**Identifying Dandelion:** For such a common weed, dandelion is easy to misidentify. Many look-alike plants have similar leaves, but dandelion leaves are nearly hairless. They have toothed edges, hence the French name, “dent de lion” or lion’s tooth. Leaves and hollow flower stems grow directly from the rootstock. What most people think of as a single dandelion flower is actually hundreds of flowers growing together on a single base. A "petal" is a complete flower. Dandelion flowering heads open in sunlight and close in dark rainy weather. Each dandelion can produce more than 5,000 seeds per year, which form “wish balls” that are carried away with the slightest breeze or breath. Individual seeds with parachute-like hairs have been known to travel on the wind as much as five miles! Dandelion only has one flowering head per stalk. Other look-alikes have many flowering heads per stalk. Dandelion roots, leaves and stems all exude a milky white sap. Dandelion belongs to the Asteraceae (sunflower) family.

**Where it Grows:** The genus *Taraxacum* includes over 250 species that grow throughout the world. It will thrive just about anywhere including pristine mountain meadows, barren open fields, and even cracks in cement.

**Season:** Leaves are gathered for food in early spring, and for medicine in spring through early summer. Buds and flowers are harvested in early to late spring depending on location and temperature. Roots are harvested in spring through autumn.

**How to Harvest:** Every part of dandelion is useful. Avoid harvesting along roadsides, agricultural or industrial sites, places that have been sprayed, or areas frequented by dogs.

- **Leaves:** To eat dandelion leaves, pinch off young tender ones from the center of plants. Rinse and keep cool before eating fresh or cooking. Older leaves become intensely bitter as they are exposed to increasing amounts of sunlight. To preserve leaves for tea, harvest on a dry day. Use a rubber band to bundle small bunches then hang to dry, or dry leaves in single layers in baskets or a dehydrator. Store in a glass jar for up to a year.

- **Buds:** Dandelion buds can be eaten fresh, cooked, or pickled. Harvest when they are tight little balls that do not open when you pinch them.

- **Flowers:** Gather dandelion flowers on sunny days when they are dry and fully open, usually March to early May.

- **Roots:** The medicinal properties of dandelion root vary a little from season to season. In spring, they are bitter and are medicinally optimal as a digestive stimulant. In fall, they are sweeter and higher in a carbohydrate called inulin, which is excellent for gut health and insulin balance. When digging dandelion, even the smallest
piece of root left in the ground will grow into a new plant.

To dry dandelion roots, dig them up in spring through fall, wash thoroughly, pat them with a towel to remove excess water, and then dry them whole in a dehydrator or on a basket next to a wood stove. You can also hang-dry the roots by using a long piece of string, wrapping each root a couple times, letting out six inches of string, and wrapping another root, thus making a long dandelion root chain. Once dry, use clippers to cut the roots into small pieces, then store in a glass jar.

**Eating Dandelion:** Dandelion leaves can be a gourmet green if you know when to harvest and how to prepare them. While they taste a little bitter, they add flavor variety as well as concentrated nutrients to dishes. They can be steamed, sautéed, or boiled, and added to dips, casseroles, and soups. Boiling older leaves in a pot of water for about five minutes removes some of the bitterness. They are high in vitamins and minerals including Potassium, Calcium, Magnesium, Iron, and vitamins A, B, and C.

Dandelion buds can be eaten like capers when they are still tight little buttons. They look like little watermelons and can be eaten fresh, cooked, or pickled in vinegar. Remove sepals (they look like tiny leaves) to decrease bitterness.

Dandelion flowers have a sweet and mild flavor. The base of the flowering head and the green sepals are bitter. You can pull the flowers off and use them straight in salads or add them to cooked foods like quiche, pancakes, muffins, and fritters. They are high in vitamin A.

**Medicine:** Dandelion is one of the oldest documented medicinal herbs. A European variety was intentionally imported to the Americas on the Mayflower ship (around 1620) as a food crop and a panacea or "cure-all." It spread and was quickly incorporated into American Indian medicine. Dandelion was in the United States Pharmacopeia from 1831-1926 and the National Formulareae from 1888-1965.

