Wild Nutrition

A Nutrition and Home Economics Unit for Grades 9-12

Developed by Allaire Diamond M.S., M.Ed. as part of the project People, Plants & Gathering in Northern Maine, a collaboration between the USDA Forest Service Northern Research Station and the University of Vermont, funded by the Northeastern States Research Cooperative. Principal project investigators: Dr. Marla Emery, USDA Forest Service, and Dr. Clare Ginger, University of Vermont.¹

Topics: Nutrition, food choices, wild foods, nutrient content, nutrient chemistry

Maine Learning Results Addressed:
Health Education & Physical Education B2: Locating Health Resources: Students access valid and reliable health information, products, and services (With chemistry option) Science D3 Matter and Energy: Students describe the structure, behavior, and interactions of matter at the atomic level and the relationship between matter and energy.

Objectives: Students will
- Classify parts of a recipe
- Identify wild foods that could substitute for some ingredients in conventional recipes
- Describe and analyze the nutritional differences in a recipe when using wild vs. conventional foods

Background: Wild foods can be delicious regional and local additions to common recipes. Often, they have less sugar and higher amounts of other vitamins and nutrients than foods grown in conventional agriculture. In this lesson, students learn about how wild foods can be part of a healthy diet. They begin by analyzing recipes and learning about wild plants to come up with potential substitutions for some conventional ingredients. Then, they compare nutrient content of wild and conventional foods/ingredients for which information is available from a USDA database. Optional extensions include mathematical analysis of the nutrient content, chemistry lab experiments to determine the amount of certain nutrients, and categorizing the foods in the USDA food pyramid.

Materials:
- Recipes provided by students

¹ Photo by Allaire Diamond
• Computer with internet access
• Copies of Wild Nutrition handout for each student
• Optional chemistry equipment for lab component.

Time: 80 minutes. With additional activities and assessments, time will increase.

Assessment:
• Rewritten recipe with wild foods
• Description of the nutritional changes that would be part of this recipe
• Assessment rubric or checklist (use the sample provide here or make your own)
• Lab report for lab component

Activities:
BEFORE TEACHING
1. The day before teaching this lesson, assign students homework: Bring in 3 recipes from cookbooks at your house, or if you don't have cookbooks, look up online. It is best if recipes are ones the student or his or her family has made so that students are familiar with them and can imagine the substitutions. Bring hard copies of all 3 recipes. Recipes should be for:
   a. A salad
   b. A vegetable dish
   c. A muffin with fruit
2. Familiarize yourself with the websites People, Plants, and Gathering in Northern Maine (http://nrs.fs.fed.us/sustaining_forests/conserve_enhance/special_products/maine_ntfp) and Healthaliciousness (http://www.healthaliciousness.com/nutritionfacts/) and the Wild Nutrition handout’s directions before proceeding on Day 2 with students.

DAY 1
Materials
Student recipes from home
Colored pencils

1. When students arrive with their recipes, ask how many have ever cooked following a recipe. Ask how many have made one of the recipes they brought. (show of hands for both questions)
2. Briefly explain the components of a good recipe and ask students to find these components on their recipe. Explain that a recipe provides specific ingredients and instructions for a specific food so that the food has the proper proportions of ingredients prepared in a safe and appropriate way. Recipes often allow for some variation depending on availability of ingredients and personal tastes. Write these recipe components on the board:
   a. Complete list of ingredients in the order they are to be used
   b. Amounts for each ingredient
   c. Clear, step-by-step instructions
   d. Equipment to be used, including both type and size
   e. Terms for temperature and cooking technique such as simmer, medium high, or chill, as well as baking temperature if necessary
3. Students should clearly mark each of these components on their recipes – this can be done using different colored pencils as long as they note which color is for which component.

4. Now, analyze the ingredient list. Each ingredient should fall into at least one of the following categories, perhaps more than one:
   a. **Carbohydrate or grain** (ex. Flour, rice, or pasta)
   b. **Vegetable or fruit** (ex. Carrots, cranberries, or beans)
   c. **Protein** (ex. Meat, tofu, egg, kidney beans, or peanut butter)
   d. **Fat** (ex. Oil or butter)
   e. **Leavening** (ex. Yeast, baking soda, baking powder)
   f. **Flavoring or spice** (ex. Cinnamon, salt, pepper)
   g. **Sweetener** (ex. Sugar, honey, molasses)
   h. **Acid/preservative** (ex. Vinegar, lemon juice)

5. Ask students to label their ingredient lists in their recipes with these categories.

6. Then ask how many have ever had to substitute an ingredient in a recipe when they didn’t have what the recipe called for. Ask a few students to share their substitutions and if they were successful. Explain that substituting ingredients is a way to be creative as well as resourceful, and use what you have available or in season. Tell students that they will now learn about some wild plants that people eat in northern Maine and that we’re going to think about ways those foods might be able to substitute for others in their recipes.

**DAY 2**

**Materials**

Computers with internet access

Copies of the **Wild Nutrition** handout for each student

1. Proceed to computers and access the website **People, Plants, and Gathering in Northern Maine** ([http://nrs.fs.fed.us/sustaining_forests/conserve_enhance/special_products/maine_ntfp](http://nrs.fs.fed.us/sustaining_forests/conserve_enhance/special_products/maine_ntfp)). Familiarize yourself with these sites and the worksheet’s directions before doing this with students. It also may be helpful to demonstrate this website and the Healthaliciousness website ([http://www.healthaliciousness.com/nutritionfacts/](http://www.healthaliciousness.com/nutritionfacts/)) on a computer with a projector before students begin working on their own. Give students the **Wild Nutrition** worksheet which gives directions on navigating the site and other online resources.

