, or something similar:
 - **Modern**: present-time, recent
 - **Pioneer**: one of the first people to do something; one of the first people to explore or live in a new place

Then ask your students what they think the two words might mean together. Try to get your students excited about the idea that they can be modern pioneers as they embark on the journey of learning how to cook in a traditional foods kitchen.

3. Ask your students what *homemade* means. Guide your students to arrive at this definition, or something similar:
 - **Homemade**: made at home; made from scratch; not bought at the storeFacilitate a discussion about the idea of homemade food. Here are some questions you might ask to spark discussion:
 - When or where have you eaten homemade food before?
 - What is your favorite homemade food?
 - What are some homemade foods from different cultures?
 - Which foods are *not* homemade?
 - What does homemade food look, smell, feel, sound, and taste like?
 - Why is homemade food so good?
 - Have you ever helped cook or bake homemade food before? What was it?

4. Ask your students what *waste* means. Guide your students to arrive at this definition, or something similar:

- **Waste**: throwing away things that could be used

Facilitate a discussion about waste in the kitchen. Here are some questions you might ask your students:

- When do you usually throw food in the garbage?
 - Where do you notice a lot of food getting thrown in the garbage?
 - What can we do as a family to throw out less food?
 - What parts of foods do we often throw out, but we might be able to use in a new way?
 - Does cooking homemade food lead to more wasted food, or less? Why?
5. Close the discussion by explaining to your students that homemade food and low waste are two important parts of the traditional foods kitchen. Explain that, as you go through the recipes in *The Modern Pioneer Cookbook* together, you will be thinking about the importance of homemade food and low waste.

Activity: Kitchen Journal

1. Ask your students to share any experience they have with keeping a journal or ongoing notebook. Tell them that today, they will make a kitchen journal to be used whenever they are cooking (or tasting!) in the kitchen.
2. Explain that the family kitchen journal will be a place to write down (and draw!) anything related to the food you're preparing. Tell your students that the kitchen is like a laboratory where they will experiment with different tools and ingredients. Every scientist has a notebook to record their observations, failures, successes, and questions.
3. Lay out the blank notebook you will use for your kitchen journal, along with any art supplies your students can use to decorate it. Give them a few minutes to be creative and put their own personal touches on the journal. They might consider using markers, crayons, colored pencils, stickers, stamps, or collage. Use whatever works best with your notebook type, as well as whatever your students prefer. The finished product does not have to be fancy or elaborate. At the very least, the journal should have a clear "Kitchen Journal" title on the cover.

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above).
2. Ask your students to name as many of the kitchen tools as they can. Go over the names and purposes of any unfamiliar equipment.
3. Share important safety information with your students. For example, you might say:
 - "The cast iron skillet is very heavy."
 - "It's easy to get burned when working with a hot oven."
 - "Never use the chef's knife without an adult."
4. Tell your students that today they will learn to roast a whole chicken by following a recipe. Make sure that your students understand what a recipe is. If needed, share this definition:
 - **Recipe:** a list of ingredients and directions for making a food dish
5. Open *The Modern Pioneer Cookbook* to pages 34 and 35, "The Right Way to Roast a Whole Chicken." Ask your students to look at the pages and share what they notice. Observations may include:
 - Numbered steps to follow
 - Ingredients list
 - Box with "Cook's Notes"
6. Read the entire recipe aloud with your students. Although this step may seem unnecessary to you, it will help your students better understand the procedure of roasting the chicken. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.
7. Before getting started, go over these safety guidelines for handling raw chicken:
 - After touching raw chicken, wash hands thoroughly with warm, soapy water.
 - The USDA recommends that you do *not* wash your raw chicken.
 - Roast chicken needs an internal temperature of 165°F (74°C).

8. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Adults should be in charge of putting the chicken into the oven and taking it out, but students can be involved in virtually all other steps. Always use your best judgment, as you know your students best.
 - Remember the two main themes of this lesson: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts. For example, when preparing the carrots, ask your students whether they think the carrots should be peeled. Point out that leaving the carrots unpeeled would mean less waste. But if they prefer peeled carrots, work together to save the peels in a freezer-safe vegetable scrap bag.
 - If your students have never tasted giblets, make a point to cook them while your chicken roasts. The more tasting opportunities students have, the better! Remind them that eating the giblets helps keep waste low.
 - The tasks of sprinkling with seasonings, tying with twine, and brushing with a pastry brush are great for students' motor skills, and they may be especially enjoyed by tactile, kinesthetic, or sensory learners.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
9. When it's all done, it's time to eat! While you are enjoying your family meal of roast chicken, have a discussion about the experience of cooking it. Ask your students what their favorite and least favorite parts of the process were. If you know that you will have leftover meat, talk about what other dishes you can make. Then, start a freezer-safe bag for the carcass. It can be used to make bone broth another day.

Interdisciplinary Extensions

Writing

Make a list of your favorite homemade foods.

Write a page describing your favorite homemade foods.

Math

Your roast chicken needs to be an internal temperature of 165°F (74°C). You check the temperature, and the thermometer reads 145°F (63°C). How many more degrees does the temperature need to climb?

Science

The key to roasting a chicken is heat. At what temperature did you roast your chicken? What did the heat do to the chicken? How did the heat make the chicken look, smell, feel, and taste different?

History

Imagine you lived hundreds of years ago. How do you think you would have roasted a chicken? How would it be similar to the way you made it for this lesson? How would it be different?

Culture

Interview people from different cultural backgrounds, and ask them whether there is a traditional roast chicken dish in their culture. How is it similar to or different from the roast chicken you made in this lesson?

Art

Draw pictures of your family working together in the kitchen or enjoying a homemade meal. Make your own apron by upcycling an old one with fabric markers or paint. Or, buy a blank apron from a craft store and personalize it however you like.

Kitchen Garden

Plant some carrots! You can even use a container if you don't have the outdoor garden space. Make sure to use a container that is at least 12 inches (30 cm) deep. Plant the carrot seeds $\frac{1}{4}$ inch (a little over $\frac{1}{2}$ cm) under the soil, and space them 1 – 2 inches ($2\frac{1}{2}$ – 5 cm) apart.

Kitchen Economy

Did you throw any food away when you were making your roast chicken? If so, what was it? Could you have used it for something else?

Nature Study

What herbs did you use to make your roast chicken? Can you draw them? If you can't find them growing in nature, look them up online to see what they look like before they're dried.

Nutrition

Roast chicken is a good source of protein and fat, two important nutrients we all need. What other foods are good sources of protein and fat?

Decision-Making

What would you like to serve with your roast chicken? Why?

Social-Emotional Learning

Why do you think it's important to eat meals with people you love?

Video Resources

How to Make a Simple Roast Chicken: <https://marysnest.com/how-to-make-a-simple-roast-chicken/>

My Kitchen Journal for the Traditional Foods Kitchen: <https://marysnest.com/my-kitchen-journal-for-the-traditional-foods-kitchen/>

10 Vegetables You Can Regrow from Kitchen Scraps to Create a Recurring Harvest: <https://marysnest.com/10-vegetables-you-can-regrow-from-kitchen-scraps/>

5-8: Real, Whole Foods and Seasonal Eating

Overview

The 5-8 lesson focuses on two elements of the traditional foods kitchen: using real, whole foods, and eating seasonally. Families will create a kitchen journal and roast a whole chicken.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of real, whole, seasonal food
2. Create a kitchen journal (“Keeping a Kitchen Journal,” p. 27 of *The Modern Pioneer Cookbook*)
3. Roast a whole chicken, following a recipe (“The Right Way to Roast a Whole Chicken,” p. 34-35 of *The Modern Pioneer Cookbook*)

Materials

- Blank notebook, journal, or binder (to be designated as a kitchen journal)
- Art supplies to decorate kitchen journal
- Freezer-safe bags or containers for bones and scraps

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Cast iron skillet or roasting pan with rack
- Cutting board and knife
- Saucepan (optional, for giblets)
- Kitchen twine
- Pastry brush
- Meat thermometer (optional)
- Serving utensils and platter
- Ingredients: whole chicken, carrots, onion, butter, herbs, salt, pepper

Vocabulary

- **Real food:** food that comes from nature (plants or animals) and does not have chemicals or other substances added to it
- **Whole food:** all parts of a food that can be eaten or used; “nose to tail”
- **Seasonal food:** local food that is eaten or prepared around its harvest time

Discussion

1. Tell your students that today they will begin a new homeschooling program—in the kitchen! Show them your copy of *The Modern Pioneer Cookbook* and give them a chance to leaf through it. Tell them that you will be making recipes from this cookbook,

together. Ask them if anything in the book stands out to them, or if they have any questions before getting started.

2. Tell your students that they will be learning to cook real food. Ask them what they think *real food* means. Guide them to arrive at this definition, or something similar:
 - **Real food:** food that comes from nature (plants or animals) and does not have chemicals or other substances added to it
3. Ask them to list examples of real food, as well as examples that would not be considered real food.
4. Ask your students if they ever throw away certain parts of a particular food. Examples include bread crusts, chicken skins, and fruit or vegetable peels. Ask them if they can think of any uses for parts of foods that people often throw away. Explain that we should use as many parts of a food as we can, and that this is called using *whole foods*. Another way of saying this is that we should cook “nose to tail.”
5. Ask your students to think about their favorite fruit. What time of year does that fruit taste the best? What time of year does it seem easy to get that fruit? If you have gone fruit picking as a family, remind your students about these experiences, and ask them what time of year it was. Ask your students what they think *seasonal eating* means. Guide them to arrive at this definition, or something similar:
 - **Seasonal food:** local food that is eaten or prepared around its harvest timeExplain that, throughout history, foods have been prepared and eaten on a seasonal rhythm. You might extend the discussion by asking your students to imagine how cooking and eating habits might be different in different climates.
6. Close the discussion by explaining to your students that real, whole foods and seasonal eating are two important parts of the traditional foods kitchen. Explain that, as you go through the recipes in *The Modern Pioneer Cookbook* together, you will be thinking about these themes and connecting them to the techniques you learn.

Activity: Kitchen Journal

1. Ask your students to share any experience they have with keeping a journal or ongoing notebook. Tell them that today, they will make a kitchen journal to be used whenever they are cooking (or tasting!) in the kitchen.
2. Explain that the family kitchen journal will be a place to write down (and draw!) anything related to the food you're preparing. Tell your students that the kitchen is like a laboratory where they will experiment with different tools and ingredients. Every scientist has a notebook to record their observations, failures, successes, and questions.
3. Give your students the blank notebook you will use for your kitchen journal, along with any art supplies they can use to decorate it. (If you are homeschooling more than one child, it's up to you whether they share or each have their own.) Give them a few minutes to be creative and put their own personal touches on the journal. They might consider using markers, crayons, colored pencils, stickers, stamps, or collage. Use whatever works best with your notebook type, as well as whatever your students prefer. The finished product does not have to be fancy or elaborate. At the very least, the journal should have a clear “Kitchen Journal” title on the cover.

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Tell your students that today they will learn to roast a whole chicken by following a recipe.
4. Open *The Modern Pioneer Cookbook* to pages 34 and 35, “The Right Way to Roast a Whole Chicken.” Ask your students to read (aloud) the list of ingredients and the 11 recipe steps. Give them the opportunity to ask questions about the process.
5. Before getting started, go over these safety guidelines for handling raw chicken:
 - After touching raw chicken, wash hands thoroughly with warm, soapy water.
 - The USDA recommends that you do *not* wash your raw chicken.
 - Roast chicken needs an internal temperature of 165°F (74°C).
6. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Use your best judgment about what your students can handle.
 - Remember the two main themes of this lesson: real, whole foods and seasonal eating. Throughout the cooking process, look for opportunities to discuss these concepts.
 - If your students have never tasted giblets, make a point to cook them while your chicken roasts. The more tasting opportunities students have, the better! Remind them that eating the giblets supports the idea of eating whole foods.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
7. When it’s all done, it’s time to eat! While you are enjoying your family meal of roast chicken, have a discussion about the experience of cooking it. Ask your students what their favorite and least favorite parts of the process were. If you know that you will have leftover meat, talk about what other dishes you can make. Then, start a freezer-safe bag for the carcass. It can be used to make bone broth another day.

Interdisciplinary Extensions

Writing

Make a list of real, whole foods you would like to try or eat more often.

Write a poem about the rhythm of seasonal eating.

Math

If you were going to roast two whole chickens at once, how much of each ingredient would you need? What if you needed to divide the ingredients in half?

Science

Use your new kitchen journal to practice the scientific method:

1. Ask a question.
2. Make a hypothesis.
3. Test the hypothesis with an experiment.
4. Analyze the results of the experiment.
5. Draw a conclusion.
6. Communicate results.

What food or cooking question can you experiment with?

History

Why would seasonal eating be especially important in history, before refrigeration and supermarkets?

Culture

Roast chicken is a common dish all around the world. In Peru, it is called *pollo a la brasa* and served with a salsa called *ají*. Look these foods up online, and consider making *ají* to serve with your roast chicken. Then, find Peru on a map or globe. What continent is Peru in?

Art

Make your own apron by upcycling an old one with fabric markers or paint. Or, buy a blank apron from a craft store and personalize it however you like.

Kitchen Garden

Did you know that you can grow onions from scraps? Cut off ½ inch (1.27 cm) of the root end of an onion and place it under a thin layer of soil. You can do this outside, or in a container at least 10 inches (25.4 cm) deep.

Kitchen Economy

How can you use the leftovers from your roast chicken meal? Brainstorm at least three ideas.

Nature Study

Can you find wild onions, wild leeks, or ramps near your home?

Nutrition

Roast chicken is a good source of protein. What is protein, and why is it important?

Decision-Making

Do you eat any snacks that are made with chemicals or other unnatural ingredients? What are some real, whole food choices you could make instead?

Social-Emotional Learning

How do you think real food can help bring people together?

Video Resources

How to Make a Simple Roast Chicken: <https://marysnest.com/how-to-make-a-simple-roast-chicken/>

My Kitchen Journal for the Traditional Foods Kitchen: <https://marysnest.com/my-kitchen-journal-for-the-traditional-foods-kitchen/>

10 Vegetables You Can Regrow from Kitchen Scraps to Create a Recurring Harvest: <https://marysnest.com/10-vegetables-you-can-regrow-from-kitchen-scraps/>

9-12: Maximum Nutrition and Self-Sufficiency

Overview

The 9-12 lesson focuses on two elements of the traditional foods kitchen: preparing food to maximize its nutritional value and preserving food so that we can be as self-sufficient as possible. Families will create a kitchen journal and roast a whole chicken.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of (1) maximizing foods' nutritional value and (2) preserving food as a way to be more self-sufficient
2. Create a kitchen journal ("Keeping a Kitchen Journal," p. 27 of *The Modern Pioneer Cookbook*)
3. Roast a whole chicken, following a recipe ("The Right Way to Roast a Whole Chicken," p. 34-35 of *The Modern Pioneer Cookbook*)

Materials

- Blank notebook, journal, or binder (to be designated as a kitchen journal)
- Art supplies to decorate kitchen journal
- Freezer-safe bags or containers for bones and scraps

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Cast iron skillet or roasting pan with rack
- Cutting board and knife
- Saucepan (optional, for giblets)
- Kitchen twine
- Pastry brush
- Meat thermometer (optional)
- Serving utensils and platter
- Ingredients: whole chicken, carrots, onion, butter, herbs, salt, pepper

Vocabulary

- **Self-sufficiency:** the ability to provide for and support oneself; independence; self-reliance
- **Food preservation:** the process of extending the storage period of a food by preparing it in a way that prevents spoilage
- **Processed food:** prepackaged food that contains chemicals, preservatives, or other questionable ingredients

Discussion

1. Tell your students that today they will begin a new homeschooling program—in the kitchen! Show them your copy of *The Modern Pioneer Cookbook* and give them a chance to leaf through it. Tell them that you will be making recipes from this cookbook, together. Ask them if anything in the book stands out to them, or if they have any questions before getting started.
2. Summarize the premise of the traditional foods kitchen. A traditional foods kitchen has six main qualities:
 1. Most foods are homemade
 2. Little to no food is wasted
 3. Real, whole foods are used
 4. Foods are eaten seasonally
 5. The nutritional value of food is maximized through preparation
 6. Foods are preserved to encourage self-sufficiency

You may want your students to write these down on a whiteboard or piece of paper. Take a few minutes to discuss these six elements of the traditional foods kitchen. Allow your students to ask questions and make comments.

3. Ask your students what they think it means to maximize nutritional value through preparation. Explain that the nutritional value of a particular food can be affected by the way it's prepared. Examples include cooking, soaking, sprouting, and fermenting. In a traditional foods kitchen, it is important to understand these different preparation methods and use them wisely. Tell your students that you will learn more about these methods together as you progress through the lessons and the cookbook.
4. Ask your students what they think *self-sufficiency* means. Guide them to arrive at this definition, or something similar.
 - **Self-sufficiency:** the ability to provide for and support oneself; independence; self-reliance

Ask your students why self-sufficiency is important. Ask them to brainstorm different ways to be self-sufficient. You might use a whiteboard or piece of paper to draw a thought cloud with *self-sufficiency* in the center. Use lines to branch out into different ways to be self-sufficient. Allow your students to start with more general ideas, like “food,” “water,” and “electricity.” Then, challenge them to think more specifically about what concrete actions could be taken in each of these areas of life (e.g., start a kitchen garden, collect rainwater, etc.).

5. Ask your students how they would define *food preservation*. Guide them to arrive at this definition, or something similar:
 - **Food preservation:** the process of extending the storage period of a food by preparing it in a way that prevents spoilage

Facilitate a discussion, using the following questions as a guide:

- Why is food preservation important for self-sufficiency?
- How is food preservation related to the other elements of the traditional foods kitchen:
 - Most foods are homemade
 - Little to no food is wasted

- Real, whole foods are used
 - Foods are eaten seasonally
 - The nutritional value of food is maximized through preparation
 - What are some methods of food preservation?
 - Freezing
 - Drying
 - Canning
 - Fermenting
 - Pickling
6. Explain to your students that food preservation not only helps us to be more self-sufficient, but it also makes it easier to cut down on processed foods. Discuss this definition of processed food:
- **Processed food:** prepackaged food that contains chemicals, preservatives, or other questionable ingredients

Processed foods can be enticing because they offer convenience. But we can create our own convenience by preserving healthy, real foods at home. Close the discussion by asking your students what food they would like to try to preserve in the near future (e.g., tomato sauce, pickles, dried fruit, jam, jerky, etc.).

7. Close the discussion by explaining to your students that maximizing the nutritional value of food and preserving food for self-sufficiency are two important parts of the traditional foods kitchen. Explain that, as you go through the recipes in *The Modern Pioneer Cookbook* together, you will be thinking about these themes and connecting them to the techniques you learn.

Activity: Kitchen Journal

1. Ask your students to share any experience they have with keeping a journal or ongoing notebook. Tell them that today, they will make a kitchen journal to be used whenever they are cooking (or tasting!) in the kitchen.
2. Explain that the family kitchen journal will be a place to write down (and draw!) anything related to the food you're preparing. Tell your students that the kitchen is like a laboratory where they will experiment with different tools and ingredients. Every scientist has a notebook to record their observations, failures, successes, and questions.
3. Give your students the blank notebook you will use for your kitchen journal, along with any art supplies they can use to decorate it. (If you are homeschooling more than one child, it's up to you whether they share or each have their own.) Give them a few minutes to be creative and put their own personal touches on the journal. They might consider using markers, crayons, colored pencils, stickers, stamps, or collage. Use whatever works best with your notebook type, as well as whatever your students prefer. The finished product does not have to be fancy or elaborate. At the very least, the journal should have a clear "Kitchen Journal" title on the cover.

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Tell your students that today they will learn to roast a whole chicken by following a recipe.
4. Open *The Modern Pioneer Cookbook* to pages 34 and 35, “The Right Way to Roast a Whole Chicken.” Ask your students to read (aloud) the list of ingredients and the 11 recipe steps. Give them the opportunity to ask questions about the process.
5. Before getting started, go over these safety guidelines for handling raw chicken:
 - After touching raw chicken, wash hands thoroughly with warm, soapy water.
 - The USDA recommends that you do *not* wash your raw chicken.
 - Roast chicken needs an internal temperature of 165°F (74°C).
6. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Use your best judgment about what your students can handle.
 - Remember the two main themes of this lesson: maximizing nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss these concepts.
 - If your students have never tasted giblets, make a point to cook them while your chicken roasts. The more tasting opportunities students have, the better! Remind them that eating the giblets supports the idea of eating whole foods.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
7. When it’s all done, it’s time to eat! While you are enjoying your family meal of roast chicken, have a discussion about the experience of cooking it. Ask your students what their favorite and least favorite parts of the process were. If you know that you will have leftover meat, talk about what other dishes you can make. Then, start a freezer-safe bag for the carcass. It can be used to make bone broth another day.

Interdisciplinary Extensions

Writing

Research a chemical that is commonly added to processed food and write a short essay describing why it should be avoided.

Read the Four-Corners Pantry List in *The Modern Pioneer Cookbook* (p. 33 of *The Modern Pioneer Cookbook*). Survey your family’s nutritional restrictions and food preferences. Then, customize the list for your family’s unique needs.

Math

In your kitchen journal, make a culinary measurement conversion chart.

Science

Research the three different types of cooking heat—conduction, convection, and radiation. Can you accurately describe each one?

History

Why would food preservation be especially important in history, before refrigeration and supermarkets?

Culture

Roast chicken is a common dish all around the world. In India, chicken is often marinated in yogurt and ginger, among other spices. Then, it is cooked in a traditional clay oven called a *tandoor*. Consider looking up a recipe for an Indian yogurt marinade to try on your roast chicken in the future.

Art

Make your own apron by upcycling an old one with fabric markers or paint. Or, buy a blank apron from a craft store and personalize it however you like.

Kitchen Garden

Start an herb garden (on a windowsill if you don't have outdoor space). You can try herbs like parsley, thyme, chives, basil, and oregano.

Kitchen Economy

What is your least favorite part of a whole chicken? What can you do with it so it doesn't get wasted?

Nature Study

Can you find wild carrots or Queen Anne's Lace growing nearby your home? Try drawing them, but don't touch or pick them. Queen Anne's Lace can be irritating to the skin.

Nutrition

Roast chicken is a good source of protein. What are protein molecules made of? What is the role of protein in the human body?

Decision-Making

Do you eat any processed foods on a regular basis? What are some alternatives with more nutritional value? Can you make them yourself?

Social-Emotional Learning

How can we aim to be self-sufficient while still cooperating and working together with others?

Video Resources

How to Make a Simple Roast Chicken: <https://marysnest.com/how-to-make-a-simple-roast-chicken/>

My Kitchen Journal for the Traditional Foods Kitchen: <https://marysnest.com/my-kitchen-journal-for-the-traditional-foods-kitchen/>

10 Vegetables You Can Regrow from Kitchen Scraps to Create a Recurring Harvest: <https://marysnest.com/10-vegetables-you-can-regrow-from-kitchen-scraps/>

Chapter 2 – Bone Broths

Chapter 2 of *The Modern Pioneer Cookbook* is all about bone broth. Here are some key points:

- Bone broth can be made from the bones and high-cartilage connective tissue of virtually any animal.
- Bone broth is different from stock and simple broth:
 - Simple broth is made from raw meat.
 - Stock is made from bones.
 - Bone broth is made from bones and connective tissue, and it is cooked for much longer.
- The process of making bone broth has five basic steps:
 - Roast the bones (or begin with pre-roasted bones).
 - Cover the bones with water.
 - Make the water acidic.
 - Simmer the bones for 12 hours.
 - Strain and store the bone broth.
- The types of bones that can be used for making bone broth include:
 - Meaty bones (such as shank, ribs, knuckle)
 - Medium/long marrow bones
 - High-cartilage bones (such as oxtails, beef feet, tendons, ligaments)

Before getting started, make sure you have the bones you will need for the recipe in this lesson. If you don't already have bones in your freezer, plan ahead. You may be able to prepare meals that will leave you with the bones you need. The K-4 lesson calls for 3 roast chicken carcasses and scraps, as well as the optional addition of chicken feet, wing tips, necks, or backs. The 5-8 lesson needs meaty beef bones, beef marrow bones, and high-cartilage beef bones. The 9-12 lesson requires pork bones, such as ham shanks and ham bones, or ham hocks.

K-4: Roast Chicken Bone Broth

The K-4 lesson introduces students to the basics of bone broth and connects bone broth to the themes of homemade food and low-waste kitchens. Families will prepare bone broth from roast chicken carcasses and scraps.

5-8: Rich & Flavorful Beef Bone Broth

The 5-8 lesson focuses on the basic 5-step process of making bone broth and connects bone broth to the themes of real, whole foods and seasonal eating. Families will prepare bone broth from different types of beef bones.

9-12: Beautiful Skin Bone Broth

The 9-12 lesson focuses on the difference between broth, stock, and bone broth, as well as the 5-step process of making bone broth. This lesson also connects bone broth to the themes of

maximum nutritional value and preservation for self-sufficiency. Families will prepare bone broth from pork bones.

A note on using all three lessons

Feel free to facilitate all three Chapter 2 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different bone broth recipe. However, both the 5-8 and the 9-12 lessons have students writing down the five steps of the bone broth process.

K-4: Roast Chicken Bone Broth

Overview

The K-4 lesson introduces students to the basics of bone broth and connects bone broth to the themes of homemade food and low-waste kitchens. Families will prepare Roast Chicken Bone Broth (p. 48 of *The Modern Pioneer Cookbook*).

Learning Objectives

In this lesson, families will:

1. Discuss how making bone broth contributes to a low-waste kitchen
2. List animal parts that can be used to make bone broth
3. Prepare bone broth from chicken scraps, following a recipe (“Roast Chicken Bone Broth,” p. 48 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Large stock pot with lid, or large slow cooker
- Meat mallet (optional)
- Slotted spoon or spider strainer
- Colander or mesh strainer
- Large, deep pot or bowl
- Cheesecloth or flour-sack towel
- Ladle
- Airtight storage container(s)
- Ingredients: roast chicken carcasses, scraps, and skin; roast chicken pan drippings; raw chicken feet, chicken wing tips, chicken necks, or chicken backs (optional); white vermouth, apple cider vinegar, or lemon juice; onions; carrots; celery; bay leaves; peppercorns; water

Vocabulary

- **Bone broth:** a liquid made from boiling animal bones and connective tissue

Discussion

1. Tell your students that today, they will make a special kind of broth called bone broth. Share the following definition:
 - **Bone broth:** a liquid made from boiling animal bones and connective tissue

Tell your students that to make the bone broth today, they will use chicken bones and scraps (possibly including the scraps from the roast chicken they made in the first lesson!).

2. Facilitate a discussion about how making bone broth can help lower the amount of waste in your kitchen. Here are some questions you might ask:
 - What are some meals we eat that leave us with bones when we're finished?
 - What happens to the bones after we eat the meat?
 - How do you think people first started making bone broth many years ago?
 - What are some different ways bones can be used?
 - What recipes do you think we could use bone broth for, instead of water?
 - How can making bone broth help lower the amount of waste in our kitchen?
3. Close the discussion by telling your students that by making bone broth today, they are making a real difference by helping to reduce kitchen waste. Reducing waste helps their family save money, and it also helps the Earth.

Activity: Bone Broth Basics

1. Tell your students that, together, you will learn a little more about bone broth. This activity will entail writing and/or drawing. You can use a page in your kitchen journal (front and back), a large piece of paper, or a whiteboard.
2. On one side of your page or writing surface, write "Bone broth can be made from..." On the other side, write "Bone broth is good for our..." Depending on their ages and writing goals, you might choose to have your students write these prompts themselves.
3. Ask your students what they think bone broth can be made from. They should write or draw their responses underneath the prompt. The idea is for students to understand that bone broth can be made from different animals, as well as from different animal parts (in addition to bones). Here are some possible answers:
 - Beef (cow) bones
 - Chicken bones and carcasses
 - Pork (pig) bones
 - Venison (deer) bones
 - Turkey bones and carcasses
 - Lamb bones
 - Bison bones
 - Feet
 - Hooves
 - Beaks
 - Gizzards
 - Fins
 - Shells

Your students should not be expected to list these answers completely on their own. When they get stuck, you can turn this activity into a game of charades or another kind of guessing game where you give them hints and clues to lead them to the right answers.

4. Tell your students that bone broth is good for our health. Ask them to guess which parts of our body benefit from bone broth. They should write or draw their responses under the prompt “Bone broth is good for our...” Here are some possible answers:
 - Bones
 - Teeth
 - Brain
 - Immune system
 - Stomach/gut/digestion
 - Joints
 - Skin
 - Hair
 - Nails
- Again, do not expect your students to list these answers completely on their own. When they get stuck, you can turn this activity into a game of charades or another kind of guessing game where you give them hints and clues to lead them to the right answers.
5. Conclude the activity by giving your students an opportunity to ask questions or make comments about what they learned, what they found surprising, or what kinds of bone broth they would like to try in the future.

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Ask your students to name as many of the kitchen tools as they can. Go over the names and purposes of any unfamiliar equipment.
2. Share important safety information with your students. For example, you might say:
 - “The pot/slow cooker will be very hot, so we will need to be careful not to burn ourselves.”
 - “If we break the bones with a meat mallet, they can be sharp, so we will need to be careful not to cut ourselves.”
3. Open *The Modern Pioneer Cookbook* to page 48, “Roast Chicken Bone Broth.” Read the ingredients and “Cook’s Notes” aloud with your students.
4. Turn to page 44 of *The Modern Pioneer Cookbook*, “Bone Broth Master Recipe.” Explain that this recipe can be used for many different kinds of bone broth. Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the procedure of making bone broth. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.)
5. If you are using any raw chicken parts, go over these safety guidelines for handling raw chicken:
 - After touching raw chicken, wash hands thoroughly with warm, soapy water.
 - The USDA recommends that you do *not* wash your raw chicken.
 - Roast chicken needs an internal temperature of 165°F (74°C).
6. Follow the recipe (p. 44 of *The Modern Pioneer Cookbook*), step by step. Consider the following:

- Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes your students learned in Lesson 1: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts. For example, when preparing the carrots, ask your students whether they think the carrots should be peeled. Point out that leaving the carrots unpeeled would mean less waste. But if they prefer peeled carrots, work together to save the peels in a freezer-safe vegetable scrap bag.
 - These tasks may be especially enjoyed by tactile, kinesthetic, or sensory learners:
 - Using a meat mallet to crack the leg and thigh bones in half
 - Sprinkling seasonings
 - Skimming foam or fat
 - Feeling heat radiate from the pot, keeping hands a safe distance away
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
7. When it's all done, it's time to taste! While you are tasting, have a discussion about the experience of preparing the bone broth. Ask your students what their favorite and least favorite parts of the process were. Brainstorm ideas for using the broth, such as making soups or cooking grains, as well as uses for the skimmed fat, reminding students of the importance of minimizing waste.
 8. Make sure your students have the opportunity to see the gelatinous broth after it has been refrigerated. Give them a chance to wiggle it and watch it jiggle, and let them taste the cold gel if they want.

Interdisciplinary Extensions

Reading

Stone Soup

Writing

Write a list of ingredients you would like to add to a soup with a bone broth base.

Math

Make a list of ingredient amounts you would need if you wanted to double the recipe on page 48 of *The Modern Pioneer Cookbook*.

Science

What are the three states of matter (solid, liquid, gas)? Can you identify all three states of matter in the process of making bone broth? (Hint: think about the steaming pot, as well as the straining step.)

History

People have made bone broth for thousands of years. Why do you think it was so important to use animal bones, not just meat, in the distant past?

Culture

In Vietnam, Pho is a popular soup dish made from beef bone broth. Can you find Vietnam on a map or globe? What continent is the country in? As a family, look up pictures and recipes of Pho online, to see if it is something you might like to try.

Art

Draw a picture of the most delicious chicken soup you can imagine. What shapes and colors will you use?

Kitchen Garden

Did you know that you can grow onions from scraps? Cut off ½ inch (1.27 cm) of the root end of an onion and place it under a thin layer of soil. You can do this outside, or in a container at least 10 inches (25.4 cm) deep.

Kitchen Economy

After making bone broth, it's possible to reuse the bones for another batch of broth. Can you do this with the bones you used for today's recipe? Read "Can you reuse the bones?" on page 43 and "Reusing the parts" under "Cook's Notes" on page 48 of *The Modern Pioneer Cookbook*. Based on what you read, can your bones and chicken parts be used again?

Nature Study

Is there an animal you can observe and draw? Maybe you have animals of your own, or maybe you can visit a nearby farm. Try drawing a chicken, cow, or pig, paying close attention to how their bones give them their special shape.

Nutrition

Have you ever had broth or soup when you were sick? Why do you think it can help us get better faster?

Decision-Making

What will you choose to make with the bone broth you prepared today? Why?

Social-Emotional Learning

When we use all parts of an animal in our cooking, including its bones, it shows that we respect and appreciate that animal. Why?

Video Resources

How to Make Roast Chicken Bone Broth for Pennies a Jar:

<https://marysnest.com/how-to-make-roast-chicken-bone-broth-for-pennies-a-jar/>

How to Make Stovetop Chicken Bone Broth:

<https://marysnest.com/how-to-make-stovetop-chicken-bone-broth/>

Easy Chicken Soup Recipe Made with Bone Broth:

<https://marysnest.com/easy-chicken-soup-recipe-made-with-bone-broth/>

5-8: Rich & Flavorful Beef Bone Broth

Overview

The 5-8 lesson focuses on the basic 5-step process of making bone broth and connects bone broth to the themes of real, whole foods and seasonal eating. Families will prepare Rich & Flavorful Beef Bone Broth (p. 47 of *The Modern Pioneer Cookbook*).

Learning Objectives

In this lesson, families will:

1. Discuss how bone broth is an example of real, whole, seasonal food
2. Outline the basic steps of making bone broth
3. Prepare bone broth from different types of beef bones, following a recipe (“Rich & Flavorful Beef Bone Broth,” p. 47)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Stovetop
- Large baking sheet
- Large stock pot with lid, or large slow cooker
- Slotted spoon or spider strainer
- Colander or mesh strainer
- Large, deep pot or bowl
- Cheesecloth or flour-sack towel
- Ladle
- Airtight storage container(s)
- Ingredients: meaty beef bones, medium/long marrow bones, high-cartilage bones, red vermouth (or apple cider vinegar or lemon juice), onions, celery, carrots, bay leaves, peppercorns, water

Vocabulary

- **Bone broth:** a liquid made from boiling animal bones and connective tissue
- **Acidulate:** add acid to something
- **Fond:** the browned bits found on a pan or baking sheet after roasting a food

Discussion

1. Tell your students that today, they will make a special kind of broth called bone broth. Share the following definition:
 - **Bone broth:** a liquid made from boiling animal bones and connective tissueTell your students that to make the bone broth today, they will use different kinds of beef bones.
2. Facilitate a discussion about how making bone broth is an example of real, whole, seasonal food. You might want to review the definitions from the Chapter 1 lesson:
 - **Real food:** food that comes from nature (plants or animals) and does not have chemicals or other substances added to it
 - **Whole food:** all parts of a food that can be eaten or used; “nose to tail”
 - **Seasonal food:** local food that is eaten or prepared around its harvest time

Here are some questions you might ask your students:

- What are some meals we eat that leave us with bones when we're finished?
 - What happens to the bones after we eat the meat?
 - How do you think people first started making bone broth many years ago?
 - What season do you think people have traditionally eaten broths and soups?
 - What seasons do you like to eat broths and soups? Why?
 - What are some different ways bones can be used?
 - What recipes do you think we could use bone broth for, instead of water?
 - How is making bone broth an example of using whole foods or cooking “nose to tail”?
3. Mention to your students that bone broth has many health benefits for our bones, teeth, brain, immune system, stomach/gut/digestion, joints, skin, hair, and nails.
 4. Close the discussion by telling your students that by making bone broth today, they are participating in an ancient tradition. Give them an opportunity to ask questions or make comments.

Activity: Bone Broth Steps

1. Tell your students that, together, you will learn a little more about bone broth. This activity will entail some writing. You can use a page in your kitchen journal, a piece of paper, or a whiteboard, but it must be visible in the kitchen when you make the bone broth.
2. Ask your students what animal bones they think can be used to make bone broth. Guide them to see that the bones of any animal they would eat can be used to make bone broth.
3. Tell your students that other parts besides bones can be used as well. Ask them to guess what animal parts can be used. Answers include feet, hooves, beaks, and seafood shells.
4. Have your students turn to pages 40-41 of *The Modern Pioneer Cookbook*. Ask your students to read the second paragraph of page 40, which talks about the seasonal rhythm of bone broth. Allow them to ask questions or make comments about what they read.

5. Ask your students to read the five steps of making bone broth (just the bold headings on pages 40-41). Share the definition:
 - **Acidulate:** add acid to something
6. Have your students write down the five steps of making bone broth in their kitchen journal or on a piece of paper or whiteboard. (For Step 3, they can write “Add acid to the water” instead of “acidulate” if they choose.)
(Optional: Write each step on a separate index card. Have your students arrange them in the correct order. The cards can also be used as flashcards to help everyone remember the steps.)
7. Encourage your students to read each step in detail (pages 40-41) and add notes to their list of steps. Here are some suggestions for notes to add:
 - Step 1: *If bones are already roasted (such as roast chicken), skip Step 1.*
 - Step 2: *Water should come no higher than 1 inch (2.5 cm) above the bones.*
 - Step 3: *Acids: wine, apple cider vinegar, or citrus juice.*
 - Step 4: *Simmer for 12 hours to 180°F (82°C).*
 - Step 5: *Strain bone broth.*
 - Step 6: *Leaving fat on top creates a “cap” that preserves the bone broth for longer.*
8. Keep the list of steps nearby when you make the bone broth, so your students have a reference they can easily glance at.
9. Conclude the activity by giving your students an opportunity to ask questions or make comments about what they learned, what they found surprising, or what kinds of bone broth they would like to try in the future.

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Open *The Modern Pioneer Cookbook* to page 47, “Rich & Flavorful Beef Bone Broth.” Read the ingredients and “Cook’s Notes” aloud with your students.
(Optional: Go over the five variations to see if any of them appeal to your family members’ health or taste preferences.)
4. Turn to page 44, “Bone Broth Master Recipe.” Explain that this master recipe can be used for many different kinds of bone broth. Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of Lesson 1: real, whole foods and seasonal eating. Throughout the cooking process, look for opportunities to discuss these concepts.

- Throughout the process, encourage your students to take any notes they want in their kitchen journals.
6. When it's all done, it's time to taste! While you are tasting, have a discussion about the experience of preparing the bone broth. Ask your students what their favorite and least favorite parts of the process were. Brainstorm ideas for using the broth, such as making soups or cooking grains, as well as uses for the skimmed fat, reminding students of the importance of eating nose to tail.

Interdisciplinary Extensions

Writing

Write a page about your experience making bone broth. You can write about your favorite part, something interesting you learned, or a summary of the process.

Write a short story about a character who makes bone broth instead of throwing the bones away after a meal.

Math

Make a list of ingredients you would need if you wanted to make five batches of the recipe on page 47 of *The Modern Pioneer Cookbook*.

Science

How does temperature affect the consistency of your bone broth? (What is it like when it's hot, and what is it like when it's cold?) Why do you think that is?

History

Imagine you lived hundreds of years ago. How do you think you would have made bone broth? How would it be similar to the way you made it for this lesson? How would it be different?

Culture

In Mexico, Caldo de Res is a popular soup dish made from beef bone broth. As a family, look up pictures and recipes of Caldo de Res online, to see if it is something you might like to try making with your bone broth.

Art

Turn the five steps of making bone broth into a colorful, illustrated poster to hang in your kitchen.

Kitchen Garden

Plant some carrots! You can even use a container if you don't have the outdoor garden space. Make sure to use a container that is at least 12 inches (30 cm) deep. Plant the carrot seeds $\frac{1}{4}$ inch (a little over $\frac{1}{2}$ cm) under the soil, and space them 1 – 2 inches ($2\frac{1}{2}$ – 5 cm) apart.

Kitchen Economy

After making bone broth, it's possible to reuse the bones for another batch of broth. Can you do this with the bones you used for today's recipe? Read "Can you reuse the bones?" on page 43 and "Cook's Notes" on page 47 of *The Modern Pioneer Cookbook*. Based on what you read, can your bones be used again?

How long will your bone broth stay fresh? Check page 43 of *The Modern Pioneer Cookbook* to find out. Be sure to date your bone broth so you don't lose track of how old it is.

Nature Study

Is there an animal you can observe and draw? Maybe you have animals of your own, or maybe you can visit a nearby farm. Try drawing a chicken, cow, or pig, paying close attention to how their bones give them their unique shape.

Nutrition

We can make bone broth more nutritious by adding vegetables or vegetable scraps. Which vegetables would you like to add, and why?

Decision-Making

What will you choose to make with the bone broth you prepared today?

Social-Emotional Learning

When we try something new for the first time, we can learn something about ourselves. What did you notice about yourself in the process of making bone broth? How did you feel? What came easy to you? What was most challenging?

Video Resources

What is the Difference Between Broth, Stock, and Bone Broth?:

<https://marysnest.com/difference-between-broth-stock-and-bone-broth/>

How to Make Rich and Gelatinous Beef Bone Broth:

<https://marysnest.com/how-to-make-rich-and-gelatinous-beef-bone-broth/>

How to Make Affordable Bone Broth Using Beef Feet:

<https://marysnest.com/how-to-make-affordable-bone-broth-using-beef-feet-2/>

9-12: Beautiful Skin Bone Broth

Overview

The 9-12 lesson focuses on the difference between broth, stock, and bone broth, as well as the 5-step process of making bone broth. This lesson also connects bone broth to the themes of maximum nutritional value and preservation for self-sufficiency. Families will prepare Beautiful Skin Bone Broth (p. 51 of *The Modern Pioneer Cookbook*).

Learning Objectives

In this lesson, families will:

1. Discuss how making bone broth is an example of maximizing foods' nutritional value and preserving food as a way to be more self-sufficient
2. Differentiate between broth, stock, and bone broth
3. Summarize the steps of making bone broth
4. Prepare bone broth from ham hocks and/or pork bones, following a recipe ("Beautiful Skin Bone Broth," p. 51)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Stovetop
- Large baking sheet
- Large stock pot with lid, or large slow cooker
- Slotted spoon or spider strainer
- Colander or mesh strainer
- Large, deep pot or bowl
- Cheesecloth or flour-sack towel
- Ladle
- Airtight storage container(s)
- Ingredients: ham hocks and/or a mix of pork bones, red vermouth (or apple cider vinegar or lemon juice), onions, celery, carrots, bay leaves, peppercorns, water

Vocabulary

- **Bone broth:** a liquid made from boiling animal bones and connective tissue
- **Acidulate:** to make something acidic
- **Fond:** the browned bits found on a pan or baking sheet after roasting a food
- **Collagen:** an important protein found in the body, including in hair, skin, nails, bones, ligaments, tendons, cartilage, blood vessels, and intestines

- **Gelatin:** a cooked form of collagen

Discussion

1. Tell your students that today, they will learn to make bone broth. Share the following definition:
 - **Bone broth:** a liquid made from boiling animal bones and connective tissueTell your students that to make the bone broth today, they will use pork bones.
2. Ask your students if they have heard about any health benefits of bone broth or collagen. If so, make a list of these benefits together. If not, share with your students that bone broth benefits our bones, teeth, brain, immune system, stomach/gut/digestion, joints, skin, hair, and nails. The collagen in bone broth is high in protein, an important nutrient that serves as a building block for our bodies.
3. Facilitate a discussion about how making bone broth is an example of maximizing foods' nutritional value and preserving food as a way to be more self-sufficient. Here are some questions to guide the discussion:
 - Think of the health benefits of bone broth collagen (just mentioned). How does this compare to throwing bones away after eating the meat?
 - How does making bone broth help to maximize our food's nutritional value?
 - Why might it be especially important to make bone broth if your family is low-income or wants to save money?
 - How can making bone broth help families be more self-sufficient?
4. Close the discussion by asking your students to brainstorm possible ways to use bone broth. Answers might include making different kinds of soups, cooking grains in bone broth, or sipping a mug of bone broth instead of coffee or tea.