Dandelion leaves are used as a simple and safe diuretic, meaning that they help the kidneys to excrete excess water in the body. They can be eaten, dried and made into tea, powdered and placed in capsules, or infused in vinegar. Dandelion flower is a popular addition to facial cleansers and creams because of its high nutrient content. The flower oil is also used topically for inflammation, sore muscles, and arthritic joints. The milky white sap from the plant inhibits the growth of warts. Try dabbing warts with sap daily for a couple of weeks.

Dandelion root generally helps our body to get rid of waste products. It supports our liver, an organ that is responsible for breaking down dietary toxins, drugs, hormones, and metabolic waste. It also promotes elimination of excess uric acid, which can cause tissues to become more inflamed and reactive, potentially leading to allergies, hay fever, and gout. Arthritis, acne, psoriasis, hepatitis, and pre-menstrual syndrome may be improved by taking dandelion. Dandelion root also acts as a gentle laxative through stimulating bile, which helps us to break down fats. It stimulates peristalsis (the rhythmic contraction of the intestines). Another remarkable quality of dandelion root is that it helps the liver to preferentially make high quality fats (HDL) versus poor quality fats (LDL)
and VLDL). These fats are building blocks for cells in our body, and their quality determines the integrity and resilience of our tissue. Good quality fats lead to healthy tissue, which leads to good overall health.

Dandelion root contains up to 25 percent inulin – a compound that it produces to store energy. Inulin is a popular addition to foods and medicinal products for several reasons. It helps us to absorb minerals including calcium and magnesium, and is also a prebiotic – meaning that it feeds healthy gut flora. Inulin provides some of the energy of carbohydrates without the need for insulin, making it an ideal plant for diabetics. In addition, diabetics are typically deficient in minerals, and dandelion helps to replenish these.

To receive optimal anti-inflammatory and liver supportive properties, use fresh roots by eating them, tincturing them, or making infused vinegar. The dry root tea is boiled as a decoction and is nutritive, good for digestion, and detoxifying.

**Traditional Technologies:** Dandelion is high in latex resin, and has been grown commercially for latex extraction.

**Ecological Relationships:** Dandelion helps to improve soil quality. Roots draw minerals up from deep layers of earth – concentrating them in the whole plant. When the plant dies back, it deposits these minerals on topsoil. Roots also aerate hard packed soil and create pathways for water to enter. The flowers are pollinated by over 90 insects.

**Additional Resources**
Dandelion Bloom Video: [https://www.youtube.com/watch?v=gnQ3YAgv2b4](https://www.youtube.com/watch?v=gnQ3YAgv2b4)
The Dandelion Seed, by Joseph Anthony

**References**
Overview: In this lesson students are introduced to dandelion as a useful weed. They learn about the lifecycle of dandelion, how it improves soil quality, and how it benefits insects, grazing herbivores, and people.

Student Wondering: What is a weed? How is dandelion useful?

<table>
<thead>
<tr>
<th>Learning Objectives</th>
</tr>
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<tbody>
<tr>
<td><strong>Understandings</strong></td>
</tr>
<tr>
<td><em>Student will understand that…</em></td>
</tr>
<tr>
<td>• many common weeds including dandelion are useful to the environment and to people.</td>
</tr>
<tr>
<td>• dandelion has been valued by people for millennia as a food and medicine.</td>
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<tr>
<td><strong>Knowledge and Skills</strong></td>
</tr>
<tr>
<td><em>Student will be able to…</em></td>
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<tr>
<td>• build plant observation skills, learn botanical terms, and learn about the lifecycle of dandelion.</td>
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<tr>
<td>• tell the difference between dandelion and other look-alike plants.</td>
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NGS Standards: Performance Expectations

- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

<table>
<thead>
<tr>
<th>Scientific and Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Crosscutting Concepts</th>
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<tbody>
<tr>
<td>• Developing and Using Models</td>
<td>• LS1.B: Growth and Development of Organisms</td>
<td>• Patterns</td>
</tr>
</tbody>
</table>

Vocabulary: weed, herbicide, crop, minerals, nutritious, chlorophyll, nectar, pollen, ovaries, decompose, asexual reproduction, generation.