**CULMINATING ACTIVITY – for Day 3 or as homework**

1. **Culminating Activity:** Students should rewrite their recipes to include the wild food ingredients. Directions for this are on the **Wild Nutrition** worksheet. Along with this they should include a brief, clear description of how the nutrient content of the recipe changes when the wild food is used (ex. Because of the nutritional differences between wild and cultivated blueberries, the recipe will have more fiber, less sugar, more vitamin C, more riboflavin, etc.)

**Optional extension activities:**

a. **Extension activity #1:** Along with the above written assignment, students should consider *why* these nutritional differences exist. What factors could affect the amounts of nutrients in foods? Ex. Cultivated blueberries are bred to be sweeter so perhaps this is why they have more sugar. Or, because harvesting is so much more
intensive on farms than in the wild, some nutrients may become depleted, so perhaps this is why wild blueberries have more manganese than cultivated ones. Etc.

b. **Extension activity #2:** Compare with USDA food pyramid. Categorize the wild foods from the website according to the ‘steps’ on the pyramid. Possible analysis could include questions about whether or not a person could eat a balanced diet with mostly or only wild foods. What would they need to supplement the wild foods? Are there ‘wild’ options for these needs (ex. Meat obtained from hunting or fishing).

c. **Extension activity #3: Science.** Students should research and describe one or more of the scientific/technical methods of determining nutrient content in foods. Use the following document: *foodcomposition_analysistables.pdf*. These tables have been excerpted from the following resource:


d. **Extension activity #4: Chemistry.** In a chemistry setting (with appropriate equipment and supervision) students could perform one or more techniques to determine a nutrient’s content in a food. Ex. Determine number of calories or % fat – translate this to the calories/fat/etc. per serving.

e. **Extension activity #5: Math.** Assign mathematical extensions of recipe/nutrient analysis. For example: Double or halve the recipe. Determine the recipe’s nutrient content per serving by combining nutrient content from the various ingredients. Figure out how many servings of the recipe you would need to get the USDA’s Recommended Daily Allowance (RDA) of a particular nutrient.
Wild Nutrition

Materials needed:
3 recipes from cookbooks or computer printouts. You should have a recipe for:
1. A salad
2. A vegetable side dish
3. A fruit muffin

Computer with internet connection
Paper & pencil

Directions
1. Access the website People, Plants, and Gathering in Northern Maine (http://nrs.fs.fed.us/sustaining_forests/conserve_enhance/special_products/maine_ntfp). Spend some time reading about Faye Hafford (People→Faye Hafford), a woman with many experiences gathering and eating wild plants. Read the plant profiles of the plants she eats – you can get to these by clicking on the plant names in her profile. You can click on the “Plants” icon at the bottom of every page to get to a list of other plants described on the site. You can also use the plant list (Plants→List of All Plants) to find other plants used as food.

2. As you work, keep a running list of possible wild foods to substitute for items in your recipes. You should be able to find a substitute for at least one ingredient in each recipe, but for some you can find substitutes for multiple ingredients or find multiple substitutions for the same ingredient.

3. For each of the wild food potential substitutions you found, look up the nutrition facts for both that food and the one it might replace. For example, if beaked hazelnuts will replace peanuts, look up both. Use this resource to find nutrition information: http://www.healthaliciousness.com/nutritionfacts/

This website accesses a U.S. Department of Agriculture (USDA) database of nutrient content in foods, including many wild foods and foods eaten in a variety of Native American cultures – such as horned owl or beluga eye! When you type in a food, you’ll be presented with many options. Choose the food that most accurately represents a wild food – for example “Blueberries Wild Raw” rather than “Blueberries Raw”.

4. Compare the nutrient information of the original ingredient with the new ingredient. Be sure to click on the tabs that show the vitamin and mineral content of the foods as well as the basic nutrient information. Make a table showing your comparisons.

5. According to the U.S. Food and Drug Administration, a food must have over 20% of the Recommended Daily Allowance (RDA) of a nutrient to be labeled an “Excellent Source Of” that nutrient. It must have 10-19% of a nutrient’s RDA to be considered a “Good Source” of that nutrient. Which nutrients are your wild foods “excellent sources of” or “good sources” of? How does this compare with the foods they will replace in the recipes? Note these changes on your table from #4.

6. **Final assignment:** Rewrite your original 3 recipes with the wild food substitute ingredients. Below each recipe, write a paragraph describing how the nutritional content of the recipe will change (from the original recipe) with the wild food ingredients. This paragraph should summarize your work from #4 and #5 above. Pass in your table from #4 along with the recipes.
# Wild Nutrition Assessment Checklist

**Name:** _______________________________

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Met all requirements</th>
<th>Met most requirements</th>
<th>Needs work</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three recipes were brought from home</td>
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<tr>
<td>Components of recipes are clearly labeled</td>
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<tr>
<td>Use of computer and class time was productive</td>
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<tr>
<td>Wild nutrition comparison table is complete</td>
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<tr>
<td>Change in nutrition content due to wild food substitutions is clearly described</td>
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<tr>
<td>Nutrition information is accurate</td>
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<tr>
<td>Recipes rewritten to include wild food substitutions</td>
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- "Met all requirements": A score indicating complete fulfillment of all requirements.
- "Met most requirements": A score indicating fulfillment of most requirements.
- "Needs work": A score indicating areas that require improvement.
- "Comments": Space for additional comments or notes.