Activity: Boning up on Bone Broth

1. Tell your students that, together, you will learn a little more about bone broth. This activity will entail writing. You can use your kitchen journal, a piece of paper, or a whiteboard, but it must be visible in the kitchen while you make the bone broth.
2. Ask your students what animal bones they think can be used to make bone broth. Guide them to see that the bones of any animal they would eat can be used to make bone broth.
3. Tell your students that other parts besides bones can be used as well. Ask them to guess what animal parts can be used. Answers include feet, hooves, beaks, and seafood shells.
4. Now that your students know a little more about bone broth, ask them if they know what makes bone broth different from simple broth and stock. In your kitchen journal or on your writing surface, have your students create three columns or a three-circle venn diagram with the labels *Simple Broth*, *Stock*, and *Bone Broth*.
5. Have your students turn to pages 38-39 of *The Modern Pioneer Cookbook*. Ask them to read the two pages, focusing on the sections "Simple Broth" (p. 38), "Stock" (p. 38), and "Bone Broth" (p. 39). As they read, they should take notes in their charts or venn diagrams.

(Note: Advanced readers and writers should be able to complete this task independently. However, if your students struggle with reading and/or writing, consider asking them to read to you aloud, and talk through the notetaking process.)

6. When your students are finished reading and taking notes, go over the difference between the three liquids (simple broth, stock, and bone broth). You and your students can take turns quizzing each other until everyone remembers the difference.
7. Point out to your students that although bone broth is the healthiest option out of the three, it takes the longest. Therefore, it requires more planning. Ask your students when it might be necessary to make simple broth or stock. Answers include when you don't have cartilage, or when you need the broth as fast as possible. Tell your students that as your family goes through this lesson and recipe, you can try to come up with ideas for getting into a routine of making bone broth regularly.
8. Have your students turn to pages 40-41 of *The Modern Pioneer Cookbook*. Ask them to read both pages. As they read, they should make a written list of the five steps of the process of making bone broth. They can make these written steps as long or short as they choose. They can copy the steps directly from the cookbook, or they can put them into their own words. It's up to them. Tell your students to keep this list nearby as a reference for when it's time to make the bone broth.

(Note: Advanced readers and writers should be able to complete this task independently. However, if your students struggle with reading and/or writing, consider asking them to read to you aloud, and talk through the notetaking process.)

Recipe

1. Ask your students what most teens do if they want to care for their skin. Do teens know that they can eat (or drink) their skincare? Tell your students that today they will make Beautiful Skin Bone Broth. The gelatin in this broth has excellent benefits for skin. Have your students turn to page 51 of *The Modern Pioneer Cookbook* and read the page aloud.
2. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above). Go over the names and purposes of any unfamiliar equipment.
3. Read the entire recipe aloud with your students. (You can take turns.)
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of Lesson 1: maximizing foods' nutritional value and preserving food as a way to be more self-sufficient. Throughout the cooking process, look for opportunities to discuss these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
5. When it's all done, it's time to taste! While you are tasting, have a discussion about the experience of preparing the bone broth. Ask your students what their favorite and least favorite parts of the process were. Brainstorm ideas for using the broth, such as making soups or cooking grains, as well as uses for the skimmed fat.

Interdisciplinary Extensions

Writing

Read this selection from Geoffrey Chaucer's *Canterbury Tales*, written between 1387 and 1400. Then try to translate it into modern English. (If you get stuck, try looking the words up in an online Chaucer glossary.) Do you notice any mention of bone broth?

"A Cook they hadde with hem for the nones, To boil the chiknes with the marybones, [...]
He coulde roste, and seethe, and broile, and frye, Maken mortreux, and wel bake a pie."

Math

Professional chefs use something called the Butcher's Yield Test, which tells us what percentage of purchased meat can be served after processing. The Butcher's Yield Test formula is: $EP \text{ weight} \div AP \text{ weight} \times 100 = \text{yield } \%$. "EP" stands for "edible product," while "AP" stands for "as purchased." Try practicing the Butcher's Yield Test with these numbers:

EP weight = 3.8 pounds (1.72 kg)

AP weight = 4 pounds (1.80 kg)

Science

Making bone broth requires acidulation of the water with wine, vinegar, or citrus juice. What are the pH levels of these acids? You can order inexpensive pH test strips online. Have fun exploring the world of acids and bases in the kitchen!

History

Chicken soup made with bone broth is sometimes referred to as "Jewish penicillin." This may date back to the 12th century, when physician Moses Maimonides prescribed chicken bone broth to patients suffering from colds and other illnesses. At your local library or online, try to find out some interesting facts about Maimonides. Or, look for information about the earliest uses of bone broth, which predate Maimonides' era.

Culture

Pork bone broth, such as the Beautiful Skin Bone Broth you made, is a popular staple throughout Asia. In Japan, Tonkotsu is a pork bone broth often used to make Ramen. Can you find Japan on a map or globe? As a family, look up pictures and recipes of Tonkotsu Ramen online, to see if it is something you might like to try making with your bone broth.

Art

Look up an anatomically correct animal skeleton in a book or online, and draw it, paying close attention to the animal's joints.

Kitchen Garden

Did you know that you can grow onions from scraps? Cut off ½ inch (1.27 cm) of the root end of an onion and place it under a thin layer of soil. You can do this outside, or in a container at least 10 inches (25.4 cm) deep.

Kitchen Economy

After making bone broth, it's possible to reuse the bones for another batch of broth. Can you do this with the bones you used for today's recipe? Read "Can you reuse the bones?" on page 43 and "Cook's Notes" on page 51 of *The Modern Pioneer Cookbook*. Can your bones be used again?

How long will your bone broth stay fresh? Check page 43 of *The Modern Pioneer Cookbook* to find out. Be sure to date your bone broth so you don't lose track of how old it is.

Nature Study

Is there an animal you can observe and draw? Maybe you have animals of your own, or maybe you can visit a nearby farm. Try drawing a chicken, cow, or pig, paying close attention to how their bones give them their unique shape.

Nutrition

Choose one part of the body (bones, teeth, brain, immune system, stomach/gut/digestion, joints, skin, hair, or nails) and research how bone broth can benefit its health.

Bone marrow contains collagen, glucosamine, vitamins A and B, iron, magnesium, phosphorus, potassium, selenium, and zinc. Choose one of these and research how it benefits the human body.

Decision-Making

What will you choose to make with the bone broth you prepared today? Why?

Social-Emotional Learning

When we try something new for the first time, we can learn something about ourselves. What did you notice about yourself in the process of making bone broth? How did you feel? What came easy to you? What was most challenging?

Video Resources

What is the Difference Between Broth, Stock, and Bone Broth?:

<https://marysnest.com/difference-between-broth-stock-and-bone-broth/>

How to Make Pork Bone Broth in a Slow Cooker: <https://marysnest.com/how-to-make-pork-bone-broth-in-a-slow-cooker/>

Chapter 3 – “The Skinny on Fats”

Chapter 3 of *The Modern Pioneer Cookbook* is all about rendering animal fats. Here are some key points:

- Animal fats are nutrient-dense foods that contain vitamins A, D, E, and K2; thiamin; niacin; riboflavin; selenium; iron; phosphorus; and potassium.
- The three types of animal fats in *The Modern Pioneer Cookbook* are pork leaf lard (made in the K-4 lesson), beef tallow (made in the 5-8 lesson) and chicken schmaltz (made in the 9-12 lesson).
- To source your animal fats for this lesson, you have three main options:
 - Your local butcher (they can often order what they don't have in stock)
 - Local farmers and farmers' markets
 - Online ordering

Plan in advance so you have your animal fats on hand when you're ready to start this lesson. The K-4 recipe uses pork leaf fat or pork back fat. The 5-8 recipe uses beef suet, and the 9-12 recipe uses chicken fat and skin.

K-4: Rendering Pork Leaf Fat to Make Leaf Lard

The K-4 lesson introduces students to the practice of rendering animal fats and connects this practice to the themes of homemade food and low-waste kitchens. Families will prepare leaf lard from pork fat.

5-8: Rendering Suet to Make Tallow

The 5-8 lesson introduces students to the practice of rendering animal fats and connects this practice to the themes of real, whole foods and seasonal eating. Families will prepare beef tallow from suet.

9-12: Rendering Chicken Fat to Make Schmaltz

The 9-12 lesson introduces students to the practice of rendering animal fats and connects this practice to the themes of maximizing food's nutritional value and preserving food for self-sufficiency. Families will prepare schmaltz from chicken fat.

A note on using all three lessons

Feel free to facilitate all three Chapter 3 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different fat rendering recipe. The K-4 lesson gets students to think about all the uses of cooking fats. The 5-8 lesson teaches students the rendering process. The 9-12 lesson includes a comparison of three types of rendered animal fats, and introduces the concept of a fat's smoke point.

K-4: Rendering Pork Leaf Fat to Make Leaf Lard

Overview

The K-4 lesson introduces students to the practice of rendering animal fats and connects this practice to the themes of homemade food and low-waste kitchens. Families will prepare leaf lard from pork fat.

Learning Objectives

In this lesson, families will:

1. Discuss how rendered animal fat is a homemade food that contributes to a low-waste kitchen
2. List possible uses for rendered animal fats
3. Prepare leaf lard from pork fat, following a recipe (“Rendering Pork Leaf Fat to Make Leaf Lard,” p. 61 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write or draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Potholders or oven mitts
- Large unlined metal colander or large mesh strainer with a 9- to 10-inch (23 cm to 25.5 cm) opening
- Large, tall stockpot, preferably 10 quarts (9.46 L)
- Plate
- Paper towels
- Flour-sack towel or cheesecloth
- Heatproof bowl
- Ladle
- Heatproof storage jars with lids
- Ingredients: pork leaf fat (or pork back fat)

Vocabulary

- **Render:** to melt down fat to remove any water and solid parts
- **Leaf fat:** the dense, layered fat around pigs’ kidneys
- **Leaf lard:** leaf fat that has been rendered
- **Cracklings:** bits of solids left over after rendering animal fat

Discussion

1. Ask your students to name any fats or oils they have seen you (or others) use in cooking or baking. Point out that cooking fats fall into one of three groups: plant/seed oils, dairy fats (like butter), and animal fats. Tell them that today, they will make a special kind of animal fat in a process called rendering. Share the following definition:
 - **Render:** to melt down fat to remove any water and solid parts
2. Facilitate a discussion about how rendering fats is a great way to replace something store-bought with something homemade. Here are some questions you might use to guide the discussion:
 - What are some fats we see sold at the store?
 - Where do you think different fats come from?
 - Have you ever seen any fats or oils get made at home before?
3. Continue the discussion by asking how rendering fats can help lower the amount of waste in your kitchen. Here are some questions you might ask:
 - What are some meats we eat that have a lot of fat on them?
 - What happens to the fat? Do we cut it off before cooking? Do we have a lot of melted fat in the pan when we're done cooking?
 - How do you think people first started rendering animal fats many years ago?
 - How can rendering animal fats help lower the amount of waste in our kitchen?
4. Close the discussion by giving your students an opportunity to ask questions or make comments.

Activity: Uses for Rendered Fat

1. Ask your students to think of every possible use for fats or oils that they can think of. They should write or draw their ideas in their kitchen journals, on a piece of paper, or on a whiteboard. Here are some possible answers:
 - So foods don't stick to pans
 - To make foods moist or not too dry
 - To eat for health benefits
 - To prepare a whole chicken for roasting (remember Chapter 1!)
 - To bake into pastries, cakes, cookies, and other baked goods
 - To make vegetables tastier
 - To spread on a piece of bread
2. Ask your students if they can imagine any uses for fats that are not related to food. Here are some possible answers:
 - To moisturize skin
 - To make candles
 - To make soap
 - To make lip balm
 - To season a cast iron pan
 - For anything that needs some grease

Encourage your students to add their additional ideas to their list or drawings.

Recipe

1. Tell your students that today they will learn to render leaf lard from pork fat. Share the following definitions:
 - **Leaf fat:** the dense, layered fat around pigs' kidneys
 - **Leaf lard:** leaf fat that has been rendered
2. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above). Ask your students to name as many of the kitchen tools as they can. Go over the names and purposes of any unfamiliar equipment.
3. Share important safety information with your students. For example, you might say:
 - "We will be using the oven today, and potholders or oven mitts will be very important."
 - "Hot fats can burn our skin badly. Let's be extra careful not to get burned."
4. Open *The Modern Pioneer Cookbook* to page 61, "Rendering Pork Leaf Fat to Make Leaf Lard." Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the rendering procedure. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.)
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Be sure to give your students the opportunity to taste the cracklings.
 - **Cracklings:** bits of solids left over after rendering animal fat
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it's all done, it's time to taste! Allow your students the choice of tasting a little lard on its own, or adding it to another food. While you are tasting, have a discussion about the experience of rendering the lard. Ask your students what their favorite and least favorite parts of the process were. Talk about what other dishes you can make with the lard next.

Interdisciplinary Extensions

Writing

Write a short rhyme about lard! Try to make it at least 4 lines.

Math

How much leaf fat would you need if you wanted to double the recipe? Triple it? Cut it in half?

Science

When making the lard, when did you notice different states of matter? What caused any changes in state of matter that you noticed?

History

Lard has been rendered by people all around the world, for hundreds of years. Why do you think rendering lard has been so important throughout history?

Culture

There are many cultural dishes that use lard. Explore some recipes for any of the dishes below, and see if you might like to try making some of them:

- Griebenschmalz (Germany)
- Chu Yau Cha (China)
- Čvarci (Croatia)
- Fastnachts (Pennsylvania Dutch)
- Tep Mo (Vietnam)
- Chicharrones (Latin America)
- Smalec (Poland)

Art

Lard is often used in baking, especially to make pie crusts. Draw a picture of the most delicious pie you can possibly imagine. What's inside it?

Kitchen Economy

How long can your lard be stored? Check "Cook's Notes" on page 61 of *The Modern Pioneer Cookbook*.

Nutrition

Many people are surprised to learn that lard is a good source of vitamin D. Vitamin D is important for the health of our bones and teeth. Why are healthy bones and teeth important?

Decision-Making

What would you like to make with your homemade lard? Why?

Social-Emotional Learning

Lard is great for baking, and baked goods are great to give as gifts. Who would you choose to give a baked gift made with lard?

Video Resources

The Importance of Cooking with Traditional Fats: Animal Fats:

<https://marysnest.com/the-importance-of-cooking-with-traditional-fats-animal-fats/>

How to Make Lard – The Right Way!:

<https://marysnest.com/how-to-make-lard-the-right-way/>

How to Make Hot Water Cornbread - Depression Era Recipe:

<https://marysnest.com/how-to-make-hot-water-cornbread/>

5-8: Rendering Suet to Make Tallow

Overview

This 5-8 lesson introduces students to the practice of rendering animal fats and connects this practice to the themes of real, whole foods and seasonal eating. Families will prepare beef tallow from suet.

Learning Objectives

In this lesson, families will:

1. Discuss how rendered animal fat is a real, whole food that can be eaten seasonally
2. Describe the process of rendering tallow from suet
3. Prepare tallow from suet, following a recipe (“Rendering Suet to Make Tallow,” p. 62 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Potholders or oven mitts
- Dutch oven or heavy-bottomed pot
- Slotted spoon
- Fine mesh strainer
- Flour-sack towel or cheesecloth
- Heatproof bowl
- Heatproof storage jars with lids
- Ingredients: beef suet (or beef fat trimmings)

Vocabulary

- **Render:** to melt down fat and clear it of any impurities
- **Suet:** the hard, white fat around an animal’s kidneys
- **Tallow:** beef fat that has been rendered from suet

Discussion

1. Ask your students if they are aware of any fats or oils you use in your cooking. See how many different fats and oils they can name. Tell them that today, they will make a fat called tallow in a process called rendering. Share the following definitions:
 - **Render:** to melt down fat and clear it of any impurities
 - **Suet:** the hard, white fat around an animal’s kidneys

- **Tallow:** beef fat that has been rendered from suet
2. Open *The Modern Pioneer Cookbook* to page 58. Have your students read the second paragraph in the second column of the page (beginning with “In order to be called *tallow...*”).
(Note: For advanced readers, or for students who are interested in reading more, encourage them to read the entire section titled “Beef Tallow.”)
 3. Facilitate a discussion about how rendered fats are real, whole foods. Here are some questions you might use to guide the discussion:
 - In your experience, do you think most people like their meat fatty or lean? Do you like a lot of fat on your meat?
 - What do you think happens to the fat that gets trimmed from meat?
 - How much fat do you think gets wasted every day?
 - How does rendering fats help us eat whole foods and cook “nose to tail”?
 - What kinds of fats do you think might *not* be considered real foods?
 4. Continue the discussion by asking your students what role they think rendered fats could play in seasonal eating. Here are some questions you might ask:
 - What time of year do you think meat was traditionally hunted or harvested?
 - What time of year do you think it would be most important to eat fats?
 - What do you like about the idea of following a seasonal food cycle?
 - How would seasonal eating change your food planning and decision-making process throughout the year? (For example, what would you do in the spring, summer, or fall to get ready for winter?)
 5. Have your students turn to page 60 of *The Modern Pioneer Cookbook* and read the second paragraph, subtitled “When should you render animal fats?”
 6. Close the discussion by giving your students an opportunity to ask questions or make comments. Ask your students to summarize what they read by asking them what time of year is “fat season.”

Activity: The Rendering Process

1. Tell your students that, together, you will now learn about the process of rendering tallow from suet. Their job will be to understand the process and then create a diagram to illustrate it.
2. Share with your students the following process of rendering tallow:
 - Step 1: Heat the suet in the oven
 - Step 2: Remove the cracklings
 - Step 3: Strain the tallow
 - Step 4: Store the tallow
3. Give your students some time to create a drawing or simple diagram of this process.
(Note: If your students get stuck, take out all the equipment you will need for the recipe, and act out the process without the ingredients. If they’re still stuck, allow them to create the drawing as you are following the recipe. It will be easier once the steps have become real to them.)

4. Close the discussion by mentioning that rendering tallow is one of the easiest tasks in the traditional foods kitchen. It only requires one ingredient, and most of the time you're sitting back and letting the heat do the work.

Recipe

1. Tell your students that today they will learn to render beef tallow from suet. You may choose to mention that beef tallow is especially delicious for deep frying (e.g., french fries). Gather the kitchen equipment and ingredients that you will need (see "Materials" list above). Go over the names and purposes of any unfamiliar equipment.
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Open *The Modern Pioneer Cookbook* to page 62, "Rendering Suet to Make Tallow." Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. While cooking, look for opportunities to discuss these concepts.
 - Be sure to give your students the opportunity to taste the cracklings.
 - **Cracklings:** bits of solids left over after rendering animal fat
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When it's all done, it's time to taste! Allow your students the choice of tasting a little tallow on its own, or adding it to another food. While you are tasting, have a discussion about the experience of rendering the tallow. Ask your students what their favorite and least favorite parts of the process were. Talk about what other dishes you can make with the tallow next.

Interdisciplinary Extensions

Writing

Write a letter to a grandparent or other family member teaching them how to render tallow.

Math

You start rendering your tallow at 9:00 am. Your tallow will be ready to come out of the oven 6 hours later. What time will it be?

US: Your recipe creates 2 quarts of tallow. How many pints is that? How many gallons? How many cups?

Metric: Your recipe creates 1.89 liters of tallow. How many milliliters is that?

Science

Re-read step 3 of “Rendering Suet to Make Tallow” (page 62 of *The Modern Pioneer Cookbook*). What does the last sentence mean? (“Small bubbles on the surface are an indication that moisture is evaporating.”) Why is moisture evaporating?

History

Humans have been rendering beef tallow since ancient times, and they didn’t only use it for cooking. What else do you think tallow might have been used for in the ancient past?

Culture

Pemmican is a traditional Native American food that mixes tallow with dried meat and sometimes dried fruit. Pemmican is a storable food (like beef jerky) that is great for camping or hiking. Try looking it up online to see if you’d like to make some yourself.

Art

Draw a picture of what you imagine to be a healthy cow in a healthy environment. Then, draw a picture of what you imagine to be an unhealthy cow in an unhealthy environment. What are the differences between the two drawings?

Kitchen Economy

How long will your tallow stay fresh? Check “Cook’s Notes” on page 62 of *The Modern Pioneer Cookbook*.

Nutrition

Beef tallow is a good source of vitamins A and D. What parts of our body do these vitamins benefit?

Decision-Making

What will you choose to make with your beef tallow? Why?

Social-Emotional Learning

Gift-giving is a great way to show someone you appreciate them. Whipped tallow balm is a luxurious skin moisturizer that makes a special homemade gift. If you made some tallow balm, who would you give it to as a gift?

Video Resources

The Importance of Cooking with Traditional Fats: Animal Fats:

<https://marysnest.com/the-importance-of-cooking-with-traditional-fats-animal-fats/>

What is Tallow and How is it Different from Suet?:

<https://marysnest.com/what-is-tallow-and-how-is-it-different-from-suet/>

How to Make Beef Tallow:

<https://marysnest.com/how-to-make-beef-tallow/>

Learn How to Make Tallow Balm – Easy DIY Homemade Moisturizer:

<https://marysnest.com/tallow-balm-easy-diy-homemade-moisturizer-video/>

How to Make Hot Water Cornbread - Depression Era Recipe:

<https://marysnest.com/how-to-make-hot-water-cornbread/>

9-12: Rendering Chicken Fat to Make Schmaltz

Overview

The 9-12 lesson introduces students to the practice of rendering animal fats and connects this practice to the themes of maximizing food's nutritional value and preserving food for self-sufficiency. Families will prepare schmaltz from chicken fat.

Learning Objectives

In this lesson, families will:

1. Discuss the role of rendered animal fat in maximizing food's nutritional value and preserving food for self-sufficiency
2. Explain the importance of a cooking fat's smoke point
3. Compare and contrast three types of rendered animal fats: lard, tallow, and schmaltz
4. Prepare schmaltz from chicken fat, following a recipe ("Rendering Chicken Fat to Make Schmaltz," p. 65 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Medium-sized bowl
- Nonstick skillet or well-seasoned cast-iron skillet with lid
- Mesh strainer (optional: flour-sack towel or cheesecloth)
- Heatproof bowl
- Plate
- Paper towels
- Heatproof storage jars with lids
- Ingredients: chicken fat and skin, salt, pepper, onion (optional)

Vocabulary

- **Render:** to melt down and purify fat
- **Schmaltz:** rendered chicken fat
- **Gribenes:** the cracklings left over from rendering schmaltz
- **Smoke point:** the temperature to which a cooking fat can be heated before it begins to smoke

Discussion

1. Start the discussion by getting your students to think about cooking fats. You can use any of these questions to guide the conversation:
 - How many cooking fats can you name?
 - What are cooking fats used for?
 - Do you have a favorite cooking fat? What is it?
 - What cooking fats do we have in our kitchen?
 - What would happen if we had to cook without any fats at all?
 - Are some fats healthier than others? Which fats are healthiest?
 - Which fats can be used to moisturize our skin?
2. Share with your students that real animal fat is a nutrient-dense food. It contains vitamins (A, D, E, K2), thiamin, niacin, riboflavin, selenium, iron, phosphorus, and potassium.
3. Ask your students to explain how rendering animal fats is a way to maximize the nutritional benefit of your food.
(Note: If they are stuck, remind them of the nutrients you just listed. Guide them to see that throwing away animal fats instead of rendering them into cooking fats is a waste of these nutrients. If we want to maximize the health benefits of our food, we don't throw away anything with nutritional value.)
4. Ask your students what time of year they think would be especially important for rendering animal fats. Open up *The Modern Pioneer Cookbook* to page 60 and read the second paragraph, subtitled "When should you render animal fats?" Ask your students to explain how rendering animal fats can be important for self-sufficiency.
(Note: If they are stuck, remind them that our ancestors preserved cooking fats to last them through the fall and winter.)

Activity: Comparing Lard, Tallow, and Schmaltz

1. Ask your students if they know what a cooking fat's smoke point is. If they don't, encourage them to guess. Then share the following definition:
 - **Smoke point:** the temperature to which a cooking fat can be heated before it begins to smoke

Explain that it's important not to heat an oil higher than its smoke point because this damages the fats and has a harmful impact on our health.

2. Tell your students that they will compare three kinds of animal fat, including their smoke points. In their kitchen journals, on a piece of paper, or on a whiteboard, encourage them to create a blank chart, something like this one:

Animal source			
Type of fat used			

Smoke point			
Other notes			

In the top three boxes (the column labels), your students will fill in the three types of rendered animal fat discussed in *The Modern Pioneer Cookbook* (lard, tallow, and schmaltz).

- Have your students turn to pages 58-59 of *The Modern Pioneer Cookbook*. Ask them to read both pages, taking notes as they read to fill in their charts. A completed chart will look something like this:

	Lard	Tallow	Schmaltz
Animal source	Pork	Beef	Chicken
Type of fat used	Leaf fat (from around the pig's kidneys)	Suet (from around the cow's kidneys)	Chicken fat and skins
Smoke point	370°F (188°C)	400°F (204°C)	375°F (191°C)
Other notes	<ul style="list-style-type: none"> Great for baking Great for sauteing 	<ul style="list-style-type: none"> Great for frying Fat rendered from beef fat trimmings (not suet) is softer and doesn't last as long 	<ul style="list-style-type: none"> Used in many Eastern European Jewish recipes Has a mild chicken flavor Great spread on bread

- Close the discussion by giving your students an opportunity to summarize what they learned, ask questions, or make comments.

Recipe

- Tell your students that today they will learn to render schmaltz from chicken fat. If you are using chicken fat and/or skins from the roast chicken you made with your students in the Chapter 1 lesson, point this out to them.
- Gather the kitchen equipment and ingredients that you will need (see "Materials" list above). Go over the names and purposes of any unfamiliar equipment.
- Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
- Open *The Modern Pioneer Cookbook* to page 65, "Rendering Chicken Fat to Make Schmaltz." Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
- Follow the recipe, step by step. Consider the following:

- Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing food's nutritional value and preserving food for self-sufficiency. While cooking, look for opportunities to discuss these concepts.
 - Be sure to give your students the opportunity to taste the gribenes (cracklings).
 - **Gribenes:** the cracklings left over from rendering schmaltz
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it's all done, it's time to taste! Allow your students the choice of tasting a little schmaltz on its own, or adding it to another food. While you are tasting, have a discussion about the experience of rendering the schmaltz. Ask your students what their favorite and least favorite parts of the process were. Talk about what other dishes you can make with the schmaltz next.

Interdisciplinary Extensions

Writing

Write a short story about someone who is scared to taste schmaltz for the first time, but ends up loving it.

Write a paragraph about the importance of knowing a cooking fat's smoke point.

Math

What is the difference between measuring ingredients by weight and by volume?

Science

When fats and oils are oxidized, they can become rancid. Do some research about the health effects of consuming rancid oils.

Now that you have some experience rendering animal fats, how do you think vegetable oils are made? Look online for a video using the search term "industrial vegetable oil production." Take some notes about what you learn and what you find surprising.

History

Historically, do you think more people were able to raise cows or chickens? Chickens were generally more affordable because cows require a large amount of pasture land for grazing. This means that schmaltz was a rendered fat that was more accessible to a larger group of people, no matter how much money or land they had. Do you think this is still true today? Why or why not?

Culture

Schmaltz's origins are in the Jewish communities of Eastern Europe. One of the reasons schmaltz is so important in Jewish cooking is because it provides more options for keeping Kosher. Because butter is made from dairy, Jewish cooks could not use it as a fat to prepare meat. However, schmaltz, being an animal fat, could be used for cooking meat. Some common traditional dishes that use schmaltz are chopped liver, matzo balls, and latkes. Have you tried any of those?

Art

Some people like to call schmaltz "liquid gold." Experiment with different art supplies to create an image of liquid gold (use your imagination!). You can try markers, paints, pastels, glitter, or cut out pieces of gold paper from magazines or junk mail.

Kitchen Economy

How should you store your schmaltz, and how long will it last? Check "Cook's Notes" on page 65 of *The Modern Pioneer Cookbook*.

Nutrition

What are saturated, monounsaturated, and polyunsaturated fats? What are trans fats?

Decision-Making

What will you make with your schmaltz? Will it be a traditional cultural recipe, or something different? Explain your choice.

Social-Emotional Learning

What was the hardest (most challenging, most boring, or most annoying) part of making schmaltz? What could you do differently next time to make this part easier or more fun?

Video Resources

The Importance of Cooking with Traditional Fats: Animal Fats:

<https://marysnest.com/the-importance-of-cooking-with-traditional-fats-animal-fats/>

How to Make Schmaltz – Rendered Chicken Fat:

<https://marysnest.com/how-to-make-schmaltz-rendered-chicken-fat/>

How to Make Chopped Chicken Livers:

<https://marysnest.com/how-to-make-chopped-chicken-livers/>

Chapter 4 – The Homemade Dairy

In Chapter 4 of *The Modern Pioneer Cookbook*, we learn about making dairy products at home. Here are some important points:

- Homemade dairy is generally easy, requiring minimal ingredients and no special equipment.
- The homemade dairy season is the warmer part of the year.
- Cultured dairy means that (good) live bacteria was introduced into milk. A food is cultured if it has been fermented using a starter culture.
- Culturing dairy can help in the digestion of lactose.
- Whole, full-fat milk is more nutritious than low-fat or nonfat milk. It contains vitamins A and B12, calcium, choline, magnesium, phosphorus, potassium, selenium, zinc, and conjugated linoleic acid (CLA).
- Raw milk, ideally from grassfed cows, is more nutritious than pasteurized and homogenized milk because it contains healthful probiotics. However, raw milk is not available in all areas. Plus, the decision to drink raw milk is a personal one. If you don't feel comfortable trying it, that's okay! Either way, if you would like to learn more about the effects of pasteurization, read "What Pasteurization Does To The Vitamins In Milk" by Sally Fallon Morell at <https://nourishingtraditions.com/pasteurization-vitamins-milk/>.
- Homemade dairy creates a byproduct called whey, which can be used in a number of ways.

Before getting started, make sure you have the ingredients needed for the recipe(s) you will be following. The K-4 lesson uses whole milk and vinegar. The 5-8 lesson uses butter. The 9-12 lesson uses whole milk and yogurt. Although you may have these ingredients on hand, be aware of the amounts you will need (a gallon of milk for K-4, a pound of butter for 5-8, and a quart of milk for 9-12). In addition to the ingredients for the recipes, the 9-12 lesson also features a science experiment requiring a small amount of whole milk, food coloring, and dish soap.

K-4: Easy Stovetop Cottage Cheese

The K-4 lesson introduces students to the idea of making dairy products at home. They will learn about curds and whey before experimenting with them hands-on. Families will prepare cottage cheese from whole milk.

5-8: Clarified Butter, Ghee, and Brown Butter

The 5-8 lesson focuses on homemade dairy as a whole food that plays an important role in seasonal eating. Families will prepare clarified butter, ghee, and/or brown butter.

9-12: Homemade Yogurt

The 9-12 lesson addresses nutritional issues in dairy processing, including pasteurization and homogenization. The practice of culturing dairy is introduced. Families will prepare yogurt from whole milk.

A note on using all three lessons

Feel free to facilitate all three Chapter 4 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different dairy recipe. The K-4 lesson highlights the process of curdling. The 5-8 lesson teaches students the process of clarifying butter. The 9-12 lesson focuses on culturing as a way to counter the effects of pasteurization and homogenization. The 9-12 lesson also includes a kitchen science experiment that is suitable for siblings of all ages.

K-4: Easy Stovetop Cottage Cheese

Overview

This lesson introduces students to the idea of making dairy products at home. They will learn about curds and whey before experimenting with them hands-on. Families will prepare Easy Stovetop Cottage Cheese (p. 83 of *The Modern Pioneer Cookbook*).

Learning Objectives

In this lesson, families will:

1. Discuss the role of making dairy in a homemade, low-waste kitchen
2. Define *curds and whey*
3. Prepare cottage cheese from milk, following a recipe (“Easy Stovetop Cottage Cheese,” p. 83)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Something to write or draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Large pot with lid
- Candy thermometer
- Colander or mesh strainer
- Flour-sack towel or cheesecloth
- Bowl (to fit under colander or strainer)
- Storage container with tight-fitting lid
- Blender (optional)
- Ingredients: whole milk, white distilled vinegar, heavy cream (optional), sea salt (optional)

Vocabulary

- **Curdle:** to cause to separate into lumps (curds)
- **Curds:** soft chunks that form when milk sours
- **Whey:** liquid created by curdling milk that is often strained from the curds

Discussion

1. Ask your students what the word “dairy” means, and ask them to identify as many dairy products as they can. (Answers include milk, cheese, yogurt, ice cream, butter, etc.)
2. Facilitate a discussion about the benefits of making dairy at home. Here are some questions you might use to guide the discussion:

- What are your favorite dairy products?
 - Which dairy products do you wish we could make at home?
 - What dairy products do we use most often in our kitchen?
 - Where do we usually get our dairy products?
 - Why would it be a good thing to make more dairy products at home?
 - How might it reduce kitchen waste to make dairy products at home?
 - Why do you think most people buy their dairy at the store instead of making it at home?
 - How much milk and dairy do you think gets wasted every day?
3. Close the discussion by giving your students an opportunity to ask questions or make comments.

Activity: Curds and Whey

1. Ask your students if they are familiar with the nursery rhyme “Little Miss Muffet.” See if they can recite the rhyme from memory:

Little Miss Muffet
Sat on a tuffet
Eating her curds and whey
Along came a spider
Who sat down beside her
And frightened Miss Muffet away
2. Ask your students if they know what curds and whey are. Have them draw a picture of what they imagine (or know) curds and whey to look like.
3. Tell your students that curds and whey are created by curdling, or souring, milk. Share the following definitions with your students:
 - **Curdle:** to cause to separate into lumps (curds)
 - **Curds:** soft chunks that form when milk sours
 - **Whey:** liquid created by curdling milk that is often strained from the curds

Give your students the opportunity to create a new drawing based on this information. Then ask them how they would explain what curds and whey are to someone their age.
4. Now have your students write their own version of the Miss Muffet nursery rhyme. They should use this template:

Little _____ [name]
Sat on a _____
Eating their curds and whey
Along came a _____
Who _____
And _____!

Consider writing your own version as well to model the practice for your students and show that you are a participant in the learning process.
5. Wrap up by telling your students that they will be making their very own curds and whey!

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Ask your students to name as many of the kitchen tools as they can. Go over the names and purposes of any unfamiliar equipment.
2. Share important safety information with your students. For example, you might say:
 - “We will be using the stovetop for this recipe, so we need to be careful not to get burned. Let’s make sure we don’t have any loose clothing or long hair that could catch on fire.”
3. Tell your students that today they will learn to make an easy stovetop cheese. The cheese is the “curds” in “curds and whey.” Open *The Modern Pioneer Cookbook* to page 83, “Easy Stovetop Cottage Cheese.” Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the process of turning milk into cheese. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.)
4. Under “Cook’s Notes” on page 83, read “Using this cottage cheese in recipes” with your students. Discuss whether to make the variation with heavy cream and salt (similar to the store-bought version), or to blend the cottage cheese for use in other ways.
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it’s all done, it’s time to taste! While you are enjoying your cheese, have a discussion about the experience of cooking it. Ask your students what their favorite and least favorite parts of the process were. Talk about what other dishes you can make with the cheese.

Interdisciplinary Extensions

Writing

Look up the word *coagulate* or *coagulation* in the dictionary. Then write a sentence using one of those words to describe the process of making curds and whey.

Extend your version of “Little Miss Muffet” with another verse that shows what happened next.

Math

The recipe calls for $\frac{1}{4}$ cup of vinegar. How many tablespoons is that? How many teaspoons?

US: This cottage cheese recipe called for a gallon of milk. How many quarts is that? How many pints?

Metric: This cottage cheese recipe called for 3.75 liters of milk. How many milliliters is that?

Science

Vinegar makes milk curdle because it is an acid. Other acids include lemon juice and pineapple juice. Try making the recipe again with an acidic juice instead of vinegar, and see if there's any difference in the final result.

History

In pioneer times, people often made cottage cheese out of milk that was already turning sour. In the past, why do you think it was so important not to throw sour milk away?

Culture

There are many cultural dishes that use curdled cheese. Explore some recipes for any of the dishes below, and see if you might like to try making some of them. Then, try to find that country on a map or globe.

- Queso Panela (Mexico)
- Tvorog (Eastern Europe)
- Paneer (India)
- Quark (Germany)
- Queso Blanco (Latin America)

Art

Why do you think it's called "cottage" cheese? Draw a picture to answer the question.

Kitchen Garden

The next time you have scallions, cut off the greens for your recipes and put the roots in a small glass of water or pot with soil. Watch your scallions grow! When they're tall enough to be trimmed, try chopping them and mixing them with some salted cottage cheese. If you like, put the cheese in the blender to make a smooth spread.

Kitchen Economy

How long will your cottage cheese stay fresh? Check page 83 of *The Modern Pioneer Cookbook* (step 6).

Nutrition

A serving of cottage cheese has more protein than a serving of yogurt or eggs. What are some creative ways to add cottage cheese to your meals and snacks, to get more protein into your diet?

Decision-Making

Will you choose to eat your cottage cheese with cream and salt, or will you use it for another recipe? Why?

Social-Emotional Learning

It can take courage to try new things. If you've never tried cottage cheese before, you might worry that you won't like it. Try turning it into a game. Prepare the cottage cheese three different ways, and see which flavor combination you like the best!

Video Resources

How to Make Cottage Cheese – The Easy Way!:

<https://marysnest.com/how-to-make-cottage-cheese/>

Learn How to Make Ricotta Cheese – The Easy Way!:

<https://marysnest.com/learn-how-to-make-ricotta-cheese/>

5-8: Clarified Butter, Ghee, and Brown Butter

Overview

This lesson focuses on homemade dairy as a whole food that plays an important role in seasonal eating. Families will prepare clarified butter, ghee, and/or brown butter.

Learning Objectives

In this lesson, families will:

1. Discuss how homemade dairy is an example of real, whole, seasonal food
2. List the nutritional benefits of whole milk
3. Prepare clarified butter, ghee, and/or brown butter, following a recipe (“Clarified Butter, Ghee, and Brown Butter,” p. 78-79 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Medium saucepan
- Ladle or large spoon
- Glass jar with lid
- Mesh strainer
- Flour-sack towel or cheesecloth
- Ingredients: butter

Vocabulary

- **Smoke point:** the temperature to which a cooking fat can be heated before it begins to smoke
- **Clarify (butter):** to remove the milk solids from butter by melting and straining it

Discussion

1. Ask your students to define *dairy* and give some examples of dairy products, including their favorites.
2. Remind your students that, in each of these lessons, they have been thinking about real, whole foods and seasonal eating. Ask your students to brainstorm how dairy might connect to these ideas. Facilitate a discussion about how homemade dairy is an example of real, whole food. Here are some questions you might use to guide the discussion:

- What processes do you think dairy products go through before they get to our table?
 - On a carton of milk, how many ingredients do you think are listed? What about other dairy products, like cheeses, yogurts, sour cream, and ice cream? Which of these foods are real, whole foods? How do you know?
 - Have you ever seen any dairy products being made at home?
 - Why do you think most people buy dairy at the store?
3. Continue the discussion by asking your students what time of year they think dairy is in season.
(Note: If your students are stuck, ask them if all cows produce milk, all the time. Guide them to understand that mother cows produce milk for their calves. Then ask if they know what time of year calves are usually born. If they are still stuck, proceed to the next step.)
 4. Have your students turn to page 68 of *The Modern Pioneer Cookbook* and read the second paragraph (beginning with “And as far as culturing dairy goes...”). Ask your students to summarize what they read by asking them what time of year is “dairy season.”

Activity: Whole Milk Benefits

1. Tell your students that although milk is a real, whole food, it is often sold in forms that make it less “real” and “whole.” For example, when tons of chemical ingredients are added to a dairy product, it is no longer a *real food*. Ask your students if they can guess when milk is no longer a *whole food*. Guide them to understand that milk is sold with different levels of fat content: whole, low-fat (or 2%), and nonfat. Ask them to explain why only whole milk can be considered a whole food (i.e., because nothing has been removed from it).
2. Ask your students if they think whole milk tastes better than nonfat or low-fat milk. Ask them if they think whole milk is healthier or less healthy than low-fat or nonfat milk options. Consider asking them how they formed that opinion (e.g., advertising, books, peers, doctors, etc.).
3. Have your students turn to page 68 of *The Modern Pioneer Cookbook*. Together, read the section titled “Different Types of Milk.” Have your students write down at least three benefits of whole milk. Encourage your students to write down any questions that come up for them as well.
(Note: For advanced readers, or for students who are interested in reading more, encourage them to read the section titled “Whole Milk” on pages 68-69.)
4. Tell your students that raw milk is even more of a whole food than regular whole milk. Unlike the whole milk sold in the grocery store, raw milk is not heated (pasteurized) or blended (homogenized). Have your students turn to page 70 of *The Modern Pioneer Cookbook* and ask them to read the section titled “Raw Milk.” Explain that raw milk is not legal in certain states. Together, look up whether raw milk is legal in your state. If raw milk is not legal in your state, find out if you can sign a petition to legalize it. Ask your students to share their opinions about whether raw milk should be illegal, and why.

5. Ask your students if anything they learned surprised them. Give them an opportunity to ask questions, make comments, and/or add to their notes.

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Tell your students that today they will learn to prepare a special kind of butter. Turn to pages 78-79 of *The Modern Pioneer Cookbook*. Point out that there are three recipe options: clarified butter, ghee, and brown butter. Share the following definition:
 - **Clarify (butter):** to remove the milk solids from butter by melting and straining it
4. Tell your students that butter has a smoke point, and ask them to guess what that means. Share the following definition:
 - **Smoke point:** the temperature to which a cooking fat can be heated before it begins to smoke

Explain to your students that we don't want a cooking fat like butter to get hotter than its smoke point because it's harmful to our health. Tell your students that clarifying butter gives it a higher smoke point, which means we have more options for cooking with it.

5. Together, read all three recipes aloud, pointing out the differences you notice (for example, brown butter is not strained). Give your students the opportunity to ask questions about the process. Together, decide which butter recipe to follow. (Note: Ghee is cooked longer than clarified butter, giving it a caramelized or nuttier flavor.)
6. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. While cooking, look for opportunities to discuss these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
7. When it's all done, it's time to taste! Allow your students the choice of tasting a little butter on its own, or adding it to another food. Ask them to compare the flavor to regular butter. While you are tasting, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what other dishes you can make with the butter.

Interdisciplinary Extensions

Writing

Imagine you just read an article in a magazine about the importance of drinking nonfat milk. Write a letter to the editor explaining some of the benefits of whole milk.

Math

You started your butter recipe with 1 pound (454g) of butter. How much butter did you have when you were finished cooking? How much weight did you lose in the heating process?

Science

Clarified butter and ghee are shelf-stable, meaning they don't require refrigeration. Why do you think that is?

History

The preparation of ghee in India may be as old as 1500 BC. Why do you think it was so important to clarify butter in the past? (Hint: Think of India's climate.)

Culture

Many different cultures make clarified butter, especially in warmer climates. Here are some examples for you to look up:

- Manteiga-da-terra (Brazil)
- Niter kibbeh (Ethiopia, Eritrea)
- Smen (Algeria, Morocco, Tunisia)

Can you find these countries on a map or globe? What continents are they on?

Art

Draw a picture of ancient people or pioneers from the 1800s preparing or enjoying the butter you made for this lesson.

Kitchen Garden

Butter is delicious on almost any vegetable. The next time you have sweet potatoes that are starting to sprout, cut off the sprouts and plant them in your garden or a container. When they grow, try them with some of your homemade butter!

Kitchen Economy

Clarified butter and ghee are shelf-stable, but brown butter must be stored in the refrigerator. How long does each type of butter last? Check page 79 of *The Modern Pioneer Cookbook*.

Nutrition

Whole milk contains vitamins A and B12, calcium, choline, magnesium, phosphorus, potassium, selenium, zinc, and conjugated linoleic acid (CLA). Pick one of these nutrients to research. Why is it good for human health?

Decision-Making

What will you choose to make with your butter? Why?

Social-Emotional Learning

What do you like best about spending time in the kitchen with your family or friends?