Background: Dandelion is one of our most common weeds. Few people know how useful it is as a food, medicine, and soil rehabilitator. This activity is a good opportunity for students to question why we value plants and how these values might differ over time or from family to family.

Materials:
- Inside: Dandelion plant samples including flowering heads, leaves, hollow stems, and at least one root,
• magnifying glasses or hand lenses, and drawing materials.

• Outside: Gather class around dandelion plants, bring a shovel to dig up a root, magnifying glasses or hand lenses, student field books or outdoor drawing materials.

• Younger Students: a copy of the book *The Dandelion Seed* by Joseph Anthony.

**Preparation:** Gather plant samples before class or find a place where students can look at dandelion plants, dig up a root, and sit to draw the plants. Review the dandelion overview and choose information that is appropriate for your student knowledge level.

**LESSON: DANDELION - THE USEFUL WEED**

**INTRODUCTION**

10 MINUTES

**Ask:** What is a weed? Is dandelion a weed? Give students a chance to respond.

**Share:** A “weed” is simply a plant that people do not want in a certain area. Dandelion is quite possibly the most common and most hated weed in America. Many people spray herbicides in their yards to kill it. Yet other people love dandelion and think it is beautiful. Farmers have grown it as a crop. For centuries, immigrants have carried dandelion across the world and planted it where they make home. The plants that people value change over time and in different regions.

**Group Discussion:** Invite students to share what they know about dandelion. **Ask:** How is dandelion useful? Document students’ key points on a board.

**Share:** Dandelion is a complex plant that holds many surprises. We might think of it as a common weed, but it has many gifts for the soil, plants, people, insects, and other species. Surprising gifts of dandelion include:

- **Dandelion is a food hub for insects** – over 90 different kinds of insects visit dandelion to gather nectar and pollen.
- **Dandelion heals the soil** – roots draw minerals up from deep layers of earth – concentrating them in the whole plant. When the plant dies back, it deposits these minerals on topsoil. Roots also aerate hard packed soil and create pathways for water to enter.
- **Dandelion is a nutritious food** – in the spring, leaves and flowers can be eaten. For some people, dandelion is the most nutritious plant they have access to. Deer, rabbits and many other creatures eat dandelion as well. (Share information from the overview that is applicable for students’ age range).
- **Dandelion is a medicine** – leaves are high in minerals, flowers are made into nutritious oil for the skin, and roots are used to support eliminative functions (help get rid of waste) in the body including the liver, guts, and kidneys. (See the Dandelion Overview for more information).

**DANDELION LIFECYCLE**

5–10 MINUTES

Either read the book *The Dandelion Seed* by Joseph Anthony or read the following:
Dandelion Through the Seasons:

*Take a deep breath, relax your body and close your eyes if you wish. Imagine that you are a common dandelion plant. It is wintertime. The nights are long and the days are cold and windy. You stay warm beneath the soil so you can survive, but your roots are growing thin after the long months of cold.*

*Spring finally arrives and you sprout new leaves to gather light. You grow rapidly as it becomes warmer and the days grow longer. Your leaves are making chlorophyll and are becoming stronger and more vital. It is time to produce flowers. Your buds sprout, swell, and open.*

*The heat of summer has arrived and everything is buzzing with vitality and growth. Your brilliant yellow flower heads have sweet nectar and pollen. You are visited by bees and other flying insects that gather your nectar for food. They carry pollen from another flower, which travels down into your ovaries. They swell and grow, turning into hundreds of seeds that form a wish ball. A child playing makes a wish and blows your seeds into the wind. They are the promise of the next generation.*

*Autumn arrives with its cool nights and the leaves begin falling. They decompose on the ground and send nutrients back into the soil. Your own leaves begin to wither and turn brown. Your energy descends back into your roots beneath the soil where it is warm. All summer you have been gathering food and storing it. Now your roots are fat and sweet, and you can once again survive the cold dark winter.*

**Dandelion Plant Characteristics:** Show students samples of the whole dandelion plant or dig a whole dandelion plant up if you are outside. There are many dandelion look-alikes, so it is important to know a few tricks for proper identification. Point out that dandelion has only ONE flower per stem and the leaves are never hairy. Leaves are toothed like a lion’s tooth, hence the French name, “dent de lion.” Flower stems are hollow. Some people like to use the larger stems as a drinking straw. The fleshy roots are white on the inside. Show students that a white milky sap comes out when you break the root, stem, or larger leaves. If possible, show examples of dandelion look-alikes including hairy cat’s ear (*Hypochaeris radicata*). Hairy cat’s ear has solid forked stems with multiple flowers and hairy leaves.