Video Resources

The Importance of Cooking with Traditional Fats: Butter and Ghee:

<https://marysnest.com/importance-of-cooking-with-traditional-fats-butter-and-ghee/>

How to Make Skillet Biscuit Bread:

<https://marysnest.com/how-to-make-skillet-biscuit-bread/>

9-12: Homemade Yogurt

Overview

This lesson addresses nutritional issues in dairy processing, including pasteurization and homogenization. The practice of culturing dairy is introduced. Families will prepare Homemade Yogurt (p. 73 of *The Modern Pioneer Cookbook*).

Learning Objectives

In this lesson, families will:

1. Discuss how cultured dairy is an example of maximizing foods' nutritional value and preserving food as a way to be more self-sufficient
2. Describe pasteurization and homogenization
3. Prepare yogurt from milk, following a recipe ("Homemade Yogurt," p. 73)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Waterproof plate with rim, shallow bowl, or petri dish
- Whole milk (enough to cover bottom of plate or bowl)
- Food coloring (preferably more than one color)
- Liquid dish soap
- Cotton swabs or toothpicks

For recipe:

- *The Modern Pioneer Cookbook*
- Rimmed baking sheet
- 3 dish towels (or 1 dish towel and 1 large towel)
- Large bowl (not plastic)
- Medium saucepan
- Candy thermometer (optional)
- Medium bowl (not plastic)
- Whisk
- Tea kettle (or small pot for boiling water)
- Lids or plastic wrap to cover the bowls
- Storage container (or you can use the medium bowl, covered)
- Ingredients: whole milk, whole milk cultured yogurt

Vocabulary

- **Cultured dairy:** food that is prepared by introducing live bacteria into milk
- **Pasteurization:** the process of heating milk and then quickly cooling it to kill bacteria
- **Homogenization:** the process of breaking down the cream in milk so that it no longer separates or rises to the top

Discussion

1. Ask your students if they are familiar with cultured dairy, and what it means. Share the following definition:
 - **Cultured dairy:** food that is prepared by introducing live bacteria into milkAsk your students if they can list any examples of cultured dairy products. (Answers include yogurt, buttermilk, sour cream, and certain cheeses.) Explain that the live bacteria makes cultured dairy a probiotic food, which has many health benefits. For example, the live bacteria in cultured dairy helps us digest lactose, or milk sugar. (Do you know anyone who is lactose-intolerant? They may be able to digest cultured dairy.)
2. Tell your students that cultured dairy is especially important when milk has been pasteurized and homogenized. Ask your students if they know what those words mean. Share the following definitions:
 - **Pasteurization:** the process of heating milk and then quickly cooling it to kill bacteria
 - **Homogenization:** the process of breaking down the cream in milk so that it no longer separates or rises to the top

Explain that milk is no longer raw once it undergoes these processes. Have your students check the milk in your fridge to see if it is pasteurized and/or homogenized.

3. Tell your students that pasteurization was introduced in the 1800s. It became a widespread public health effort because it kills harmful microorganisms that can make people sick. However, pasteurization also kills the beneficial bacteria and enzymes that help us digest and strengthen our immune system. Despite the good intentions behind pasteurization, some people think the process has led to negative health effects.
4. Tell your students that homogenization was introduced in 1899. Its purpose is to give milk a smoother and more consistent texture and color. The fat in non-homogenized milk rises to the top, and you need to shake it to combine. Homogenization makes the fat particles in milk so tiny that they don't get digested. These undigested particles pass right into our bloodstream. This can aggravate lactose intolerance by making our immune system fight the undigested proteins. Some people also think homogenization may also increase a person's risk for heart disease.
5. Fortunately, by culturing dairy, we can reverse some of the negative effects of pasteurization and homogenization. Have your students open *The Modern Pioneer Cookbook* to page 68, and read pages 68-71. (You can take turns reading aloud, or have your students read independently. However, if they are reading to themselves, make sure you also read this section, either before or during the lesson.) Ask your students to share their thoughts, opinions, and questions about pasteurization, homogenization, and cultured dairy. Share your own thoughts about these topics as well.
6. Steer the discussion towards the two themes of the 9-12 lessons: maximizing food's nutritional value and preserving food for self-sufficiency. Here are some questions to guide the discussion:
 - How does the process of culturing dairy maximize milk's nutritional value? Why is this especially true of milk that has been pasteurized and/or homogenized?
 - How can culturing dairy prevent waste?
 - Why is homemade dairy important for self-sufficiency?

7. Close the discussion by telling your students that they will learn more about milk through a mini-experiment, and then they will prepare homemade yogurt.

Activity: Milk Molecules

1. Tell your students that they will now conduct a science experiment using whole milk. This experiment will give them the opportunity to play with the composition of milk as a mixture of fat and water. This can help them to think about and better imagine the homogenization process. Gather your supplies (see “Materials” list above), including the milk, dish, food coloring, soap, cotton swabs, and a place to take notes.
2. Have your students pour enough milk to cover the bottom of the dish. The dish does not need to be full.
3. Have your students add a few drops of food coloring to the milk. The drops should be close to each other, but not touching. Point out that the food coloring seems to sit on the surface of the milk.
4. Have your students dip a cotton swab (or toothpick) into the milk (don’t stir!), and observe that nothing out of the ordinary happens. Have them write down their observations.
5. Have your students add dish soap to the cotton swab (or toothpick). Ask them to hypothesize or guess if anything different will happen this time. Then have them dip the swab into one of the food coloring drops in the milk. Remove and dip again in different spots in the dish to observe the reaction and create a fun “tie-dye” design. Have your students write down their observations.
6. Ask your students if they can explain (or guess at) the reason for the reaction. Share the following information:
 - Molecules can be polar or nonpolar. Polar molecules (like water) have one positively charged end and one negatively charged end. Nonpolar molecules (like fat) are equally charged. Because milk is a mixture of water and fat, it is a mix of both polar and nonpolar molecules.
 - Surfactants have molecules with polar heads and nonpolar tails. The polar head is attracted to the water in milk, while the nonpolar tail is attracted to the fat. The polar head is hydrophilic, or “water-loving.” The nonpolar tail is hydrophobic, or “afraid of water.”
 - When a surfactant (like dish soap) is added to milk, it affects the surface tension of the milk and allows you to see the fat move around on the surface. Surface tension refers to how strong or resistant a liquid’s surface is.
7. Ask your students how they think pasteurization and homogenization might change the fat molecules in milk. Ask them how they think these processes would affect the surface tension of milk.
8. If time allows, encourage your students to repeat the experiment. This time, they should explain the science of what’s happening as they work.
9. Allow your students the opportunity to ask questions or make comments about the experiment.
10. Discard the milk, which should not be consumed.

Recipe

1. Tell your students that they will learn to make yogurt today.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Open *The Modern Pioneer Cookbook* to page 73, “Homemade Yogurt.” Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of this lesson: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it’s all done, it’s time to taste! While you are enjoying your yogurt, have a discussion about the experience of cooking it. Ask your students what their favorite and least favorite parts of the process were. Talk about what other dishes you can make with your homemade yogurt, or what you might do differently next time.

Interdisciplinary Extensions

Writing

Research the history of pasteurization. When, how, and why did the practice of pasteurization start? Do you think it’s as necessary as most people believe? Why or why not? Write a page explaining your view.

Math

Pasteurization can be quantified by units called Pasteurization Units (PU). 1 PU = 1 minute of heating at 140°F (60°C). Look online for the formula used to calculate a PU, and see if you can apply it in the kitchen.

Science

To make yogurt, you need to keep your milk at 110°F (43°C). What happens if it gets too warm? What happens if it gets too cold?

Homogenized milk is a *colloid*. What is a colloid? What are some other examples of colloids?

History

Yogurt is a traditional food that can be dated to at least 5000 BC. Some people think yogurt was discovered when ancient people carried milk around in containers made from animal stomachs.

If the milk was exposed to bacteria and kept in a warm environment, yogurt could have been created. What else can you find out about the history of yogurt?

Culture

Many different cultures rely heavily on yogurt for their cuisine. Here are some examples for you to look up:

- Tzatziki (Greece) or Cacik (Turkey)
- Kashk (Middle East, Central Asia)
- Mishti doi (India, Bangladesh)
- Zhoixo (Tibet)
- Dovga (Azerbaijan)
- Lassi (India)
- Dhallë (Albania)

Can you find these countries and regions on a map or globe?

Art

Did you know that you can make finger paint from yogurt? You can use natural food coloring or, even better, berries and other colorful foods. Unleash your inner Kindergartener or give the paint as a gift to a toddler in your family. (Keep the finger paint refrigerated.)

Kitchen Garden

Herbs like dill and mint give Tzatziki its signature flavor. Try growing some of these herbs in your garden or on your windowsill. Both plants will sprout quickly. Before you know it, you'll be able to use some fresh herbs in your yogurt-based recipes.

Kitchen Economy

How long will your yogurt stay fresh? Check page 73 of *The Modern Pioneer Cookbook* (step 6).

Nutrition

What are probiotics and why are they good for us?

Decision-Making

What will you choose to make with your yogurt? Why?

Social-Emotional Learning

Have you ever committed to a healthy lifestyle choice that felt challenging or difficult? If so, what was it, and how did you stick to your new healthy habit? If not, have you ever tried? What healthy lifestyle habits would you like to try?

Video Resources

How to Make Homemade Yogurt – No Machine Required:

<https://marysnest.com/how-to-make-homemade-yogurt-no-machine-required/>

How to Make the Ultimate Superfood Smoothies with Free Checklist:

<https://marysnest.com/how-to-make-the-ultimate-superfood-smoothies-with-free-checklist/>

Chapter 5 – Pickling and Fermenting

Chapter 5 introduces the practice of fermentation. Here are some key points:

- Two ways to preserve food are pickling and fermentation.
- Pickling entails pouring hot brine (salty water) over fresh produce and giving it some time to pickle (about a day).
- There is more than one method of fermentation. The recipes in Chapter 5 of *The Modern Pioneer Cookbook* use lacto-fermentation.
- Lacto-fermentation uses the lactobacillus bacteria that naturally occurs on produce to convert the naturally occurring sugars in the produce into lactic acid. It takes much longer than pickling (at least a week).
- Lacto-fermentation makes produce more nutritious because it adds probiotics to the food.
- During the fermentation process, the live enzymes in raw produce begin to break down the food to be more digestible. Lacto-fermentation also preserves the live enzymes in raw food, making it easier for us to absorb nutrients in general.
- Fermentation can be aerobic (exposing the food to oxygen) or anaerobic (not exposing the food to oxygen). Lacto-fermentation is anaerobic because it doesn't need air.
- Fermentation season is generally early autumn.

Before getting started, make sure you have the ingredients and materials needed for the lesson you plan to facilitate. For the K-4 activity, you will need art supplies in 15 different colors—shades of red, orange, yellow, green, blue and purple. These can be crayons, markers, colored pencils, colored construction paper, or even different colored paint swatches. It's okay to mix and match. You can use some crayons, some markers, and some construction paper. If you can't find 15 different colors, your students can make lighter color tones by coloring more lightly or drawing patterns to distinguish the different hues. You will also need different sized jars, a bowl, and pH strips for all lessons.

K-4: Always-Crisp Fermented Dill Pickle Spears

The K-4 lesson introduces students to the practice of lacto-fermentation and the concept of pH. Families will prepare fermented pickles from cucumbers.

5-8: Sweet & Sour Fermented Red Cabbage

The 5-8 lesson introduces students to the practice of lacto-fermentation and frames it within the context of seasonal eating. Families will prepare fermented red cabbage.

9-12: Sauerkraut

The 9-12 lesson focuses on the lacto-fermentation process and its importance for maximizing food's nutritional value and preserving food for self-sufficiency. Families will prepare sauerkraut from green cabbage.

A note on using all three lessons

Feel free to facilitate all three Chapter 5 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different fermentation recipe. It's okay to omit some of the 9-12 content about fermentation for younger learners.

K-4: Always-Crisp Fermented Dill Pickle Spears

Overview

This lesson introduces students to the process of lacto-fermentation and connects it to the themes of homemade food and low waste. This lesson also introduces the concept of pH. Families will prepare lacto-fermented cucumber pickles.

Learning Objectives

In this lesson, families will:

1. Discuss how ferments are a homemade food that contributes to a low-waste kitchen
2. Create an illustrated pH scale
3. Prepare fermented pickles, following a recipe (“Always-Crisp Fermented Dill Pickle Spears,” p. 98 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- 15 different colored art supplies (i.e., crayons, markers, colored pencils, colored paper, or paints—it’s okay to use a mix) in shades of red, orange, yellow, green, blue, and purple
(Note: If you don’t have 15 distinct shades, create different shades with the same color crayon by coloring with different amounts of pressure.)

For recipe:

- *The Modern Pioneer Cookbook*
- Wide-mouth, quart-size glass jar with lid
- Small glass jar that can fit inside the quart-size glass jar
- Bowl large enough to hold the quart-size jar
- pH strips
- Ingredients: pickling cucumbers, pickling spice, fresh dill, sea salt, chlorine-free water, black tea bag (optional)

Vocabulary

- **Fermentation (lacto-fermentation):** breaking down the sugars in food and creating lactic acid
- **Brine:** salty water used for pickling or fermenting
- **Probiotics:** the good bacteria that help us digest our food
- **pH:** a way to measure how acidic or alkaline something is

Discussion

1. Ask your students if they have ever heard the word “ferment,” “fermented,” or “fermentation.” Ask them to guess what it means. Share the following definition:

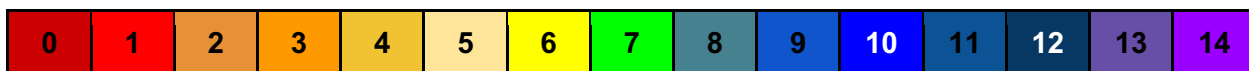
- **Fermentation (lacto-fermentation):** breaking down the sugars in food and creating lactic acid
- Tell your students that people have been fermenting food since 10,000 BC.
2. Explain that to ferment a food, you put it in a jar with some brine and let it sit for several days. Share the following definition:
 - **Brine:** salty water used for pickling or fermenting
 3. Tell your students that when you ferment foods, you are making the food more nutritious because you are adding probiotics. Share the following definition:
 - **Probiotics:** the good bacteria that help us digest our food
 4. Share with your students that fermenting foods makes them last longer. Ask your students why they think this is important.
 5. Tell your students that fermentation also gives food a new flavor. This means your least-favorite vegetable might be more enjoyable after it's fermented. To illustrate this, ask your students to compare and contrast cucumbers and pickles or cabbage and sauerkraut.

(Optional: Ask your students to share their least favorite vegetables and see if they'd like to try fermenting them in the future.)
 6. Steer the discussion towards the two themes of the K-4 lessons: homemade food and low waste. Here are some questions you might use to guide the discussion:
 - Have you ever tried pickles or sauerkraut? Was it homemade or store-bought?
 - The grocery store has lots of jars of pickles and ferments. What have you noticed about them?
 - Why might it be better to make pickles and ferments at home instead of buying them at the store?
 - How could it reduce kitchen waste to make pickles and ferments? (Hint: Fermentation makes vegetables last longer.)
 7. Close the discussion by giving your students an opportunity to ask questions or make comments about what they learned.

Activity: pH Scale

1. Tell your students that when we ferment food, we are changing its pH. Share the following definition:
 - **pH:** a way to measure how acidic or alkaline a liquid is
2. Ask your students if they have heard the word "acid" before. Ask them to share or guess what it means. Share with your students the following facts about pH:
 - Acids and bases (or alkalis) are two different types of chemicals that are opposites.
 - pH is a scale or a spectrum. pH is measured from 0-14.
 - In the middle of the scale is water, which is neutral (neither acid nor alkaline). Water has a pH of 7.

Show your students a sample pH chart like the one below. Explain that each number matches up to a color on the scale. 0 is the strongest acid. 14 is the strongest base (alkali). The colors transition from one to the next, like a rainbow.



3. Tell your students that they will now create their own colorful pH scale chart and learn about whether common liquids are acids or bases.
4. Using the 15 shades of color, your students should create their own pH scale using whatever shapes they want. The only requirements are:
 - The spectrum starts with red and gradually transitions to orange, then yellow, then green, then blue, then purple or very dark blue.
 - Each color corresponds to the right pH number value.
 - There is enough space above and/or below the colorful spectrum to draw or write examples of liquids for each pH.
5. After the 15-color spectrum is created, tell your students that they will now add some examples of different pH levels to their chart. Share the list below. If you like, you can say the name of the liquid and have your students guess its pH. Or, you can simply tell them the name of the liquid and its pH.
 - Battery acid – 0
 - Stomach acid – 1
 - Lemon juice, vinegar – 2
 - Orange juice, soda – 3
 - Tomato juice – 4
 - Coffee – 5
 - Milk – 6
 - Water – 7
 - Seawater, blood – 8
 - Baking soda – 9
 - Milk of magnesia (stomach medicine) – 10
 - Ammonia – 11
 - Soap – 12
 - Bleach – 13
 - Drain cleaner – 14

(Note: Older and advanced students may prefer to write the names of the liquids. Younger or struggling students should draw the liquids.)

Older and advanced students can be expected to include 15 or more examples. Younger or struggling students can choose a few examples to include.)

6. Conclude the activity by having your students indicate on their chart that fermented foods like pickles and sauerkraut should have a pH that is lower than 5 (specifically, lower than 4.6).

Recipe

1. Tell your students that today they will start a fermentation recipe that will take a total of 7 days to ferment. They will make their very own pickles! Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).

2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Open *The Modern Pioneer Cookbook* to pages 98-99, “Always-Crisp Fermented Dill Pickle Spears.” Read the entire recipe aloud with your students. (Although this step may seem unnecessary to you, it will help your students better understand the procedure of fermenting the cucumbers. This allows them to be active participants in the process, rather than simply obeying directions in isolation or out of context.)
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. This recipe does not use any heat and only requires minimal cutting. However, always use your best judgment, as you know your students best.
 - Remember the two main themes of this lesson: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts. For example, you might point out that homemade ferments are extra special because they take so many days before they’re ready.
 - As the pickles ferment, encourage your students to observe the jar every day. They should pay attention to how cloudy the brine gets and take notes about what they observe in their kitchen journals.
5. When they’re finally ready, it’s time to taste! While you are enjoying your pickles, have a discussion about the experience of making them. Ask your students what their favorite and least favorite parts of the process were. Talk about what to serve the pickles with or what to do differently next time.

Interdisciplinary Extensions

Writing

Write a poem or short story about kids who love pickles!

Math

If you wanted to make 2 jars of pickles, how many cucumbers would you need? How many spears would you cut altogether? What about for 3 jars? 4 jars? 5 jars?

Science

pH strips tell us whether our ferment is acidic enough. But what if you don’t have pH strips? Here are some things to observe. Remember to take notes of your observations!

- The brine should look cloudy
- You should see little bubbles in the brine
- It should smell sour but pleasant
- It should taste tangy, but less vinegary than many store-bought pickles

History

The word “pickle” comes from the Dutch word *pekel*. This is a word for a very important ingredient in pickle-making. Can you guess what it is? (Answer: brine)

Culture

In Nepal, Khalpi Ko Achaar is a traditional fermented pickle made with cucumbers. Can you find Nepal on a map or globe? What continent is the country in? As a family, look up pictures and recipes of Khalpi Ko Achaar online, to see if it is something you might like to try.

Art

Design a label for your pickle jar! You can use a small piece of paper and some tape.

Kitchen Garden

Try growing your own cucumbers for an endless supply of pickles! If you don't have space in your garden, use a 5-gallon bucket and plant 3 cucumber seeds, about ½ inch (1.27cm) into the soil.

Kitchen Economy

How long will your fermented pickles stay fresh? Check page 99 of *The Modern Pioneer Cookbook* (step 10).

Nature Study

If you have the chance to see a cucumber growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Nutrition

What can you learn about probiotics? How do they help us digest?

Decision-Making

Will you eat your pickles straight from the jar? Will you serve them with a meal? Will you chop them up and use them in another recipe? Explain your choice.

Social-Emotional Learning

Fermentation takes time, but it's worth it. What are some other things that take time, but are worth it? (Examples: good friendships, developing your skills, etc.)

Video Resources

How to Make Crisp Lacto Fermented Pickles:

<https://marysnest.com/how-to-make-crisp-lacto-fermented-pickles>

5-8: Sweet & Sour Fermented Red Cabbage

Overview

This lesson introduces students to lacto-fermentation and connects it to the theme of seasonal eating. Families will prepare fermented red cabbage.

Learning Objectives

In this lesson, families will:

1. Discuss the benefits of fermentation and the role of fermented foods in seasonal eating
2. Describe the process of fermentation, including the importance of temperature
3. Prepare fermented red cabbage, following a recipe (“Sweet & Sour Fermented Red Cabbage,” p. 100-101 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Stand blender
- Large stainless steel bowl
- Kraut pounder (or handheld potato masher, or wooden spoon)
- 2 wide-mouth quart-size glass jars with lids
- 2 small glass jars that can fit inside the larger jars
- 2 bowls large enough to hold the large jars
- pH strips
- Ingredients: large head red cabbage, sea salt, green apple, chlorine-free water, maple syrup or raw honey

Vocabulary

- **Fermentation (lacto-fermentation):** the process of preserving food by allowing the food’s natural bacteria to create lactic acid
- **Brine:** salty water used for pickling or fermenting
- **Probiotics:** the good bacteria that help us digest our food
- **Infographic:** a visual way to represent information, using images, graphs, and a small amount of text
- **pH:** a way to measure how acidic or alkaline something is

Discussion

1. Ask your students if they have ever heard the word “ferment,” “fermented,” or “fermentation.” Ask them to guess what it means. Share the following definition:

- **Fermentation (lacto-fermentation):** the process of preserving food by allowing the food's natural bacteria to create lactic acid
- Tell your students that people have been fermenting food since 10,000 BC.
2. Explain that to ferment a food, you put it in a jar with some brine and let it sit for several days. Share the following definition:
 - **Brine:** salty water used for pickling or fermenting
 3. Tell your students that when you ferment foods, you are making the food more nutritious because you are adding probiotics. Share the following definition:
 - **Probiotics:** the good bacteria that help us digest our food
 4. Review the definition of fermentation again, and ask your students what “preserving food” means. Guide your students to see that preserving food means preparing it in a way that keeps it fresh for longer.
 5. With the idea of food preservation in mind, ask your students how they think fermented foods fit into the practice of seasonal eating. Here are some additional questions you might use to guide the discussion:
 - What time of year do you think it's most important to preserve food? Why?
 - If you lived on a farm and there were no grocery stores, what vegetables would be available to eat during the winter months?
 6. Have your students turn to page 88 of *The Modern Pioneer Cookbook*. Find the section titled “Lacto-fermentation—Patience Coupled with a Little Bit of Trial and Error.” Have your students start reading at the third sentence, beginning with “The secret to a successful fresh produce ferment...” They should read to the end of that section.
 7. Ask your students what time of year can be called “fermentation season,” based on what they just read. (Answer: early autumn)
 8. Point out that, in addition to preparing for winter, an important reason for fermenting in the early autumn is because fermentation only works if the temperature is just right. Fortunately, in our modern kitchens, we can ferment at almost any time of year so long as we can maintain the right temperature for our ferment. Together, read the next two sections on pages 88-90: “Keeping the Bad Bacteria at Bay, While the Good Can Proliferate” and “Finding the Sweet Spot for Ferments” (you can take turns reading). Encourage your students to take notes in their kitchen journal. Ask your students if they have any initial ideas for fermentation sweet spots in your specific home.
 9. Close the discussion by reinforcing the idea that fermentation is a process of experimentation. Give your students an opportunity to ask questions or make comments about what they learned.

Activity

1. Tell your students that they will now make an infographic that can be used to remember and teach others the process of lacto-fermentation. Share the following definition:
 - **Infographic:** a visual way to represent information, using images, graphs, and a small amount of text

Decide with your students whether they will create their infographic in their kitchen journal or on a separate piece of paper that can be hung up in the kitchen.

2. Go over the process of lacto-fermentation with your students. Tell them you start with a vegetable, add brine (salty water), keep the oxygen out, and give it time. Then, you have a fermented food. Ask your students how this process could be represented as an equation. What is being added? What is being taken away? What is the final result? Have them write it out. Guide your students towards something close to the following fermentation equation:
$$\text{VEGETABLE} + \text{SALT} - \text{OXYGEN} + \text{TIME} = \text{FERMENTED FOOD}$$
3. Now have your students create an infographic to teach the process of lacto-fermentation. They can use the equation above for the infographic's structure, or they can use their own ideas for teaching fermentation. They may also choose to include the ideal temperature for fermentation (68-72°F [20-22°C]). The only requirement is that they use images to illustrate each element of fermentation. When they are finished, they should make sure their infographic has a title.
4. Conclude the activity by encouraging your students to share their infographic with others, either in person or digitally.

Recipe

1. Tell your students that today they will start a fermentation recipe that will take up to 2 weeks to ferment. Open *The Modern Pioneer Cookbook* to pages 100-101, "Sweet & Sour Fermented Red Cabbage."
2. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above). Take a moment to show your students the pH strips and explain that they will be used to test how much acid the brine has in it. Show your students the pH scale and tell them that ferments need to have a pH of 4.6 or lower.
3. Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
4. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. While cooking, look for opportunities to discuss these concepts.
 - As the cabbage ferments, encourage your students to observe the jar every day. They should pay attention to how cloudy the brine gets and take notes about what they observe in their kitchen journals.
6. When it's finally ready, it's time to taste! While you are enjoying your fermented cabbage, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what to serve the cabbage with or what to do differently next time.

Interdisciplinary Extensions

Writing

Write a poem or short story using lots of similes to describe the cabbage's deep red-purple color. (Similes are comparisons between two different things using the word "like" or the word "as." Examples: "She was clever like a fox." "He was as tall as a tree.")

Math

If you want to double a recipe, you simply have to multiply the amount of each ingredient by 2. But what if you want to increase your recipe by a different amount? You have to multiply each ingredient amount by a number called the conversion factor. Luckily, there's a formula to find out the conversion factor you need! Here it is:

$$\frac{\text{New Yield}}{\text{Old Yield}} = \text{Conversion Factor}$$

For example, if your current recipe makes two jars of fermented cabbage, but you want 5 jars, your equation would be $5 \div 2 = 2.5$. You would then multiply each ingredient amount by your conversion factor, 2.5. Practice using the conversion factor for the 5 recipes you've tried from *The Modern Pioneer Cookbook*.

Science

Did you know that you can use the same red cabbage from your recipe to make a pH indicator? That's right, you can make a liquid version of pH strips with red cabbage. You will need 3-4 big leaves of red cabbage, water, a blender, a strainer, and a few clear glass jars, bowls, or drinking glasses. You will also need household liquids to test their pH. Choose at least one acid (like vinegar, lemon juice, or soda) and one base (like washing soda or laundry detergent). (The number of liquids you will test is the number of jars you will need.) To make the indicator, add the cabbage leaves to the blender and fill the blender with water halfway. Blend until you have purple juice. Strain the liquid and pour some into each of your glass jars. Then add some of each test liquid into the different jars and observe the reaction! Can you identify the pH of each liquid?

History

Red cabbage is a vegetable that was first bred by Europeans hundreds of years ago. Why do you think cabbage was so valuable in Europe? (Hint: Think about Europe's climate.)

Culture

In Korea, fermented Kimchi can incorporate all kinds of different vegetables. Remember reading about finding your home's fermentation "sweet spot" in *The Modern Pioneer Cookbook*? In Korea, there are special spots called *jangdokdae* where jars of food (called *onggi*) can sit and ferment. As a family, look up pictures of *onggi* and *jangdokdae*.

Art

Design a label for your jar of fermented red cabbage! You can use a small piece of paper and some tape.

Kitchen Garden

Try growing your own red cabbage at home! Cabbage does best in the ground, but if you don't have the outdoor space, it is possible to grow them in containers. You can grow up to 3 cabbages in a 20-inch (50cm) pot.

Kitchen Economy

How long will your fermented red cabbage stay fresh? Check page 101 of *The Modern Pioneer Cookbook* (step 6).

Nature Study

If you have the chance to see red cabbage growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Nutrition

What can you learn about probiotics? How do they help us digest?

Decision-Making

Will you eat your fermented cabbage straight from the jar? Will you serve it with a meal? Will you use it in another recipe? Explain your choice.

Social-Emotional Learning

Fermentation takes time, but it's worth it. Have you ever set a goal that took a long time to achieve? What was it? How did you feel when you achieved it?

Video Resources

Fermented Sweet Red Cabbage Recipe:

<https://marysnest.com/fermented-sweet-red-cabbage-recipe/>

9-12: Sauerkraut

Overview

This lesson focuses on the lacto-fermentation process and its importance for maximizing food's nutritional value and preserving food for self-sufficiency. Families will prepare sauerkraut from green cabbage.

Learning Objectives

In this lesson, families will:

1. Discuss the role of fermentation in maximizing food's nutritional value and preserving food for self-sufficiency
2. Describe the process of lacto-fermentation and compare it to pickling
3. Prepare sauerkraut, following a recipe ("Sauerkraut," p. 96-97 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Stand blender
- Large stainless steel bowl
- Kraut pounder (or handheld potato masher, or wooden spoon)
- 2 wide-mouth quart-size glass jars with lids
- 2 small glass jars that can fit inside the larger jars
- 2 bowls large enough to hold the large jars
- pH strips
- Ingredients: large head green cabbage, sea salt, green apple, chlorine-free water

Vocabulary

- **Lacto-fermentation:** the process of preserving food by allowing the food's natural bacteria to create lactic acid
- **Brine:** salty water used for pickling or fermenting
- **Probiotics:** the good bacteria that help us digest our food

Discussion

1. Ask your students if they have ever heard the word "ferment," "fermented," or "fermentation." Ask them what they think it means. Ask if they can identify any fermented foods or drinks. (Answers include sauerkraut, yogurt, kefir, kombucha, miso, and wine.)

2. Tell your students that there are multiple methods of fermentation, but today they will work with the process of lacto-fermentation. Share the following definition:
 - **Lacto-fermentation:** the process of preserving food by allowing the food's natural bacteria to create lactic acid

Tell your students that this is the same type of fermentation they used to make yogurt in the last lesson.
3. Explain that to ferment a food, you put it in a jar with some brine and let it sit for several days. Share the following definition:
 - **Brine:** salty water used for pickling or fermenting
4. Tell your students that when you ferment foods, you are making the food more nutritious because you are adding probiotics. Share the following definition:
 - **Probiotics:** the good bacteria that help us digest our food

Then share the following additional benefits of fermented foods. Fermented foods can:

 - Make it easier to digest
 - Make nutrients more bioavailable
 - Boost our immune system
 - Reduce inflammation
 - Support the growth of good bacteria in the digestive tract
 - Boost our mood
 - Optimize our brain health
 - Make our bones stronger
 - Reduce the risk of heart disease
 - Promote healthy skin
 - Protect against toxins in food (such as chemical pesticides)

Ask your students to identify at least three health benefits of fermented foods that interest them, and write them down.
5. Ask your students how fermentation can help families to be more self-sufficient. Here are some questions you can use to guide the discussion:
 - In what season is it hardest to get fresh vegetables?
 - How can people use fermentation to store up food for the winter?
 - How can fermentation help families save money on their grocery bills?
 - How could fermentation help families prevent waste?
6. Close the discussion by reminding your students that they have already made a lacto-fermented food—yogurt, and they will have another opportunity to practice lacto-fermentation by making sauerkraut next.

Activity

1. Have your students turn to pages 86-87 of *The Modern Pioneer Cookbook*. Ask them to read from the top of page 86 to the end of the section titled “What Is Fermenting?”
2. To compare and contrast pickling and fermentation, draw (or have your students draw) a venn diagram. Use the data below to fill in the two overlapping circles.

Pickling	Fermentation	Both
<ul style="list-style-type: none"> • Takes less time (about 24 hours) • Does not add probiotics 	<ul style="list-style-type: none"> • Takes more time (at least 7 days) • Adds probiotics 	Preserves food

Reinforce the point that although pickling does not create probiotic-rich food, we can make probiotic-rich pickles by adding apple cider vinegar to the brine once the pickles have cooled.

- Have your students turn to page 88 of *The Modern Pioneer Cookbook*. Together, read the following sections (you can take turns). Note that some sections are optional reading; however, all sections are listed below in the order they appear in the chapter.
 - “Lacto-fermentation—Patience Coupled with a Little Bit of Trial and Error” (p. 88)
 - “Keeping the Good Bacteria at Bay While the Good Can Proliferate” (p. 88-89)
 - “Finding the Sweet Spot for Ferments” (p. 89-90)
 - Optional: “Start with Lacto-fermenting Vegetables” (p. 90)
 - Optional: “The Benefit of Tannins” (p. 90)
 - Optional: “What About the Water?” (p. 90-91)
 - “The Reassurance Offered by pH Strips” (p. 91)
 - “Refrigerating Your Ferment” (p. 91-92)
 - “A World of Possibilities” (p. 92)
 - Optional: “Choosing Fermentation Vessels for Vegetable Ferments” (p. 92-93)
 - Optional: “A Word on Salt” (p. 93)
- Tell your students that they will now make an educational poster or brochure (or video, or digital infographic) about lacto-fermentation. They can include the health benefits they wrote down during the discussion (see list under “Discussion”), as well as the points below:
 - Lacto-fermentation uses the lactobacillus bacteria that naturally occurs on produce to convert the naturally occurring sugars in the produce into lactic acid.
 - Lacto-fermentation makes produce more nutritious because it adds probiotics to the food.
 - During the fermentation process, the live enzymes in raw produce begin to break down the food to be more digestible. Lacto-fermentation also preserves the live enzymes in raw food, making it easier for us to absorb nutrients in general.
 - Fermentation can be aerobic (exposing the food to oxygen) or anaerobic (not exposing the food to oxygen). Lacto-fermentation is anaerobic because it doesn't need air.

Encourage your students to illustrate the educational resource they created.

- Invite your students to use the resource they created to teach another family member or friend about lacto-fermentation.
- Conclude by asking your students if, after learning more about lacto-fermentation, they would add anything to your previous discussion about how fermentation is a way to maximize nutritional value and preserve food for self-sufficiency.

Recipe

1. Tell your students that today they will learn to make lacto-fermented sauerkraut.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Turn to pages 96-97 of *The Modern Pioneer Cookbook*. Together, read the entire recipe aloud (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - As the sauerkraut ferments, encourage your students to observe the jar every day. They should pay attention to how cloudy the brine gets and take notes about what they observe in their kitchen journals.
6. When it’s finally ready, it’s time to taste! While you are enjoying your sauerkraut, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might serve it with.

Interdisciplinary Extensions

Writing

Read “Sauerkraut Makes the Best Sandwich!” on pages 87-88 of *The Modern Pioneer Cookbook*. What food stories do you have in your memories? What do certain foods represent for you? How are certain foods connected to special people or places? Pick a food and write about its personal importance to you.

Math

If you made a jar of sauerkraut every two weeks for a year, how many jars would you make in that year? If you did that for the next two decades, how many jars would you have made in total?

Science

Lacto-fermentation is just one type of fermentation. What are the other types? What are the differences between them?

In lacto-fermentation, the bacteria used is *Lactobacillus*. What kind of bacteria is used to ferment apple cider vinegar?

History

Lacto-fermentation is a practice that dates back to 10,000 BC. Evidence of fermentation has been found among the ancient civilizations of Mesopotamia, Egypt, China, and India. Locate these regions on the globe. How do you think their geography and climate might influence people's choices of vegetables to ferment?

Culture

In German, *sauerkraut* means "sour cabbage." In Germany, sauerkraut is considered a national dish. Despite being closely associated with Germany, sauerkraut is made throughout Central and Eastern Europe.

In Italy, Giardiniera is a traditional fermented relish made with a mix of vegetables. Look at the photo and recipe on pages 102-103 of *The Modern Pioneer Cookbook*, and see if Giardiniera is a fermented food you'd like to try.

Art

You can make color-changing paint using red cabbage. In a blender, blend red cabbage and water until you have a thick, bright purple liquid. Paint an entire sheet of watercolor paper with this purple cabbage juice. Then, gather a few acids (like vinegar or lemon juice) and bases (like laundry detergent) from around the house. Dip a clean paintbrush into a small dish of each solution, and paint on your purple paper. What colors did the different liquids make? What does it mean? (Hint: Check the pH scale that comes with your pH strips.)

Kitchen Garden

Try growing your own cabbage at home. Cabbage does best in the ground, but if you don't have the outdoor space, it is possible to grow them in containers. You can grow up to 3 cabbages in a 20-inch (50cm) pot.

Kitchen Economy

How long will your sauerkraut stay fresh? Check page 97 of *The Modern Pioneer Cookbook* (step 5).

Nature Study

If you have the chance to see cabbage growing in a garden or on a farm, take some time to carefully observe it. If not, you can still draw a cabbage that you have in your kitchen. Try focusing on the different parts of the cabbage—first the leaves, then the core, etc. What patterns do you notice?

Nutrition

What else can you learn about probiotics? How do they help us digest?

Decision-Making

Will you eat your sauerkraut straight from the jar? Will you serve it with a meal? Will you use it in another recipe? Explain your choice.

Social-Emotional Learning

Fermentation takes time, but it's worth it. What are some other things that take time, but are worth it? (Examples: good friendships, developing your skills, etc.) What are some things you personally have invested time into? What are some things you'd like to invest more time into?

Video Resources

How to Make Homemade Sauerkraut:

<https://marysnest.com/how-to-make-homemade-sauerkraut/>

How to Make Sauerkraut with Oranges for a Vitamin C Boost:

<https://marysnest.com/how-to-make-sauerkraut-with-oranges-for-a-vitamin-c-boost/>

How to Make an Amazing Sauerkraut Soup:

<https://marysnest.com/how-to-make-an-amazing-sauerkraut-soup/>

Chapter 6 – The Home Baker

Chapter 6 is all about baking. Here are some key points:

- You don't have to knead dough to make bread at home. There are plenty of no-knead options.
- Sourdough bread is made with a fermented starter. Sourdough starter uses the same lactobacillus bacteria as yogurt and lacto-fermented vegetables. Live enzymes during the rising process make sourdough easier to digest than other breads. This also means we better absorb the nutrients in the bread.
- Sourdough bread is lower on the glycemic index and lower in gluten. Making sourdough breaks down some of the gluten in the flour, so it's easier to digest, but it's not gluten-free.
- Mixing whole grain flour with all-purpose flour or bread flour will produce a lighter baked good.

Before getting started, make sure you have the ingredients and materials needed for the lesson(s) you plan to facilitate. For the K-4 lesson, you will need clabbered milk, which you may want to make in advance (alternatively, you can use buttermilk). You will also need a full set of measuring cups and spoons and a substance for your students to practice measuring (it doesn't have to be food). For the 5-8 lesson, you will need instant yeast. The activity requires a plastic bottle, a balloon, a funnel, baking soda, and vinegar. For the 9-12 lesson, there are two separate recipes, one for a sourdough starter and one for a sourdough bread. Your students will also complete a creative activity that requires art supplies or creative digital media, such as a graphic design program or video editing software.

K-4: Oregon Trail Pioneer Brown Bread

The K-4 lesson introduces students to the practice of home baking. Families will prepare a quick brown bread from flour.

5-8: Super Soft No-Knead White Sandwich Bread

The 5-8 lesson introduces students to the practice of home baking and the concept of bread rising. Families will prepare a batter bread from flour.

9-12: 100% Hydration Sourdough Starter + Beginner's No-Knead Sourdough Boule

The 9-12 lesson introduces students to the topic of sourdough. Families will prepare a sourdough boule.

A note on using all three lessons

Feel free to facilitate all three Chapter 6 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different bread recipe. The K-4 lesson gives students practice with measuring, but you can differentiate this activity for older students

by having them create their own measurement conversion chart in a hands-on way (without looking at a reference chart). The 5-8 lesson teaches students about the process of bread rising, using a fun chemistry experiment that is suitable for all ages. The 9-12 lesson introduces the more complex topic of sourdough, and requires more reading than other lessons up to this point. It may not be ideal for younger students.

K-4: Oregon Trail Pioneer Brown Bread

Overview

This lesson introduces students to the practice of home baking. Families will prepare a quick brown bread from flour.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of baking in a homemade kitchen
2. Practice identifying and using measuring spoons and cups
3. Prepare a quick brown bread, following a recipe (“Oregon Trail Pioneer Brown Bread,” p. 116-117 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Measuring spoons and cups
- A material your students can practice measuring (such as dry beans, rice, salt, or sand)

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- 10-inch cast iron skillet
- Large bowl
- Whisk
- Medium bowl
- Sharp knife
- Cooling rack
- Clean tea towel (optional)
- Serrated knife
- Ingredients: unbleached bread flour, whole wheat flour, baking soda, sea salt, clabbered milk or buttermilk, egg, molasses, cold butter, currants or other dried fruit

Vocabulary

- **Bake:** to cook food with dry heat in an oven

Discussion

1. Begin the discussion by asking your students about bread. Here are some questions you might use to guide the conversation:
 - Do you like bread? What is your favorite kind of bread?
 - What do we use bread for? (e.g., sandwiches, etc.)

- Where do we usually get our bread?
 - What kind of bread do we usually get?
 - Have you ever had home-baked bread before? How did it compare to store-bought?
 - If you had a choice to have a piece of homemade bread or store-bought bread, which would you choose, and why?
2. Ask your students how bread is made. Elicit from your students or explain that bread is baked. Share the following definition:
 - **Bake:** to cook food with dry heat in an oven
 3. Ask your students if they can name any of the important ingredients that go into making bread. Make sure they mention “wheat” or “flour.”
 4. If you have a store-bought package of bread in your kitchen, read the ingredient list together with your students. Ask them if any of the ingredients listed seem surprising or unnecessary.
 5. Explain to your students that when we bake our bread at home, we can control the ingredients we include, and make sure they are healthy.
 6. Allow your students the opportunity to ask questions or make comments. Conclude the discussion by telling your students that they will have a chance to make some easy homemade bread with dried fruit in it.

Activity: Measurement Practice

1. Take out your measuring spoons and cups (not including glass measuring cups for liquid).
2. Ask your students to organize the spoons and cups in size order, starting with the smallest and ending with the largest.
3. Now ask your students to find the label on each spoon and cup that indicates how much volume it can hold.
4. Ask your students if they can read these measurements. If they are not sure how, take a minute to teach them, using the following points as a guide:
 - Each measuring cup or spoon has a number and a unit. The units are teaspoons, tablespoons, and cups. These are abbreviated as TSP, TBSP, and C. You might encourage your students to write these abbreviations down in their kitchen journals or on a piece of paper or whiteboard.
 - Many of the numbers on measuring cups and spoons are fractions. A fraction is a part of a whole number. That means a fraction of 1 cup is less than 1 cup. Fractions are written with a number on the top, a line, and then a number on the bottom. The bottom number (the denominator) shows how many parts the whole is divided into. The top number (the numerator) shows how many parts of the whole you need.
 - Have your students practice reading a few fractions, as follows:
 - $\frac{1}{2}$ = one-half
 - $\frac{1}{3}$ = one-third
 - $\frac{1}{4}$ = one-fourth or one-quarter
 - $\frac{2}{3}$ = two-thirds

- $\frac{3}{4}$ = three-fourths or three-quarters
- 5. Now have your students practice using the measuring spoons and cups by answering the questions below. They will need something to measure, and this will be up to you. (Examples include rice or other dried grains, dried legumes like beans or lentils, salt, or even sand.) Encourage older or more advanced learners to write down their answers as they go.
 - How many $\frac{1}{2}$ -cups are in a cup? students should measure and count $\frac{1}{2}$ -cups as they dump the contents into a measuring cup. (Answer: 2)
 - How many $\frac{1}{4}$ -cups are in a cup? students should measure and count $\frac{1}{4}$ -cups as they dump the contents into a measuring cup. (Answer: 4)
 - How many tablespoons are in a cup? students should measure and count tablespoons as they dump the contents into a measuring cup. (Answer: 16)
 - How many teaspoons are in $\frac{1}{4}$ cup? students should measure and count teaspoons as they dump the contents into a $\frac{1}{4}$ -cup measuring cup. (Answer: 12)
- 6. Conclude the activity by telling your students that using measuring cups and spoons is an important skill for the kitchen that they will use over and over again!

Recipe

1. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
2. Tell your students that today they will learn to bake a special bread called brown bread. Explain that this type of bread was made by pioneers in the 1800s.
3. Share important safety information with your students. For example, you might say:
 - “Today we will be using the oven to bake our bread. Let’s be careful not to get burned. We will use potholders/oven mitts to protect our hands.”
4. Open *The Modern Pioneer Cookbook* to pages 116-117, “Oregon Trail Pioneer Brown Bread.” Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the procedure of baking the bread. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.)
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Throughout the baking process, look for opportunities to discuss or practice these concepts.
 - The task of hand mixing and shaping the dough is great for students' motor skills and may be especially enjoyed by tactile, kinesthetic, or sensory learners.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it’s all done, it’s time to eat! While you are enjoying your brown bread, have a discussion about the experience of baking it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you can serve your bread with, or who might enjoy a gift of homemade bread!

Interdisciplinary Extensions

Reading

The Little Red Hen

Writing

Write a poem about how special home-baked bread is.

Math

In your kitchen journal, make a reference chart for converting teaspoons and tablespoons into cups.

Science

What would happen to the dough if you didn't bake it in the oven? Would it still be bread? Why or why not?

History

What is the Oregon Trail? Can you find a book at your library about it, or watch a video about it online?

Culture

In Ireland, brown bread and soda bread are important traditional foods. The tradition of cutting a cross into the top of the bread may have originated in Ireland. The cross makes it easier for the heat to get into the thickest part of the bread, and it is also a religious symbol. Can you find Ireland on a map or globe? What continent is it in?

Art

Draw or paint a picture of bread being baked in a beautiful kitchen.

Music

What songs do you know that mention bread, wheat, or grain? (Hint: Amber waves of grain).

Kitchen Economy

How long will your Pioneer Brown Bread last? Check page 117 of *The Modern Pioneer Cookbook* (step 16).

Nature Study

If you have the chance to see wheat or another grain growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Nutrition

Some of the ingredients in your Oregon Trail Pioneer Brown Bread are wheat flour, clabbered milk or buttermilk, egg, molasses, and butter. Pick one of these ingredients and, as a family, look up some nutritional facts about it.

Decision-Making

Will you eat your brown bread by itself, with some butter? Will you serve it with a meal? Will you use it to make a sandwich or French toast? Explain your choice.

Social-Emotional Learning

There's something about home-baked bread that can bring people together and make people feel comforted and happy. Who will you share your bread with? Would you like to make another loaf of bread to give to someone as a gift?

Video Resources

How to Make a Traditional Irish Brown Soda Bread:

<https://marysnest.com/how-to-make-a-traditional-irish-brown-soda-bread/>

How to Make Bread Without Yeast – Easy Irish Soda Bread:

<https://marysnest.com/how-to-make-bread-without-yeast-irish-soda-bread/>

How to Make Whole Wheat Irish Soda Bread:

<https://marysnest.com/how-to-make-whole-wheat-irish-soda-bread/>

5-8: Super Soft No-Knead White Sandwich Bread

Overview

This lesson introduces students to the practice of home baking and the concept of bread rising. Families will prepare a batter bread from flour.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of baking at home for a real-foods kitchen
2. Describe how bread is made
3. Prepare a sandwich bread using the batter bread technique (“Super Soft No-Knead White Sandwich Bread,” p. 118-119 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Plastic bottle
- Balloon
- Funnel
- Baking soda
- Vinegar

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Measuring spoons and cups
- 2 loaf pans (5-inch x 9-inch [23cm x 12.75cm])
- Large bowl
- Whisk
- Plastic wrap
- Pastry brush (optional)
- Cooling rack
- Serrated knife
- Bread box, cloth bag, or plastic wrap for storage
- Ingredients: unbleached all-purpose flour, sea salt, white sugar, instant yeast, warm tap water, unsalted butter.

Vocabulary

- **Knead:** to use your hands to work moistened flour into dough

Discussion

1. Begin the discussion by asking your students about bread. Here are some questions you might use to guide the conversation:
 - Do you like bread? What is your favorite kind of bread?
 - What do we use bread for? (e.g., sandwiches, etc.)
 - Where do we usually get our bread?
 - What kind of bread do we usually get? (e.g., white, whole wheat, rye, sprouted, sourdough, etc.)
 - Have you ever had home-baked bread before? How did it compare to store-bought?
2. Ask your students what the main ingredient in bread is (flour). Ask them if they know how flour is made. Explain that grains like wheat are ground down, or milled, into a powdery substance called flour.
3. Tell your students that the bread they will be making will only stay fresh at room temperature for a few days. How does this compare to store-bought bread? Ask your students how long they think the bread on grocery store shelves can sit there. Have them explain or guess about the difference between commercial bread ingredients and homemade bread ingredients.
4. If you have a loaf of store-bought bread, have your students read the ingredient list. Ask them if any of the ingredients listed seem surprising or unnecessary. Then ask them if that bread can be considered a real, whole food. (If you don't have a loaf of bread to look at, pick a brand of bread and look up their ingredients online.)
5. Ask your students to explain, in their own words, why home-baked bread is important in a real-foods kitchen.

Activity: Bread Science

1. Ask your students if they know what it means to knead dough. Share the following definition:
 - **Knead:** to use your hands to work moistened flour into dough
2. Explain that kneading can be difficult and time-consuming, and it's one of the reasons many people think making bread at home is too much work. *The Modern Pioneer Cookbook* shares several no-knead bread recipes, making it easier to bake more bread at home.
3. Have your students open up *The Modern Pioneer Cookbook* to page 115. Together, read "No Need to Knead: The Easy Way to Make Yeast Breads" (you can take turns). (Note: The last two paragraphs are optional, and you may only want to read them with your students if they have some familiarity with traditional breadmaking processes.)
4. Give you students an opportunity to ask questions or make comments about what they read.
5. Ask your students how they think bread gets so nice and fluffy. Explain that bread's puffed up shape and texture are caused by the same gas that we breathe out. Ask your students if they know what we breathe out (carbon dioxide). The carbon dioxide helps

the bread to rise. Ask your students if they can think of another product that contains carbon dioxide (fizzy drinks like soda).

6. Repeat the fact that the carbon dioxide reaction is what makes bread rise. There are a few different ways to create the carbon dioxide that makes bread rise:
 - Baking soda
 - Baking powder
 - Yeast
 - Sourdough starter

Explain that, when using yeast or sourdough starter to get bread to rise, you have to let the dough sit for some time. The time allows the chemical reaction to happen.

7. Tell your students that they will now have an opportunity to do a chemistry experiment that allows them to see a carbon dioxide reaction.
8. Have your students add about a cup of vinegar to a plastic bottle (such as an empty water bottle), and then add water to the bottle until it is about $\frac{2}{3}$ or $\frac{3}{4}$ full. Then, have them use a funnel to add baking soda to a balloon until it is about full.
9. Tell your students that they will stick the balloon onto the opening of the bottle and let the baking soda fall inside. Before they do this, have them hypothesize what they think will happen, and why. You might encourage them to write down their hypothesis. Then, let them put the balloon onto the bottle and watch what happens as the baking soda falls into the solution of vinegar and water. (They may need to hold the balloon upright to get the baking soda to fall out.)
10. Ask your students to explain why the balloon inflated. Guide them to see that the baking soda and vinegar combine to create carbon dioxide, and the bubbling gas fills the balloon with air. Encourage them to imagine the creation of this gas inside bread dough. This is why there are little bubbles or holes inside baked bread.

Recipe

1. Tell your students that today they will learn to bake a delicious bread for sandwiches using the no-knead batter bread technique.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Ask your students to name as many of the kitchen tools as they can. Go over the names and purposes of any unfamiliar equipment.
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Open *The Modern Pioneer Cookbook* to pages 118-119, “Super Soft No-Knead White Sandwich Bread.” Read the entire recipe aloud with your students (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole food and seasonal eating. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - The task of hand mixing and shaping the dough may be especially enjoyed by tactile, kinesthetic, or sensory learners.

- Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it's all done, it's time to taste! While you are enjoying your bread, have a discussion about the experience of baking it. Ask your students what their favorite and least favorite parts of the process were. Talk about what kinds of sandwiches you'd like to make with your bread, or who might enjoy a gift of homemade bread!

Interdisciplinary Extensions

Writing

Write a page about why everyone should try to make their own bread at home, instead of buying it at the store.

Math

Calculate the ingredient amounts you would need if you wanted to make multiple loaves of Super Soft No-Knead White Sandwich Bread. Put the data into a chart, like the one below. Don't forget to include the unit of measurement (tsp, tbsp, cups).

	2 Loaves	3 Loaves	4 Loaves	5 Loaves	6 Loaves
Amount of flour					
Amount of sea salt					
Amount of sugar					
Amount of yeast					
Amount of water					
Amount of melted butter					
Amount of soft butter					

Science

You can also blow up a balloon using the same yeast you used to make your sandwich bread. Put 2 tbsp sugar in a plastic bottle. Add water until the bottle is $\frac{3}{4}$ full. Now add 2 tbsp yeast. Tighten the cap and shake the bottle. Open the cap and attach the balloon, just like you did with your baking soda and vinegar experiment. How would you compare the results of the two experiments?

History

Turn to page 114 of *The Modern Pioneer Cookbook*. Read the section titled “A Rising Agent Time Line.” What did you learn? Can you imagine cooking homemade foods while traveling across the country in a covered wagon? What would it be like?

Culture

Another type of batter bread is the pancake. There are many different cultural and regional versions of the pancake, which can be made from different grains and prepared with either savory or sweet flavors. Here are some examples:

- Crepe (France)
- Injera (Ethiopia)
- Bing (China)
- Chataamari (Nepal)
- Pek Nga (Malaysia)
- Oladyi (Russia)

Art

How can you use visual art to communicate the smell of something? Draw or paint a picture that you think communicates the aroma of fresh bread baking in a cozy home kitchen.

Kitchen Economy

How long will your sandwich bread last? Check page 119 of *The Modern Pioneer Cookbook* (step 12).

Nature Study

If you have the chance to see wheat or another grain growing in a garden or on a farm, take some time to carefully observe it. Try describing or drawing the different parts of the whole grain, such as the endosperm, bran, and germ. You may even create a labeled diagram.

Decision-Making

Will you eat your homemade bread by itself, with some butter? Will you serve it with a meal? Will you use it to make a sandwich or French toast? Explain your choice.

Social-Emotional Learning

There’s something about home-baked bread that can bring people together and make people feel comforted and happy. Who will you share your bread with? Would you like to make another loaf of bread to give to someone as a gift?

Video Resources

How to Make Batter Bread:

<https://marysnest.com/how-to-make-batter-bread/>

9-12: 100% Hydration Sourdough Starter + Beginner's No-Knead Sourdough Boule

Overview

This lesson introduces students to the topic of sourdough. Families will prepare a sourdough starter and a sourdough boule.

Learning Objectives

In this lesson, families will:

1. Describe the process and benefits of making sourdough bread
2. Discuss the role of sourdough in maximizing food's nutritional value and preserving food for self-sufficiency
3. Prepare sourdough starter and sourdough boule, following recipes ("100% Hydration Sourdough Starter," p. 128-129 of *The Modern Pioneer Cookbook*; "Beginner's No-Knead Sourdough Boule," p. 132-133 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Art supplies or creative digital media

For starter recipe:

- *The Modern Pioneer Cookbook*
- Wide mouth jar large enough to hold 1 quart of liquid
- Clean cloth or paper towel
- Rubber band
- Plate or bowl big enough to hold the jar
- Ingredients: rye flour, chlorine-free water

For boule recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Dutch oven with a heatproof knob (5-6 quarts)
- 2 medium bowls
- Whisk
- Dish towel
- Flour-dusted towel
- Baking sheet
- Parchment paper
- Plastic bench scraper or spatula (optional)
- Sharp knife (or lame)
- Cooling rack
- Serrated knife

- Bread box, cloth bag, or plastic wrap for storage
- Ingredients: unbleached bread flour, sea salt, diastatic malt powder (optional), chlorine-free water, active sourdough starter, olive oil.

Vocabulary

- **Leavening agent:** a substance that causes bread to rise by introducing gas into the dough

Activity: Sourdough 101

1. Ask your students what they have baked (or helped bake) before. Are any of these baked goods breads (including quick breads like banana bread, zucchini bread, etc.)? Ask your students if they think making bread that has to rise seems easy or challenging.
2. Point out that two aspects of breadmaking tend to intimidate people: rising the bread and kneading the bread. Explain that letting the bread rise is not difficult because it only requires time. Kneading can be a bit of work, but the recipes in *The Modern Pioneer Cookbook* are for no-knead breads.
3. Now ask your students about their experience with sourdough bread. Have they eaten it? Was it store-bought or homemade? Have they ever tried making sourdough before? Ask your students if they know how sourdough is made. Explain or elicit from your students that while yeast is used to make most breads rise, a sourdough starter is used to make sourdough bread rise. Anything that makes bread rise (including baking soda or powder) is called a leavening agent. Share the following definition:
 - **Leavening agent:** a substance that causes bread to rise by introducing gas into the dough
4. Explain or elicit from your students that sourdough starter is a simple mixture of flour and water that is allowed to ferment. The lactic acid bacteria in the flour—the same bacteria we use to ferment yogurt and sauerkraut—combines with the wild yeast that is present in the air. This creates a bubbling reaction full of gas that can be used to make bread rise.
5. Ask your students if they are aware of any health benefits of sourdough bread. Explain or elicit from your students the following points:
 - We can better absorb the minerals in whole grains when the dough is fermented first.
 - The lactic acid bacteria changes the composition of the starch in the dough. This allows our bodies to absorb the starch at a slower rate.
 - Sourdough is lower on the glycemic index, which can help to keep insulin levels in check.
 - Sourdough is lower in gluten than other breads. Although it is not gluten-free, many people with gluten sensitivities find sourdough easier to digest.
6. Open *The Modern Pioneer Cookbook* to pages 120-121. Together, read the section titled “What’s So Special About Sourdough Bread?” (you can take turns). Encourage your students to take notes while reading.

7. Tell your students that they will now create an advertisement for their own (imaginary) homemade sourdough bread business. They can use any kind of art supplies they want, as well as digital media if desired. These are the requirements for their ad:
 - They must create and include a company/brand name
 - They must include 3 benefits of sourdough
 - They must include a reference to the process of making sourdough (this can be a written explanation, or images to represent the fermentation of the starter)
8. When they are finished, go over the ad together and have them explain their choices to you. Make sure they meet all 3 criteria listed above. Point out the strengths of the advertisement and ask any questions about the decisions they made in designing their ad.

Discussion

1. Remind your students of the two themes that have informed their lessons so far: maximizing food's nutritional value and preserving food for self-sufficiency. Facilitate a discussion about sourdough's importance for these themes. Start with these questions, one at a time:
 - How is sourdough a way to maximize the nutritional value of our food?
 - How can making sourdough help us to be more self-sufficient?
2. If your students are stuck, consider using these questions to prompt their responses:
 - Is homemade sourdough bread healthier than the regular bread we can buy at the store?
 - What are the health benefits of sourdough?
 - Think back to the other fermented foods we prepared from *The Modern Pioneer Cookbook* (yogurt and sauerkraut). How were those foods important in maximizing nutritional value? How is sourdough similar?
 - What does it mean to be self-sufficient?
 - Where do we usually buy our bread?
 - What would we do for bread if the grocery stores closed or ran out of bread or yeast?
 - Sourdough starter can actually last forever if you keep feeding it! How does this help with self-sufficiency?
3. Conclude the discussion by reiterating that sourdough is the ideal bread for a household that wants to make the most nutritious food possible and wants to be as self-sufficient as possible. Allow your students the opportunity to ask questions or make comments.

Recipe

Starter

1. Tell your students that they will be making sourdough bread, but first, they have to make the starter. This process will take a few days, so it's important to be patient. Tell them that getting the starter ready to ferment is quick and easy, but first you will do some reading about it, together.

2. Turn to page 122 in *The Modern Pioneer Cookbook*. Together, read the entire section titled “Sourdough Starter—Tips for Success” (p.122-127). Then, turn to pages 130-131, and read “Making Sourdough Starter—Frequently Asked Questions.” You can take turns reading, but it’s important that everyone participates.
3. Gather the kitchen equipment and ingredients that you will need for the starter (see “Materials” list above).
4. Turn to pages 128-129 in *The Modern Pioneer Cookbook*, “How to Make a 100% Hydration Sourdough Starter.” Read the entire recipe aloud with your students (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.

Bread

1. When your starter is ready, it’s time to bake the bread! Turn to page 132 of *The Modern Pioneer Cookbook*, “Beginner’s No-Knead Sourdough Boule.” With your students, read the entire recipe out loud (p. 132-135).
2. Follow the recipe, step by step. Consider the following:
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
3. When it’s all done, it’s time to taste! While you are enjoying your bread, have a discussion about the experience of baking it. Ask your students what their favorite and least favorite parts of the process were. Talk about how you might serve your bread, or who might enjoy a gift of homemade bread!

Interdisciplinary Extensions

Writing

Write an essay explaining the health benefits of sourdough bread.

Math

Calculate the ingredient amounts you would need if you wanted to make multiple loaves of Beginner’s No-Knead Sourdough Boule. Put the data into a chart, like the one below. Don’t forget to include the unit of measurement (tsp, tbsp, cups).

	2 Loaves	3 Loaves	4 Loaves	5 Loaves	6 Loaves
Amount of flour					
Amount of sea salt					
Amount of malt powder					
Amount of starter					
Amount of water					
Amount of olive oil					
Total time					

Science

Experiment with creating more than one jar of sourdough starter and leave each one in a different spot in your home (and maybe one outside, depending on the weather). Compare and contrast your results to find the perfect sourdough starter “sweet spot.” Alternatively, experiment by using two different types of flour (rye and whole wheat) in two different jars.

History

The Ancient Egyptians baked sourdough bread thousands of years ago, and remnants of their starter can still be found in the ceramic vessels they stored it in. Can you imagine using some of that ancient starter to make sourdough bread today? That’s exactly what video game developer and home baker Seamus Blackley did. With the help of scientists, he revived ancient Egyptian yeast that was 4500 years old and made some delicious cone-shaped sourdough bread. Try finding an article about Seamus Blackley’s ancient Egyptian sourdough experiments online!

Culture

Sourdough bread is an important part of cultural cuisine around the world. Here are some examples of regional sourdough breads that you may want to look up:

- Coppia ferrarese (Italy)
- Eish merahrah (Egypt)
- Borodinsky bread (Russia)
- Bazlama (Turkey)

Art

One of the beautiful characteristics of sourdough is that if we take care of our starter, it can last forever. Take a moment to think about how that can connect us to past and future generations. Create a drawing, painting or collage that represents this idea of eternity or endless connection through time.

Kitchen Economy

How long will your sourdough discard last? Check page 125 of *The Modern Pioneer Cookbook* (“Saving and Using Sourdough Discard”). How long will your sourdough boule last? Check page 135 of *The Modern Pioneer Cookbook* (step 7).

Nature Study

If you have the chance to see wheat or another grain growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Decision-Making

Will you eat your homemade bread by itself, with some butter? Will you serve it with a meal? Will you use it to make a sandwich or French toast? Explain your choice.

Social-Emotional Learning

What is the difference between instant gratification and delayed gratification? How can sourdough help us learn to be more comfortable with delayed gratification?

Video Resources

How to Make a Foolproof Sourdough Starter:

<https://marysnest.com/how-to-make-a-foolproof-sourdough-starter/>

The Complete Sourdough Starter Guide:

<https://marysnest.com/the-complete-sourdough-starter-guide/>

How to Make Sourdough Bread using the Stretch and Fold Method:

<https://marysnest.com/how-to-make-sourdough-bread-using-the-stretch-and-fold-method/>

Chapter 7 – Soaking and Sprouting

Chapter 7 is dedicated to the topic of soaking and sprouting beans, lentils, nuts, seeds, and whole grains. Here are some key points:

- Beans, lentils, nuts, seeds, and whole grains all contain a substance called phytic acid. Phytic acid is an “anti-nutrient” that these plants produce as a defense mechanism against predators.
- Phytic acid makes these foods difficult for us to digest. This means it’s more difficult to absorb the nutrients. Not only that, but phytic acid can also strip vitamins and minerals from our bodies.
- Soaking and sprouting are traditional techniques that both reduce the amount of phytic acid in these foods.
- Sprouted grains can be milled into sprouted flour for baking.
- A colander is the ideal tool for sprouting, as opposed to jar systems.

Before getting started, make sure you have the ingredients and materials needed for the lesson(s) you plan to facilitate. For the K-4 recipe, you will need beans, lentils, or whole grains of your choice. For the K-4 activity, you will need a zip-top plastic sandwich bag, wet paper towel or wet cotton balls, window-safe tape, and a few beans (such as lima, pinto, or mung beans). (Note that these beans will not be eaten.) And if you can, find a book or illustration of the seed germination process. For the 5-8 recipe, you will need an electric food dehydrator. If you don’t have one, you can use your oven, but it may destroy some of the enzymes because of the higher temperature. For the 9-12 recipe, you will need oat groats (not instant, rolled, or steel-cut oats).

K-4: How to Sprout Beans, Lentils, and Whole Grains

The K-4 lesson introduces students to the practice of sprouting. Families will prepare sprouted beans, lentils, or whole grains.

5-8: How to Soak and Dry Nuts for Better Digestion

The 5-8 lesson introduces students to the practice of soaking and dehydrating. Families will prepare nuts by soaking and drying them.

9-12: How to Make Soaked Oat Groats and Traditional Fermented Oat “Milk”

The 9-12 lesson outlines different methods of reducing phytic acid in grains, seeds, and legumes. Families will prepare soaked oat groat porridge and fermented oat “milk.”

A note on using all three lessons

Feel free to facilitate all three Chapter 7 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson focuses on a different technique for reducing phytic acid. The concept of phytic acid and its reduction is explored in more depth in the 9-12 lesson.

K-4: How to Sprout Beans, Lentils, and Whole Grains

Overview

This lesson introduces students to the practice of sprouting. Families will prepare sprouted beans, lentils, or whole grains.

Learning Objectives

In this lesson, families will:

1. Describe the process of sprouting
2. Discuss the benefits of homemade sprouted foods
3. Prepare sprouted beans, lentils, or whole grains, following a recipe (“How to Sprout Beans, Lentils, and Whole Grains,” p. 158 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Book or illustration showing the stages of seed germination (optional)
- Zip-top plastic sandwich bag
- Wet paper towel or wet cotton balls
- A few beans, such as lima, pinto, or mung beans
- Window-safe tape

For recipe:

- *The Modern Pioneer Cookbook*
- Large bowl
- Colander
- Ingredients: beans, lentils, or whole grains of your choice; filtered, chlorine-free water; tap water, for rinsing

Vocabulary

- **Sprout:** to start to grow; to germinate

Activity: What is Sprouting?

1. Begin the discussion by asking your students if they have ever planted or sprouted any seeds before. If so, ask them to describe the process. Share the following definition:
 - **Sprout:** to start to grow; to germinate
2. Explain that when a seed gets wet, it starts to expand and push open its outer covering, or its seed coat. The first thing that pops out is the root, and then the shoot, which will eventually grow leaves.
3. If possible, search online or in a reference book for a diagram that shows seeds sprouting, so your students can have a good visual sense of the process.

4. Tell your students that there are two reasons to sprout seeds: to plant them so they can grow into full-size plants, or to eat them. Explain that, for this lesson's recipe, you will be sprouting beans, lentils, or grains to be eaten. But as a fun science activity, your students will also get a chance to sprout some beans to be observed and then planted in soil.
5. Gather your supplies for the sprouting activity (see "Materials" above).
6. Have your students fold the paper towel so that it will fit inside the bag. It should be as flat as possible (not crumpled).
7. Have your students wet the paper towel (you can bring a bowl of water to the table rather than having your students use the sink) and then place it inside the bag, keeping it as flat as possible.
8. Have your students put 1-3 beans inside the bag, towards the bottom. The beans should be sitting on the paper towel.
(Note: If there is a puddle of water at the bottom of the bag, add some extra paper towel or cotton.)
9. Have your students tape the bag onto a window that gets moderate sun, with the bean facing inside so they can observe it as it sprouts.
(Note: If your window is freezing cold, consider taping the bag onto a clear jug or bottle and putting it in front of the window.)
10. Tell your students that they will be drawing and/or writing what they observe each day as the bean sprouts. Together, decide whether to make a chart or a mini-book.
 - For a chart, all illustrations/written observations will be displayed on one page. For each day, draw a box and label it with the date or "Day 1," "Day 2," etc. The drawings or written notes will go inside each box.
 - For a mini-book, each illustration/written observation will go on a separate page. Then, all the pages can be stapled or tied together to make a little book.
11. Have your students draw their bean as it looks on Day 1, and/or write written observations.
12. Make sure your students look at the bean every day and add something to their chart or book.
13. After a few days, when the sprouts get large, plant them in soil and watch the plant continue to grow.
(Note: These sprouts should not be eaten.)

Discussion

1. Tell your students that now that they have started sprouting beans to be planted, they will also sprout beans, lentils, or grains to be eaten. If you know that your students have eaten sprouted foods before, point out to them (or elicit from them) which familiar foods are sprouted. Ask your students why they think people might want to sprout these foods.
2. Explain that beans, lentils, and grains can be difficult for people to digest. If your students are aware of any friends or family members with sensitivities to these foods, you might want to mention those sensitivities to illustrate the point.

3. Tell your students that when we sprout beans, lentils, and grains, we are making them easier to digest. We are also making them more nutritious because we can better absorb vitamins and minerals from sprouted foods.
4. Steer the discussion towards the two themes of the K-4 lessons: homemade food and low waste. Here are some questions you might use to guide the discussion:
 - Do you think most beans, lentils, and grains we can buy at the store are sprouted? Why or why not?
 - Why is it better to sprout dry beans at home than it is to buy canned beans at the store?
 - How does home sprouting give us more control over our health and nutrition?
 - How is the nutrition of beans, lentils, and grains “wasted” when they are not sprouted?
5. Conclude the discussion by giving your students a chance to ask questions or make comments about what they learned.

Recipe

1. Tell your students that they will now try the practice of sprouting. Inform your students what food you will be sprouting. If you have different kinds of beans, lentils, or grains, allow your students to help you decide which ones to sprout.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Share important safety information with your students. For example, you might say:
 - “Making sprouts takes a while, and when they’re ready, they still have to be cooked to be safe for eating. Please do not taste anything without asking.”
4. Open *The Modern Pioneer Cookbook* to page 158, “How to Sprout Beans, Lentils, and Whole Grains.” Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the procedure of sprouting. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.)
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Throughout the baking process, look for opportunities to discuss or practice these concepts.
 - The task of using clean hands to toss the beans, lentils, or grains while rinsing them is great for students’ motor skills and may be especially enjoyed by tactile, kinesthetic, or sensory learners.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
6. When the sprouts are ready, it’s time to cook! Together with your students, discuss and decide how to prepare the beans, lentils, or grains (see “Cook’s Notes” on page 158).

Interdisciplinary Extensions

Reading

From Seed to Plant

Writing

Write a paragraph (a few sentences) about how seeds sprout.

Math

The recipe says to start with 2 cups of dry beans, lentils, or grains, but by the time they're ready, you may have 2-3 cups. At the end of the sprouting process, before you cook the sprouted food, measure your beans, lentils, or grains again. Do you have more than 2 cups? How much more? Why did this happen?

Science

As a family, watch a time lapse video of a seed sprouting. You can find many of these online. What do you notice about the seed's growth?

History

In China, people have been sprouting beans for at least 5,000 years. It is said that Chinese sailors made sure to have bean sprouts on their ships. The vitamin C in bean sprouts prevented a disease called scurvy, which was a risk for sailors who couldn't get fresh fruits and vegetables in the middle of the ocean. Can you imagine being a sailor thousands of years ago? How would you sprout your beans? What other foods might you want to have on your ship?

Culture

Sprouting is a traditional practice in many cultures and regions. Here are some examples of dishes from around Asia that use mung bean sprouts:

- Bánh Xèo (Vietnam)
- Usal (India)
- Moyashi Ohitashi (Japan)
- Sukjunamul (Korea)
- Kwati (Nepal)

Can you locate each of these countries on a map or globe?

Art

Create a mosaic by gluing different beans and lentils to a piece of cardboard or cardstock in an interesting pattern.

Kitchen Economy

The next time you're at a grocery store (or you can use the internet), write down the price of a can of beans. Then write down the price of a bag of dried beans. What is the price difference?

Nature Study

If you have the chance to see beans or lentils growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Nutrition

What food did you sprout—beans, lentils, or grains? What specific kind was it? As a family, look up some nutritional facts about this food.

Decision-Making

How will you prepare your sprouted beans, lentils, or grains? How did you make this choice?

Social-Emotional Learning

Beans, lentils, and grains start out small and then grow before our eyes. How are you “sprouting” in your own way? What can you do now that you couldn't do last year or when you were a toddler?

Video Resources

How to Soak and Sprout Beans—Techniques for Seasonal Differences:

<https://marysnest.com/how-to-soak-and-sprout-beans-techniques-for-seasonal-differences/>

How to Make Sprouted Flour at Home:

<https://marysnest.com/how-to-make-sprouted-flour-at-home/>

5-8: How to Soak and Dry Nuts for Better Digestion

Overview

This lesson introduces students to the practice of soaking and dehydrating. Families will prepare nuts by soaking and drying them.

Learning Objectives

In this lesson, families will:

1. Discuss the practice of soaking and drying nuts
2. Explain how to properly prepare nuts
3. Prepare soaked and dried nuts, following a recipe (“How to Soak and Dry Nuts for Better Digestion,” p. 159 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Art supplies of choice, as needed

For recipe:

- *The Modern Pioneer Cookbook*
- Electric food dehydrator (or oven if this is unavailable)
- Nonstick dehydrator sheets (such as parchment paper)
- Large bowl
- Kitchen towel or plastic wrap
- Colander
- Airtight container
- Ingredients: raw nuts, sea salt, chlorine-free water

Vocabulary

- **Rancid:** spoiled; not good to eat

Discussion

1. Begin the discussion by asking your students if they have ever heard of anyone soaking grains or nuts before.
2. Have your students turn to pages 152-153 of *The Modern Pioneer Cookbook*. Ask them to read the second section, titled “Soaking Whole Grains.” Encourage your students to use a dictionary to look up any unfamiliar words.
3. Reinforce the idea that whole grains and nuts contain something called phytic acid, which can take away vitamins and minerals from our bodies. Soaking (as well as sprouting and fermenting) are ways to prevent that.

(Note: Don't worry if your students can't remember the term "phytic acid." Understanding the concept of blocking nutrient absorption is more important.)

4. Ask your students to explain, based on what they read in "Soaking Whole Grains" (p. 152-153), how soaking has traditionally been a seasonal practice.
5. Now ask your students about nuts. Here are some questions you might use to guide the conversation:
 - Do you like nuts? What is your favorite kind of nut?
 - What do we use nuts for? (e.g., baking, snacking, nut butters, etc.)
 - Where do we usually get our nut products?
 - What kind of nuts do we usually get? (e.g., almonds, walnuts, pecans, etc.)
 - Are there any health concerns about eating nut products?
 - Are nuts real foods? Are nuts whole foods?
 - What season do you think is ideal for eating nuts? Why?
6. Have your students turn to pages 154-155 of *The Modern Pioneer Cookbook*. Ask them to read the second section, titled "Soaking and Sprouting Nuts and Seeds." Encourage your students to use a dictionary to look up any unfamiliar words.
7. Share the following definition:
 - **Rancid:** spoiled; not good to eat
8. Explain to your students that nuts contain fats that can easily turn rancid when exposed to air, light, and high temperatures. These kinds of fats can be rancid without looking or smelling any different. To prevent rancidity, we can:
 - Store nuts in the refrigerator
 - Store nuts in airtight containers
 - Dry nuts at a low temperature
9. Ask your students how they think soaking, drying, and storing to prevent rancidity fit with the idea of a whole foods kitchen. Elicit from your students that when we work with whole foods, it's important to prepare them carefully and correctly.

Activity: The Healthiest Nuts

1. Tell your students that they have learned a lot about nuts, and now they will use that knowledge to make a study resource (and/or resource for teaching others). Their goal is to create a resource that can teach people how to prepare their nuts with care in order to get the most possible nutritional benefits.
2. Ask your students what kind of resource they would like to create. Here are some ideas to consider:
 - Poster
 - Booklet
 - Comic book
 - Song
 - Video
 - Animation
3. Your students should use their creativity to make these resources, but they should include the following points:
 - Nuts contain phytic acid, which strips vitamins and minerals from our bodies.

- Soaking nuts reduces their phytic acid content.
 - Soaking nuts makes them easier to digest.
 - Nuts contain fats that easily become rancid in heat, light, and air.
 - To prevent rancidity, we can store nuts in the refrigerator and dry them at low temperatures instead of cooking them at high temperatures.
- 4. When they are finished, go over their project together and have them explain their choices to you. Make sure they included the requirements listed above. Point out the strengths of the resource and ask any questions about the decisions they made in creating it.

Recipe

1. Tell your students that today they will soak and dry nuts to make them easier to digest.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Open *The Modern Pioneer Cookbook* to page 159, “How to Soak and Dry Nuts for Better Digestion.” Read the entire recipe aloud with your students (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole food and seasonal eating. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
6. When it’s all done, it’s time to taste! While you are enjoying your nuts, have a discussion about the experience of preparing them. Ask your students what their favorite and least favorite parts of the process were. Talk about what recipes you might want to use your nuts in.

Interdisciplinary Extensions

Writing

Write a short story about some friends who argue about which kind of nut is best and how to know if certain nuts are healthy.

Math

Create a chart comparing the amounts of vitamins and minerals in a few different kinds of nuts.

Science

Conduct an experiment with walnuts, which have oils that become rancid faster than many other fats. Rancidity is sped up in warm, brightly lit conditions. Leave a walnut or drop of walnut oil on a plate in a warm, sunny spot. Observe it each day. Is the texture changing? Is it getting stickier? How does it smell? (Do not taste walnuts that have been left out of the refrigerator!)

History

People have eaten almonds for thousands of years. In India, almonds are soaked to make a traditional almond “milk” beverage. As a family, look up pictures and recipes for Badam Doodh to see if it’s something you’d like to try.

Culture

In Latin America, chia seeds are important for the energy they provide. In Mexico, the chia-eating Rarámuri tribe are famous for their long-distance runners. Try making a traditional soaked chia seed drink called Iskiate. Add some soaked chia seed to water with some lime juice and sweetener. See how fast you can run after drinking it!

Art

What kinds of arts and crafts can you make using real nuts? Depending on what kind of nuts you have, here are some ideas:

- Use nuts as stamps and create patterns with paint on paper.
- Use empty walnut shells to create little characters or animals (try gluing on some googly eyes!).
- Create an autumn wreath by gluing various nuts onto a foam wreath form, and hang it with a ribbon.

Kitchen Economy

How long will your soaked and dried nuts last? Check page 159 of *The Modern Pioneer Cookbook* (step 6).

Nature Study

If you have the chance to spend time near a nut tree, take some time to carefully observe and draw what you see.

Nutrition

What are some of the nutrients that are in the nuts you chose to soak?

Decision-Making

Will you eat your nuts by themselves as a snack? Will you use them in another recipe? Explain your choice.

Social-Emotional Learning

Nuts need careful, gentle treatment. They can't get too hot, they can't be left in the light, and they can't be exposed to air for too long. What about you? How do you treat yourself in a careful, gentle way?

Video Resources

How to Make Crispy Pecans – Easy to Digest:

<https://marysnest.com/how-to-make-crispy-pecans-easy-to-digest/>

9-12: How to Make Soaked Oat Groats and Traditional Fermented Oat “Milk”

Overview

This lesson outlines different methods of reducing phytic acid in grains, seeds, and legumes. Families will prepare soaked oat groat porridge and fermented oat “milk.”

Learning Objectives

In this lesson, families will:

1. Discuss the importance of reducing phytic acid for maximizing the nutritional value of grains, seeds, and legumes
2. Describe different methods of reducing phytic acid in grains, seeds, and legumes
3. Prepare soaked oat porridge and fermented oat “milk,” following a recipe (“How to Make Soaked Oat Groats and Traditional Fermented Oat ‘Milk,’” p. 163-164 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Art supplies of choice, as needed

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Quart-size jar with lid
- Wooden spoon
- Blender
- Flour-sack towel or cheesecloth
- Large bowl
- Whisk
- Bottle with cap
- Saucepan
- Airtight container for storage
- Ingredients: oat groats, sea salt, chlorine-free water, raw honey or maple syrup (optional), vanilla extract (optional), unsalted butter (optional), ground cinnamon (optional), tap water

Vocabulary

- **Anti-nutrient:** a compound that blocks the body’s absorption of nutrients
- **Phytic acid:** an “anti-nutrient” found in whole grains, beans, lentils, seeds, and nuts that blocks the body’s absorption of iron, zinc, magnesium, and calcium

Discussion

1. Begin the discussion by asking your students if they know anyone who doesn't eat or who limits grains, nuts, seeds, or beans in their diet. If they do, ask them if they know why. Explain that some people have allergies to these foods. However, even if we are not allergic, these foods can contribute to health issues. Fortunately, if we prepare them using traditional methods, we can make them healthier and easier to digest.
2. Have your students open *The Modern Pioneer Cookbook* to page 152. Together, read "Getting Started with Soaking and Sprouting" (p. 152-155). You can take turns reading, or you can ask your students to read independently.
3. Ask your students to name the substance found in beans, lentils, grains, nuts, and seeds (phytic acid). If they don't remember, have them review the first paragraph under "Soaking and Sprouting Beans and Lentils" (p. 152). Tell your students that phytic acid is sometimes called an "anti-nutrient."
4. Share the following definitions:
 - **Anti-nutrient:** a compound that blocks the body's absorption of nutrients
 - **Phytic acid:** an "anti-nutrient" found in whole grains, beans, lentils, seeds, and nuts that blocks the body's absorption of iron, zinc, magnesium, and calcium
5. Ask your students how *The Modern Pioneer Cookbook* says we can reduce the phytic acid in whole grains, beans, lentils, seeds, and nuts. Give them a chance to review the section if they need to. In their kitchen journal or on a piece of paper or whiteboard, have your students make a list of the different methods of reducing phytic acid in food, like this:
Ways to Reduce Phytic Acid
 - Soaking
 - Sprouting
 - Fermenting
6. Reinforce the points explained in *The Modern Pioneer Cookbook*: When we soak, sprout, or ferment foods containing phytic acid, we reduce that anti-nutrient. This makes the food easier to digest, and it prevents the food from blocking our ability to absorb iron, zinc, magnesium, and calcium.
7. Ask your students to explain, in their own words, how soaking and sprouting are important for maximizing the nutritional value of our food.
8. Close the discussion by giving your students an opportunity to ask questions or make comments about what they learned.

Activity: Reducing Phytic Acid

1. Tell your students that they will now explore the practices of soaking and sprouting in more detail. Let your students flip through pages 156-161 of *The Modern Pioneer Cookbook* and skim through these three recipes:
 - How to Soak, Brine, and Cook Dry Beans for Use in Any Recipe (p. 156-7)
 - How to Sprout Beans, Lentils, and Whole Grains (p. 158)
 - How to Soak and Dry Nuts for Better Digestion (p. 159)

2. Tell your students to choose one of these recipes to read and recreate in visual form. Your students' goal will be to communicate the steps of the recipe in pictures and numbers only. They can think of this as an infographic or a set of assembly instructions that has no text. Tell your students to imagine that their instructions will be given to people all over the world. Anyone must be able to successfully use their visual instructions, no matter what language they speak or how well they read.
3. Give your students some time to read and understand the recipe. Be available to answer any questions they may have.
4. Ask your students what medium they would like to use (markers, colored pencils, paint, graphic design, etc.). Here are some tips for the project:
 - Include a title
 - Show the equipment (e.g., colanders) visually
 - Use arrows to show processes or numbers to show sequence
5. When they are finished, go over their project together and have them explain their choices to you. Check their diagrams against the recipe they chose and make sure they included all the important steps. Point out the strengths of their work and ask any questions about the decisions they made in creating it.

Recipe

1. Tell your students that today they will make oat porridge and fermented oat “milk.” Gather the kitchen equipment and ingredients that you will need (see “Materials” list above). Go over the names and purposes of any unfamiliar equipment.
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Have your students turn to page 163 of *The Modern Pioneer Cookbook*, “How to Make Soaked Oat Groats and Traditional Fermented Oat ‘Milk.’” Read the recipe aloud with your students (you can take turns).
4. Follow the recipe, step by step. Consider the following:
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When it’s all done, it’s time to taste! While you are enjoying your porridge and oat milk, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about how you might use the oat milk in different recipes. Ask your students how the porridge compares to rolled oats varieties they’ve had before.

Interdisciplinary Extensions

Writing

Write a thesis statement for an imaginary essay about soaking and sprouting. A thesis statement communicates an argument or claim. Can you include all of these things in your thesis statement?

- Phytic acid is present in whole grains, beans, lentils, nuts, and seeds.
- Phytic acid (an “anti-nutrient”) blocks our absorption of nutrients.
- We can reduce phytic acid by soaking and sprouting whole grains, beans, lentils, nuts, and seeds.

If you get stuck, try following this formula: *It is important to _____ because _____.*

Math

Calculate the ingredient amounts you would need if you wanted to multiply the recipe for oat porridge and fermented oat milk. Put the data into a chart, like the one below. Don't forget to include the unit of measurement (tsp, tbsp, cups).

	x2	x3	x4	x5	x6
Amount of oat groats					
Amount of sea salt					
Amount of honey					
Amount of vanilla					
Amount of cinnamon					
Amount of tap water					
Total time					

Science

Phytic acid has chelating qualities. What is chelation?

History

People have been soaking and sprouting grains, beans, lentils, nuts, and seeds for generations. How do you think people first started this practice? Do you think ancient people knew about phytic acid?

Culture

Sowans, twice-fermented oat starch porridge, is a traditional food from Scotland. Try making sowans by following the instructions in the introduction to “How to Make Soaked Oat Groats and

Fermented Oat ‘Milk’” (p. 163 of *The Modern Pioneer Cookbook*). Then, look up the English translation for the traditional Scottish song about sowans, called “Brochan Lom.”

Art

Did you know that you can make clay out of oatmeal? Mix 1 part water, 1 part flour, and 2 parts oatmeal (rolled or milled). Add paint or food coloring to the mixture if you want a colored clay. Create sculptures with your clay and let them dry. Once dry, you can paint them if desired.

Kitchen Economy

How long will your porridge and oat milk last? Check page 164 of *The Modern Pioneer Cookbook* (steps 9 and 13).

Nature Study

If you have the chance to see oats growing on a farm, take some time to carefully observe and draw what you see.

Nutrition

Phytic acid is only one type of “anti-nutrient.” Do some research to find out what the other anti-nutrients are called. What foods can they be found in? Can they be reduced with the right preparation methods?

Decision-Making

Did you choose to sweeten your oat milk? Why or why not?

Social-Emotional Learning

People can be passionate about their favorite kind of milk or plant-based “milk”! Have you ever argued with a friend or family member about which is the best kind of milk? How can we remain respectful even while disagreeing?

Video Resources

How to Make Soaked Oatmeal Using Oat Groats:

<https://marysnest.com/how-to-make-soaked-oatmeal-using-oat-groats/>

Chapter 8 – Condiments and Flavor Boosters

Chapter 8 is all about flavor in the traditional foods kitchen! Here are some key points:

- Store-bought condiments often have rancid oils and artificial ingredients. Making condiments at home is a great way to ensure that your traditional foods kitchen is full of flavor and without unnecessary ingredients, like added preservatives.
- Up to this point, all of the fermentation recipes in *The Modern Pioneer Cookbook* have been anaerobic. In other words, the fermentation process did not involve exposure to air. Chapter 8 contains several anaerobic fermented condiment recipes, and it also introduces the practice of aerobic fermentation with a recipe for raw apple cider vinegar.
- Homemade condiments generally have very short shelf lives. However, when we ferment these condiments, we can extend their shelf lives by weeks or months.