**DRAWING EXERCISE 10–20 MINUTES**

Pass out drawing materials, paper, hand lenses, and samples of dandelion flowers to each student. Ask students to closely investigate their sample. Encourage them to pay attention to detail by asking:

- What do you notice about dandelion flowers?
- How many petals does it have?
- What are some of the smallest parts of this flower?
- What are some of the largest parts of this flower?

If you have time, have them add other parts of the plant to their drawing including leaves, stems, and roots. Ask what unique qualities they notice about the leaves and stems. Can they sketch the whole plant? Encourage students to follow the ABCDE’s of scientific drawing including:

A – Accurate
B – Big – use the whole page
C – Colorful or gives context
D – Detailed – use writing and drawing together. What do you notice about color, texture, shape, size?
E – Explained - “I notice… I wonder… this reminds me of…”

Older Students: Have them compare dandelion to a typical flower diagram. Can they find the parts? After giving students some time to draw and investigate, share that what we think of as a “dandelion flower” is actually a flowering head with many “florets.” Share that dandelions can reproduce in multiple ways. Some dandelions reproduce when insects carry pollen from one flower to another, but others can pollinate themselves. Dandelion florets have both male flowers that produce pollen and female flowers that produce seeds. The fruits are mostly produced without fertilization by asexual reproduction. They “clone” themselves. There are many subspecies of dandelion around the world and botanists are still trying to understand them!

See this diagram of dandelion flower - [http://www.michigannatureguy.com/blog/tag/dandelion-flower-parts-dandelion-head-cross-section/](http://www.michigannatureguy.com/blog/tag/dandelion-flower-parts-dandelion-head-cross-section/)

For added entertainment, play the Rolling Stones’ Dandelion song when students are doing the drawing activity.

### TYING IT TOGETHER 5–10 MINUTES

**Ask:** What is one thing that you will remember about dandelion? What surprised you about dandelion?

Have each student in the group respond, answer popcorn style, or discuss with a partner.

### DIGGING DEEPER

**Make Dandelion Promotional Posters:** What do students want people to know about dandelion? Research how dandelion is valued around the world by people and other animals like pollinators, deer, and rabbits.

**Show Pictures of Dandelion with Music:** [https://www.youtube.com/watch?v=U7rx5sSu1bk](https://www.youtube.com/watch?v=U7rx5sSu1bk)

**Dandelion Bloom Video:** [https://www.youtube.com/watch?v=gnQ3YAqv2b4](https://www.youtube.com/watch?v=gnQ3YAqv2b4)
**DANDELION**

**Taraxacum officinale**

*Life cycle of Dandelion* © Tend, Gather & Grow/Elise Krohn et al., 2020. All photos by Elise Krohn.

**Leaves**

They are eaten like lettuce in springtime.

**Buds**

Buds not yet open can be pickled and eaten straight or enjoyed on salads.

**White, Fleshy roots**

Have milky sap. They help regenerate soil and are used for medicine.

**Seeds**

Have parachute-like tops and can travel for miles in the wind.

**Flowers**

Bloom in early spring and are pollinated by over 90 insects.
Overview: In this activity, students learn about the nutritional content of dandelion, along with how to harvest and prepare it as food.

Student Wondering: Why is dandelion so nutritious? How can I use it as food?

Learning Objectives

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<td>Student will be able to…</td>
</tr>
<tr>
<td>• dandelion contains vitamins and minerals that help people to stay healthy.</td>
<td>• understand how to identify, harvest, and prepare dandelion as food.</td>
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NGS Standards: Performance Expectations

- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

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<td>• Patterns</td>
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Vocabulary: weed, digestive enzymes, absorb, nutrients, minerals, vitamins

Background: Dandelion leaves are a gourmet green if you know when to harvest and how to prepare them. Leaves are slightly bitter, but add variety to dishes. They can be steamed, sautéed, or boiled and then incorporated into dips, casseroles, and soups. They are high in vitamins and minerals including potassium, calcium, magnesium, iron, and vitamins A, B, and C. Dandelion buds can be eaten like capers when they are still tight little buttons. Dandelion flowers have a surprisingly sweet and mild flavor. The base of the flowering head and especially the green sepals (they look like tiny leaves) are bitter. You can pull the flowers off and use them straight in salads or add them to cooked foods like quiche, pancakes, muffins, and fritters.

Materials: Print recipes for students. Gather ingredients including dandelion, cooking supplies, serving plates,
and utensils. Bring samples of true and false dandelion plants for comparison including leaves and flowering stems if possible.

**Preparation:** Read the *Dandelion Overview*. Choose a recipe that you think students will enjoy. Gather and purchase materials for the recipe.

**LESSON: EATING DANDELION**

**INTRODUCTION**  

**Share:** Dandelion is one of our most common “weeds.” A *weed* simply means a plant that people do not want in a certain area. Many weeds are edible. Some weeds are much higher in nutrients than anything we can purchase in the grocery store. Mild greens like chickweed and miner’s lettuce taste similar to lettuce. Others like wood sorrel are very tart. Dandelion has a unique bitter taste. Our modern diet contains many sweet and salty foods, but our ancestors ate a wide variety of flavors including bitter, pungent, and sour foods. Each of these flavors of food contains important qualities that help keep us healthy. Bitter foods are an important part of traditional diets, yet they are rare in our modern diet.

**Ask:** Can you think of any bitter drinks or foods? Most students say things like lemon (sour). Coffee is a bitter drink. Greens like radicchio, kale, and arugula have a bitter taste.

**Share:** When we eat bitter foods, it activates our taste buds, which sends a message to our brain telling it to release more *digestive enzymes*. This stimulates our digestive organs including our liver, pancreas, and stomach to release liquids that help us break down our food better and therefore *absorb* more *nutrients*. Dandelion is a bitter green that is eaten throughout the world, but in order to know when to harvest it, we need to understand a little about its lifecycle. (Review the lifecycle from the overview, or if you have taught *Dandelion: The Useful Weed*, ask students to explain the lifecycle).

Dandelion spring leaves, buds, and flowers can all be eaten.

- **Dandelion leaves** are high in vitamins and *minerals* including potassium, calcium, magnesium, iron, and *vitamins* A, B, and C. They can be a gourmet green if you know when to harvest and how to prepare them. Harvest young leaves in early spring. Leaves in the shade are milder tasting. While they taste a little bitter, they add flavor variety as well as concentrated nutrients. They can be steamed, sautéed, or boiled and then incorporated into dips, casseroles, and soups. Boiling older bitter leaves in a pot of water for about 5 minutes helps to remove some of the bitter taste.

- **Dandelion buds** can be eaten like capers when they are still tight little buttons. To remove bitterness, wait until the sepals have unfurled and pinch them off. The buds look like little watermelons and can be eaten fresh, cooked, or pickled.

- **Dandelion flowers** have a sweet and mild flavor. They open with the sun and will close on dark rainy days. The base of the flowering head and especially the green sepals (they look like tiny leaves) are bitter. You can pull the flowers off and use them straight in salads or add them to cooked foods.
Harvesting Dandelion: It is important to harvest plants in clean areas. Avoid areas that are sprayed, roadsides, and industrial areas. There are many dandelion look-alikes but true dandelions only have one flower head per stem and the leaves are not hairy. (Show students samples of false dandelion and true dandelion so they can positively identify them).

**COOKING DEMONSTRATION** 30 MINUTES

Involves students in the cooking demonstration. For example, if you are making dandelion biscuits, have students pick flowers, remove the individual flowers from the base, mix the ingredients, and drop them onto the cookie sheet. You can break the class up into groups and prepare several recipes at once.