Before getting started, make sure you have the ingredients and materials needed for the lesson(s) you plan to facilitate. For the K-4 and 5-8 lessons, you will need apple cider vinegar. If possible, make a batch of homemade apple cider vinegar in advance so you can use it in these recipes (“Raw Apple Cider Vinegar,” p. 176-178 of *The Modern Pioneer Cookbook*). If you don’t have the time, store-bought vinegar is totally fine, as long as it’s raw. For the K-4 recipe, you will also need cultured whey or brine from a previous successful ferment. For the 5-8 lesson, you will have the choice to make more than one salad dressing. You will need one jar for each recipe. Check the seven recipes to confirm the ingredients you will need for your chosen dressings. For the 9-12 lesson, you will be using the kraut pounder or wooden spoon you used to make sauerkraut.

K-4: Fermented Ketchup

The K-4 lesson introduces students to the practice of making fermented condiments and explores their place in a homemade, low-waste kitchen. Families will prepare fermented ketchup.

5-8: Homemade Salad Dressings

The 5-8 lesson focuses on the importance of making condiments out of real foods to avoid unwanted ingredients. Families will prepare homemade salad dressings.

9-12: Fermented Salsa

The 9-12 lesson highlights fermented condiments and other homemade flavor boosters as ways to maximize nutrition and be more self-sufficient. Families will prepare fermented salsa.

A note on using all three lessons

Feel free to facilitate all three Chapter 8 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different recipe. You might also extend this chapter’s lessons by making apple cider vinegar first (“Raw Apple Cider Vinegar,” p. 176-178 of *The Modern Pioneer Cookbook*).

K-4: Fermented Ketchup

Overview

This lesson introduces students to the practice of making fermented condiments and explores their place in a homemade, low-waste kitchen. Families will prepare fermented ketchup.

Learning Objectives

In this lesson, families will:

1. Discuss the role of fermented condiments in a homemade, low-waste kitchen
2. Explain what it means to “shop the perimeter” of the grocery store
3. Prepare fermented ketchup (“Fermented Ketchup,” p. 186 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Art supplies or something to draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Medium bowl
- Quart-size jar with lid
- Ingredients: tomato paste, ground cloves, ground cinnamon, fine ground sea salt, unrefined whole cane sugar, cultured whey or brine from a previous successful ferment, chlorine-free water, Worcestershire sauce, raw apple cider vinegar

Vocabulary

- **Perimeter:** the outer border of a certain area

Discussion

1. Remind your students of the fermented pickles they made during the Chapter 5 lesson. Ask them to recall what they remember about the word “fermented.” What does it mean? What are the benefits of fermenting foods?
2. If necessary, share the following definition from the Chapter 5 lesson:
 - **Fermentation (lacto-fermentation):** breaking down the sugars in food and creating lactic acid
3. Ask your students if they can think of any other things that can be fermented. (If you like, point out that pickles go well with burgers, and ask your students what other things go well with burgers.) Point out that ketchup can be made and fermented at home.
4. Ask your students why they think people might want to make homemade fermented ketchup instead of buying it at the store. Guide your students to see that store-bought condiments like ketchup and salad dressing often contain unhealthy ingredients that we

don't want to eat. Some of these ingredients make it possible for the condiments to sit on store shelves for months without going bad.

5. Tell your students that homemade ketchup can be made without fermenting it, but it doesn't last very long. Fermenting foods is an important way to make them stay fresh longer. Ask your students how this information is important for a low-waste kitchen. Guide them to see that non-fermented homemade ketchup may go bad before a family has a chance to finish it. Fermenting the ketchup makes it more likely that it won't go to waste.
6. Ask your students if they have anything to add about how making fermented condiments like ketchup is important for a homemade, low-waste kitchen.
7. Give your students the opportunity to ask questions or make comments about what they learned.

Activity: Shopping the Perimeter

1. On a piece of paper or whiteboard, ask your students to draw the layout of a grocery store. What kinds of foods are sold in which parts of the store? Encourage them to include realistic grocery categories such as:
 - Fruits and vegetables
 - Meats and seafood
 - Dairy and eggs
 - Bakery
 - Frozen food
2. Instruct your students to draw the layout from above, as if they were looking down from the ceiling.
3. When they are finished, see if they have put fresh foods around the perimeter of the store. If they have, praise them for their observation skills. If they have not, ask them if they have ever noticed that the freshest foods are around the outer edges of the store, not in the inner aisles. If they are stuck, ask them where the refrigerated sections usually are.
4. Tell your students that the freshest foods are usually located in the perimeter of the store. Share the following definition:
 - **Perimeter:** the outer border of a certain area"Shopping the perimeter" means focusing on the perimeter of the store first, and limiting purchases from the inner aisles to simple foods that only have one or two ingredients (such as oats, rice, or flour).
5. Now give your students a chance to change or re-draw their grocery store diagram based on what they learned about the perimeter. If they haven't already done so, ask them to indicate where ketchup can be found at the store.
6. Tell your students that the next time you go to the grocery store together, you will ask them to lead you around the perimeter of the store first. Close the discussion by giving your students to ask questions or make comments about what they learned.

Recipe

1. Tell your students that they will now learn to make fermented ketchup. Ask your students if they think the ketchup will be made in the same way as the pickles they made for the Chapter 5 lesson. Guide your students to understand that pickles are fermented in brine (salty water), and this would not work with the thick consistency of ketchup.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Have your students turn to page 186 in *The Modern Pioneer Cookbook*, “Fermented Ketchup.” Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the procedure. This allows them to be active participants in the process, rather than simply obeying directions in isolation or out of context.)
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Look for opportunities to discuss or practice these concepts as you make the ketchup.
 - Step 3 of the recipe requires you to loosen the jar lid to let some gas out. You might refer to this step as “burping” the ketchup to amuse your students.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When it’s all done, it’s time to taste! While you are enjoying your ketchup, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you can serve your ketchup with or what recipes you could use it in.

Interdisciplinary Extensions

Writing

Write a poem or short story about all the things you can do with ketchup!

Math

How much of each ingredient would you need if you wanted to make two jars of ketchup?

Science

What is the difference between the way the gas formed when you fermented pickles and the way the gas formed in your ketchup? (Answer: the brine bubbles; the ketchup fizzes or foams.)

History

Historically, the first ketchup recipe is from the United Kingdom, and it uses mushrooms rather than tomatoes. Other early varieties include cucumber ketchup and anchovy ketchup. Would

you like to try making any of these? As a family, see if you can find an old recipe. How does it compare to the ketchup recipe you used in this lesson?

Culture

Historians are not sure exactly where the name “ketchup” came from, but there are a few theories. Which word do you think sounds the most like *ketchup*?

- *Keh jup* (Cantonese Chinese)
- *Kê-chiap* (Hokkien Chinese)
- *Kicap* (Malay)
- *Escaveche* (French)
- *Escabeche* (Spanish and Portuguese)

Art

Design a label for your ketchup jar! You can use a small piece of paper and some tape.

Kitchen Garden

Try growing your own tomatoes to make ketchup that is not only homemade, but homegrown, too! If you’re using a container, make sure it’s 5 gallons or larger. Only plant one tomato plant per container.

Kitchen Economy

How long will your fermented ketchup stay fresh? Check page 186 of *The Modern Pioneer Cookbook* (step 6).

Nature Study

If you have the chance to see a tomato growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Decision-Making

What will you eat your ketchup with? Explain your choice.

Social-Emotional Learning

Ketchup is one of those things that can make our least favorite foods taste a lot better. What are some ways to make your least favorite tasks (e.g., cleaning your room) feel a little more enjoyable?

Video Resources

Simple Fermented Ketchup Recipe That Tastes Like Store Bought:

<https://marysnest.com/simple-fermented-ketchup-recipe-that-tastes-like-store-bought/>

5-8: Homemade Salad Dressings

Overview

The 5-8 lesson focuses on the importance of making condiments out of real foods to avoid harmful ingredients. Families will prepare at least one homemade salad dressing.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of making condiments from real foods
2. Define *condiment* and list several examples that can be made at home
3. Prepare homemade salad dressings (“Homemade Salad Dressings,” p. 180-181 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For House Salad Dressing recipe:

- *The Modern Pioneer Cookbook*
- Jar with lid
- Ingredients: sea salt, black pepper, whole sweetener, raw apple cider vinegar or citrus juice, extra virgin olive oil

For French Vinaigrette recipe:

- *The Modern Pioneer Cookbook*
- Jar with lid
- Ingredients: sea salt, black pepper, raw apple cider vinegar or fresh lemon juice, Dijon mustard, shallot, extra virgin olive oil

For Italian Dressing recipe:

- *The Modern Pioneer Cookbook*
- Jar with lid
- Ingredients: sea salt, black pepper, raw apple cider vinegar or fresh lemon juice, dried oregano or Italian seasoning, garlic, extra virgin olive oil

For Thousand Island Dressing recipe:

- *The Modern Pioneer Cookbook*
- Jar with lid
- Long-handled spoon
- Ingredients: sea salt, black pepper, raw apple cider vinegar or fresh lemon juice, diced pickles, ketchup, sour cream, mayonnaise, honey or maple syrup

For the Blue Cheese Dressing recipe:

- *The Modern Pioneer Cookbook*
- Jar with lid
- Long-handled spoon

- Ingredients: sea salt, black pepper, raw apple cider vinegar or fresh lemon juice, sour cream, mayonnaise, crumbled blue cheese, buttermilk

For the Green Goddess Dressing recipe:

- *The Modern Pioneer Cookbook*
- Food processor or blender
- Ingredients: sea salt, black pepper, Dijon mustard, garlic, raw apple cider vinegar or fresh lemon juice, fresh parsley, scallion, tarragon, mayonnaise, sour cream, anchovy paste or whole anchovy (optional)

For the Ranch Dressing recipe:

- *The Modern Pioneer Cookbook*
- Jar with lid
- Long-handled spoon
- Ingredients: sea salt, black pepper, raw apple cider vinegar or fresh lemon juice, parsley, chives, dill, garlic, sour cream, mayonnaise, buttermilk

Vocabulary

- **Condiment:** something that is added to prepared food to give it extra flavor (examples include ketchup, mustard, mayonnaise, and salad dressing)

Discussion

1. Ask your students if they have ever heard the word “condiment” before, or if they can name some examples. Share the following definition:
 - **Condiment:** something that is added to prepared food to give it extra flavor (examples include ketchup, mustard, mayonnaise, and salad dressing)
2. Here is a list of condiments to consider mentioning in your discussion. Consider having your students make a written list of their favorite condiments, or condiments they’ve never tried before. You can also challenge yourself and your students to name some condiments that are not on the list below. Another option is to pick one condiment and name as many variations as you can, such as all the different salad dressings you know, or the different kinds of barbecue sauce made in different regions.
 - Ketchup
 - Mustard
 - Mayonnaise
 - Salad dressings
 - Special seasoning blends
 - Honey
 - Gravy
 - Salsa
 - Jelly
 - Barbecue sauce
 - Hot sauce
 - Soy sauce
 - Chutney

- Pesto
 - Wasabi
3. Ask your students which condiments they think can be made at home. The answer is that virtually all condiments can be made at home!
 4. Ask your students why people might want to make condiments at home instead of buying them at the store.
 5. Have your students turn to page 172 of *The Modern Pioneer Cookbook*, “Getting Started with Condiments and Flavor Boosters.” Together, read the introductory section (three paragraphs in bold text).
 6. Turn to the next page (p. 173) and, together, read the first paragraph of “The Shelf Lives of Homemade Condiments.”
(Optional: Read the entire section, ending on page 174.)
 7. Give your students an opportunity to ask questions and make comments.
 8. Ask your students what the benefits of homemade condiments are. Guide your students to see that when we make condiments at home, we are able to avoid chemicals and artificial ingredients. If we want to maintain a real-food kitchen, we need to have control over the ingredients that go into our condiments.

Activity: Write Your Own Recipe

1. Tell your students that for this chapter’s recipe, they will make their own salad dressings. Tell them that Chapter 8 contains seven different salad dressing recipes, and they will get to decide how many to make.
2. Have your students turn to page 180-181 of *The Modern Pioneer Cookbook*, “Homemade Salad Dressings.” Give your students a chance to read or skim through all seven recipes. Together, make a decision about which dressings to make based on which ingredients you have available. Encourage your students to choose at least two dressings, as these recipes are easy to make. (However, don’t make more dressing than your family can eat in 1-2 weeks. Alternatively, give the extra dressing you make to friends or extended family.)
3. Ask your students what kind of salad they think would taste good with the dressings they chose. Tell your students that they will now have the chance to write their own salad recipe.
4. Your students should write their recipes in their kitchen journal, or on a piece of paper or whiteboard. Their recipes must meet these requirements:
 - The recipe must have a title.
 - The recipe must have an ingredient list.
 - The recipe must have a set of steps to follow in order.
 In addition, your students can choose to add “Cook’s Notes” if desired.
5. Tell your students to choose any ingredients they want for their salad recipes. Remind them to include details about how to prepare those ingredients (e.g., chop, slice, grate, etc.). Be available to answer any questions your students may have about what different techniques are called.
6. When they are finished, go over the recipe together. Make sure they meet all three criteria listed above. Ask them why they thought this particular salad would go well with

the salad dressing they had in mind. Ask them to reflect on the experience of writing a recipe. Was it easy or hard? Why? Point out the strengths of the recipe and ask any questions about the decisions your students made in writing it.

Recipe

1. Tell your students that they will now make their salad dressings. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Turn to pages 180-181 in *The Modern Pioneer Cookbook*. Together, read through your chosen recipe(s).
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole food and seasonal eating. Throughout the process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When it’s all done, it’s time to taste! While you are enjoying your dressings, have a discussion about the experience of preparing them. Ask your students what their favorite and least favorite parts of the process were. Talk about which dressing you might try to make next.

Interdisciplinary Extensions

Writing and Art

Create seven characters, each based on a different salad dressing recipe in *The Modern Pioneer Cookbook*. Write a paragraph about each character’s personality, and accompany each description with a drawing.

Math

Choose one of the seven salad dressing recipes in *The Modern Pioneer Cookbook* and calculate the ingredient amounts you would need if you wanted to make multiple jars. Put the data into a chart, like the one below. Don’t forget to include the unit of measurement (tsp, tbsp, cups).

Ingredient	Amount for 2 Jars	Amount for 3 Jars	Amount for 4 Jars	Amount for 5 Jars

Science

Using pH strips or red cabbage pH indicator, measure the pH of raw apple cider vinegar. Is it an acid or a base?

History

Ranch dressing is an American classic. Guess what U.S. state it was first invented in! The answer is Alaska. Does that surprise you? Why or why not? Now guess what year Ranch dressing was invented. The answer is 1949. Does that surprise you? Why or why not? What else was going on in the world in 1949?

Culture

Vinaigrettes, or mixtures of oil and vinegar, come from France. Vinaigrettes can be used as salad dressings or marinades. The word *vinaigrette* comes from the French word for vinegar, *vinaigre*. The *-ette* ending of the word is called the diminutive, suggesting a sense of smallness or adoration. In English, diminutive endings include adding a *-y*, or *-o* to the end of a word, such as “doggy” or “kiddo.” Can you think of any other English words that borrow the French diminutive ending *-ette*?

Kitchen Garden

Which herbs did you use in your salad dressing? Try growing some at home so you have a fresh supply for future dressings. Herbs are smaller plants, so you can grow them on a windowsill if you don’t have outdoor space. You can try herbs like parsley, chives, dill, and oregano.

Kitchen Economy

How long will your salad dressing stay fresh? Check page 180 of *The Modern Pioneer Cookbook* (introductory paragraph).

Nature Study

If you have the chance to visit an apple tree, take some time to carefully observe and draw what you see. Think about all the things that can be made from apples, including the apple cider vinegar you probably used to make your dressing.

Nutrition

What can you learn about raw apple cider vinegar? What are its health benefits?

Decision-Making

You had a choice of seven dressing recipes for this lesson. That's the most decision making you've had to do for these lessons! How did you choose which dressings to make? Was it based on the ingredients you already had? Your favorite flavors? A desire to try something new?

Social-Emotional Learning

Salad dressings are great for making our not-so-favorite foods taste a lot better. What are some ways to make your not-so-favorite tasks (e.g., cleaning your room) feel a little more enjoyable?

Video Resources

5 Homemade Salad Dressings – Quick, Easy, and Healthy!

<https://marysnest.com/5-homemade-salad-dressings/>

How to Make Green Goddess Salad Dressing:

<https://marysnest.com/how-to-make-green-goddess-salad-dressing-video/>

9-12: Fermented Salsa

Overview

This lesson highlights fermented condiments and other homemade flavor boosters as ways to maximize nutrition and be more self-sufficient. Families will prepare fermented salsa.

Learning Objectives

In this lesson, families will:

1. Discuss how fermented condiments and homemade flavor boosters help to maximize the nutritional value of food and encourage self-sufficiency
2. Summarize important points about making condiments at home
3. Prepare fermented salsa (“Fermented Salsa,” p. 187 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Art supplies of choice

For recipe:

- *The Modern Pioneer Cookbook*
- Wide-mouth glass quart-size jar with lid
- Kraut pounder or wooden spoon
- Small glass jar that can fit inside the quart-size jar
- Bowl large enough to hold the quart-size jar
- Ingredients: tomatoes, onion, cilantro or Italian parsley, jalapeño, lime, sea salt, chlorine-free water

Vocabulary

- **Aerobic fermentation:** fermentation that uses air

Discussion

1. Begin the discussion by asking your students to identify as many condiments as they can. You can do this orally or by making a list on a whiteboard or piece of paper. Then steer the discussion towards the practice of making condiments at home. Here are some questions you might use to guide the conversation:
 - Where do we usually buy our condiments?
 - What do you notice about the condiments sold at stores?
 - Have we ever made any condiments at home?
 - What are the pros and cons of buying condiments at the grocery store?

2. Explain to your students that homemade condiments often have short shelf lives, unlike store-bought versions that are full of preservatives. However, if we ferment our homemade condiments, we can extend their shelf life significantly.
3. Ask your students if they remember what *anaerobic* fermentation is from Chapter 5 when they made sauerkraut. Remind them that *anaerobic* means “without air.” That’s why when they made sauerkraut, they closed the jar with a lid, to keep the air out. Ask them what they think *aerobic* fermentation means. Share the following definition:
 - **Aerobic fermentation:** fermentation that uses air

Explain that an important condiment ingredient, raw apple cider vinegar, is made with aerobic fermentation. When you make apple cider vinegar, you cover the jar with fabric or a paper coffee filter, so that air can pass through.
4. Share the following points about apple cider vinegar (ACV) with your students, allowing time for questions or comments:
 - ACV can be used in a number of homemade condiments, like ketchup and salad dressing.
 - ACV is made with aerobic fermentation.
 - ACV stays fresh forever.
 - ACV can be made with apple scraps instead of apple cider (so you can drink your apple cider instead!).
5. Explain to your students that there is more than one way to make a fermented condiment:
 - Ferment the ingredients directly (e.g., “Fermented Ketchup,” p. 186 of *The Modern Pioneer Cookbook*)
 - Add apple cider vinegar (e.g., “Homemade Salad Dressings,” p. 180-181 of *The Modern Pioneer Cookbook*)
 - Add whey or brine from a previous successful ferment (e.g., “Olive Oil & Egg Mayonnaise,” p. 184 of *The Modern Pioneer Cookbook*)

Tell your students that when it’s time for this lesson’s recipe, they will be fermenting their ingredients directly to make their own salsa.
6. Finally, remind your students of the two themes that have informed their lessons so far: maximizing food’s nutritional value and preserving food for self-sufficiency. Facilitate a discussion about the importance of homemade fermented condiments for these themes. Start with these questions, one at a time:
 - How are homemade fermented condiments a way to maximize the nutritional value of our food?
 - How can making homemade fermented condiments help us to be more self-sufficient?
7. If your students are stuck, consider using these questions to prompt their responses:
 - Are homemade fermented condiments healthier than the condiments we can buy at the store?
 - What are the health benefits of homemade fermented condiments?
 - What does it mean to be self-sufficient?
 - What would we do if the grocery stores closed or ran out of condiments?
 - Apple cider vinegar can last forever! How does this help with self-sufficiency?

8. Conclude the discussion by reiterating that homemade fermented condiments are ideal for a household that wants to make the most nutritious food possible and wants to be as self-sufficient as possible. Allow your students the opportunity to ask questions or make comments.

Activity

1. Have your students turn to page 172 of *The Modern Pioneer Cookbook*. Ask them to read the entire section “Getting Started with Condiments and Flavor Boosters” (p. 172-175). Give them opportunities to ask questions, make comments, and take notes as they read.
2. Tell your students that they have learned a lot about fermentation and making condiments at home. Now, they will get a chance to use that knowledge in a creative way. Explain that they have three options for this activity.
 - Option 1: Draw a cozy kitchen where everything is homemade. Include lots of condiments and label them clearly (e.g., “fermented ketchup,” etc.). The cozy kitchen can be based on your home kitchen, or it can be your dream kitchen. Use the section “A Cozy Kitchen and the Lure of Everything Homemade” on page 175 as inspiration.
 - Option 2: Imagine you have your own cafe that only serves traditional, made-from-scratch foods. Create a menu for your cafe, making sure that every menu item uses at least one condiment from Chapter 8.
 - Option 3: Imagine you have a small business selling traditional foods and homemade fermented condiments. Draw a picture of your store, labeling each fermented condiment that you sell.
3. When your students are finished, go over their project together and have them explain their choices to you. Make sure they have included the required fermented condiments. Point out the strengths of their project and ask any questions about the decisions they made in creating it.

Recipe

1. Tell your students that today they will make fermented salsa. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
2. Have your students turn to page 187 of *The Modern Pioneer Cookbook*, “Fermented Picante and Chunky Salsa.” Read the recipe aloud with your students (you can take turns). Together, decide whether you will make chunky or pureed picante salsa.
3. Follow the recipe, step by step. Consider the following:
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
4. When it’s all done, it’s time to taste! While you are enjoying your salsa, have a discussion about the experience of making it. Ask your students what their favorite and

least favorite parts of the process were. Talk about how you might serve the salsa with different meals. Ask your students how the salsa compares to store-bought salsas they've had before.

Interdisciplinary Extensions

Writing

Write a persuasive essay in which you attempt to convince your reader to make fermented condiments at home.

Math

Calculate the ingredient amounts you would need if you wanted to make multiple jars of fermented salsa. Put the data into a chart, like the one below. Don't forget to include the unit of measurement (tsp, tbsp, cups).

Ingredient	Amount for 2 Jars	Amount for 3 Jars	Amount for 4 Jars	Amount for 5 Jars
Tomatoes				
Onion				
Cilantro				
Jalapeno				
Lime				
Sea salt				
Water				

Science

When you made sauerkraut, your fermentation process used lactobacillus bacteria. What kind of bacteria is used to make apple cider vinegar?

History

Historically, Mexican salsas have been made with the traditional stone tools called *molcajetes*. The *molcajete* is the traditional Mexican mortar and pestle. Try looking up a picture of a *molcajete* online. How long do you think it would take to make pureed picante salsa with a *molcajete* instead of a blender?

Culture

The word *salsa* is Spanish for “sauce.” Throughout Mexico and Latin America, there are many different kinds of salsas. Here are some different types you might want to look up, now that you know how to make fermented salsa!

- Salsa roja
- Salsa verde
- Pico de gallo
- Salsa ranchera
- Salsa taquera
- Salsa molcajete
- Salsa criollo
- Salsa de aguacate

Art

Design a label for your salsa jar! You can use a small piece of paper and some tape.

Kitchen Garden

Can you grow your own salsa garden? You can do it outside or in containers indoors. You can easily grow all your salsa ingredients, except for the sea salt and the lime. (Where does sea salt come from? How do limes grow?) You can even experiment with different kinds of peppers, such as green chile. But remember to keep your pepper plants in super sunny spots, especially if you’re growing them indoors.

Kitchen Economy

How long will your fermented salsa stay fresh? Check page 187 of *The Modern Pioneer Cookbook* (step 5).

Nature Study

If you have the chance to observe a pepper plant, take some time to draw what you see.

Nutrition

Do peppers have health benefits? What nutrients do they contain? Are there any health risks to eating too many peppers?

Decision-Making

You’re planning a taco night, but everyone seems to want something different. Your younger sister doesn’t want spicy salsa, but your dad wants extra spicy. Your brother likes pureed picante salsa, but your mom likes it chunky! What will you do?

Social-Emotional Learning

Some people are more sensitive to spicy flavors than others. Do you like spicy food? Usually, young students need to get used to spice before they start to enjoy it. Think about your life—

what did you need time to get used to before you felt okay about it? How can you use this experience to help you in challenging situations that come up in the future?

Video Resources

How to Make Fermented Salsa – Step-by-Step Tutorial for Beginners:

<https://marysnest.com/how-to-make-fermented-salsa/>

How to Make the Best Fermented Hot Sauce:

<https://marysnest.com/how-to-make-fermented-hot-sauce/>

Chapter 9 – Traditional Superfoods

Chapter 9 of *The Modern Pioneer Cookbook* is all about nutrient-dense and nutrient-rich superfoods. Here are some key points:

- Nutrient-rich foods are rich in vitamins and minerals but low in calories. Examples of nutrient-rich foods are bitters, bone broths, and mineral-rich vegetable broths.
- Nutrient-dense foods are rich in vitamins and minerals and also calorie-dense. Examples of nutrient-dense foods are organ meats, animal fat, bone marrow, oily fish, and cultured dairy.
- There are many benefits of bone broth, which contains:
 - Vitamins A, C, K
 - B vitamins (riboflavin, thiamin, niacin, B6, and folate)
 - Minerals (potassium, magnesium, manganese, phosphorus, calcium, iron, and copper)
 - Collagen
 - Conjugated linoleic acid (CLA)
- Some vegetables that are often called “superfoods” contain antinutrients. In Chapter 6, “The Home Baker,” we learned about the antinutrient phytic acid that is found in grains. Other antinutrients include goitrogens and oxalates, which can be found in “superfood” vegetables like kale. However, by cooking these vegetables instead of eating them raw, we can benefit from the nutrient content without blocking our absorption of vitamins and minerals.

Before getting started, make sure you have what you need for each lesson. The K-4 lesson uses frozen beef liver. The 5-8 lesson uses marrow bones. The 9-12 lesson requires a variety of different vegetables. For the K-4 activity, you will need an internet connection for watching a video.

K-4: Deep-Fried Beef Liver Nuggets with Fermented Ketchup

The K-4 lesson introduces students to the concept of superfoods. Families will prepare deep-fried nuggets from beef liver.

5-8: Roasted Bone Marrow

The 5-8 lesson introduces students to nutrient-dense bone marrow as an important part of a whole-foods kitchen. Families will prepare roasted bone marrow.

9-12: Super Mineral Broth

The 9-12 lesson introduces students to the difference between nutrient-rich and nutrient-dense food. Families will prepare a nutrient-rich broth from vegetables and herbs.

A note on using all three lessons

Feel free to facilitate all three Chapter 9 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson features a completely different recipe. For younger students, you may need to skip the part of the 9-12 lesson that compares and contrasts nutrient-dense and nutrient-rich foods.

K-4: Deep-Fried Beef Liver Nuggets with Fermented Ketchup

Overview

This lesson introduces students to the concept of superfoods. Families will prepare deep-fried nuggets from beef liver.

Learning Objectives

In this lesson, families will:

1. Define *superfood*
2. Discuss the role of superfoods in a homemade kitchen
3. Prepare deep-fried nuggets from frozen beef liver, following a recipe (“Deep-Fried Beef Liver Nuggets with Fermented Ketchup,” p. 202 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Art supplies of choice
- Internet connection (for watching video)

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- 4-quart cast iron or enamel-lined Dutch oven
- Deep-frying or candy thermometer
- Slotted spoon or spider strainer
- Sharp serrated knife
- Large bowl
- Medium bowl
- 2 large baking sheets
- Parchment paper
- Cooling rack (or paper towels)
- Large spoon
- Ingredients: frozen beef liver, buttermilk, all-purpose flour, sea salt, black pepper, beef tallow, fermented ketchup

Vocabulary

- **Superfood:** a food that is especially healthy

Discussion

1. Ask your students if they have ever heard the word *superfood* before. Share the following definition:
 - **Superfood:** a food that is especially healthy

2. Explain to your students that *superfood* is a word people use to describe foods that are extra nutritious for their size. However, superfoods are not perfect, and some may cause health problems. These superfoods need to be carefully prepared to make them safe to eat. An example of this special preparation is when you sprouted beans, lentils, or grains for the Chapter 7 lesson.
3. Ask your students why this information is important for a homemade kitchen. Here are some questions you might use to guide the conversation:
 - How do we make sure we're getting the right nutrition?
 - Why is it important to know how to properly prepare superfoods at home?
 - Why is it better to make healthy foods at home than to buy them in packages at the store?
4. Explain to (or elicit from) your students that it's our job to prepare healthy foods at home so we know what is in them and how they are made. When we buy them at the store, we can't be sure that they were made the right way. When we make healthy foods at home, we can be sure that there are no unwanted ingredients.
5. Conclude the discussion by inviting your students to draw a picture of themselves as superchefs preparing healthy superfoods in their home kitchen.

Activity: How Are Nuggets Made?

1. Ask your students if they have ever had any type of nuggets (such as chicken nuggets). Ask them how they think nuggets are made.
2. Explain to your students that pre-made nuggets from fast food restaurants or the frozen aisle in the grocery store are made in large factories and usually have lots of unwanted ingredients. Luckily, we can make our own nuggets at home!
Optional: You may want to talk a little more about food processing factories. Use the following questions as a guide:
 - What is a factory?
 - What kinds of things are made in factories?
 - Do factories seem like good places to make food? Why or why not?
 - What seems safer and cleaner: homemade food or factory-made food?
 - What seems more special: homemade food or factory-made food?
3. Tell your students that they will be making nuggets out of beef liver (a superfood!) and serve them with the fermented ketchup they made for the Chapter 8 lesson. But first, they will watch a video showing the process in action (step 5, below). This way, they can see what the liver nuggets look like before making them (because there is no photo in the cookbook) and get a good sense of the cooking process.
4. Have your students turn to page 202 of *The Modern Pioneer Cookbook*, "Deep-Fried Beef Liver Nuggets with Fermented Ketchup." Go over the list of ingredients together.
5. Navigate to <https://marysnest.com/how-to-cook-beef-liver>, "How to Cook Beef Liver (Your Kids Will Love!)." Watch the video with your students. Pause the video at various points to discuss what you see and answer your students' questions.
6. Point out that the deep-fried liver nuggets are made from fresh liver, while most fast food nuggets are made from processed meat.

7. Ask your students to summarize the process of making the liver nuggets (based on what they saw in the video). They should mention these basic steps: (1) cut the liver into small pieces, (2) soak the liver pieces in buttermilk, (3) roll the liver pieces in flour, and (4) fry the liver pieces in beef tallow. For younger students, you may want to shorten this to (1) cut, (2) soak, (3) roll, (4) fry.
8. Conclude by sharing some excitement about making your own nuggets!

Recipe

1. Tell your students that it is now time to make their own nuggets! Have them turn to page 202 of *The Modern Pioneer Cookbook*, “Deep-Fried Beef Liver Nuggets with Fermented Ketchup.” Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
2. Share important safety information with your students. For example, you might say:
 - “Deep-frying means we have to use a lot of very hot oil. Hot oil can splatter and cause painful burns. Let’s be extra careful around the pot of hot oil so we don’t get hurt.”
 - “We will need to let the nuggets cool a bit before tasting them.”
3. Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the procedure. This allows them to be active participants in the cooking process, rather than simply obeying directions in isolation or out of context.)
4. Follow the recipe, step by step. Consider the following:
 - Make sure your students wash their hands after touching the liver.
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - The task of using clean hands to soak the liver and roll it in flour may be especially enjoyed by tactile, kinesthetic, or sensory learners. On the other hand, students with sensory sensitivities may need some extra support.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When the nuggets are ready, it’s time to taste! Serve your nuggets with the fermented ketchup you made in the last lesson. As you eat, have a discussion about the experience of cooking the nuggets. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might want to do differently next time (such as making different dipping sauces or making sure the liver is still partially frozen when cutting it).

Interdisciplinary Extensions

Writing

Make a list of words that describe your deep-fried liver nuggets.

Write a letter to a friend who loves fast-food nuggets. Try to convince your friend to try your homemade nuggets instead.

Math

How much of each ingredient would you need if you wanted to double the nuggets recipe?

Science

The nugget recipe you followed for this lesson uses oil for deep frying. What are some other ways to use heat to cook food? (Answers include grilling, roasting, pan frying, etc.)

History

Liver has been eaten around the world for thousands of years. Imagine you lived in a time before grocery stores. If your community only hunted for meat, why would it be especially important to eat liver?

Culture

Liver is an important food in many different cultures. Here are some examples of cultural liver dishes. Can you find each country on a map or globe?

- Tortillas con bistec de hígado (Panama)
- Fegato alla veneziana (Italy)
- Fegato alla romana (Italy)
- Fígado (bovino) acebolado (Brazil)
- Sambal goreng hati (Indonesia)
- Leberspätzle (Germany)
- Boulfaf (Morocco)
- Skilpadjies (South Africa)
- Putu pap and livers (South Africa)
- Kebda eskandarani (Egypt)
- Kebda m'chermoula (Algeria)
- Liver suya (West Africa)

Art

Imagine that you're serving a "kid's meal" of your deep-fried liver nuggets at a healthy fast food restaurant. What would the packaging look like? Would you include activities or toys? Use your creativity to design your own "kid's meal."

Nutrition

What is so nutritious about liver?

Kitchen Economy

How much does liver cost? How does that compare to the cost of other meats?

Decision-Making

What did you decide to season your flour with? How did you make this choice?

Social-Emotional Learning

Why do you think kids love nuggets? What is fun about eating foods with your hands and dipping them into a sauce?

Video Resources

How to Cook Beef Liver (Your Kids Will Love!):

<https://marysnest.com/how-to-cook-beef-liver/>

5-8: Roasted Bone Marrow

Overview

The 5-8 lesson introduces students to nutrient-dense bone marrow as an important part of a whole-foods kitchen. Families will prepare roasted bone marrow.

Learning Objectives

In this lesson, families will:

1. Define *nutrient* and *nutrient-dense*
2. List examples of nutrient-dense foods
3. Prepare roasted bone marrow, following a recipe (“Roasted Bone Marrow,” p. 200 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Baking sheet
- Parchment paper
- Ingredients: thin-cut or canoe-cut beef marrow bones, baguette or sourdough bread, sea salt, fresh Italian (flat-leaf) parsley

Vocabulary

- **Nutrient:** a substance in food that helps us grow and stay healthy
- **Nutrient-dense:** high in calories and rich in vitamins and minerals

Discussion

1. Begin the discussion by asking your students what they think the word *nutrient* means. Share the following definition:
 - **Nutrient:** a substance in food that helps us grow and stay healthy
2. Ask your students if they can name any nutrients. Elicit or share the following examples of nutrients:
 - Vitamins
 - Minerals
 - Protein
3. Now ask your students what they think the term *nutrient-dense* means. Share the following definition:
 - **Nutrient-dense:** high in calories and rich in vitamins and minerals

Explain that not all foods are nutrient-dense. Some foods, particularly processed foods, are low in nutrients, or nutrient-poor. Other foods, like many fruits and vegetables, are rich in vitamins and minerals, but they are low-calorie foods.

4. Point out to your students that nutrient-dense foods are found in whole foods, and that when we cook nose to tail, we are making sure to use all nutrient-dense parts of the animal. For example, liver and bone marrow are two nutrient-dense foods that many people unfortunately choose not to eat. But in the traditional foods kitchen, we know better!

Activity: Nutrient-Dense Scavenger Hunt

1. Ask your students if they can name any nutrient-dense foods. Share the following examples:
 - Organ meats (like liver)
 - Animal fat
 - Bone marrow
 - Oily fish (like herring)
 - Cultured dairy (like yogurt)
2. Now tell your students that they will go on a scavenger hunt for nutrient-dense recipes in *The Modern Pioneer Cookbook*. Their goal is to see how many nutrient-dense recipes they can find by looking at the lists of ingredients. Together, decide which optional guidelines to follow:
 - Set a timer and see how many nutrient-dense recipes you can find in a certain number of minutes.
 - Keep a running tally to count how many nutrient-dense recipes you can find in total.
 - Make a list of the nutrient-dense recipes you'd like to try making as you find them for the scavenger hunt.
 - Optional: Extend the scavenger hunt to allow your students to look for nutrient-dense foods in your kitchen. (Suggestion: Don't use a timer for this because your students might feel rushed and ransack your kitchen!)
3. When finished, have a discussion about the recipes your students noted. Here are some questions to help guide the conversation:
 - How did you search for the nutrient-dense recipes? Did you start with the first recipe, or did you flip ahead to a certain chapter?
 - Did you come across any recipes that seemed surprising or interesting in some way?
 - Did you notice any patterns as you were looking for nutrient-dense recipes?
 - Did you see any recipes that you'd like to try?
4. Now, tell your students that they will create a menu using dishes from *The Modern Pioneer Cookbook*. They have two options:
 - Create a full menu for an imaginary restaurant. Consider sections like "Appetizers," "Lunch," "Dinner," and "Dessert." Include as many nutrient-dense meals as you can. Be sure to describe each dish for your customers.

- Create a family menu for a special holiday or celebration day. Start with breakfast, and include lunch, dinner, dessert, drinks, and snacks. What will you serve?
5. When your students are finished, go over their menu and ask them to explain their choices. Point out the strengths of their project and ask them any questions you may have about their menus.

Recipe

1. Tell your students that today they will be making bone marrow, a nutrient-dense superfood. Have them turn to page 200 of *The Modern Pioneer Cookbook*, “Roasted Bone Marrow.”
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Together, read through the recipe and Cook’s Notes (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole food and seasonal eating. Throughout the process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
6. When it’s all done, it’s time to taste! While you are enjoying your bone marrow, have a discussion about the experience of preparing it. Ask your students what their favorite and least favorite parts of the process were. Talk about whether you might try Bone Marrow Gremolata (p. 201 of *The Modern Pioneer Cookbook*) next.

Interdisciplinary Extensions

Writing

A London nursery rhyme from 1790 goes like this:

Taffy was a Welshman, Taffy was a thief;
Taffy came to my house and stole a piece of beef;
I went to Taffy's house, Taffy wasn't home;
Taffy came to my house and stole a marrow-bone.

Can you make up your own nursery rhyme that mentions marrow bones?

Math

Give everyone in your family a taste of roasted bone marrow. How many people liked it? How could you represent this number as a fraction? As a percent? On a graph?

Science

We know that bone marrow is a delicious nutrient-dense food. But what about the bone marrow inside *your* bones? What is its purpose? How is it formed?

History

Before people started roasting bone marrow, they ate it raw. Some scientists think humans first started eating bone marrow because they were able to use their tools to crack open large animal bones left behind by predators. Why do you think it would be especially important to eat bone marrow in prehistoric times?

Culture

Bone marrow is an important food in cultures around the world. Here are some examples of recipes from different regions. Can you locate each country on a map or globe?

- Markklößchen (Germany)
- Sapu Mhichā (Nepal)
- Pemmican (Native North American)
- Sumsum (Indonesia)
- Nihari (India)
- Ossobuco (Italy)

Art

Did you know that roasted bone marrow is an expensive delicacy served at some of the fanciest restaurants? Draw a picture of patrons eating bone marrow in a fancy restaurant. Or, draw a picture of the original humans eating bone marrow in the wild.

Kitchen Economy

How long will your roasted bone marrow last? Check page 200 of *The Modern Pioneer Cookbook* (step 5).

Decision-Making

Will you make Bone Marrow Gremolata next (p. 201 of *The Modern Pioneer Cookbook*)? Why or why not?

Social-Emotional Learning

If this was your first time tasting bone marrow, how did you feel about it? Were you worried that you wouldn't like it, or were you excited to try it? How did you feel after you tasted it? Was the bone marrow just what you expected, or something different?

Video Resources

Easiest Roasted Bone Marrow Recipe:

<https://marysnest.com/easiest-roasted-bone-marrow-recipe/>

9-12: Super Mineral Broth

Overview

The 9-12 lesson introduces students to the difference between nutrient-rich and nutrient-dense food. Families will prepare a nutrient-rich broth from vegetables and herbs.

Learning Objectives

In this lesson, families will:

1. Compare and contrast nutrient-rich and nutrient-dense foods
2. Discuss the role of nutrient-rich and nutrient-dense foods in a traditional foods kitchen that seeks to maximize nutrition
3. Prepare mineral-rich broth from vegetables and herbs, following a recipe (“Super Mineral Broth,” p. 204-205)

Materials

- Kitchen journal, large piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Large stockpot
- Colander or mesh strainer
- Large bowl
- Flour-sack towel or cheesecloth
- Medium-size stockpot or large bowl
- 2 half-gallon size jars with tight-fitting lids (or more jars if they are smaller)
- Ingredients: yellow onions, red onion, carrots, celery, romaine lettuce, italian plum tomatoes, sweet potatoes, mushrooms, ginger root, turmeric root, bay leaves, fresh thyme, fresh oregano, black peppercorns, allspice berries, garlic, water, fine ground sea salt

Vocabulary

- **Nutrient-dense:** high in calories and rich in vitamins and minerals
- **Nutrient-rich:** high in vitamins and minerals but low in calories

Activity

1. Begin by writing down the terms *nutrient-dense* and *nutrient-rich* on a whiteboard or piece of paper. Tell your students that these terms are often confused or used to mean the same thing. However, there is an important difference between the two. Ask your students if they want to guess what each word means.
2. Share the following definitions:
 - **Nutrient-dense:** high in calories and rich in vitamins and minerals
 - **Nutrient-rich:** high in vitamins and minerals but low in calories
3. Ask your students to create a venn diagram to illustrate the similarities and differences between nutrient-dense and nutrient-rich foods.
4. Have your students turn to page 194 of *The Modern Pioneer Cookbook*, “Getting Started with Traditional Superfoods.” Have your students read pages 194-197. You can take turns reading, or your students can read independently.
5. Ask your students to summarize some of the important points they learned. Ask them if anything they read was surprising. Give them the opportunity to ask questions or make comments about what they read.
6. Now have your students make a chart, and list some examples of nutrient-dense and nutrient-rich foods, respectively. If they are stuck, they should review pages 194-197, paying attention to the examples mentioned. The finished chart will look something like this:

Nutrient-Dense Foods	Nutrient-Rich Foods
Organ meats Animal fat Bone marrow Oily fish Cultured dairy	Bitters Bone broths Mineral-rich vegetable broths

7. Ask your students which kinds of nutrient-dense and nutrient-rich foods they have prepared from *The Modern Pioneer Cookbook*.
Optional: Extend this activity by inviting your students to locate one recipe for each type of nutrient-dense or nutrient-rich food. (For example, for “organ meats,” they can identify the “Deep-Fried Beef Liver Nuggets with Fermented Ketchup” recipe on page 202).

Discussion

1. Remind your students of the two themes that have informed their lessons so far: maximizing food’s nutritional value and preserving food for self-sufficiency. Facilitate a discussion about the importance of nutrient-dense and nutrient-rich foods for these themes. Start with these questions, one at a time:
 - How can nutrient-dense and nutrient-rich foods help us to maximize the nutritional value of our food?
 - How can making nutrient-dense and nutrient-rich foods at home help us to be more self-sufficient?

2. If your students are stuck, consider using these questions to prompt their responses:
 - How do we make sure we're getting the right nutrition?
 - Whose responsibility is it to make sure that we're getting the right nutrition?
 - Why is it important to know how to prepare nutrient-dense and nutrient-rich foods at home?
 - Why is it better to make healthy foods at home than to buy them in packages at the store?
3. Ask your students to make a list of the nutrient-dense and nutrient-rich foods they eat on a regular basis. Ask them whether they eat nutrient-dense and nutrient-rich foods each and every day.
4. Have your students make a list of nutrient-dense and nutrient-rich foods that they would like to try to incorporate into their diet. Encourage them to leaf through *The Modern Pioneer Cookbook* for ideas and inspiration.
5. Together, make a shopping list and a meal plan to include at least one nutrient-dense meal in the next week.
6. Conclude the discussion by giving your students the opportunity to ask questions or make comments.

Recipe

1. Tell your students that they will now make a mineral-rich vegetable broth. Emphasize that this is a great skill to add to their repertoire, as they already know how to make bone broth. Like bone broth, vegetable broth can be used in a variety of ways—such as to make soup, to cook grains, or to make gravy.
2. Have your students turn to pages 204-205 of *The Modern Pioneer Cookbook*, “Super Mineral Broth.” Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Together, read through the recipe, including the introduction and Cook’s Notes (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the cooking process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
6. When it’s all done, it’s time to taste! While you are enjoying your broth, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about whether you might try to make a cream soup with the leftover vegetables, as described in “Cook’s Notes” (p. 205 of *The Modern Pioneer Cookbook*).

Interdisciplinary Extensions

Writing

Write an essay comparing and contrasting nutrient-dense and nutrient-rich foods.

Math

The mineral broth recipe you followed produced 2 half-gallon jars of broth. What if you needed to produce 7 half-gallon jars? You can use this recipe conversion factor formula:

When you have your conversion factor, multiply it by the amount of each ingredient in the Super Mineral Broth recipe to find out how much of everything you need.

$$\frac{\text{New Yield}}{\text{Old Yield}} = \text{Conversion Factor}$$

Science

What are Fick's laws of diffusion and what do they have to do with making broth?

History

Have you ever thought about the history of vegetables themselves? Every vegetable has its own unique history. Try doing a little research on the vegetables in the Super Mineral Broth recipe. Then you can put the data into a chart, like the one below.

Vegetable	Dated to...	Found in ancient... (places)	Interesting facts
Onion			
Carrot			
Celery			
Sweet potato			

Culture

Mineral-rich vegetable broths are popular around the world. Here are some examples of soups from different cultures that use vegetable broth:

- Chaesu (Korea)
- Hasa adas (Libya)
- Kasvissosekeitto (Finland)

How might the climates of these different regions influence the vegetables that go into their mineral broths?

Art

Design a label for your jar of soup! You can use a small piece of paper and some tape.

Kitchen Garden

How many of the vegetables you used in your mineral broth could be planted in your kitchen garden or containers?

Kitchen Economy

How long will your mineral broth stay fresh? Check page 205 of *The Modern Pioneer Cookbook* (step 5).

Nature Study

Think of all the vegetables and herbs you used to make your mineral broth. Which ones are you least familiar with? Take some time to carefully draw that vegetable (or the plant it grows on). If you can't look at one in real life, look for a picture in a book or on a website.

Nutrition

What are the specific vitamins and minerals in each of the vegetables you used to make your broth?

Decision-Making

Will you use the leftover (strained) vegetables to make a cream soup (see "Cook's Notes" on page 205)? Why or why not?

Social-Emotional Learning

Why do you think warm broth can be so comforting?

Video Resources

Super Mineral Broth Recipe – Natural Immune Booster:

<https://marysnest.com/super-mineral-broth-recipe-natural-immune-booster-video/>

How to Make a Super Mushroom Broth:

<https://marysnest.com/how-to-make-a-super-mushroom-broth/>

How to Make Golden Broth:

<https://marysnest.com/how-to-make-golden-broth/>

Instant Pot Vegetable Soup with a Super Mineral Broth:

<https://marysnest.com/instant-pot-vegetable-soup-with-a-super-mineral-broth/>

Chapter 10 – Good “Bug” Beverages

Chapter 10 focuses on healing probiotic beverages, including switchel, shrubs, kvass, and ginger ale. Here are some key points:

- Good “bugs” refer to good bacteria that is rich in probiotics.
- Traditional cultures have a wide variety of probiotic-rich beverages.
- Probiotic beverage recipes can be adjusted to include the ingredients you have available.
- Switchel is an electrolyte drink consisting of ginger, raw apple cider vinegar, sweetener, and water.
- Shrubs are mixtures of fresh fruit, herbs, water, and raw apple cider vinegar. They can be used as a base for different mocktail recipes.
- A ginger bug is a fermented form of fresh ginger and sugar that can be used to make ginger ale and other sodas.
- Kvass is a fermented beverage from Eastern Europe that is often made from beets or rye bread.

K-4: Haymaker’s Switchel Punch

The K-4 lesson focuses on homemade electrolyte beverages. Families will prepare a switchel punch with raw apple cider vinegar and ginger.

5-8: Pineapple Mojito Shrub Mocktail

The 5-8 lesson introduces students to probiotic-rich beverages. Families will prepare a mock mojito shrub using pineapple, raw apple cider vinegar, lime, and mint.

9-12: Homemade Ginger “Bug”

The 9-12 lesson introduces students to probiotic-rich beverages. Families will prepare a ginger bug that can be used as a base for ginger ale or other sodas.

A note on using all three lessons

Feel free to facilitate all three Chapter 10 lessons for your family, starting with K-4 and working your way up to 9-12. All three lessons use a completely different beverage recipe. The K-4 lesson introduces the concept of electrolytes. The 5-8 lesson focuses on the benefits of probiotics. The 9-12 lesson has students compare and contrast different types of probiotic beverages.

K-4: Haymaker's Switchel Punch

Overview

This lesson focuses on homemade electrolyte beverages. Families will prepare a switchel punch with raw apple cider vinegar and ginger.

Learning Objectives

In this lesson, families will:

1. Discuss the benefits of making beverages at home
2. Define *electrolytes*
3. Prepare switchel, following a recipe ("Haymaker's Switchel Punch," p. 214)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Art supplies or something to draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Half-gallon jar with tight-fitting lid
- Ground ginger
- Fine ground sea salt
- Raw apple cider vinegar
- Molasses, honey, or maple syrup
- Filtered, chlorine-free water

Vocabulary

- **Electrolytes:** electrically charged minerals in your body that help you stay hydrated
- **Hydrated:** having enough water in your body
- **Probiotics:** the good bacteria that help us digest our food

Activity: What Are Electrolytes?

1. Ask your students if they have ever tried a sports drink before, or if they have seen sports drinks at the store or in advertisements. Ask them to describe sports drinks (or guess what they're like). Here are some questions to guide their responses:
 - What do sports drinks look like? What colors are they?
 - What do sports drinks taste like? Are they sweet? Do they taste fruity?
 - Do you think sports drinks are good for us? Why or why not?
2. Point out to (or elicit from) your students that sports drinks are usually loaded with sugar and chemicals. However, sports drinks do have something that is good for us: electrolytes.

3. Ask your students if they have heard of electrolytes before. You might ask them any of these questions:
 - What are electrolytes? If you don't know, guess!
 - What does the word *electrolyte* sound like? (Electric?)
 - What is electricity?
 - How are electrolytes good for our health?
4. Share the following definitions with your students:
 - **Electrolytes:** electrically charged minerals in your body that help you stay hydrated
 - **Hydrated:** having enough water in your body
Note: Younger students may struggle with these words and the concepts they represent. That's okay! Simplify it as much as necessary. The most important thing for your students to understand is that drinking enough water is one way we stay healthy. You might say that water is great for us, but electrolytes can "supercharge" or "electro-charge" our water making it even more powerful.
Safety Note: You may also need to clarify that although the electricity in our bodies doesn't hurt us, electricity from wires, plugs, and outlets is very dangerous. Drinking electrolyte water is safe, but mixing water and electricity is never safe.
5. Reiterate the following points to help your students understand what electrolytes are:
 - Electrolytes are already in our body.
 - Electrolytes are minerals, which are good for our nutrition.
 - Electrolytes are actually electric! Did you know that there is electricity running through our bodies at all times?
 - Electrolytes make sure that the cells in our body have the right balance of water. Did you know that more than half of your body is made of water?
 - Staying hydrated is important for our health in general. It's also very important when we are exercising, running around, or playing sports. That's why there are electrolytes in sports drinks.
 - Electrolytes can also be found in real salt, as well as all kinds of different foods.
 - *Safety Note:* You may also need to clarify that although the electricity in our bodies doesn't hurt us, electricity from wires, plugs, and outlets is very dangerous. Drinking electrolyte water is safe, but mixing water and electricity is never safe.
6. Have your students draw a picture of themselves when they are really thirsty and dehydrated. (If they get stuck, tell them to picture a dried-out plant.) Then, have them draw a picture of themselves after drinking electrolyte water. Encourage them to be creative, for example by turning themselves into a superhero after drinking the electrolytes.
7. Wrap up by sharing your excitement about getting to make a homemade electrolyte drink for this lesson's recipe.

Discussion

1. Point out to your students that they learned a lot about electrolytes and the importance of staying hydrated. Ask your students why it is better to make our own electrolyte drinks instead of buying the ones sold at the store. You can use these questions to guide the discussion:
 - Are the sports drinks sold at stores good for us? Why or why not?
 - Why is it good to make things at home?
 - Why is it good to know how foods and drinks are made?
 - How many plastic sports drink bottles do you think get thrown away every year?
2. Tell your students that the drink they will learn to make is called switchel. It can also be called “switzel,” “swizzle,” and “switchy.” Switchel is a traditional drink that has been made for hundreds of years. It’s made from apple cider vinegar, water, ginger, and sweetener.
3. Ask your students if they remember using apple cider vinegar in another recipe. If your students need prompting, remind them that they used apple cider vinegar to make their bone broth and their ketchup.
4. Ask your students if they know any of the health benefits of apple cider vinegar. To guide them, tell them that apple cider vinegar contains the same kind of good bacteria as the fermented pickles they made. Remind them that these bacteria are called probiotics. Share the following definition from the Chapter 5 lesson:
 - **Probiotics:** the good bacteria that help us digest our food
5. Explain to your students that we can add apple cider vinegar to water and other ingredients to make a refreshing, probiotic-rich drink.
6. Tell your students that the switchel they will be making is called Haymaker’s Switchel Punch. Ask your students what they think a *haymaker* is. Guide them to see that a haymaker is someone who grows and cuts hay. Ask them why they think the switchel recipe might be named after haymakers. Guide them to see that farming and cutting hay are difficult tasks, and working in the sun all will leave haymakers needing healthy hydration.
7. Close the discussion by giving your students an opportunity to ask questions or make comments about what they learned.

Recipe

1. Tell your students that it’s time to make their switchel! Have them turn to page 214 of *The Modern Pioneer Cookbook*, “Haymaker’s Switchel Punch.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Read the entire recipe aloud with your students. (Although this step may seem unnecessary to you, it will help your students better understand the procedure. This allows them to be active participants in the process, rather than simply obeying directions in isolation or out of context.)

5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. This recipe is extremely simple, requiring no heat and no knives. Always use your best judgment, as you know your students best.
 - Remember the two main themes of this lesson: homemade food and low-waste kitchens. Throughout the cooking process, look for opportunities to discuss or practice these concepts. For example, you might point out that you are using reusable jars instead of disposable plastic bottles. Depending on your students' age, you might also compare the cost of store-bought sports drinks to the cost of making your switchel.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When they're finally ready, it's time to taste! While you are enjoying your switchel, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what to do differently next time, such as trying a different sweetener or adding a little extra water.

Interdisciplinary Extensions

Reading

Hey, Hey, Hay!

Writing

How many words can you write down using only the letters in SWITCHEL? How many words can you write down using only the letters in ELECTROLYTE?

Math

How much of each ingredient would you need if you wanted to make 2 jars of Haymaker's Switchel Punch?

Science

How is apple cider vinegar made?

History

Switchel was very popular in the 1700s. What are some things that happened in the 1700s?

Culture

What did other Colonial Americans eat or drink? Where would they have obtained the ingredients for this Switchel or other popular beverages? Would some items be homemade and others imported? Where would they have imported ginger for the Switchel? In what American colonies would they have commonly used molasses, honey, or maple sugar?

Art

Draw a picture of students in Colonial America drinking switchel. What are they wearing? What games are they playing?

Kitchen Economy

How long will your switchel last? Check page 214 of *The Modern Pioneer Cookbook* (step 4).

Nutrition

What are some foods that naturally contain electrolytes?

Decision-Making

How did you decide which sweetener to use?

Social-Emotional Learning

Did you like drinking switchel? Do you think most kids would like switchel? Why or why not?

Video Resources

How to Make Switchel – The 18th Century Energy Drink:

<https://marysnest.com/switchel-the-18th-century-energy-drink/>

How to Make a Homemade Electrolyte Drink:

<https://marysnest.com/how-to-make-a-homemade-electrolyte-drink/>

How to Make Homemade Apple Cider Vinegar:

<https://marysnest.com/how-to-make-homemade-apple-cider-vinegar/>

5-8: Pineapple Mojito Shrub Mocktail

Overview

This lesson introduces students to probiotic-rich homemade beverages. Families will prepare a mock mojito shrub using pineapple, raw apple cider vinegar, lime, and mint.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of using real-food ingredients in the beverages we drink
2. List the benefits of probiotic-rich beverages
3. Prepare a shrub beverage, following a recipe (“Pineapple Mojito Shrub Mocktail,” p. 215 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with
- Six index cards, with the following benefits of probiotics written on them (1 per card):
 - Help with digestion
 - Strengthen immune system
 - Reduce inflammation
 - Improve dermatological health
 - Prevent allergies
 - Lower blood pressure
- Six more index cards, with the following explanations of the benefits written on them (1 per card):
 - Probiotics can make it easier to break down food and drink and turn it into energy for our bodies.
 - Probiotics can make it easier for our bodies to fight off sickness.
 - Probiotics can help our bodies calm down from redness, heat, and pain caused by illnesses ending in “-itis.”
 - Probiotics may help clear up acne, eczema, and other skin conditions.
 - Probiotics can help create a stronger immune response to different allergens.
 - Probiotics can reduce the force of blood pushing against blood vessel walls.

For recipe:

- *The Modern Pioneer Cookbook*
- Half-gallon jar with tight-fitting lid
- Long-handled wooden spoon, kraut pounder, or muddler
- Mesh strainer
- Bowl or large measuring cup
- Ingredients: cubed pineapple, fresh mint leaves, limes, honey, raw apple cider vinegar, chlorine-free water, garnish (pineapple slices with rind, lime slices, and/or mint sprigs)

Vocabulary

- **Probiotics:** the good bacteria that help us digest our food

Discussion

1. Begin the discussion by asking your students what their favorite things to drink are. Have them make a list of their favorites on a piece of paper or whiteboard.
2. Ask your students to circle all the drinks on their list that are healthful. Feel free to expand the discussion beyond your students' favorites to evaluate the nutritional value of other drinks as well. (For example, even if your students don't mention soda as one of their favorite drinks, you can ask them if soda is nutritious.) See if your students can explain why a particular drink is or isn't healthy (it's okay if they're not sure).
3. Ask your students how we can know whether a particular drink is nutritious. If you have any store-bought beverages at home, examine their ingredients with your students. (As an alternative, you can ask your students to name a popular drink, and then you can look up the ingredients together online.)
4. Tell your students that on food and drink packaging, ingredients are listed from greatest to least amount. In other words, the first ingredient listed has the largest quantity, and the last ingredient is the smallest amount.
5. Encourage your students to evaluate the ingredients to the best of their knowledge. They are not expected to know what every ingredient is, or even how to pronounce them all. They should simply do their best to evaluate whether the ingredients seem nutritious or not. Here are some questions to guide them:
 - What is the first ingredient? Does it sound healthy?
 - What kind of sweetener is used? (Whole-food sweeteners include honey, maple syrup, and molasses. Less healthful sweeteners include high fructose corn syrup and aspartame.)
 - Are there any artificial flavors or colors listed?
 - Are there any ingredients you have never heard of?
 - Are there any ingredients that sound like chemical names?
6. Tell your students that it's best to drink beverages with real-food ingredients. Ask your students to name some real-food ingredients that might be used in drink recipes. (Answers include fruits, herbs, dairy, and sweeteners like honey and maple syrup.)
7. Ask your students why it's important to use real-food ingredients in our drinks. Guide them to see that real-food ingredients are better for our health. Many store-bought drinks have a lot of sugar, artificial flavors, and artificial colors. Reiterate that we can know for sure that our drinks are nutritious when we make them at home.

Activity

1. Ask your students what they remember about probiotics from Chapter 5 when they made Sweet & Sour Fermented Red Cabbage. Share the following definition from Chapter 5:
 - **Probiotics:** the good bacteria that help us digest our food

2. Tell your students that, in addition to probiotic-rich food, we can also enjoy probiotic-rich drinks. Ask your students if they know of any probiotic-rich drinks, such as kefir, kombucha, or yogurt smoothies. (If they don't, that's okay!)
3. Tell your students that there are many benefits of probiotic-rich beverages. To learn about them, tell your students that you will play a matching game. Show your students the six index cards with the benefits of probiotics. Give them a chance to read the cards and spread them out on the table. Ask them if they know what any of these benefits mean.
4. Now give them the six cards with the explanations of each benefit. Give your students some time (and assistance, as needed) to match up the cards as follows:

Probiotic Benefits	Explanation
Help with digestion	Probiotics can make it easier to break down food and drink and turn it into energy for our bodies.
Strengthen immune system	Probiotics can make it easier for our bodies to fight off sickness.
Reduce inflammation	Probiotics can help our bodies calm down from redness, heat, and pain caused by illnesses ending in "-itis."
Improve dermatological health	Probiotics may help clear up acne, eczema, and other skin conditions.
Prevent allergies	Probiotics can help create a stronger immune response to different allergens.
Lower blood pressure	Probiotics can reduce the force of blood pushing against blood vessel walls.

5. Ask your students to draw a simple picture on the back of each benefit card. The drawing should represent the benefit of probiotics listed on the card. For example, for the digestion card, they could draw a picture of someone eating or holding their stomach.
6. Go over your students' drawings and ask them to explain their choices. Point out the strengths of their drawings. Give them an opportunity to ask questions or make comments about what they learned.

Recipe

1. Tell your students that today they will learn to make a probiotic-rich drink called a shrub. Explain that shrubs were very popular drinks from the 1600s to the 1800s in England and Colonial America.
2. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above).

3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Turn to page 215 of *The Modern Pioneer Cookbook*, “Pineapple Mojito Shrub Mocktail.” Ask your students what they think a “mocktail” is. Explain that a cocktail is a mixed drink that contains alcohol. To “mock” means to copy something. So a “mocktail” is a mixed drink that does not contain alcohol. Together, read the entire recipe aloud (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. While preparing the shrub, look for opportunities to discuss these concepts. For example, you might ask your students what seasonal fruits could be used to make shrubs.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it’s finally ready, it’s time to taste! While you are enjoying your shrub, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what variations you could make in the future.

Interdisciplinary Extensions

Writing

What other meanings does the word *shrub* have? Why do you think a shrub is called a *shrub*? Write a paragraph explaining your opinion.

Math

How much of each ingredient would you need if you wanted to make two jars of shrub?

Science

How did you make sure that your shrub was kept between 68°F-72°F (20°C-22°C) while it steeped? What would happen if it got too hot or too cold?

History

Read “A Little Sip of History” on page 211 of *The Modern Pioneer Cookbook*. Was anything especially interesting or surprising?

Culture

Can you find out about any cultural drinks that are similar to shrubs? Where are they from?

Art

Draw a picture of a shrub that you think would taste delicious! Make sure it's a little different from the mocktail you made for this lesson.

Kitchen Garden

Mint is a refreshing herb that tastes delicious in shrubs. Try growing some mint on your windowsill!

Kitchen Economy

How long will your pineapple liquid stay fresh? Check page 215 of *The Modern Pioneer Cookbook* (step 5).

Nature Study

If you have the chance to see a mint plant in person, take some time to observe it and draw what you see.

Nutrition

What are some of the health benefits of pineapple?

Decision-Making

Did you choose to garnish your shrub with a pineapple slice, lime slice, and mint sprig? Why or why not?

Social-Emotional Learning

Were you excited to taste your shrub, or did you feel nervous because vinegar can be strong? How did you feel after you tasted it?

Video Resources

How to Make a Pineapple Mint Shrub Mocktail:

<https://marysnest.com/how-to-make-a-pineapple-mint-shrub-mocktail/>

How to Make A Shrub – A Drink from the 1700s:

<https://marysnest.com/how-to-make-a-shrub-a-drink-from-the-1700s/>

9-12: Homemade Ginger “Bug” and Homemade Ginger Ale

Overview

This lesson introduces students to probiotic-rich homemade beverages. Families will prepare a ginger bug to be used as a base for ginger ale.

Learning Objectives

In this lesson, families will:

1. Discuss the importance of homemade probiotic beverages for maximizing nutritional value and working towards self-sufficiency
2. Compare and contrast various probiotic beverages
3. Prepare a ginger “bug” and ginger ale following recipes (“Homemade Ginger ‘Bug,’” p. 216 of *The Modern Pioneer Cookbook*; “Homemade Ginger Ale,” p. 217 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- 2 quart-size jars with tight-fitting lid
- 4 (8 fl oz / 237 mL) bottles with screw-on caps (not airtight)
- Mesh strainer
- 2 bowls
- Flour-sack towel or cheesecloth
- Ingredients: fresh ginger, sugar, chlorine-free water

Vocabulary

- **Probiotics:** the good bacteria that help us digest our food

Discussion

1. Begin the discussion by asking your students to list their favorite beverages on a piece of paper or whiteboard. Then ask your students to identify the most and least nutritious drinks on their list. Encourage your students to explain their answers.
2. Ask your students what kinds of unwanted ingredients are in drinks that are commonly marketed to young people (such as sodas, sports drinks, etc.). If they are stuck, prompt them with questions like these:
 - How are these drinks sweetened?
 - How are these drinks flavored?
 - How are these drinks preserved so they don’t spoil?

- How are these drinks colored?
3. Tell your students that there are lots of healthier options, including drinks we can make at home. One broad category of nutritious drinks is probiotic-rich beverages. Ask your students if they remember what probiotics are from Chapter 5 lesson when they made sauerkraut. Share the following definition:
 - **Probiotics:** the good bacteria that help us digest our food
 Explain that there are different kinds of probiotic-rich beverages, and your students will be learning about them soon.
 4. If necessary, review some of the benefits of probiotics, as introduced in the Chapter 5 lesson. Probiotics:
 - Make it easier to digest
 - Make nutrients more bioavailable
 - Boost our immune system
 - Reduce inflammation
 - Support the growth of good bacteria in the digestive tract
 - Boost our mood
 - Optimize our brain health
 - Make our bones stronger
 - Reduce the risk of heart disease
 - Promote healthy skin
 - Protect against toxins in food (such as chemical pesticides)
 5. Now ask your students how making probiotic-rich beverages at home can help us maximize nutritional value and work towards self-sufficiency. Here are some questions to help guide the conversation:
 - Why are probiotic-rich drinks healthier than the sodas, sports drinks, and pasteurized juices sold in stores?
 - Are probiotic-rich drinks better than plain water? Why or why not?
 - What does it mean to be self-sufficient?
 - Why is it better to make drinks at home instead of buying them at the store?
 - What if the grocery stores closed or ran out of your favorite drinks?
 6. Conclude the discussion by reiterating that making probiotic-rich drinks at home allows us to enjoy additional health benefits compared to drinking plain water. This is a great way to maximize the nutritional value of our drinks. It also helps us to be more self-sufficient because we don't have to go to the store to buy our drinks.
 7. Give your students the opportunity to ask questions or make comments about what they learned.

Activity: Comparing Probiotic Drinks

1. Tell your students that there is more than one type of probiotic beverage. Ask your students if they can name any.
2. Have your students open *The Modern Pioneer Cookbook* to page 209. Together, preview the beverage recipes listed in the Chapter 10 contents. Tell your students that they are going to compare and contrast these different drinks. Have your students make a chart like this one:

	Key ingredients	How long to make	Interesting facts
Switchel			
Mojito shrub			
Ginger-bug sodas			
Kvass			

Tell your students that they will read the introduction to Chapter 10 and fill in the chart with information they learn.

- Have your students turn to page 210, "Getting Started with Probiotic Beverages." Together, read pages 210-213, pausing to fill in the chart. Your students may also need to read or skim through specific recipes to get the information they need for their charts.
- When they are finished, go over their chart together and discuss the similarities and differences between each beverage. (Remind your students that one similarity all of these drinks have in common is that they contain probiotics. Another similarity is that they are all made with water.) Their finished chart should look something like this:

	Key ingredients	How long to make	Interesting facts
Switchel	Ginger, sea salt, apple cider vinegar, sweetener	5 minutes	-Popular in Colonial America -Also called haymaker's punch, switzel, swizzle, and switchy
Mojito shrub	Pineapple, mint, lime, honey, apple cider vinegar	40 minutes	-Originally made with alcohol -Used as medicine in 1400s -Used by sailors in 1600s -Non-alcoholic version in Colonial America
Ginger-bug sodas	Ginger, sugar	9 days	-The ginger bug can be used to make a wide variety of sodas
Kvass	Beets or stale rye bread and apples	1-3 weeks (depending on type)	-Comes from Eastern Europe -Can be steeped with spices for a holiday beverage

5. If they want to, give your students the opportunity to illustrate their chart by drawing a picture of each probiotic beverage.
6. Ask your students which probiotic drinks they are most excited about trying.
7. Conclude by giving your students a chance to ask questions or make comments about what they learned.

Recipe

1. Tell your students that today they will learn to make a ginger “bug” that will be used to make ginger ale, and can also be used to make other flavored sodas.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Turn to page 216-217 of *The Modern Pioneer Cookbook*. Together, read both recipes aloud (you can take turns).
5. Follow the recipes, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing food's nutritional value and preserving food for self-sufficiency. Throughout the fermentation process, look for opportunities to discuss or practice these concepts.
 - As the ginger bug ferments, encourage your students to observe the jar every day. They should pay attention to how the mixture changes and take notes about what they observe in their kitchen journals.
6. When it's finally ready, it's time to taste! While you are enjoying your soda, have a discussion about the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what other flavor variations you might try next time.

Interdisciplinary Extensions

Writing

Turn your chart into a short essay in which you compare and contrast the different probiotic beverages you learned about.

Math

It takes six days to make a ginger bug. If you made a ginger bug every six days for a year, how many jars would you have made?

Science

Did you use aerobic or anaerobic fermentation to make your ginger bug? What kind of bacteria did you use in your fermentation?

History

Research the history of switchels and shrubs. How did they get their start? How did they evolve over the years?

Culture

What cultural foods use a lot of ginger?

Art

What do you think of when you think of ginger? Spicy? Refreshing? Warm ginger tea? Cold ginger ale? Draw a picture that captures the character of ginger.

Kitchen Garden

Try growing ginger at home! If you will be using containers, make sure they are wide rather than deep because ginger grows horizontally. Keep your potted ginger warm but away from strong sun.

Kitchen Economy

How long will your ginger ale stay fresh in a bottle with a screw top cap? Check page 217 of *The Modern Pioneer Cookbook* ("Cook's Notes").

Nature Study

If you have the chance to see ginger growing in a garden or on a farm, take some time to carefully observe and draw what you see.

Nutrition

What are some of the health benefits of ginger? Can it be used medicinally?

Decision-Making

Will you use your ginger bug to make a different flavor of soda? Explain your choice.

Social-Emotional Learning

Ginger beverages can help us feel better when we're sick. Have you ever drunk ginger tea for a cold or flu? What about ginger ale for an upset stomach? Do these drinks bring you a sense of emotional comfort as well? Why or why not?

Video Resources

How to Make a Ginger Bug for Making Probiotic Rich Fermented Drinks:

<https://marysnest.com/how-to-make-a-ginger-bug-for-making-probiotic-rich-fermented-drinks/>

Fermented Ginger Ale Recipe – A Probiotic-Rich Homemade Soda for Good Gut Health:

<https://marysnest.com/homemade-fermented-ginger-ale/>

Chapter 11 – Preserving Foods with Home Canning

Chapter 11 is dedicated to the practice of food preservation by canning. This is a worthy step towards being more self-sufficient. There are two types of home canning: water bath canning and pressure canning. Only water bath canning is discussed in *The Modern Pioneer Cookbook*. Water bath canning is a process of putting food into jars and boiling them to remove the air and seal the lid. You fill jars with high-acid foods, close them with a lid and a ring, and boil them on your stovetop. When you remove them from the water, the change in temperature causes the lids to “ping” and create an airtight seal.

Canning can seem intimidating at first, but that’s only because it’s new, and you need to get used to some new equipment. But after your first few canning projects, you will feel comfortable with the process, and you’ll love making your own storable foods. Here are some guidelines and tips for water bath canning at home:

- Canning rings (or bands) can be reused, but lids cannot.
- Always have extra canning jars on hand. You may end up with a bit more food than can safely fit in your jars. If you can fill an entire jar with the extra food, that’s another jar you can seal. But if you only have a little extra, store it in the refrigerator instead.
- Headspace refers to the distance between the top of the contents in the jar and the rim of the jar. Headspace matters because the food inside the jar expands, and if it leaks it may not be properly preserved. Pay attention to the specific headspace guidelines for each canning recipe you use.
- When closing your jars before placing them in the water bath, do not overtighten them. The ring needs to be “fingertip tight.” Turn the ring until you feel resistance, and then just a little more. (The ring is not what seals the jar, and you will be removing it for storage after your jar has cooled.) The jar needs to release air in the canning process. If you overtighten the ring, the jar may shatter because air cannot escape quickly enough.
- Sometimes your jars will “ping” or seal right away, but not always. Give your jars a full 24 hours to seal. The lid “button” will be depressed, and the lid will be slightly concave. If you have a jar that doesn’t seal, put it in the refrigerator and treat it as fresh food. It’s still perfectly fine to eat, but it won’t have an extended shelf life.
- When your jars have cooled, remove the rings and allow the sealed lid to do the work by itself. If the seal happened to come loose in storage, the ring would reseal the lid. But this would be a “false seal” because air has already seeped into the jar. With the ring off, you will not make the mistake of thinking that a jar has been properly preserved.
- Altitude can affect the canning process. If you are at an elevation of 1,000 feet or higher, consult the Cook’s Notes for your canning recipe for variations in instructions.

For canning, you will need certain supplies that are not basic kitchen tools. These include:

- Water bath canner with rack or large stockpot with rack
(Note: If you plan to use a water bath canner and have a glass-top stove, check with the manufacturer first. The stovetop can be cracked by a canner that is not approved for a glass-top stove.)
- Various size regular-mouth canning jars with lids and rings (also called “bands”)

- Various size wide-mouth canning jars with lids and rings
- Jar lifter
- Wide-mouth funnel for fitting over regular- and wide-mouth canning jars
- Ladle, preferably with a pour spout
- Magnetized lid lifter
- Debubbler (or flat butter knife and food-safe ruler)
- Cushioned drying mat or thick dish towels
- Jelly or candy thermometer
- Canning and pickling salt
- Pickle Crisp (sodium chloride, for canning pickles)

In addition to preparing for the Chapter 11 lessons by obtaining these supplies, it's also important to keep in mind that canning recipes call for large amounts of food. The K-4 lesson requires 5 cups of berries; the 5-8 lesson calls for 35 pears (17-18 pounds); and the 9-12 lesson needs 85 tomatoes (about 21 pounds).

K-4: Low-Sugar Old-Fashioned Pioneer Berry Apple Jam

The K-4 lesson introduces students to the practice of home canning. Families will preserve jam using the water bath canning method.

5-8: How to Home Can Fresh Fruit (with No Sugar)

The 5-8 lesson introduces students to the practice of home canning. Families will preserve fresh fruit using the water bath canning method.

9-12: How to Home Can Tomatoes

The 9-12 lesson introduces students to the practice of home canning. Families will preserve tomatoes using the water bath canning method.

A note on using all three lessons

Feel free to facilitate all three Chapter 11 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different canning recipe. The K-4 lesson teaches students about canning supplies. The 5-8 lesson has students focus on the steps of the canning process. In the 9-12 lesson, students think about the canning process in more detail.

K-4: Low-Sugar Old-Fashioned Pioneer Berry Apple Jam

Overview

This lesson introduces students to the practice of home canning. Families will preserve jam using the water bath canning method.

Learning Objectives

In this lesson, families will:

1. Discuss the benefits of home canning in a homemade, low-waste kitchen
2. Identify basic canning supplies
3. Use the water bath canning method to preserve several jars of jam, following a recipe ("Low-Sugar Old-Fashioned Pioneer Berry Apple Jam," p. 229-231 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write or draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Water bath canner and supplies (see the Chapter 11 overview before this lesson or pages 222-223 of *The Modern Pioneer Cookbook*)
- 7 half-pint (8oz) regular-mouth canning jars
- 7 half-pint (8oz) regular-mouth canning lids and bands
- Large deep pot or jam-making pot
- White vinegar (for wiping jar)
- Paper towel or clean kitchen towel
- Ingredients: berries, white cane sugar, Granny Smith apple, bottled lemon juice

Discussion

1. Tell your students that today they will learn about home canning. Ask your students to help you find some cans or jars of food in your kitchen. Ask them why most people have cans or jars of food in their kitchens. Guide your students to see that canned/jarred food can be stored in the pantry (not refrigerated) for a much longer time than if the food were fresh.
2. Ask your students how they think those cans or jars were sealed. Tell them that there are different ways to can food. They will be learning about the easiest method, called water bath canning.
Note: You may need to point out that even though we will be using glass jars, the process is still called "canning."
3. Tell your students that water bath canning goes like this:

- Fill your jars with food and liquid (following a recipe).
 - Close the jars and boil them in a large pot of water.
 - Take the jars out and let them cool. As they cool, the lids will seal, making a fun “ping” sound.
4. Steer the discussion towards the two recurring themes of the K-4 lessons: homemade food and low waste. Ask your students how home canning can help us achieve our goal of making homemade food without unnecessary waste. Here are some questions you may want to use as a guide:
 - What are some of the foods we commonly buy in jars or cans?
 - What are some differences between jars and cans of food we can buy at the store, and jars of food that we can at home?
 - Do we ever have so much of a fruit or vegetable that we don’t know what to do with it, or we end up throwing some of it away?
 - Imagine someone brought us a bushel of apples or tomatoes. How could we make sure that none of them go to waste?
 5. Ask your students to imagine the factories where store-bought foods are canned. What do they think the factories look like? Have your students draw a picture. Then, have them draw a picture of what they think it would look like to can at home. For example, they might draw a pantry full of colorful homemade jars of food. Or, they might draw themselves filling jars with food to be canned. Consider hanging these pictures in the kitchen to get inspired about home canning.
 6. Conclude the discussion by giving your students the opportunity to ask questions or make comments about home canning.

Activity: Canning Supplies

1. Remind your students that they have done a lot of cooking since starting the lessons for *The Modern Pioneer Cookbook*. Ask them to name some of the kitchen tools they have used.
2. Tell your students that home canning requires some new tools that they may not have seen before. Gather your canning supplies (see the Chapter 11 overview before this lesson or pages 222-223 of *The Modern Pioneer Cookbook*). Lay out your canning supplies in a safe way, making sure that all items are visible to your students
3. Ask your students to name any of the supplies that they can. Go over each item with your students, repeating its name as necessary, and explaining its purpose as follows:

Tool	Purpose/Explanation
Water bath canner with rack or large stockpot with rack	This is where the jars full of food will be boiled and sealed. The rack allows the boiling water to get underneath the jars evenly. It also prevents jars from breaking because they are too close to the heat.
Various size regular-mouth	-Lots of jars are needed for home canning. These should be in different sizes for different foods. (For example, tomatoes are

and wide-mouth canning jars with lids and rings (bands)	good in large jars, but jams and jellies are generally canned in small jars.) -Regular-mouth jars are great for pourable foods like jellies or sauces. -Wide-mouth jars are great for whole or chunks of fruits and vegetables. -The lids are what seal the jars, while the rings (bands) hold the lids in place during boiling.
Jar lifter	The jar lifter makes it possible to place jars carefully in the boiling water, and then lift the super-hot jars out of the boiling water.
Wide-mouth funnel for fitting over regular- and wide-mouth canning jars	The funnel makes it easier to fill your jars with food. Without a funnel, jar-filling can be really messy!
Ladle, preferably with a pour spout	A ladle is used to pour hot food and liquid into your canning jars. The pour spout makes it easy and neat.
Magnetized lid lifter	The magnetic lid lifter makes it easy to keep your lids totally clean as you lift them and place them on your jars.
Debubbler (or flat butter knife)	The debubbler removes any air bubbles inside your jar after filling it with food. If you don't remove these bubbles, they will rise to the top of the jar during the boiling process. As you will learn, the space at the top of the jar (called "headspace") needs to be exact.
Food-safe ruler (if debubbler does not have one)	In order to make sure you have the right amount of headspace at the top of your filled jars, you need to measure. If you're using a debubbler, it may have ruler marks on it. If you're using a butter knife to remove your bubbles, you will need a separate food-safe ruler. The amount of headspace you need will be specified in your recipe directions.
Cushioned drying mat or thick dish towels	When you remove your jars from the canner or stockpot, you don't want to place them directly on your counter. This could cause your jar to break. You want to cushion your jars with a thick drying mat or towels to protect them.
Jelly or candy thermometer	A thermometer is needed to make sure that your food is at the right temperature before it gets added to your jars.
Canning and pickling salt	Canning and pickling salt are specially designed for canning, unlike many table salts. Canning and pickling salts give us the most consistent results each time.

4. Give your students a chance to ask clarifying questions. Then give them an informal (low-pressure) "quiz" to see how many of the supplies they can name.
5. Allow your students to act out some of the steps of the canning process:

- Let them use the jar lifter to carefully lift a jar and place it down on the cushioned mat or towels.
 - Let them use the magnetized lid lifter to place and remove lids from jars.
 - Let them practice screwing rings onto jars “fingertip tight” (see page 224 of *The Modern Pioneer Cookbook*, “What Is Fingertip Tight?”).
 - Let them use the funnel and ladle to fill a jar with water or even small toys. Then let them use the debubbler to pop any bubbles (whether real or imaginary). Then let them use the debubbler or food-safe ruler to measure the jar’s headspace.
 - Let them use the thermometer to take the temperature of warm tap water.
- Safety Note: Canning jars are easily broken if dropped. Be sure to supervise your students at all times, and set guidelines for how to handle the jars (for example, only on the cushioned drying mat).
6. Conclude the activity by asking your students which canning task was the most fun, and why.

Recipe

1. Tell your students that today they will make a berry apple jam and can it into seven jars that can be stored in the pantry.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Share important safety information with your students. For example, you might say:
 - “It’s easy to break glass canning jars by accident, so let’s be extra careful when handling them. Please don’t grab any jars without asking.”
 - “The canner/stockpot will be very hot. When we remove the lid, steam will come pouring out, so make sure to stand back.”
 - “When the jars come out, they need to cool. Do not touch the jars when they are cooling on the mat/towels.”
4. Have your students turn to page 229 of *The Modern Pioneer Cookbook*, “Low-Sugar Old-Fashioned Pioneer Berry Apple Jam.” Read the entire recipe aloud with your students. (Although this step may seem unnecessary, it will help your students better understand the procedure. This allows them to be active participants in the canning process, rather than simply obeying directions in isolation or out of context.) Feel free to skip the “Cook’s Notes” section on page 231 unless you want to share something in particular with your students.
5. Follow the recipe, step by step. Consider the following:
 - This is the first recipe that isn’t concluded with a tasting! Before washing your ladle and jam-making pot, let your students have a small taste of the jam. If you have enough left over after filling your seven jars, store it in the refrigerator and eat it within a few days.
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Throughout the canning process, look for opportunities to discuss or practice these concepts.

- Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When you remove your jars, listen for the “pings”! After 24 hours, check the lids to ensure a proper seal. The lid should be slightly concave, with the “button” pressed down. Put your jars on your shelves for storage and encourage your students to admire how beautiful they look!
 7. Conclude by asking your students to reflect on the process of making and canning the jam. Ask them if they would like to try using different berries next time.

Interdisciplinary Extensions

Reading

Blueberries for Sal

Writing

Make a list of all the canning supplies you can remember. It’s okay if you’re not sure how to spell their names. Sound them out and do your best! (Advanced: Make a chart listing the canning supplies you used in one column, and a description of each tool in the other column.)

Math

How much of each ingredient would you need if you wanted to make 14 jars of jam instead of 7? What about 21 jars?

Science

Boiling the jars removes any air from the jars. Why is this important for storable (non-refrigerated) foods?

History

The jam recipe you made is called “Low-Sugar Old-Fashioned Pioneer Berry Apple Jam.” What is a pioneer? Why do you think this recipe has “pioneer” in the title? (Note: Pioneer is defined in the Chapter 1 lesson as “one of the first people to do something; one of the first people to explore or live in a new place.”)

Culture

Cultures around the world have their own versions of jams, jellies, and preserves. Guava jam is popular in Jamaica. In Korea, Cheong is a whole category of different types of jams and preserves. The Philippines has a special fermented coconut jam called Nata de Coco. Can you find each of these countries on a map or globe?

Art

Create an illustrated label for your jam jar! You can use a small piece of paper and some tape.

Kitchen Garden

Do you have enough space to grow some berries at home? If not, try to find out where wild berries might be growing somewhere nearby.

Kitchen Economy

How long will your jars of jam stay fresh in your pantry? Check page 230 of *The Modern Pioneer Cookbook* (step 14).

Nutrition

What vitamins and minerals can be found in different kinds of berries?

Decision-Making

How did you decide what kind of berries to use for your jam?

Social-Emotional Learning

Jars of homemade jam are a thoughtful gift. Who could you give one of your jars to? (Note: See “Cook’s Notes” on page 231.)

Video Resources

How to Make Strawberry Jam Without Pectin (with Water Bath Canning Tutorial):
<https://marysnest.com/strawberry-jam-without-pectin/>

How to Make Low Sugar Strawberry Jam:
<https://marysnest.com/low-sugar-strawberry-jam-with-water-bath-canning/>

The Essential Guide to Water Bath Canning Equipment and Supplies:
<https://marysnest.com/the-essential-guide-to-water-bath-canning-equipment-and-supplies/>

5-8: How to Home Can Fresh Fruit (with No Sugar)

Overview

This lesson introduces students to the practice of home canning. Families will preserve fresh fruit using the water bath canning method.

Learning Objectives

In this lesson, families will:

1. Discuss the benefits of home canning in a real-foods, seasonal kitchen
2. List the steps of water bath canning
3. Use the water bath canning method to preserve pears, following a recipe (“How to Home Can Fresh Fruit (with No Sugar),” p. 234-235 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write or draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Water bath canner and supplies (see the Chapter 11 overview before this lesson or pages 222-223 of *The Modern Pioneer Cookbook*)
- 8 quart-size (32oz) wide-mouth canning jars
- 8 quart-size (32oz) wide-mouth canning lids and rings
- Large stockpot
- White vinegar (for wiping jar)
- Paper towel or clean kitchen towel
- Ingredients: about 35 ripe but firm Bartlett pears (approximately 17-18 pounds), bottled lemon juice, tap water

Discussion

1. Ask your students to take out any can or jar of food from your pantry. Start a discussion about canned food. Consider asking any of these questions:
 - What are your favorite canned or jarred foods? What are your least favorites?
 - Do we buy a lot of canned or jarred food? Where do we get it? What kinds do we usually get?
 - Why is canned food useful? When might it be absolutely necessary?
 - What are the benefits of canned food?
 - What do you wonder about how food is canned?
 - How do we know if canned food has spoiled?
 - What are the pros and cons of canned food?

2. Ask your students if they think it is possible to create shelf-stable canned food at home. Tell them that there are several ways to can food, and they will be learning a method called water bath canning.
3. Steer the discussion towards the two recurring themes of the 5-8 lessons: real, whole foods and seasonal eating. Ask your students how canning food at home supports these goals. Here are some questions you can use to guide the conversation:
 - Do you think store-bought canned food uses real, whole foods? Why or why not? Can you name any examples to support your opinion?
 - Where are store-bought canned food items made?
 - What are the benefits of canning food at home?
 - How do you think home canning supports seasonal eating?
 - In what season(s) do you think people traditionally ate their canned foods?
4. Ask your students if they have ever tried anything that was canned at home, such as homemade jams or tomato sauce. If they have, ask them to describe the food's taste, texture, and appearance. If they haven't, ask them to imagine what a homemade jam might look, feel, and taste like.
5. Allow your students to leaf through Chapter 11 of *The Modern Pioneer Cookbook*, focusing on the pictures of home-canned foods. Then ask your students to picture the canned and jarred foods at the grocery store. Which ones look more beautiful or more special? Why?
6. Conclude the discussion by giving your students an opportunity to ask questions or make comments about home canning.