**Dandelion Greens Sauté**

1 small onion, chopped  
2 tablespoons olive oil  
4-6 cloves garlic, chopped  
½ cup feta cheese  
2 T. lemon juice or balsamic vinegar  
Salt and pepper to taste  
A medium sized bowl of spring dandelion leaves.

Gather fresh greens, wash, drain, then chop or cut into large pieces. Sauté garlic and onions. Add lemon juice or vinegar and greens. Sauté until greens are tender and vibrant – about 3 to 5 minutes. Add salt and pepper to taste. Sprinkle with fresh feta and serve.

**Dandelion Bud Pickles**

Early spring dandelion buds  
⅓ cup sweet onion, finely chopped  
2 cloves garlic, minced  
Apple cider, brown rice, or white wine vinegar  
Tamari or soy sauce

Place onions and garlic in the bottom of a 16 oz. mason jar. Fill jar with dandelion buds so there is 1-2 inches of clearance on the top. Cover buds with a mixture of about ¼ tamari or soy sauce and ¾ vinegar. Cap and let sit for at least 2 weeks. Keep refrigerated. Stir regularly to ensure all buds are covered with liquid.

**Dandelion Drop Biscuits**

2 cups all purpose flour  
2½ teaspoons baking powder  
1-2 teaspoons chopped herbs such as rosemary, basil, chive  
½ cup dandelion flowers – pulled off the base  
½ teaspoon of salt  
5 tablespoons cold unsalted butter  
1 cup milk
Preheat oven to 450 degrees F. Mix dry ingredients including herbs and dandelion flowers. Cut butter into small pieces, add to dry mix, and work with your hands until the butter feels like breadcrumbs. Add milk and stir until batter is just mixed. It should be moist and sticky but not smooth. Use a spoon to form about ½-cup scoops. Place a couple of inches apart on a cookie sheet. Bake until the bottom is browned and the edges are just starting to brown, about 12-15 minutes. Remove from the cookie sheet right away and enjoy!

**Dandelion Flower Fritters**

*Pick recently opened flowers and remove the green sepal from the base of the flower. Even wary wild-foods consumers come around when they taste these.*

- ½ cup flour
- ½ teaspoon baking powder
- Pinch of salt
- 2 eggs beaten
- ½ cup milk
- 2 cups fresh flowers
- Sunflower oil or sesame oil for frying

Mix flour, baking powder, and salt in a bowl. You can add herbs like basil and rosemary to this if you choose. In another bowl, blend eggs and milk. Heat a skillet with about ¼ inch of a high-heat tolerant oil like sunflower or sesame. Dip flowers in egg batter then coat with flour mixture. Fry until golden, then flip to other side. Drain on paper towels. Fine corn meal can be substituted for flour. If you have small flowers, you can make a batter by mixing all the ingredients together at once. Mix half batter and half flowers, and then sauté in oil to make “flower pancakes.” Serve immediately.

**TYING IT TOGETHER**

5 MINUTES

After sampling your recipe, ask students how they liked it. Close by asking each student to share one thing they didn’t know about dandelion before the class.

**DIGGING DEEPER**

Discuss Minerals for Health: Compare dandelion to other greens that are available in grocery stores. See the Cooking Nettle lesson for nutritional information on dandelion.

Compile a Dandelion Cookbook: Have students research dandelion recipes and interview family members, elders, or local cooks.
Overview: In this lesson students learn dandelion's medicinal uses as well as its relationship to healthy soil. In a hands-on activity, they prepare and sample dandelion root lattes.

Student Wondering: What is the medicine of Dandelion?

Learning Objectives

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</tr>
<tr>
<td>• dandelion improves soil quality.</td>
<td>• build plant observation skills, define botanical terms,</td>
</tr>
<tr>
<td>• dandelion contains nutrients and medicinal compounds that contribute to human health.</td>
<td>name the lifecycle of dandelion, and explain why</td>
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<td></td>
<td>dandelion has been valued by people.</td>
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</table>

NGS Standards Alignment: Performance Expectations

• 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.