Activity: Water Bath Canning Steps

1. Tell your students that learning to can food at home is a great skill that can help them throughout their lives. When you know how to can your own food, it can save you money and help you ensure that you are only eating real, whole foods. Canned foods are also very important in case of an emergency.
2. Explain that there are multiple ways to can food, but you will be learning water bath canning. Water bath canning is a process of putting food into jars, closing them, and boiling them to create an airtight seal.
3. Tell your students that canning requires a new set of tools that may be unfamiliar. Gather your canning supplies and show them to your students. Ask them if they already know the names of any of the supplies. If not, that's okay! They are going to learn about them now.
4. Have your students turn to page 222 of *The Modern Pioneer Cookbook*, "Getting Started with Home Canning." Together, read the introduction (the first paragraph, in bold text). Then, read the section titled "Water Bath Canning Supplies" on pages 222-223. As you read the list, have your students identify each piece of equipment. If they're not sure, encourage them to guess, and correct them as needed.
5. Now ask your students what they think each tool is used for. If they're not sure, encourage them to guess, and correct them as needed. As a reference, you can use this chart from the K-4 lesson.

Tool	Purpose/Explanation
Water bath canner with rack or large stockpot with rack	This is where the jars full of food will go to be boiled and sealed. The rack allows the boiling water to get underneath the jars evenly. It also prevents jars from breaking because they are too close to the heat.
Various size regular-mouth and wide-mouth canning jars with lids and rings (bands)	<ul style="list-style-type: none"> -Lots of jars are needed for home canning. These should be in different sizes for different foods. (For example, tomatoes are good in large jars, but jams and jellies are generally canned in small jars.) -Regular-mouth jars are great for pourable foods like jellies or sauces. -Wide-mouth jars are great for whole or chunks of fruits and vegetables. -The lids are what seal the jars, while the rings (bands) hold the lids in place.
Jar lifter	The jar lifter makes it possible to place jars carefully in the boiling water, and then lift the super-hot jars out of the boiling water.
Wide-mouth funnel for fitting over regular- and wide-mouth canning jars	The funnel makes it easier to fill your jars with food. Without a funnel, jar-filling can be really messy!
Ladle, preferably with a pour spout	A ladle is used to pour hot food and liquid into your canning jars. The pour spout makes it easy and neat.
Magnetized lid lifter	The magnetic lid lifter makes it easy to keep your lids totally clean as you lift them and place them on your jars.
Debubbler (or flat butter knife)	The debubbler removes any air bubbles inside your jar after filling it with food. If you don't remove these bubbles, they will rise to the top of the jar during the boiling process. As you will learn, the space at the top of the jar (called "headspace") needs to be exact.
Food-safe ruler (if debubbler does not have one)	In order to make sure you have the right amount of headspace at the top of your filled jars, you need to measure. If you're using a debubbler, it may have ruler marks on it. If you're using a butter knife to remove your bubbles, you will need a separate food-safe ruler. The amount of headspace you need will be specified in your recipe directions.
Cushioned drying mat or thick dish towels	When you remove your jars from the canner or stockpot, you don't want to place them directly on your counter. This could cause your jar to break. You want to cushion your jars with a thick drying mat or towels to protect them.
Jelly or candy	A thermometer is needed to make sure that your food is at the

thermometer	right temperature before it gets added to your jars.
Canning and pickling salt	Canning and pickling salt are specially designed for canning, unlike many table salts. Canning and pickling salts give us the most consistent results each time.

6. Have your students turn to page 225 of *The Modern Pioneer Cookbook*. Have them read the two sections, titled “Preparing the Water Bath Canner and Supplies” (p. 225) and “Using your Water Bath Canner” (p. 225-226). Allow them to ask questions as they read.
7. Ask your students to summarize the water bath canning process, pointing to each piece of equipment as they mention it in their explanation.
8. Allow your students to review with you the canning process and overview of canning supplies a few times, as needed.
9. When your students feel confident that they can explain the purpose of each tool and the overall process of water bath canning, have them create a canning page in their kitchen journal. They should write down the steps for a water bath canning project, adding any notes about supplies that they want. When they are finished, go over the page with them and see if they missed any important points.
10. Allow your students to ask questions or make comments about home canning and canning equipment.

Recipe

1. Tell your students that today they will preserve fresh fruit by canning it in eight jars.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Have your students turn to pages 234-235 of *The Modern Pioneer Cookbook*, “How to Home Can Fresh Fruit (with No Sugar).” Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
5. Follow the recipe, step by step. Consider the following:
 - This is the first recipe that isn’t concluded with a tasting! If you have enough after filling your jars, let your students taste a piece of the fruit.
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. While canning, look for opportunities to discuss these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journal, or add to the canning page they created.
6. When you remove your jars, listen for the “pings”! After 24 hours, check the lids to ensure a proper seal. The lid should be slightly concave, with the “button” pressed down. Put your jars on your shelves for storage and encourage your students to admire how beautiful they look!

7. Conclude by asking your students to reflect on the process of making and canning the preserved fruit. Ask them if they would like to try using a different fruit next time.

Interdisciplinary Extensions

Writing

Write a poem or short story about saving fruit from spoiling by canning it.

Math

How much of each ingredient would you need if you wanted to make 16 jars of fruit instead of 8? What about 24 jars? 32 jars?

Science

Why is it important to leave the right amount of headspace in your jars? (See page 224 of *The Modern Pioneer Cookbook*.)

History

The history of canning is fascinating. Check out the illustrated timeline “How Did We Can? The Evolution of Home Canning Practices: A National Agricultural Library Digital Exhibit” at <https://www.nal.usda.gov/exhibits/ipd/canning/timeline-table>.

Why were victory gardens and home canning so important during World War II?

Culture

Can you interview a few people from different cultures? Ask them if home canning is a part of their traditions. If it isn't, ask them about other traditional ways to preserve food.

Art

Create an illustrated label for your jar of fruit! You can use a small piece of paper and some tape.

Kitchen Economy

How long will your jars of fruit stay fresh in your pantry? Check page 235 of *The Modern Pioneer Cookbook* (step 17).

Should you throw away the pear peels? Check page 235 of *The Modern Pioneer Cookbook* (“Cook’s Notes.”)

Nutrition

What vitamins and minerals can be found in pears?

Decision-Making

How did you decide what kind of fruit to use for your canning project?

Social-Emotional Learning

Jars of home-canned fruit are a thoughtful gift. Who could you give one of your jars to? (Note: See the fourth note under “Cook’s Notes” on page 231.)

Video Resources

How to Can Pears – NO SUGAR Recipe:

<https://marysnest.com/how-to-can-pears-no-sugar-recipe/>

The Essential Guide to Water Bath Canning Equipment and Supplies:

<https://marysnest.com/the-essential-guide-to-water-bath-canning-equipment-and-supplies/>

9-12: How to Home Can Tomatoes

Overview

This lesson introduces students to the practice of home canning. Families will preserve tomatoes using the water bath canning method.

Learning Objectives

In this lesson, families will:

1. Discuss the benefits of home canning for self-sufficiency
2. Describe the process of water bath canning in detail
3. Use the water bath canning method to preserve tomatoes, following a recipe (“How to Home Can Tomatoes,” p. 236-237 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write or draw with

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Water bath canner and supplies (see the Chapter 11 overview before this lesson or pages 222-223 of *The Modern Pioneer Cookbook*)
- 8 quart-size (32oz) wide-mouth canning jars
- 8 quart-size (32oz) wide-mouth canning lids and rings
- Large stockpot
- Large bowl
- Slotted spoon
- Ice water
- Sharp paring knife
- White vinegar (for wiping jar)
- Paper towel or clean kitchen towel
- Ingredients: about 85 Roma or plum tomatoes (about 21 pounds), bottled lemon juice, canning and pickling salt (optional), tap water

Discussion

1. Tell your students that you will start today’s discussion by making a mind map or word cloud. On a whiteboard or piece of paper, ask your students to write the phrase “Canned Food” in the center of the writing surface. Ask them what comes to mind when they think of canned food. Tell them to branch off of the central term (“Canned Food”) with any words that they can connect to the concept of canned food. If they get stuck, you can use these questions to prompt them:
 - What kinds of foods come in cans?

- Where are canned goods sold?
 - What are the benefits of canned food?
 - What are the downsides of canned food?
 - What kinds of canned food do you like?
 - What kinds of canned foods are healthiest?
 - Who eats canned foods? Why?
 - What kinds of foods are good to have in an emergency?
 - Are canned goods refrigerated? Why or why not?
2. Tell your students that they are going to learn to can food at home. Although there are several methods of canning, they will only be learning one because it is the easiest method to use at home. This method is called water bath canning.
 3. Ask your students if they know how home (water bath) canning is done. If they don't, encourage them to guess. Give them a basic overview of the process: You fill jars with food and then boil them with their lids on to create an airtight seal. Explain that they will learn about the details in another part of the lesson.
 4. Steer the discussion towards the theme of self-sufficiency. Ask your students how home canning can help families work towards self-sufficiency. Use any of these questions to guide them:
 - What does it mean to be self-sufficient?
 - Why is self-sufficiency important in general?
 - In what kinds of situations is self-sufficiency especially important?
 - What is the purpose of home canning?
 - How can it be empowering to can your own food at home?
 - Why might it be better to can food at home than to stock up on canned food from the store?
 - How much food do you think you would have to can in order to be prepared for an emergency?
 5. Conclude the discussion by allowing your students to ask questions or make comments about the idea of self-sufficiency.

Activity: All About Canning

1. Tell your students that they will now learn about the water bath canning process in more detail. Have them turn to page 222 of *The Modern Pioneer Cookbook*, "Getting Started with Home Canning." Together, read the entire section, up to page 227 (you can take turns). After each subsection, pause to discuss what you read. Allow your students to pause and ask questions at any point while reading.
2. Have your students help you gather your canning supplies. Challenge them to identify each item based on what they read. If they get stuck, refer to this chart summarizing canning supplies and their purposes, from the K-4 lesson:

Tool	Purpose/Explanation
Water bath	This is where the jars full of food will go to be boiled and sealed.

canner with rack or large stockpot with rack	The rack allows the boiling water to get underneath the jars evenly. It also prevents jars from breaking because they are too close to the heat.
Various size regular-mouth and wide-mouth canning jars with lids and rings (bands)	<ul style="list-style-type: none"> -Lots of jars are needed for home canning. These should be in different sizes for different foods. (For example, tomatoes are good in large jars, but jams and jellies are generally canned in small jars.) -Regular-mouth jars are great for pourable foods like jellies or sauces. -Wide-mouth jars are great for whole or chunks of fruits and vegetables. -The lids are what seal the jars, while the rings (bands) hold the lids in place.
Jar lifter	The jar lifter makes it possible to place jars carefully in the boiling water, and then lift the super-hot jars out of the boiling water.
Wide-mouth funnel for fitting over regular- and wide-mouth canning jars	The funnel makes it easier to fill your jars with food. Without a funnel, jar-filling can be really messy!
Ladle, preferably with a pour spout	A ladle is used to pour hot food and liquid into your canning jars. The pour spout makes it easy and neat.
Magnetized lid lifter	The magnetic lid lifter makes it easy to keep your lids totally clean as you lift them and place them on your jars.
Debubbler (or flat butter knife)	The debubbler removes any air bubbles inside your jar after filling it with food. If you don't remove these bubbles, they will rise to the top of the jar during the boiling process. As you will learn, the space at the top of the jar (called "headspace") needs to be exact.
Food-safe ruler (if debubbler does not have one)	In order to make sure you have the right amount of headspace at the top of your filled jars, you need to measure. If you're using a debubbler, it may have ruler marks on it. If you're using a butter knife to remove your bubbles, you will need a separate food-safe ruler. The amount of headspace you need will be specified in your recipe directions.
Cushioned drying mat or thick dish towels	When you remove your jars from the canner or stockpot, you don't want to place them directly on your counter. This could cause your jar to break. You want to cushion your jars with a thick drying mat or towels to protect them.
Jelly or candy thermometer	A thermometer is needed to make sure that your food is at the right temperature before it gets added to your jars.
Canning and	Canning and pickling salt are specially designed for canning,

pickling salt	unlike many table salts. Canning and pickling salts give us the most consistent results each time.
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3. Acknowledge to your students that this is a lot of information to take in and remember, and encourage them to review “Getting Started with Home Canning” (p. 222-227) and the reference chart above as much as they like.
4. Tell your students that they will now create a “one-pager” to summarize what they have learned about canning. Their one-pager should include everything a person needs to know about water bath canning, as simply and as briefly as possible. Their one-pager should be:
 - On a piece of unlined paper or posterboard
 - Visually pleasing, with text that is easy to read and colors and/or images to illustrate the information

If you or your students have never seen a one-pager before, do an internet search for “student one-pagers” to see some examples and get some inspiration. You can also search for “student one-pager templates” to see different layouts. You can even print out a blank template if your students want to use one.

5. Tell your students that their one-pager should mention:
 - Necessary water bath canning supplies (“Water Bath Canning Supplies,” p. 222-223 of *The Modern Pioneer Cookbook*)
 - Headspace (“What Is Headspace?,” p. 224 of *The Modern Pioneer Cookbook*)
 - A proper seal (“Understanding a Proper Seal,” p. 225 of *The Modern Pioneer Cookbook*)
 - The steps of the process (“Using Your Water Bath Canner,” p. 225-226 of *The Modern Pioneer Cookbook*)
 - How to store sealed jars (“Tips for Keeping Your Canned Goods Fresh,” p. 227 of *The Modern Pioneer Cookbook*)
 - Any helpful tips your students want to include (“Always Have Extra Canning Jars on Hand,” p. 223 of *The Modern Pioneer Cookbook*; “What Is Fingertip Tight?,” p. 224 of *The Modern Pioneer Cookbook*; “The Role of Altitude,” p. 226-227 of *The Modern Pioneer Cookbook*; “Don’t Get Overwhelmed, You Can Do This!,” p. 227 of *The Modern Pioneer Cookbook*)
6. Give your students time to work on their one-pagers, making sure they have access to *The Modern Pioneer Cookbook* and possibly the reference chart from step 2 (above). When they are finished, ask them to present their one-pager to you, and possibly other friends or family members who are interested in learning about canning.
7. Conclude the activity by giving your students positive feedback for working so hard to learn this new, slightly complex, process. Share your excitement about the fact that your students will get a chance to can their own food at home, putting their new knowledge into practice.

Recipe

1. Tell your students that today they will preserve fresh tomatoes by canning them in eight jars.
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Have your students turn to pages 236-237 of *The Modern Pioneer Cookbook*, “How to Home Can Tomatoes.” Read the entire recipe aloud with your students. (You can take turns.) Give them the opportunity to ask questions about the process.
5. Follow the recipe, step by step. Consider the following:
 - This is the first recipe that isn’t concluded with a tasting! If you have enough after filling your jars, let your students taste a piece of tomato.
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. While canning, look for opportunities to discuss these concepts.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journal.
6. When you remove your jars, listen for the “pings”! After 24 hours, check the lids to ensure a proper seal. The lid should be slightly concave, with the “button” pressed down. Put your jars on your shelves for storage and encourage your students to admire how beautiful they look!
7. Conclude by asking your students to reflect on the process of making and canning the tomatoes. Ask them which canning recipe they would like to try next time.

Interdisciplinary Extensions

Writing

Turn your canning one-pager into an explanatory essay with an introduction, body paragraphs, and a conclusion.

Math

“How to Home Can Tomatoes” has the following quantities: 8 quarts, 32 ounces, 21 pounds, 14 tablespoons, and 7 teaspoons. Convert each quantity to the metric system by multiplying it by the appropriate conversion factor, as shown below:

- Quarts to liters: multiply by 0.95
- Ounces to milliliters: multiply by 30
- Pounds to kilograms: multiply by 0.45
- Tablespoons to milliliters: multiply by 15
- Teaspoons to milliliters: multiply by 5

Science

Water bath canning only works with high-acid foods that have a pH of less than 4.6. What are some foods that can be canned using the water bath method? Why does this method only work with acidic foods? (Hint: Look up *clostridium botulinum*.)

History

Canning was invented by Nicholas Appert in France at the turn of the nineteenth century. Napoleon offered a 12,000-franc reward to anyone who developed a reliable food preservation method that could be used to feed troops during the Napoleonic Wars. Appert used cork to hermetically seal the jars in a boiling water bath. Interestingly Appert and his contemporaries could not explain why his invented method was effective. Today's science can explain it, though. Can you explain it? Can you find out about the next development in canning history?

Culture

Home canning, which started in France, became very popular in the United States. Some say it is especially important for the Franco-American community. Which areas of the country have the most people of French descent?

Art

Jar lids cannot be reused after they have been in boiling water (although the rings can). Can you think of a way to upcycle used jar lids into an art project? Ideas include wind chimes, coasters, and magnets.

Kitchen Economy

How long will your jars of fruit stay fresh in your pantry? Check page 237 of *The Modern Pioneer Cookbook* (step 19).

Should you throw away the tomato skins, stems, and cores? Check page 237 of *The Modern Pioneer Cookbook* ("Cook's Notes.")

Nutrition

What vitamins and minerals can be found in tomatoes?

Decision-Making

When you finally open your jars of tomatoes, what recipes will you make with them? (Note: Canned tomatoes should be cooked before eating.)

Social-Emotional Learning

Jars of home-canned tomatoes are a thoughtful gift. Who could you give one of your jars to? (Note: See the fourth note under "Cook's Notes" on page 231.)

Video Resources

Canning Crushed Tomatoes with Water Bath Tutorial:

<https://marysnest.com/canning-crushed-tomatoes-with-water-bath-tutorial/>

The Essential Guide to Water Bath Canning Equipment and Supplies:

<https://marysnest.com/the-essential-guide-to-water-bath-canning-equipment-and-supplies/>

Chapter 12 – Preserving Foods by Drying

Chapter 12 introduces another way to preserve foods, this time by drying them. Here are some key points:

- There are four methods of drying food:
 - Air drying
 - Oven drying
 - Drying in an electric dehydrator
 - Microwave drying (not used in *The Modern Pioneer Cookbook*)
- Although an oven can be used for most dehydrating recipes, sometimes an electric dehydrator is preferable. For example, when drying pungent foods like onion and garlic, dehydrators can be moved outside so that your house doesn't smell like onion for weeks!
- You don't need to buy the most expensive dehydrator. Start with a mid-grade model and see if dehydrating is something you will be doing regularly before making a major investment. Also, check your local thrift stores and online marketplaces for used options.
- Other helpful dehydrating supplies include silicone mats, jars in various sizes, and silica gel packs (for humid climates).
- It's important to ensure that your food has dried sufficiently before storing it in your pantry. After drying a food and putting it into a jar, leave the jar out for a few days to be observed (do not leave it in direct sunlight). Make sure that no condensation forms inside the jar. If it does, remove the food from the jar and continue drying it a little longer.

Before getting started, make sure you have the ingredients you need for the recipes you will be following. The K-4 recipe calls for 12 apples, the 5-8 recipe requires 12 oranges or other citrus fruits, and the 9-12 recipe needs an assortment of fresh herbs. For the 9-12 lesson, try to choose at least three different herbs so that your students can compare and contrast the way they look and feel. Consider consulting the chart in the 9-12 lesson before purchasing your herbs, so that you can be sure to select some high-moisture herbs and some low-moisture herbs.

K-4: How to Dry Apple Slices

The K-4 lesson introduces students to the practice of drying foods at home. Families will preserve apple slices by drying them in the oven.

5-8: How to Dry Citrus and Citrus Peel

The 5-8 lesson introduces students to the practice of drying foods at home. Families will preserve citrus slices by drying them in the oven.

9-12: How to Dry Fresh Herbs

The 9-12 lesson introduces students to the practice of drying foods at home. Families will preserve fresh herbs by air-drying them or drying them in an electric dehydrator.

A note on using all three lessons

Feel free to facilitate all three Chapter 12 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a completely different drying recipe. The K-4 lesson introduces the concept of dehydration. The 5-8 lesson teaches students how dehydration works to preserve food. In the 9-12 lesson, students learn to identify low-moisture and high-moisture herbs to determine the appropriate drying method for different herbs.

K-4: How to Dry Apple Slices

Overview

This lesson introduces students to the practice of drying foods at home. Families will preserve apple slices by drying them in the oven.

Learning Objectives

In this lesson, families will:

1. Discuss the role of drying foods in a homemade, low-waste kitchen
2. Define *dehydrate*
3. Prepare dried apple slices, following a recipe (“How to Dry Apple Slices,” p. 256 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- 2-3 pieces of unlined white paper (any size)
- Brown paper (from a shopping bag, lunch bag, or brown packaging paper), cut so that you have an equal number of white and brown pieces, in roughly the same size

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- 3 large baking sheets with cooling racks
- Parchment paper
- 2 clean, lint-free dish towels
- Apple corer (optional)
- Peeler (optional)
- Kitchen twine (optional)
- Airtight container for storage
- Ingredients: apples, apple cider vinegar, tap water, cinnamon (optional)

Vocabulary

- **Dehydrate:** to remove water from something or allow something to dry out

Discussion

1. Ask your students what dried foods they have eaten or seen before. Ask them if they can identify an example of dried fruit, dried vegetable, and dried meat. If they mention a dried fruit with a name that is different from the name of the fruit when it is fresh, ask them what fresh fruit it is made from. For example, dried grapes are called raisins and dried plums are called prunes.

2. Have a general discussion about dried foods. You can use any of these questions to guide and prompt your students:
 - What are your favorite dried foods?
 - Are there any dried foods you do not like?
 - How are foods dried?
 - Where can we buy dried foods?
 - Where are dried foods made?
 - Can we make dried foods at home?
 - Why are some foods dried?
 - What happens to foods that are dried? What changes and what stays the same?
 - When are some good times to use dried foods? (Examples: while hiking or camping, in a blackout or emergency, when you don't have the food in its fresh state, or when you want a different taste or texture than the food has when it's fresh)
3. Ask your students why it's good to dry your own food at home. You can use any of these questions to guide and prompt your students:
 - Why is homemade food important?
 - Why do you think homemade dried food might be better than store-bought dried food?
 - How do you think homemade dried food could help create a cozy kitchen?
 - Have we ever thrown food away because we had too much of it and couldn't eat it all before it spoiled? How might drying help prevent that in the future?
 - If someone brought us a barrel of apples, what could we do to make sure they didn't spoil before we could eat them all?
 - Why is it important not to waste food?
 - How can drying food help us keep a low-waste kitchen?
4. Reiterate the point that when we make our food at home, we know exactly what is going into it. When we control our ingredients, we can be in control of our health. Making our food at home also helps us to be more independent. This is important for saving money and being prepared in emergencies.
5. Conclude the discussion by giving your students an opportunity to ask questions or make comments about drying food.

Activity: Dehydration

1. Ask your students if they have heard the word "dehydration" or "dehydrated" before. If they get stuck, remind them that they talked about staying hydrated in the Chapter 10 lesson on electrolytes and water. Share the following definition:
 - **Dehydrate:** to remove water from something or allow something to dry out
2. Ask your students what can get dehydrated besides our bodies. If they get stuck, remind them of the discussion they just had about dried food.
3. Ask your students what happens to our bodies when we get dehydrated. Then ask them what happens to a piece of food when it gets dehydrated. Elicit from your students that dried food often looks browner or off-color, drier, and shriveled. You can use any of these questions to guide and prompt your students:

- Think about the dried foods we mentioned in our discussion. How are they different from the fresh version of the same food (e.g., grapes vs. raisins)?
 - Have you ever dropped some wet or moist food on the table or floor and not cleaned it up right away? What happened to it when you saw it later? Was it harder to clean after all that time? Why?
 - Have you ever seen a piece of fruit left outside on a hot, sunny day? What happened to it? What would be different if it were raining?
 - What food do you think would take the longest to dehydrate? Why? (Hint: High-moisture foods)
4. Tell your students that they will now use what they know about dehydration to create a fun art project. Give your students the white paper and art supplies. Tell them to draw a fruit on each page. They can choose their favorite fruits or any fruits they want to draw. When they are finished, ask them how these fruits would look if they were dried.
 5. Give your students the brown paper and tell them to draw the same fruits on the brown paper, but this time each fruit should be dried. When they are finished, encourage them to crinkle the paper so it looks dried and shriveled. Allow them to cut out the dried fruit from the brown paper. Have them glue their dried fruit (brown paper) onto the back of the fresh fruit (white paper). Flip the page from back to front to show the dehydration transformation!

Recipe

1. Tell your students that they will now make their own dried apples!
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Share important safety information with your students. For example, you might say:
 - “We will need to core and slice a lot of apples for this recipe, so let’s be extra careful with the sharp tools we will be using.”
4. Have your students turn to page 256 of *The Modern Pioneer Cookbook*, “How to Dry Apple Slices.” Read the entire recipe aloud with your students, including “Cooks’ Notes.” (Although this step may seem unnecessary, it will help your students better understand the procedure of drying. This allows them to be active participants in the process, rather than simply obeying directions in isolation or out of context.)
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Look for opportunities to discuss or practice these concepts as you dry the apples.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
6. When it’s all done, it’s time to taste! Have your students describe the texture and moisture level of the apples. Discuss the experience of making them. Ask your students what their favorite and least favorite parts of the process were. Talk about what recipes

you could make with your dried apples. Together, decide whether to string your apples before storing them.

Interdisciplinary Extensions

Reading

Johnny Appleseed

Writing

Write a sentence or two explaining what dehydration means in your own words.

Math

It takes a total of 6 hours and 15 minutes to make dried apple slices. If you start at 11:15am, when will your apple slices be finished? If you needed your apples to be finished by 3:00pm, when would you have to start making them?

Science

Do you think you could get the same results if you tried air-drying the apples? Why or why not? Where do you think air-drying would be most successful?

History

How did the pioneers dry their apples?

Culture

Would you ever think to make a soup out of your dried apples? In Sweden, Fruktsoppa is a dried fruit soup that can be made during the winter out of whatever dried fruits are available. It can be served hot or cold. As a family, try looking up a recipe online to see if it's something you might like to try.

Art

A popular craft made with dried apples turns them into a beautiful autumn wreath. This is best done with apples that are too old to be eaten, otherwise it's a waste of perfectly good fruit. Can you think of any lower-waste arts and crafts projects involving apples?

Kitchen Economy

How long will your dried apples stay fresh? Check page 256 of *The Modern Pioneer Cookbook* (step 9).

Nature Study

If you have the chance to visit an apple tree, take some time to carefully observe and draw what you see. How does an apple tree change its appearance through the seasons?

Decision-Making

Will you put your dried apples on a string before storing? Why or why not?

Social-Emotional Learning

After all the hard work you put into your dried apples, it's nice to share them with someone you care about. Who will you share your apple slices with?

Video Resources

How to Dry Apples in the Oven:

<https://marysnest.com/how-to-dry-apples-in-the-oven/>

5-8: How to Dry Citrus and Citrus Peel

Overview

This lesson introduces students to the practice of drying foods at home. Families will preserve citrus slices by drying them in the oven.

Learning Objectives

In this lesson, families will:

1. Discuss how drying foods can support the goal of eating real, whole foods seasonally
2. Explain how drying works to preserve food
3. Prepare dried citrus slices, following a recipe (“How to Dry Citrus and Citrus Peel,” p. 254-255 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write or draw with
- Small pieces of paper with different possible audiences written on them, and then folded or crumpled up

Note: The possible audiences are up to you! If you are stuck, two general categories to use are age groups and interests. For example:

- Preschoolers
- Teens
- Elders
- Athletes
- Artists
- Video game lovers

You could also get creative and include interesting audiences like dogs, robots, or aliens.

- Hat, bag, bowl, or any kind of container to hold the folded pieces of paper

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- 3 baking sheets (half-size sheet pans) with cooling racks
- Parchment paper
- Airtight container for storage
- Ingredients: 12 medium oranges or other citrus fruits

Vocabulary

- **Dehydrate:** to remove water from something or allow something to dry out
- **Audience:** the group of people listening to you

Discussion

1. Ask your students what it means to dehydrate a food. If they get stuck, ask them what they did to the nuts they prepared in Chapter 7. Share the following definition:
 - **Dehydrate:** to remove water from something or allow something to dry out
2. Ask your students to name as many dehydrated foods as they can. Examples include nuts, seeds, garlic powder, onion powder, tea, dried herbs, dried soup mix, raisins, prunes, and other dried fruits, such as apple, pear, mango, coconut, cranberry, and other berries. Ask them which dehydrated foods are their favorites, and which are their least favorites.
3. Ask your students if they think all foods can be dehydrated. Have them explain their answer.
4. Steer the discussion towards the two recurring themes of the 5-8 lessons: real, whole food and seasonal eating. Use any of these questions to guide the discussion:
 - Are all dried foods real, whole foods? Why or why not?
 - What do you think the difference is between store-bought dried foods and homemade dried foods?
 - Where do you think store-bought dried foods were made?
 - Do you think factory-made dried foods have any preservatives, chemicals, or added sugar?
 - In what season(s) do you think people relied on dried foods the most? Why?
 - How can dried foods help us to eat in a seasonal rhythm?
5. Point out to your students that learning to dehydrate foods at home is another valuable skill for the traditional kitchen. Encourage your students to imagine all of the preserved foods that you can make together, whether by dehydrating, canning, or fermenting.
6. Close the discussion by giving your students the opportunity to ask questions or make comments about the importance of dehydrating food.

Activity: Explaining Dehydration

1. Tell your students that now that they understand the importance of dehydrating food at home, they will learn about the process in more detail.
2. Have your students turn to page 244 of *The Modern Pioneer Cookbook*, "Getting Started with Drying Foods." Together, read the following sections, pausing to discuss what you read:
 - "Four Methods of Drying," p. 244
 - "When It's Best to Use a Dehydrator," p. 244-245
 - "Drying Citrus," p. 246
 - "The Benefits of Dried Foods," p. 247
 - "Ensuring Your Food Is Sufficiently Dried," p. 247
3. Ask your students why they think dehydration works to preserve food. In other words, why doesn't dehydrated food spoil?
4. Tell your students that food spoils because of the growth of microorganisms, like mold and bacteria. But mold and bacteria need water to grow, so if you remove the moisture

from the food, it won't spoil. Discuss this concept until your students have a firm grasp on it, answering any questions they may have.

5. When your students feel confident about explaining how dehydration preserves food, tell them that they will now give a mini-speech about drying food.
6. Ask your students what an "audience" is. Share the following definition:
 - **Audience:** the group of people listening to youAsk your students how they might change the way they talk depending on who they are talking to. For example, depending on the person's age, background, or experiences, we might use different words and examples to explain the same thing.
7. Tell your students that they will give their dehydration mini-speech to a mystery audience that they pick out of a hat! They should use words and examples that they think their audience could relate to and understand.
8. Have your students choose a piece of paper from the hat or bag (see "Materials" above). Tell them to open up the piece of paper and read the description of the audience. Give them a few seconds to prepare. When they are ready, they should give a mini-speech about how dehydration works to preserve food, pretending that you are the audience they picked.
9. Repeat this process a few times to practice the skill of adjusting a speech to meet the audience's needs (and reinforce the concept of dehydration at the same time). It's okay if your students want to be silly with it, as long as they are accurately explaining the dehydration process.

Recipe

1. Tell your students that it's time for them to dehydrate their own citrus slices!
2. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Open *The Modern Pioneer Cookbook* to pages 254-255, "How to Dry Citrus and Citrus Peel." Read the entire recipe aloud with your students (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole food and seasonal eating. Throughout the dehydrating process, look for opportunities to discuss or practice these concepts.
 - Throughout the process, encourage your students to take any notes they want in their new kitchen journals.
6. When it's all done, it's time to taste! Put a citrus slice into a teacup or mug, and fill it with boiling water for a delicious tea that is rich in vitamin C. (Allow the tea to steep for a few minutes). As you sip your citrus tea, have a discussion about the experience of dehydrating the fruit. Ask your students what their favorite and least favorite parts of the process were. Talk about what you will do with your dried citrus slices.

Interdisciplinary Extensions

Writing

Write a poem describing the beauty of dried citrus slices.

Math

If an orange tree produced 400 oranges, and you used 12 of them to make dried orange slices, what fraction of the orange tree's yield did you use? Can you express that as a percentage?

Science

What can you learn about exactly how mold and bacteria cause food to spoil?

History

Oranges have been used as Christmas ornaments since at least the Middle Ages. Dried oranges, with their shiny appearance, became popular ornaments in the Victorian era. Why do you think this tradition is becoming less common in today's era?

Culture

Why are limes more common in Mexican cuisine and lemons more common in American cuisine?

Art

Dried citrus slices are truly beautiful. Try using watercolors to paint pictures of them, paying close attention to how they reflect light.

Kitchen Economy

How long will your dried oranges last? Check page 255 of *The Modern Pioneer Cookbook* (step 9).

Which citrus fruit is generally the least expensive?

Nature Study

If you have the chance to visit a citrus tree, take some time to observe and draw it. Where do citrus trees grow? How do they change from season to season?

Decision-Making

How will you use your dried citrus? Explain your choice.

Social-Emotional Learning

The oranges in your recipe changed as they dried. How have you changed as a result of your experiences?

Video Resources

How to Dehydrate Citrus Peels in the Oven or the Dehydrator:

<https://youtu.be/LwqyGdAhGf4>

How to Make Crispy Citrus Chips:

<https://youtu.be/xWq2fyTgxh4>

How to Make Citrus Salts and Sugars:

<https://youtu.be/c33C0APhNsA>

9-12: How to Dry Fresh Herbs

Overview

This lesson introduces students to the practice of drying foods at home. Families will preserve fresh herbs by air-drying them or drying them in an electric dehydrator.

Learning Objectives

In this lesson, families will:

1. Differentiate between low-moisture herbs that can be air-dried and high-moisture herbs that must be dried in an oven or dehydrator
2. Discuss how drying foods can support efforts to be more self-sufficient
3. Prepare dried herbs, following a recipe (“How to Dry Fresh Herbs,” p. 248-249 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal
- Scrap paper
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Ingredients: an assortment of fresh herbs (ideally more than 3 different kinds, all harvested before they flower)

If air-drying:

- 6-8 clean, lint-free dish towels
- Rubber bands
- Paper bags

If using an oven:

- Oven
- Baking sheet (half-size sheet pan)
- Parchment paper or silicone baking sheets

If using a dehydrator:

- Electric dehydrator
- Silicone drying mats or parchment paper

Activity: Sorting Herbs

1. Tell your students that Chapter 12’s lesson focuses on dehydrated (dried) foods. Ask your students to name some common dehydrated foods. Elicit from them that herbs can be dried and crushed to season foods or make tea.
2. Ask your students to name some familiar herbs. Ask them to describe different herbal flavors, identifying their favorites and least favorites.

3. Ask your students how herbs are often used. Answers include seasoning, tea, medicinal purposes, and skincare. Ask your students how the herbs they are familiar with are used. For example, cilantro is often used for flavor, and lavender is often used in skincare products.
4. Reinforce the point that there are many different kinds of herbs, and herbs have many uses.
5. Gather your assortment of herbs, which you will be using for the recipe later on. Ask your students to identify as many of these herbs as they can. Encourage them to use their sense of smell or even taste to help them identify the herbs. Allow them to share their favorite and least favorite herbal aromas. Have them label the herbs in some way, such as by writing the names of the herbs on pieces of scrap paper and placing the paper next to the herbs they identify.
6. Now, tell your students that there are two ways to dry herbs: air-drying, or drying in an oven or electric dehydrator. The method you use depends on the type of herb you are drying.
7. Tell your students that herbs with more moisture need to be dried in the oven or dehydrator, while lower-moisture herbs can be air-dried.
8. Invite your students to sort the herbs into two groups: high-moisture herbs and low-moisture herbs. Encourage them to use their sense of touch to figure it out. Which herbs feel like they have a higher water content? Which herbs seem pretty dry already?
9. When your students are satisfied with the groups they have made, ask them to explain how they made their choices. What did they notice about each herb that helped them decide how to classify it?
10. Tell your students whether they sorted the herbs correctly. Use the chart below as a reference for distinguishing high-moisture and low-moisture herbs.

High-Moisture Herbs	Low-Moisture Herbs
Basil Chives Parsley Cilantro Mints Lemon balm Tarragon	Rosemary Sage Thyme Bay leaves Dill Oregano Marjoram Savory Lavender

If your herb is not listed in this chart, you can use your best judgment. High-moisture herbs are softer and have more tender leaves. Low-moisture herbs are harder and less tender.

11. Allow your students to make corrections to the groups they sorted, if necessary. Ask your students to reiterate how to prepare high- and low-moisture herbs, respectively (air drying is for low-moisture herbs only).

Discussion

1. Tell your students that they learned a lot about drying herbs. Now steer the discussion towards the two recurring themes of the 9-12 lesson: maximizing food's nutritional value and preserving food for self-sufficiency.
2. Ask your students how drying herbs at home can support efforts to be more self-sufficient. Use any of these questions to guide or prompt your students:
 - Where do we usually get dried herbs?
 - What does it mean to be self-sufficient?
 - If you have a lot of storable food, does it really matter if you have dried herbs, too? Why or why not?
 - How can dried herbs be helpful in emergency situations?
 - What are the benefits of drying herbs at home rather than buying them at the store?
 - What would we do if we couldn't get herbs at the grocery store?
 - If you had to choose three different herbs to dry for an emergency, which herbs would you choose, and why?
3. Remind your students that drying food is another vital skill for a traditional kitchen that aims at self-sufficiency. Just like preservation through fermentation and water bath canning, dehydrating herbs and other foods can help keep the kitchen stocked, no matter what is going on in the outside world. This helps us to be more independent without draining our financial resources.
4. Point out that herbs are not the only foods that can be dried. Have your students turn to page 244 of *The Modern Pioneer Cookbook*, "Getting Started with Drying Foods." Together, read the following sections, pausing after each section to discuss what you read:
 - "Four Methods of Drying," p. 244
 - "When It's Best to Use a Dehydrator," p. 244-245
 - "Drying Sourdough Starter," p. 246
 - "Drying Low-Moisture and High-Moisture Herbs," p. 246
 - "Drying Citrus," p. 246
 - "The Comfort of Dried Apples," p. 246-247
 - "The Benefits of Dried Foods," p. 247
 - "Ensuring Your Food Is Sufficiently Dried," p. 247
5. Close the discussion by giving your students the opportunity to ask questions or make comments about dehydrating food as a preservation method that supports self-sufficiency.

Recipe

1. Tell your students that they will now dry the herbs they had previously sorted into two categories. Ask your students to recall how to prepare the two types of herbs. Elicit from your students that low-moisture herbs can be air-dried, but high-moisture herbs should be dried in an oven or dehydrator.

2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Turn to pages 248-249 of *The Modern Pioneer Cookbook*. Together, read the entire recipe aloud (you can take turns).
5. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. This recipe is one of the simplest your students have tried so far. If you are only air-drying low-moisture herbs, your students may be able to do everything independently.
 - Remember the two main themes of the 9-12 lessons: maximizing food’s nutritional value and preserving food for self-sufficiency. Throughout the drying process, look for opportunities to discuss or practice these concepts.
 - If you are air-drying any herbs, encourage your students to check them every day. They should pay attention to any changes and take notes about what they observe in their kitchen journals.
6. When your herbs are ready, it’s time to taste them! Ask your students if they want to taste a tiny bit on their own, or if they would like to add their herbs to a food or make tea out of them. While you are tasting, have a discussion about the experience of dehydrating the herbs. Ask your students what their favorite and least favorite parts of the process were. Talk about which herbs you might dry next time.

Interdisciplinary Extensions

Writing

Write an essay describing the uses and benefits of a few different herbs.

Math

The formula for converting temperature from Fahrenheit to Celsius is $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$. Use this formula to fill in the chart below.

Climate	Dehydrator Temperature - $^{\circ}\text{F}$	Dehydrator Temperature - $^{\circ}\text{C}$
Arid	95 $^{\circ}\text{F}$	
Moderate	115 $^{\circ}\text{F}$	
Damp/humid	125 $^{\circ}\text{F}$	

Science

What might happen if you tried to air-dry an herb with a high moisture content?

History

Air-drying herbs was a common practice among Colonial Americans and pioneers. Can you find out what herbs are native to the different regions of the colonies/early republic?

- New England
- Middle Atlantic region
- Southeast
- Western frontier
- Southwest

Culture

How are dried herbs used medicinally in Ayurveda (traditional medicine from India) and Traditional Chinese Medicine?

Art

Design labels for your jars of crushed, dried herbs. You can use small pieces of paper and some tape.

Kitchen Garden

Which herbs are perennial, meaning they come back every year?

Kitchen Economy

How long will your dried herbs last? Check page 249 of *The Modern Pioneer Cookbook* (step 5).

Nature Study

Try creating scientific botanical drawings of each herb you are drying. Pay close attention to the differences in leaf shape and stem growth. Try to make your illustrations as realistic as possible.

Decision-Making

How will you use your dried herbs? Explain your choice.

Social-Emotional Learning

Dried herbs are reliable—we know that they won't go bad before a year or two if they are properly stored. In what ways are you reliable? Give some examples that show that people can depend on you.

Video Resources

Dehydrating Herbs and Drying Herbs:

<https://youtu.be/kurppVv40V4>

Master Recipe for How to Make a Medicinal Herbal Soup:

<https://marysnest.com/master-recipe-for-how-to-make-a-medicinal-herbal-soup/>

10 Essential Medicinal Herbs to Grow in Your Garden:

<https://marysnest.com/10-essential-medicinal-herbs-to-grow-in-your-garden/>

5 More Essential Medicinal Herbs to Grow in Your Garden:

<https://marysnest.com/5-more-essential-medicinal-herbs-to-grow-in-your-garden/>

Chapter 13 – Sweets and Treats

Chapter 13 is all about sweets! Here are some key points:

- When making sweets and desserts, use whole sweeteners as often as possible. These include:
 - Unrefined whole cane sugar
 - Honey
 - Maple syrup/maple sugar
 - Coconut syrup/coconut sugar
 - Date syrup/date sugar
- Spelt flour is an ancient grain that is a great choice for baking because it can replace both whole wheat flour and whole wheat pastry flour.
- Vanilla extract can be made at home and used indefinitely (similar to how a sourdough starter can be used indefinitely). It takes a whole 180 days to steep, though, so you might want to get it started sooner than later!
- Sourdough starter is great for reducing knead time and making baked goods a little healthier.

Before getting started, make sure you have the ingredients you will need for the recipe(s) you will be following. The K-4 recipe uses whole grain spelt flour, the 5-8 recipe uses graham or whole wheat flour, and the 9-12 recipe uses all-purpose flour. Check the full lists of ingredients to make sure you have the other necessary items for each recipe.

K-4: Whole Grain Cowboy Cookies

The K-4 lesson focuses on home baking and the practice of moderating sweets. Families will prepare cowboy cookies out of whole grains.

5-8: Old-Fashioned Cinnamon Graham Crackers

The 5-8 lesson focuses on using whole sweeteners in home baking. Families will prepare cinnamon graham crackers.

9-12: Maple Sugar Apple Pandowdy

The 9-12 lesson focuses on ways to maximize the nutritional value of home baked goods. Families will prepare an apple pie in a traditional pandowdy style.

A note on using all three lessons

Feel free to facilitate all three Chapter 13 lessons for your family, starting with K-4 and working your way up to 9-12. Each lesson uses a different recipe, all of which can be made relatively quickly. The K-4 lesson focuses on moderating sweets. The 5-8 lesson introduces different types of sweeteners, and the 9-12 lesson looks at four ways to maximize the nutritional value of baked goods and desserts.

K-4: Whole Grain Cowboy Cookies

Overview

This lesson focuses on home baking and the practice of moderating sweets. Families will prepare cowboy cookies out of whole grains.