Scientific & Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
----------------------------------|-------------------------|----------------------|
• Developing and Using Models    | • LS1.B: Growth and Development of Organisms | • Patterns |

Vocabulary: serrated, minerals, digestive stimulant, detoxify, diabetics

Background: For centuries, immigrants have carried dandelion across the world and planted it where they make home. The medicinal properties of dandelion root vary a little from season to season. In spring, they are more bitter and have optimal medicine as a digestive stimulant. In fall, they are sweeter and higher in a carbohydrate called inulin, which is excellent for gut health and insulin balance. When you dig dandelion, even the smallest piece of root left in the ground will grow into a new plant.

Dandelion root contains up to 25 percent inulin – a compound that it produces to store energy. Inulin is added to prepared foods like cereal and medicinal supplements for several reasons. It helps us to absorb minerals, including calcium and magnesium, and is also a prebiotic that builds healthy gut flora. Inulin
provides some of the energy of carbohydrates without the need for insulin, making it an ideal plant for diabetics. In addition, diabetics are typically deficient in minerals, and dandelion helps to replenish these.

Dandelion helps to improve soil quality. Roots draw minerals up from deep layers of the earth – concentrating them in the whole plant. When the plant dies back, it deposits these minerals on the topsoil. Roots also aerate hard packed soil and create pathways for water to enter. The flowers are pollinated by over 90 different kinds of insects.

**Materials:** See each activity below for associated materials:
- stovetop (or portable burner)
- large pot with lid and water
- long-handled spoon for stirring
- cups/mugs for serving
- milk (any kind tastes good) and honey
- ½ cup (serves approx. 16) roasted dandelion roots (10-15 dandelions)
- hand trowels for digging
- gloves (optional)
- bucket with water for washing newly harvested roots
- scrub brush/toothbrush, etc. to wash roots

**Preparation:** If an oven is available and you have ample time, students can help prepare roasted roots. Otherwise roast dandelion ahead of lesson to save time. Taking students through the whole process (digging, washing, chopping, drying, roasting, and brewing tea) takes a minimum of two days. Plan to have roasted dandelion pre-prepped to make lattes, unless you have a two-day class planned. When dried dandelion root is roasted it gets sweet and has a similar flavor to bitter-sweet coffee. Place chopped dried roots on a cookie sheet and roast in an oven for about 30 minutes at 200 degrees F. When the roots turn golden brown and begin to smell sweet and roasted, they are done.

**LESSON: DANDELION MEDICINE**

<table>
<thead>
<tr>
<th>INTRODUCTION AND DANDELION DIG</th>
<th>15 MINUTES</th>
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</table>

The following order of activities and times are assuming you have dandelion root for the latte pre-prepped and roasted (ready to brew). Before venturing outside, put tea on stove. Place 1 teaspoon of roasted dandelion root per cup of cold water in a pot, bring to a boil, and turn down to simmer for about 15 minutes with the pot covered. If dandelions are abundant (and in clean soil) in your area, take students out for a dig. Roots can be harvested in spring through fall, but will be sweetest in fall. Circle up students outdoors near a dandelion patch. You can dry the roots you harvest and use them for tea or another medicine at a different time.

**Share:** Dandelion is one of our most useful weeds. For centuries, immigrants have carried dandelion across the world and planted it where they make home. It has even been planted as a food crop! Today we are going to explore dandelion root medicine. First, let’s look at how to identify it.
Identifying Dandelion: For such a common weed, dandelion is easy to misidentify. There are many dandelion look-alikes but true dandelions only have one flower head per stem and the leaves are not hairy. (Show students samples of false dandelion and true dandelion so they can positively identify them).

- **Leaf**: Many look-alike plants have similar leaves, but dandelion leaves are not hairy. They have **serrated** or toothed edges, hence the French name, "dent de lion" or lion's tooth. Leaves and hollow flower stems grow directly from the rootstock.
- **Flower**: There is only one flower per stem, versus other branching look-alike plants. What most people think of as a single dandelion flower is actually hundreds of flowers growing together on a single base. These open to the sunlight and close in dark rainy weather. Dandelions can produce more than 5,000 seeds in one year. Each dandelion forms a "wish ball" of seeds that can be carried away by the slightest breeze or breath. Individual seeds with parachute-like hairs have been known to travel on the wind as much as five miles! The flowers are pollinated by over 90 different kinds of insects.
- **Roots**: Dandelion helps to improve soil quality. Roots break up hard packed soil and create pathways for air and water to enter. They draw **minerals** up from deep layers of earth – concentrating them in the whole plant. When the plant dies back, it deposits these minerals on topsoil.
- **General**: Dandelion roots, leaves, and stems all exude a milky white sap. It is in the sunflower or asteraceae family.

Harvesting Dandelion: When harvesting dandelion, it is important to harvest plants in clean areas. Avoid roadsides, dog parks, areas that are sprayed, and industrial areas.

**Dig**: Send students to find and dig two dandelions each. Share that when you dig dandelion, even the smallest piece of root left in the ground will grow into a new plant. To weed an area, try to remove the whole root. Once finished, have students wash roots in a bucket. These can be dried for later use.

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**COOKING DEMONSTRATION**

**Dandelion Root Lattes**

When students return from dig, strain the dandelion tea and serve it hot with milk and honey. Many people prefer about ¼ – ½ part milk to dandelion root tea, and about 1 teaspoon of sweetener per cup. Encourage students to share their impressions of the tea using descriptive words. **How is the fifth sip different than the first? Does the taste or feel bring up any memories?**

While students drink their lattes, ask them what they remember about dandelion. For example:

- Every part of dandelion is useful. The leaves are a nutritious green. The flowers are edible and nutritious. They are infused in oil and are used in skin creams. Roots are also nutritious and help us to **detoxify** or eliminate waste products from our body.
- The medicinal properties of dandelion root vary a little from season to season. In spring, they are bitterer and have optimal medicine as a **digestive stimulant**. In fall, they are sweeter.
- In autumn, dandelion root contains up to 25 percent inulin – a compound that it produces to store energy. Inulin is added to prepared foods like cereal and medicinal supplements for several reasons. It
helps us to absorb minerals including calcium and magnesium and is also a prebiotic, meaning that it helps to support or feed healthy gut flora. Inulin provides some of the energy of carbohydrates without the need for insulin, making it an ideal plant for diabetics.

- People with diabetes are typically deficient in minerals, and dandelion helps to replenish these.

**TYING IT TOGETHER**

Note: This can be done while dandelion latte is brewing, if you are not digging dandelion roots.

Break students into two groups. Half of the students stand in a circle facing out. The other half forms a circle around them and face in. Each person is thus facing another person. Tell the group which people – those in the inner or outer circle – will speak first. Ask the first question (see below). Each person shares their answer with the person they are facing. After a minute or two, call "switch." The partner then responds with their answer to the same question. Next, call "rotate!" The students in the inner circle move one position to the right to face a new partner. Now ask another question, and so on.

- Name one way to identify dandelion
- What is one way dandelion helps the human body?
- How can dandelion help the soil?
- When is a time you felt like a “weed?”
- How will this day change the way you see dandelion?
- What’s a positive trait you see in your partner that reminds you of dandelion?

**DIGGING DEEPER**

**Dandy Tea:** For leaf tea, use one tablespoon of dried herb per one cup of boiled water and steep 15 minutes. Drink up to five cups a day. For root tea, combine one teaspoon per cup of cold water in a pan and then bring it to a boil. Simmer about ten minutes, then strain. Drink up to three cups a day.

**Dandelion Vinegar:** Most of the medicinal compounds in dandelion can be brought out in vinegar. Gather roots, clean well to remove dirt, finely chop with a knife and place in a mason jar. Cover completely with brown rice, apple cider, or other types of vinegar with at least 5 percent acetic acid. Cover with a tight fitting lid. Let sit for at least 2 weeks, shaking every couple days. Strain with muslin cloth. The vinegar will be milky. This is the inulin, which is an important part of dandelion’s medicine. Store in a glass jar with a non-metal lid and keep in a cool dark place for up to a year. Use ½ to 1 teaspoon 2 times a day. You can use this in salad dressing or on other foods. For added flavor and increased immune support, add chopped garlic, onion, and dried herbs.