Learning Objectives

In this lesson, families will:

1. Discuss the role of baking in a homemade kitchen
2. Decide how to moderate sweets and treats
3. Prepare whole-grain cookies, following a recipe ("Whole Grain Cowboy Cookies," p. 265 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Half-size baking sheet
- Parchment paper (or butter for baking sheet)
- Large bowl
- Handheld or stand mixer (or wooden spoon)
- Whisk
- 2-inch ice cream scoop or ¼-cup measuring cup
- Cooling rack
- Airtight container, for storage
- Ingredients: butter, unrefined whole cane sugar, eggs, vanilla extract, whole grain spelt flour, baking soda, fine ground sea salt, baking powder, ground cinnamon, old-fashioned rolled oats, chocolate chips, raisins or other small dried fruit, chopped pecans, shredded unsweetened coconut

Vocabulary

- **Bake:** to cook food with dry heat in an oven
- **Moderate** (adj.): not too much

Note: You may also want to teach the related words with different parts of speech:

- Moderation (noun)
- Moderate (verb)
- Moderately (adverb)

Discussion

1. Start the discussion by asking your students to name their favorite and least favorite baked goods. Ask them if they like different kinds of breads, cakes, cookies, muffins, and pastries.
2. Remind your students of the Oregon Trail Pioneer Brown Bread they baked for the Chapter 6 lesson. Ask them if they remember the definition of *bake*. Share the following definition (a review from Chapter 6):
 - **Bake:** to cook food with dry heat in an oven
3. Ask your students to think about the baked goods, particularly sweet ones, that are sold in grocery stores. Use any of these questions to prompt your students:
 - How are store-bought desserts different from homemade desserts?
 - Where are store-bought desserts made?
 - What kinds of ingredients might be in store-bought desserts?
 - Why don't the desserts at the store spoil on the shelves?
4. Now ask your students to think about homemade baked goods, sweets and desserts. Use any of these questions to prompt your students:
 - How would you describe homemade desserts? (This question can be answered in general, or your students can pick a few specific desserts to describe.)
 - What is special about homemade desserts?
 - How does home baking create a cozy kitchen?
 - Why might homemade desserts use different ingredients than store-bought baked goods?
 - Do you think homemade desserts are healthier than store-bought? Why or why not?
5. Emphasize the point that homemade food is the most important goal of a traditional foods kitchen. When we make our sweets at home, we can control the ingredients we use and make sure they are healthy. Plus, serving a store-bought dessert after a delicious homemade meal just seems a little disappointing!

Activity: Moderating Sweets

1. Remind your students about the point of the previous discussion: home baking is an important part of the traditional foods kitchen, and it's best to make desserts at home as much as possible.
2. Now ask your students, "If we make all our desserts at home, can we eat as many desserts as we want?" Elicit from your students that even though home-baked desserts are healthier, it doesn't mean we should eat a ton of sweets.
3. Ask your students why we shouldn't eat too much sugar. Share the following important points with your students:
 - Refined sugar (in most store-bought baked goods) has no nutrients at all.
 - Too much sugar is bad for our teeth.
 - Too much sugar can make it hard for us to get enough sleep.
 - Too much sugar can make us moody.

- Too much sugar can cause lots of other health problems, including weight gain, heart disease, and diabetes.
4. Tell your students that when we bake at home, we can use whole sweeteners like maple syrup instead of zero-nutrition refined sugar. However, we should still eat only a moderate amount of sugar. Share the following definition with your students:
 - **Moderate:** not too much
 5. Point out that because everyone is different, “moderate” sweets might mean something a little different to each person. If someone has a health issue related to sugar, they may need to eat a different amount than someone with no health issues. Similarly, people of different ages and sizes can handle different amounts of sugar. Therefore, we should not worry about getting the same amount of sugar as anyone else; we should only think about getting a moderate amount of sugar for our individual bodies. Explain to your students that you will guide them in figuring out the right “moderate” amount of sweets for them.
 6. Tell your students that they will make a plan, with your help, for eating a moderate amount of sweets in their daily lives. Using a whiteboard or piece of paper, allow your students to brainstorm a set of guidelines. For example, your students might say:
 - Only eat dessert if I eat a big healthy, dinner.
 - Only eat dessert if I eat three healthy meals a day.
 - Have something sugary three times a week.
 - Replace sugary snacks with healthier ones. (Help them to be specific.)
 - No sweets for breakfast.
 7. Provide guidance to your students as needed, such as by suggesting alternative snacks and breakfast ideas. Ask your students if they would like to schedule a phone call or telehealth appointment where they can ask their doctor for advice about how much sugar is okay.
 8. Once you and your students have established clear guidelines for eating sweets, invite your students to create a poster, drawing, or page in their kitchen journal. They should use their creativity to communicate their plan to eat sweets only moderately.
 9. When they are finished, go over their project with them and ask them to describe their work. Praise them for their hard work on this, and acknowledge that you know it can be hard to limit sweets when other kids are eating lots of them. Tell your students that you’re proud of them for their efforts to be healthy.
 10. Conclude by sharing your excitement about getting to make healthy cookies together!

Recipe

1. Tell your students that it’s time to make some cookies! Have them turn to page 265 of *The Modern Pioneer Cookbook*, “Whole Grain Cowboy Cookies.” Ask your students to guess why they might be called “cowboy cookies.”
2. Together, read the introduction (the first paragraph, in bold text). Allow your students to ask questions or make comments about cowboys and cowboy cookies.
3. Read the entire recipe aloud with your students, including “Cook’s Notes.” (Although this step may seem unnecessary, it will help your students better understand the procedure

of baking. This allows them to be active participants in the process, rather than simply obeying directions in isolation or out of context.)

4. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
5. Share important safety information with your students. For example, you might say:
 - “We will be using the oven for this recipe. What are some ways to stay safe and not burn ourselves?”
6. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Look for opportunities to discuss or practice these concepts as you bake your cookies.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
7. When it’s all done, it’s time to taste! Have your students describe the texture and flavor of the cookies. Discuss the experience of making them. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might do differently next time, or who might enjoy a gift of some home-baked cowboy cookies.

Interdisciplinary Extensions

Reading

The Gingerbread Cowboy

Writing

Write a short article for a kids’ magazine explaining the importance of eating moderate amounts of sugar.

Math

How much of each ingredient would you need if you wanted to make 2 batches of Whole Grain Cowboy Cookies?

Science

How does baking turn wet dough into firm, dry cookies?

History

What can you learn about the history of cowboys?

Culture

Does Texas have its own special culture that is different from many other U.S. states? Why or why not?

Art

Draw a picture of yourself as a cowboy or cowgirl!

Kitchen Economy

How long will your cookies stay fresh? Check page 265 of *The Modern Pioneer Cookbook* (step 13).

Decision-Making

What decisions did you have to make while preparing your cowboy cookies? How did you make them?

Social-Emotional Learning

Practice mindful eating by chewing a cookie slowly, paying careful attention to all of its flavors and textures.

Video Resources

Which Sugar is the Best? Essential Sugars for Your Prepper Pantry:

<https://marysnest.com/essential-sugars-for-your-prepper-pantry/>

How to Make Healthy Cowboy Cookies:

<https://marysnest.com/how-to-make-healthy-cowboy-cookies/>

5-8: Old-Fashioned Cinnamon Graham Crackers

Overview

This lesson focuses on using whole sweeteners in home baking. Families will prepare cinnamon graham crackers.

Learning Objectives

In this lesson, families will:

1. Discuss why home baking is important in a kitchen that uses real, whole foods
2. Distinguish between whole and refined sweeteners
3. Prepare graham crackers, following a recipe (“Old-Fashioned Cinnamon Graham Crackers,” p. 266-267 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- 2 baking sheets (half-sheet pans)
- Parchment paper
- Medium bowl
- Whisk
- Plastic wrap
- Rolling pin
- Sharp knife or pizza cutter
- Fork
- Pastry brush (or spoon)
- Ingredients: graham or whole wheat flour, unrefined whole cane sugar, ground cinnamon, baking powder, baking soda, fine ground sea salt, cold unsalted butter, pourable honey, vanilla extract, whole milk

Vocabulary

- **Whole sweeteners:** sweeteners that have not been stripped of nutrients
- **Refined sweeteners:** sweeteners that have their nutrients stripped
- **Artificial sweeteners:** sweeteners that were made with chemicals in a laboratory

Discussion

1. Start the discussion by asking your students if they like to bake. Remind them of the Super Soft No-Knead White Sandwich Bread they made for the Chapter 6 lesson.

2. Ask your students what sweeter baked goods they enjoy, such as cookies, cakes, muffins, and pastries. Ask them what their favorite sweet baked good is. Can they buy it at the store, or does it have to be homemade to be considered their favorite?
3. Ask your students to compare and contrast homemade versus store-bought desserts. Consider making a venn diagram for them to fill in, with one circle labeled “Home-Baked” and the other labeled “Store-Bought.” You can use any of these questions to prompt your students' responses:
 - Where are store-bought desserts made?
 - What kinds of ingredients might be in store-bought desserts?
 - Why don't the desserts at the store spoil on the shelves?
 - Do you think homemade desserts use different ingredients than store-bought desserts? Why or why not? What are some ingredients that store-bought desserts might contain, that homemade desserts usually do not?
 - Do you think homemade desserts are healthier than store-bought? Why or why not?
4. Ask your students what it means to bake with real food ingredients. Which is more likely to be made of real food ingredients: homemade or store-bought desserts?
5. Ask your students why they think it's important to bake at home when you have a traditional, real-food kitchen. Guide your students to the understanding that when we bake at home, we can ensure that we only use real food ingredients. Homemade desserts made in traditional foods kitchens do not contain chemical preservatives or artificial colors or flavors, none of which are real foods.
6. Conclude the discussion by giving your students an opportunity to ask questions or make comments about baking sweets at home.

Activity: Whole Sweeteners

1. Tell your students that one difference between many homemade and store-bought baked goods is the sweeteners that are used. Ask your students to name as many sweeteners as they can, such as white sugar, maple syrup, honey, corn syrup, and molasses.
2. Tell your students that some sweeteners are highly processed and refined, while other sweeteners are considered whole foods or whole sweeteners. In fact, there are lots of different kinds of sweeteners, and it can be hard to keep track of them all! But today, your students will learn to tell the difference between refined and whole sweeteners.
3. Share the following definitions with your students:
 - **Whole sweeteners:** sweeteners that have not been stripped of nutrients
 - **Refined sweeteners:** sweeteners that have their nutrients stripped
4. Have your students turn to pages 260-261 of *The Modern Pioneer Cookbook*. Together, read the section titled “Baking with Whole Sweeteners.” Allow your students to ask questions or make comments about what they read.
5. Have your students make a chart with two columns, one labeled “Whole Sweeteners” and one labeled “Refined Sweeteners.” Tell your students that they will now watch a video about different kinds of sugars and sweeteners. As they watch, they should fill in their lists with examples of each.

6. Navigate to <https://marysnest.com/essential-sugars-for-your-prepper-pantry/>, “Which Sugar is the Best? Essential Sugars for Your Prepper Pantry.” Watch the video with your students. Pause the video at various points to discuss what you see and allow your students to take notes.
(Note: The entire video is an hour and 10 minutes long. If you are worried about time, consider watching it in segments. Or, skip the first 23 minutes which focus on different types of refined sugarcane products, and go right to the discussions of unrefined sugar and whole sweeteners.)
7. Use the following lists to help your students fill out their charts.

Refined Sweeteners	Whole Sweeteners
<ul style="list-style-type: none"> ● White sugar (from sugarcane or beets) ● Brown sugar ● Corn syrup ● High fructose corn syrup ● Agave nectar 	<p>From sugarcane:</p> <ul style="list-style-type: none"> ● Whole unrefined cane sugar ● Sucanat ● Muscovado ● Panela ● Jaggery ● Molasses <p>From other sources:</p> <ul style="list-style-type: none"> ● Honey ● Maple syrup/maple sugar ● Coconut syrup/coconut sugar ● Date syrup/date sugar

8. Tell your students that although refined sweeteners have no nutrients, they are like whole sweeteners in the sense that they come from food sources like sugarcane, corn, beets, and agave. However, there is another, very different category of sweeteners: artificial sweeteners. Share the following definition:
- **Artificial sweeteners:** sweeteners that were made with chemicals in a laboratory
9. Have your students create a third list on their page, labeled “Artificial Sweeteners.” Allow them to copy this list of artificial sweeteners to complete their chart.
- Saccharin
 - Acesulfame
 - Aspartame
 - Neotame
 - Sucralose

Remind your students that artificial sweeteners do not have a place in the traditional foods kitchen.

10. Conclude the activity by encouraging your students to read packaged food labels and try to find different kinds of sweeteners in the list of ingredients. Allow your students to ask questions or make comments before wrapping up.

Recipe

1. Tell your students that they will now make their own graham crackers! Have them turn to pages 266-267 in *The Modern Pioneer Cookbook*, “Old-Fashioned Cinnamon Graham Crackers.” Together, read the recipe with your students (you can take turns).
2. Gather the kitchen equipment and ingredients that you will need (see “Materials” list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. While baking, look for opportunities to discuss these concepts. For example, you might compare the color of the unrefined whole cane sugar to the white cane sugar.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When it’s finally ready, it’s time to taste! While you are enjoying your graham crackers, have a discussion about the experience of baking them. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might do differently next time, or what you could eat or drink with your graham crackers.

Interdisciplinary Extensions

Writing

Write an essay in which you explain the difference between refined, whole, and artificial sweeteners.

Math

How much of each ingredient would you need if you wanted to double your batch of graham crackers? What if you wanted to triple the recipe?

Science

What type of heat did you use to bake your cookies—conduction, convection, or radiation?

History

Graham crackers are named for Sylvester Graham. Who was he? What can you learn about him?

Art

Draw a picture of you and your family making s’mores around a campfire.

Kitchen Economy

How long will your graham crackers last? Check page 267 of *The Modern Pioneer Cookbook* (step 15).

Nature Study

How is cinnamon grown and harvested?

Decision-Making

How will you enjoy your graham crackers? By themselves? As s'mores? In another recipe? Explain your choice.

Social-Emotional Learning

Have you ever spent time with your family roasting foods over a campfire? How does that image make you feel?

Video Resources

Which Sugar is the Best? Essential Sugars for Your Prepper Pantry:

<https://marysnest.com/essential-sugars-for-your-prepper-pantry/>

No Bake Cheesecake with a Graham Cracker Crust:

<https://marysnest.com/no-bake-cheesecake-with-a-graham-cracker-crust/>

9-12: Maple Sugar Apple Pandowdy

Overview

This lesson focuses on ways to maximize the nutritional value of home baked goods. Families will prepare an apple pie in a traditional pandowdy style.

Learning Objectives

In this lesson, families will:

1. Discuss how home baking supports the goal of self-sufficiency
2. List ways to maximize the nutritional value of homemade desserts
3. Prepare apple pie, following a recipe ("Maple Sugar Apple Pandowdy," p. 268-269 of *The Modern Pioneer Cookbook*)

Materials

- Kitchen journal, piece of paper, or whiteboard
- Something to write with

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- 10-inch cast-iron skillet (or other ovenproof skillet)
- Food processor (a pastry cutter, two knives, or two forks are alternatives)
- Plastic wrap
- Rolling pin
- Pizza cutter or sharp knife
- Parchment paper
- Large bowl
- Small bowl
- Wooden spoon
- Pastry brush
- Wire rack (for cooling the skillet)
- Ingredients: all-purpose flour, white cane sugar, fine ground sea salt, unsalted butter, lard or leaf lard, vanilla extract, apple cider vinegar, sour cream, ice-cold water, Granny Smith apples, maple sugar or molasses, ground cinnamon, lemon juice and zest, apple juice or water, cornstarch or tapioca flour, egg

Discussion

1. Tell your students that today's lesson is all about baking. Remind them of their experience making sourdough for the Chapter 6 lesson. Steer the discussion towards desserts and baked goods that are sweeter than bread. Ask your students to share their favorite sweets, desserts, and baked goods. Ask them what desserts they have baked or helped bake before.

2. Point out that although sweets and desserts are not exactly necessary, many people want to include them in their diets as occasional treats or ways to celebrate special occasions. Ask your students when they think it is especially nice to have something sweet. Answers might include: birthdays, holidays, weddings, ice cream in the summer, pie in the fall, etc.
3. Ask your students how baking and making desserts at home can help to support the goal of self-sufficiency. You can use any of these questions to prompt your students and guide the conversation:
 - What does it mean to be self-sufficient?
 - Where do we usually get our desserts and sweets?
 - What would we do if the grocery stores and bakeries closed, or ran out of an important ingredient for making baked goods?
 - Imagine that for some reason we couldn't buy a cake for your birthday, or we couldn't get the sweets that we always buy for the holidays. What could we make at home instead?
 - Why is it important to have the knowledge and skills required to make baked goods and sweets at home?
4. Conclude the discussion by giving your students an opportunity to ask questions or make comments about home baking and self-sufficiency.

Activity: Making Healthy Desserts

1. Tell your students that in addition to home baking being an important part of a self-sufficient kitchen, there are also ways to maximize the nutritional value of the desserts we make. Ask your students if they can think of any ways to make healthier sweets.
2. Share with your students that four ways to maximize the nutritional value of desserts are:
 - Using whole grain flour
 - Using sourdough
 - Using whole unrefined sweetener
 - Avoiding artificial ingredients

Tell your students that you will now discuss each of these methods in more detail.

3. Ask your students what they think it means to use whole grain flour for baking. Share that whole grain flours still have their germ and bran, unlike refined flours which have had their germ and bran removed. The bran has lots of fiber, and the germ has lots of nutrients. Examples of whole grain flour include spelt, einkorn, barley, buckwheat, and kamut. These whole grains can all be sprouted to make them healthier and easier to digest. Once sprouted, they can be dried and ground up into flour.
4. Remind your students of the sourdough bread they made for the Chapter 6 lesson. See if they can recall any of the benefits of sourdough they learned in Chapter 6:
 - We can better absorb the minerals in whole grains when the dough is fermented first.
 - The lactic acid bacteria changes the composition of the starch in the dough. This allows our bodies to absorb the starch at a slower rate.
 - Sourdough is lower on the glycemic index, which can help to keep insulin levels in check.

- Sourdough is lower in gluten than other breads. Although it is not gluten-free, many people with gluten sensitivities find sourdough easier to digest.

Ask your students if they think sourdough starter can also be used to make sweet baked goods and desserts. Yes, they can! *The Modern Pioneer Cookbook* contains two sourdough dessert recipes: “Easy Sourdough Bread Pudding with Dried Fruit” (p. 270) and “Sourdough Cinnamon Rolls with Homemade Cream Cheese Frosting” (p. 272).

5. Ask your students what the difference is between whole, unrefined sweeteners and refined sweeteners. See if they can name any examples of each. Explain that refined sweeteners are processed to have all of their nutrients removed. For example, sugarcane is processed to remove all of its molasses content and become what we know as “white sugar.” On the other hand, whole, unrefined sweeteners still contain their nutritional value. Share some examples of refined and unrefined sweeteners, using the reference chart from the 5-8 lesson:

Refined Sweeteners	Whole Sweeteners
<ul style="list-style-type: none"> ● White sugar (from sugarcane or beets) ● Brown sugar ● Corn syrup ● High fructose corn syrup ● Agave nectar 	<p>From sugarcane:</p> <ul style="list-style-type: none"> ● Whole unrefined cane sugar ● Sucanat ● Muscovado ● Panela ● Jaggery ● Molasses <p>From other sources:</p> <ul style="list-style-type: none"> ● Honey ● Maple syrup/maple sugar ● Coconut syrup/coconut sugar ● Date syrup/date sugar

6. Remind your students that the fourth way to maximize the nutritional value of desserts is to avoid artificial ingredients. Share with your students that artificial ingredients are not from natural plant or animal sources, but they are manmade in laboratories using chemicals. Artificial ingredients include sweeteners like saccharin and aspartame, as well as artificial colors. These kinds of ingredients were not eaten by our ancestors, so they are not a part of the traditional foods kitchen.
7. Ask your students to summarize the four ways to maximize the nutritional value of baked goods, sweets, and desserts. To reinforce this information, consider having your students create a project to communicate what they learned. Ideas include:
 - A page in their kitchen journal
 - A poster to hang in the kitchen or inside the pantry door
 - A slideshow
 - A digital or hand-drawn infographic
 - A video
 - A blog post
 - A board game

8. Conclude by reiterating the idea that it's important to get the most nutrition possible out of our food, even when we're eating sweets. We can do this by using whole grain flour, using sourdough, using whole unrefined sweetener, and avoiding artificial ingredients. Allow your students to ask questions or make comments about what they learned.

Recipe

1. Tell your students that they will now make their own apple pie! Have them turn to pages 268-269 in *The Modern Pioneer Cookbook*, "Maple Sugar Apple Pandowdy." Together, read the recipe with your students (you can take turns).
2. Gather the kitchen equipment and ingredients that you will need (see "Materials" list above).
3. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
4. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing the nutritional value of food and preserving food for self-sufficiency. While baking, look for opportunities to discuss these concepts. For example, you might compare the color of the maple sugar to the white cane sugar.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
5. When it's finally ready, it's time to taste! While you are enjoying your apple pandowdy, have a discussion about the experience of baking it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might do differently next time, or for what special occasion you might make this recipe again.

Interdisciplinary Extensions

Writing

Write an essay explaining the four ways to maximize the nutritional value of baked goods and desserts.

Math

How much of each ingredient would you need if you wanted to make 2, 3, 4, or 5 apple pandowdy pies?

Science

The Maple Sugar Apple Pandowdy recipe recommends a cast-iron skillet. How does cast iron distribute heat?

History

Apple Pandowdy was one of Abigail Adams' favorite desserts. Who was Abigail Adams? Why do you think she liked Apple Pandowdy so much?

Read "The Perfect Wedding Cake" on page 263 of *The Modern Pioneer Cookbook*. What did you learn? What questions do you have for further research?

Culture

Read "Tried-and-True Traditional Desserts" on pages 261-262 of *The Modern Pioneer Cookbook*. Which cultural versions of bread pudding would you like to look up in more detail?

Art

Draw a picture of Colonial Americans enjoying an Apple Pandowdy.

Music

There is a song from 1945 called "Shoo-Fly Pie and Apple Pan Dowdy." Can you find it online? What is your reaction to the song?

Nature Study

If you have the chance to visit an apple tree, take some time to carefully observe and draw what you see. How does an apple tree change its appearance through the seasons?

Decision-Making

How did you decide how to arrange the pieces of dough on top of the apples? Did you try to make any kind of a pattern, or did you place them randomly? Explain your choice.

Social-Emotional Learning

What emotions or memories do you associate with pie?

Video Resources

How to Make Old Fashioned Apple Pandowdy:

<https://marysnest.com/how-to-make-old-fashioned-apple-pandowdy/>

How to Make a Skillet Apple Pie with an Easy Foolproof Crust:

<https://marysnest.com/how-to-make-a-skillet-apple-pie-with-an-easy-foolproof-crust-video/>

Chapter 14 – Traditional Comfort Food Meals

After successfully completing 13 chapters of traditional cooking skills, you've made it to Chapter 14! In the final chapter of *The Modern Pioneer Cookbook*, you will find six recipes for delicious traditional meals that build on the skills you have learned.

The most important takeaway from Chapter 14 is that flexibility is key. "If you don't have this, use that!" will become a mantra in your kitchen as you learn to rely on the basic idea of a traditional recipe but adjust it to make it your own. Feel free to replace meats, vegetables, seasonings, and herbs with whatever you have available or whatever your family prefers.

Remember the roast chicken you made for the Chapter 1 lesson? In Chapter 14, we return to this basic, reliable meal with a new, time-saving twist. A spatchcock chicken is a whole chicken with its backbone cut out, allowing it to roast in only 45 minutes. The simple extra step transforms a roast chicken dinner from easy to fast *and* easy!

Overall, the goal of Chapter 14 is to encourage you to feel comfortable making a variety of traditional meals for your family. These six meals can form the basis of your weekly meal plan, and the more you make them, the more you can tweak them and make countless different versions. Experiment and see what works best for you. Remember, traditional cooking is a journey, and you're not alone. There are hundreds of recipes and videos to guide you, along with a growing community of traditional cooks, at MarysNest.com.

K-4: Panfried Breaded Whitefish with Homemade Tartar Sauce

The K-4 lesson wraps up the *The Modern Pioneer Cookbook Curriculum* by reviewing the main points that have informed the K-4 lessons: homemade food and low-waste kitchens. Families will prepare a filet of sole by breading and pan frying it.

5-8: Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables

The 5-8 lesson wraps up the *The Modern Pioneer Cookbook Curriculum* by reviewing the main points that have informed the 5-8 lessons: real, whole foods and seasonal eating. Families will prepare a salmon meal by baking it with vegetables.

9-12: Budget-Friendly Southwestern Chili con Carne

The 9-12 lesson wraps up the *The Modern Pioneer Cookbook Curriculum* by reviewing the main points that have informed the 9-12 lessons: maximizing food's nutritional value and preserving food for self-sufficiency. Families will prepare a southwestern chili that includes nutrient-dense beef liver.

A note on using all three lessons

Feel free to facilitate all three Chapter 14 lessons for your family, starting with K-4 and working your way up to 9-12. All three lessons have completely different recipes, although the K-4 and

5-8 lessons are both working with fish. Older students may want to skip or simplify the dredging and breeding activity in the K-4 lesson, while the 9-12 activity will be too advanced for younger students.

K-4: Panfried Breaded Whitefish with Homemade Tartar Sauce

Overview

This lesson wraps up the *The Modern Pioneer Cookbook Curriculum* by reviewing the main points that have informed the K-4 lessons: homemade food and low-waste kitchens. Families will prepare a filet of sole by breading and pan frying it.

Learning Objectives

In this lesson, families will:

1. Describe the culinary techniques of dredging and breading
2. Prepare breaded whitefish, following a recipe (“Panfried Breaded Whitefish with Homemade Tartar Sauce,” p. 291 of *The Modern Pioneer Cookbook*)
3. Summarize what they have learned about making homemade traditional foods and minimizing waste

Materials

- Kitchen journal, piece of paper, or whiteboard
- 4 pieces of paper, any size (you can cut a standard size page into 4 pieces, or use 4 unlined index cards)
- Art supplies of choice

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Cast-iron skillet
- Medium bowl with cover (or plastic wrap)
- Three plates
- Small bowl
- Whisk
- Wide fish spatula (or two traditional spatulas)
- Oven-safe plate
- Airtight container, if storing leftovers
- Ingredients: all-purpose flour, eggs, plain breadcrumbs, mix of dried herbs, fine ground sea salt, freshly ground black pepper, ghee or clarified butter, skinless sole filets, lemons, mayonnaise (preferable homemade), bread and butter pickles (preferably home canned), lemon juice and zest

Vocabulary

- **Dredge:** to lightly coat wet or moist food with a dry ingredient (like flour) before cooking
- **Breaded:** dredged, coated in eggs or another liquid, and then dredged again

Activity: Dredging and Breading

1. Ask your students if they have ever heard the word *dredge* or *dredging* before. (If they mention dredging a lake or body of water, ask them if they have heard the word in reference to cooking.) Ask them if they know what it means for a food to be *breaded*. Share the following definitions:
 - **Dredge:** to coat wet or moist food with a dry ingredient (like flour) before cooking
 - **Breaded:** dredged, coated in eggs or another liquid, and then dredged again
2. Ask your students if they have ever dredged a food before cooking it. If necessary, remind your students about the Deep-Fried Beef Liver Nuggets they made for the Chapter 9 lesson. Ask if they remember rolling the liver pieces in flour after they were soaked in buttermilk. Ask your students how the food comes out after it's been breaded and cooked. Elicit from them that the food gets a crispy coating that tastes delicious. Tell your students that they will do something similar for the Chapter 14 recipe.
3. Give your students four pieces of paper and some crayons, markers, or pencils. Ask them to draw flour on one page, eggs on another, and breadcrumbs on another. On the last page, have them draw a fish or a piece of fish, and cut it out. (Let them look at the foods while drawing, if they want.)
4. Give your students three plates and ask them to create an assembly line by putting them in a row. Now have your students place their picture of the flour on the first plate, eggs on the second plate, and breadcrumbs on the third plate. Tell your students that they are going to act out the process of dredging and breading that they will use for this lesson's recipe.
5. Have your students take their cut-out fish and place it in the flour (i.e., on the plate with their drawing of flour). Tell them to coat their fish on both sides, and then gently shake off any excess flour.
6. Have your students place their fish in the egg (i.e., on the plate with their drawing of the eggs). Tell them to coat their fish on both sides, and then let any excess egg drip off onto the plate.
7. Have your students place their fish in the breadcrumbs (i.e., on the plate with their drawing of the breadcrumbs). Tell them to heavily coat their fish on both sides, pressing the breadcrumbs into the fish.
8. Optional: If your students want to continue acting out the process, have them put their paper fish in a pan and make a sizzling noise as they pretend to cook it on both sides. Then, have them add color or texture to their fish to show how it changed after cooking.
9. Optional: Ask your students if they want to make a how-to video showing how to dredge and bread fish. While you film them, have them act out the dredging and breading process again, this time explaining it to their imaginary audience.

Recipe

1. Tell your students that they will now make breaded fish in the same way they acted out with their drawings. Have them turn to page 291 of *The Modern Pioneer Cookbook*, "Panfried Breaded Whitefish with Homemade Tartar Sauce." Read the recipe aloud to your students, reminding them of the steps they acted out.

2. Share important safety information with your students. For example, you might say:
 - “The ghee (or clarified butter) will be getting very hot on the stovetop, and it could splatter. How can we protect ourselves from burns?”
3. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the K-4 lessons: homemade food and low-waste kitchens. Look for opportunities to discuss or practice these concepts as you make your fish.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
4. When it’s all done, it’s time to taste! Have your students describe the texture and flavor of the breaded fish. Discuss the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might do differently in the future, or what other recipes from *The Modern Pioneer Cookbook* you’re ready to try next!

Discussion

1. Tell your students that they have successfully completed *The Modern Pioneer Cookbook Curriculum*! Remind your students that they have made the following foods:
 - Roast Chicken
 - Roast Chicken Bone Broth
 - Leaf Lard from Rendered Pork Leaf Fat
 - Easy Stovetop Cottage Cheese
 - Always-Crisp Fermented Dill Pickle Spears
 - Oregon Trail Pioneer Brown Bread
 - Sprouted Beans, Lentils, or Whole Grains
 - Fermented Ketchup
 - Deep-Fried Beef Liver Nuggets with Fermented Ketchup
 - Haymaker’s Switchel Punch
 - Low-Sugar Old-Fashioned Pioneer Berry Apple Jam
 - Dried Apple Slices
 - Whole Grain Cowboy Cookies
 - Panfried Breaded Whitefish with Homemade Tartar Sauce
2. Ask your students to reflect on their overall experience making these foods. What stands out? What tasted the best? What was most difficult? What do they want to try again?
3. Ask your students to explain, in their own words, what homemade food is and why it’s important. Then ask them to explain, in their own words, what a low-waste kitchen is and why it’s important. Add your own examples or points of emphasis as needed.
4. Tell your students how proud you are of their hard work towards becoming a traditional cook. Remind them that these are skills that will serve them for a lifetime, but the journey isn't over! Together, you will continue to learn and explore traditional foods and methods. What will you try next?

Interdisciplinary Extensions

Reading

The Man Who Cooked For Himself

Writing

Write a set of directions explaining how to dredge and bread fish.

Math

How much of each ingredient would you need if you wanted to double the recipe for Panfried Breaded Whitefish with Homemade Tartar Sauce?

Science

What does dredging and breading do? How would your fish have come out differently if you didn't dredge or bread it before pan frying it?

History

Do you think people breaded their fish hundreds of years ago? When do you think people might have started breading fish? (Hint: Think about how you cooked your fish, and how ancient peoples first cooked their food.)

Culture

Fried fish dishes are popular all around the world. Here are some examples of fried fish in different cultures. Can you find each country on a map or globe?

- Sole Meunière (France)
- Pescado Frito (Spain)
- Ikan Goreng (Indonesia)
- Cá Chiên (Vietnam)
- Fish and Chips (United Kingdom)

Kitchen Economy

Can you store your breaded fish, or should you eat it right away? Check page 291 of *The Modern Pioneer Cookbook* (step 8).

Social-Emotional Learning

How do you feel after successfully making 14 traditional recipes?

Video Resources

Easy Crispy Chicken Cutlets Recipe:

<https://marysnest.com/easy-crispy-chicken-cutlets-recipe-video/>

5-8: Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables

Overview

This lesson wraps up the *The Modern Pioneer Cookbook Curriculum* by reviewing the main points that have informed the 5-8 lessons: real, whole foods and seasonal eating. Families will prepare a salmon meal by baking it with vegetables.

Learning Objectives

In this lesson, families will:

1. List health benefits of salmon
2. Prepare a baked salmon and vegetable dish, following a recipe (“Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables,” p. 292 of *The Modern Pioneer Cookbook*)
3. Summarize what they have learned about eating seasonally and cooking with real, whole foods

Materials

- Kitchen journal, piece of paper, or whiteboard
- Art supplies of choice

For recipe:

- *The Modern Pioneer Cookbook*
- Oven
- Baking sheet
- Aluminum foil or parchment paper
- Serving platter
- Ingredients: wild-caught Alaskan sockeye salmon, coarse ground sea salt, freshly ground black pepper, crushed red pepper (optional), maple sugar, ghee, yellow onion, cherry tomatoes, yellow summer squash, zucchini, fine ground sea salt

Activity: Health Benefits of Salmon

1. Tell your students that for this lesson’s recipe, they will be making a salmon dish. Ask them if they’ve had salmon before, and if they liked it. Ask them to describe how it was prepared.
2. Ask your students if they know any of salmon’s health benefits. Ask what parts of our body can benefit from eating salmon. Elicit from your students that the nutrients in salmon are good for the health of our:
 - Immune system
 - Brain
 - Heart

- Bones
- Skin
- Eyes

If your students aren't sure what parts of our body can benefit from eating salmon, play a game of charades where you point to each body part and get your students to correctly guess.

3. Ask your students if they can name any of the nutrients in salmon. Share the following list with your students:
 - Protein
 - Vitamins: B2, B3, B6, B12, D
 - Minerals: selenium, phosphorus, potassium, and more
 - Omega-3 fatty acids
4. Tell your students that salmon can help to prevent a number of health conditions, including cancer, ADHD, inflammation, and more.
5. Have your students create an infographic or video to communicate the health benefits of eating salmon. For example, they could draw a picture or icon to represent each of the six areas of health that benefit from salmon (immune system, brain, heart, bones, skin, and eyes).
6. When your students are finished, go over their project with them, discussing their process and choices. Ask them, now that they know about some of the health benefits of salmon, what questions they have for further research. (For example, your students may be interested in finding out more details about specific nutrients, such as selenium or omega-3 fatty acids.)
7. Conclude the activity by giving your students the opportunity to ask questions or make comments. Then, share your excitement about making salmon for the Chapter 14 recipe!

Recipe

1. Tell your students that they will now make an easy meal of salmon and vegetables. Have them turn to page 292 of *The Modern Pioneer Cookbook*, "Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables." Read the recipe aloud with your students (you can take turns).
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 5-8 lessons: real, whole foods and seasonal eating. Look for opportunities to discuss or practice these concepts as you bake your salmon.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
4. When it's all done, it's time to taste! Have your students describe the texture and flavor of the salmon and vegetables. Discuss the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you

might do differently in the future, or what other recipes from *The Modern Pioneer Cookbook* you're ready to try next!

Discussion

1. Tell your students that they have successfully completed *The Modern Pioneer Cookbook Curriculum!* Remind your students that they have made the following foods:
 - Roast Chicken
 - Rich & Flavorful Beef Bone Broth
 - Tallow Rendered from Suet
 - Clarified Butter, Ghee, and Brown Butter
 - Sweet & Sour Fermented Red Cabbage
 - Super Soft No-Knead White Sandwich Bread
 - Soaked and Dried Nuts for Better Digestion
 - Homemade Salad Dressings
 - Roasted Bone Marrow
 - Pineapple Mojito Shrub Mocktail
 - Home-Canned Fresh Fruit (With No Sugar)
 - Dried Citrus
 - Old-Fashioned Cinnamon Graham Crackers
 - Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables
2. Ask your students to reflect on their overall experience making these foods. What stands out? What tasted the best? What was most difficult? What do they want to try again?
3. Ask your students to explain, in their own words, what it means to use real, whole foods, and why it's important. Then ask them to explain, in their own words, what it means to eat seasonally and why it's important. Add your own examples or points of emphasis as needed.
4. Tell your students how proud you are of their hard work towards becoming a traditional cook. Remind them that these are skills that will serve them for a lifetime, but the journey isn't over! Together, you will continue to learn and explore traditional foods and methods. What will you try next?

Interdisciplinary Extensions

Writing

Write a full paragraph or short essay explaining the health benefits of eating salmon.

Math

The Sheet Pan Baked Salmon with Maple Sugar Glaze and Roasted Vegetables recipe calls for about 24 ounces of salmon. Using a mixed fraction or decimal point, represent the amount 24 ounces in pounds. (Hint: A pound has 16 ounces.)

Science

Wild-caught salmon is much healthier than farm-raised salmon. Can you explain why?

History

Read “The Lure of Fish” on page 280-281 of *The Modern Pioneer Cookbook*. What did you learn about people eating salmon throughout history? What are some questions for further research?

Culture

Salmon is so important that many cultures consider it sacred. Cultural regions where salmon is highly respected include the Pacific Northwest of the U.S., Ireland, Japan, and Norway. Can you find each of these nations on a map or globe?

The Centre for Indigenous Peoples’ Nutrition and Environment (CINE) has an extensive resource on the role of salmon among North American Indians as part of its Traditional Animal Foods of Indigenous Peoples of Northern North America project. If you are interested in learning more, you can visit this resource here:

<http://traditionalanimalfoods.org/fish/searun-fish/page.aspx?id=6446>.

Kitchen Garden

Yellow summer squash and zucchini are generally easy to grow. Do you have some outdoor space where you could plant them?

Kitchen Economy

Look up the price of the following types of salmon, keeping in mind that wild-caught salmon is best:

- Fresh wild salmon
- Fresh farmed salmon
- Frozen wild salmon
- Frozen farmed salmon
- Smoked wild salmon
- Smoked farmed salmon
- Canned/tinned wild salmon
- Canned/tinned farmed salmon

Social-Emotional Learning

How do you feel after successfully making 14 traditional recipes?

Video Resources

How to Make Salmon Patties with Canned Salmon:

<https://marysnest.com/how-to-make-salmon-patties-with-canned-salmon/>

9-12: Budget-Friendly Southwestern Chili con Carne

Overview

This lesson wraps up the *The Modern Pioneer Cookbook Curriculum* by reviewing the main points that have informed the 9-12 lessons: maximizing food's nutritional value and preserving food for self-sufficiency. Families will prepare a southwestern chili that includes nutrient-dense beef liver.

Learning Objectives

In this lesson, families will:

1. Describe the origins of chili
2. Prepare chili con carne, following a recipe ("Budget-Friendly Southwestern Chili con Carne," p. 286-287 of *The Modern Pioneer Cookbook*)
3. Summarize what they have learned about maximizing food's nutritional value and preserving food for self-sufficiency

Materials

- Kitchen journal, piece of paper, or whiteboard
- Art supplies of choice

For recipe:

- *The Modern Pioneer Cookbook*
- Stovetop
- Disposable gloves or clean dish gloves
- Sharp knife
- Large heatproof bowl
- Tea kettle
- Blender
- Mesh strainer placed over a bowl
- Medium bowl
- Large dutch oven
- Slotted spoon
- Platter
- Ingredients: dried chiles, yellow onion, garlic, cumin, coriander, fine ground sea salt, freshly ground black pepper, beef bone broth, all-purpose flour, chuck roast, lard, frozen beef liver, diced tomatoes, masa harina (optional)

Activity: The Origins of Chili

1. Ask your students if they have had chili before. Ask them if they know what kind of chili it was, and whether it was homemade, canned or at a restaurant.
2. Tell your students that chili is one of those foods that gets people debating about who started it all and what's the "right" way to make it. People are passionate about chili!

Texas made chili its official state dish. And there's even a worldwide group dedicated to loving chili—the Chili Appreciation Society International (CASI).

3. Have your students turn to page 278-279 of *The Modern Pioneer Cookbook*. Together, read the section titled “In Search of Traditional Chili con Carne.” Take a moment to discuss what you read.
4. Now tell your students that they will learn even more about chili by reading a history compiled by the Chili Appreciation Society International (CASI). Tell your students that they will make a chili timeline based on what they read. (Alternatively, your students can write a “blog post” entitled “10 Interesting Facts About Chili.”)
5. Navigate to <https://www.casichili.net/history-of-chili.html>. Together, read through the history of chili, pausing to ask questions and make comments. Allow your students to take notes for their timeline.
6. Give your students some time to work on their chili timelines (or blog posts). When they are finished, go over their work with them. Ask them questions about their process and the choices they made. Ask them what they found surprising or especially interesting. Encourage them to come up with some questions for further research.
7. Conclude the activity by sharing your excitement about getting to make chili with your students.

Recipe

1. Tell your students that they will now make their own chili. Have them turn to pages 286-287 of *The Modern Pioneer Cookbook*, “Budget-Friendly Southwestern Chili con Carne.” Read the recipe aloud with your students (you can take turns).
2. Set boundaries about what, for safety reasons, your students are not allowed to do without your supervision or assistance.
3. Follow the recipe, step by step. Consider the following:
 - Aim for safety, but also empower your students as much as possible. Always use your best judgment, as you know your students best.
 - Remember the two main themes of the 9-12 lessons: maximizing food's nutritional value and preserving food for self-sufficiency. Look for opportunities to discuss or practice these concepts as you make your chili.
 - Throughout the process, encourage your students to take any notes they want in their kitchen journals.
4. When it's all done, it's time to taste! Have your students describe the texture and flavor of the chili. Discuss the experience of making it. Ask your students what their favorite and least favorite parts of the process were. Talk about what you might do differently in the future, or what other recipes from *The Modern Pioneer Cookbook* you're ready to try next!

Discussion

1. Tell your students that they have successfully completed *The Modern Pioneer Cookbook Curriculum*! Remind your students that they have made the following foods:
 - Roast Chicken

- Beautiful Skin Bone Broth
 - Schmaltz (Rendered Chicken Fat)
 - Homemade Yogurt
 - Sauerkraut
 - 100% Hydration Sourdough Starter + Beginner’s No-Knead Sourdough Boule
 - Soaked Oat Groats and Traditional Fermented Oat “Milk”
 - Fermented Picante and Chunky Salsa
 - Super Mineral Broth
 - Homemade Ginger “Bug” and Ginger Ale
 - Home-Canned Tomatoes
 - Dried Herbs
 - Maple Sugar Apple Pandowdy
 - Budget-Friendly Southwestern Chili con Carne
2. Ask your students to reflect on their overall experience making these foods. What stands out? What tasted the best? What was most difficult? What do they want to try again?
 3. Ask your students to explain, in their own words, what it means to maximize the nutritional value of our food, and why it’s important. Then ask them to explain, in their own words, what it means to preserve food for self-sufficiency why it’s important. Add your own examples or points of emphasis as needed.
 4. Tell your students how proud you are of their hard work towards becoming a traditional cook. Remind them that these are skills that will serve them for a lifetime, but the journey isn’t over! Together, you will continue to learn and explore traditional foods and methods. What will you try next?

Interdisciplinary Extensions

Writing

Turn your chili timeline into an essay about the history of chili in Texas.

Math

There are 4 quarts in 1 gallon. What is the ratio of quarts to gallons? What are some other important culinary ratios?

Science

Is chili a solution, a colloid, a suspension, or none of the above? Explain your answer. What is the Scoville Scale? How is spiciness measured? Where did the peppers you used in this recipe reside on that scale?

History

The word chili comes from the Aztec language. Find three food-related words from other languages we commonly use today.

Culture

There are several different regional variations of chili. Have you tried any of these?

- Chili con Carne, AKA "Texas Red" (Texas)
- Chile Verde, made with pork and fresh Hatch chiles (New Mexico)
- Springfield Chilli (with two Ls), AKA Tavern Chili, made with beef suet (Illinois)
- Cincinnati Chili, often served over spaghetti (Ohio)
- Hoosier Chili, with a soup-like consistency and also served over spaghetti (Indiana)

Kitchen Garden

What peppers can you grow at home, so that you can dry some and use them for chili?

Kitchen Economy

Which was more expensive, the chuck roast or the beef liver?

Nature Study

Try drawing different types of dried peppers. How do they look different from fresh peppers?

Decision-Making

What will you serve your chili with? Explain your choice.

Social-Emotional Learning

Spicy chili can make us sweat! What is something that makes you sweat (either literally or figuratively!) because it makes you nervous? What are some good ways to overcome nervous feelings?

Video Resources

How to Cook Dried Beans - The Right Way - For Maximum Nutrition:

<https://marysnest.com/how-to-cook-dried-beans/>

How to Make Deliciously Slimming Chili in 5 Steps:

<https://marysnest.com/how-to-make-deliciously-slimming-chili-in-5-steps/>