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# Plant Power!

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## Activity Overview

Students will research Native American uses of plants and look for plant specimens in their native garden. Students will identify, examine, and draw the plants they find using a field sheet.

## Objectives

Students will:

- Learn about the role that plants play in Native American cultures
- Conduct research using multiple sources of information
- Identify native plants in the field
- Utilize their senses to enhance their research of plant usage

## Subjects Covered

Science, Language Arts, Social Studies,

## Grades

3 through 12

## Activity Time

1 hour in field; 1 hour in classroom

## Season

Any season, though spring or fall are best for plant identification in the field

## Materials

Informational resources (*see Additional Resources*), field guides, clipboards, worksheets, and writing utensils

## State Standards

### Language Arts:

Use effective reading strategies (A.4.1, 8.1, 12.1)

Read to acquire information (A.4.4, 8.4, 12.4)

Create or produce writing (B.4.1, 8.1, 12.1)

Orally communicate (C.4.1, 8.1, 12.1)

Listen & comprehend oral communications (C.4.2, 8.2, 12.2)

Use computers (E.4.1, 8.1, 12.1)

Conduct then communicate research (F.4.1, 8.1, 12.1)

## Background

Native plants have been used for medicinal, food and other purposes by various peoples throughout time. Having an understanding of these plant uses can help to preserve the heritage of different cultures, while also providing an appreciation of how plants are used by humans and how these resources fit into different ecosystems. Native Americans of many cultures have used naturally growing plants for food, supplies, and medicine. For example, nearly 400 plant species have been identified as being used by the Great Lakes Ojibwa. About 123 species of prairie plants have also been used as food sources. Many of the same plants have been used for medicine and food, though preparation techniques vary, and different parts of the plant may have been utilized. Although not every person knew how to use each plant, knowledge of native plant uses was handed down from one generation to the next through oral traditions and great respect was shown to all plants.

Ethnobotany is the study of how plants have been used by various peoples and cultures around the world, both in the past and present. Such studies can help us gain an understanding of how valuable plants have been, while also helping to establish their value as potential sources for future medicines. Aspirin, cortisone, and novocaine all come from native plants. Native Americans utilized the natural curative properties from the plants for centuries before modern day equivalents were created. For example, Native Americans chewed willow bark or steeped willow stems in boiling water for tea as a pain reliever. Since the late 1800's, salicin, a derivative of native willows, was officially listed as a pharmaceutical product in the United States. Today, synthetic substitutions of salicin are manufactured for pain relief. Unfortunately, much of the indigenous knowledge and related names have been lost over time and been replaced by English and scientific names. Nevertheless, we can still gain a better understanding about relationships between people and plants that can also increase awareness about the need to preserve biodiversity.

In addition to understanding and researching native uses of plants, this activity provides an opportunity for students to use their senses in a natural setting. Students can feel the rough or smooth leaves of a native plant, smell the strong scent of a plant from the mint family (Labiatae), and hear insects buzzing around the plants. A variety of materials of different shapes and sizes can be touched and explored.

## Activity Description

As a class, determine what resources to use for researching Native American plant uses. Work in teams of two to investigate 5 native plants growing in your region. For each plant, furnish the following information:

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## Plant Power! (cont.)

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### Science:

Decide which questions to ask (A.4.1)

Develop themes for questions (A.8.1)

Apply themes to develop future visions (A.12.1)

Use scientific sources & resources (B.4.1)

Describe changes in knowledge and concepts (B.8.1)

Show cultural & individual contributions to science (B.12.1)

Ask questions, plan investigations, make observations, predictions (C.4.2)

Identify data and sources to answer questions (C.8.2)

Identify issues, questions, research; design & conduct investigations (C.12.2)

### Social Studies:

Describe examples of land use, communities, shelters (A.4.4)

Conduct land use history (A.8.4)

Analyze effects of population changes on environment (A.12.4)

Identify different ecosystems & cultural adaptations (A.12.8)

Identify & examine sources of information about history (B.4.1)

Examine biographies (B.4.3)

Compare & contrast contemporary & historical lives (B.4.4)

Explain history of WI Indian tribes (B.4.10)

Use & evaluate primary sources of information (B.8.1)

Summarize issues associated with WI Indian tribes (B.8.11)

Analyze primary & secondary sources about historical event (B.12.1)

Analyze historical periods and relationships (B.12.3)

Explain significance of important people (B.12.8)

Discuss impact of changes on beliefs & values (B.12.10)

Analyze history & status of WI Indian tribes (B.12.12)

Describe influence of ethnic cultures (E.4.4)

Describe different values & beliefs (E.4.8)

Give examples of cultural expression (E.4.11)

Scientific and common name(s), description of plant, description of plant use(s), references

Compile information from all teams to use as a resource in the native garden. Students can also develop a computer database to file this information for later use.

### Part 2 (In the school native garden)

Before entering the native garden, review the five senses (touch, smell, sight, sound, and taste). Discuss how you use these senses in your daily lives and how native peoples may have relied on their senses when native ecosystems covered most of the region. Clarify that they will be using their sense of touch, sight, smell, and sound in the field. Their sense of taste will not be used! When investigating native plants in the field, emphasize that this activity should be conducted without picking or tasting any plants unless proper precautions are taken. Be sure that students can identify plant irritants like poison ivy and wild parsnip to avoid an unpleasant field experience.

In teams, search for examples of plants growing in your school garden that were traditionally used for food, beverages, and medicinal remedies for illness or injury. Once you locate a plant specimen, use your sense of smell, touch, hearing, and sight to examine the plant more closely. Notice if you smell, feel, or observe any characteristics such as a strong fragrance or a thick sap that may indicate how the plant was used. Is there anything unique about the plant that might indicate a use for medicinal or food purposes? Draw each plant that you identify, and indicate how the plant might be used.

### Extensions

- Search out native prairie plants growing in your native garden that may have biologically active chemicals. Test plants to find which ones might inhibit bacterial growth in petri dishes.
- Prior to researching plant uses, go out to your native garden and hypothesize about various plant uses based on your observations.
- Create a menu for a balanced diet using plants and animals native to the region.
- Make natural dyes and dye your own cloth. (See *North American Dye Plants* by Anne Bliss (1980)).
- Read literature about Native American life and look for specific information about native plant uses. Create a list of plants and note how they have been used in the past and present.
- Create photos or drawings with accompanying text of plants in your native garden for a school display and/or for your school website.
- Prepare a list of native plants and their uses according to the time of year they can be used or harvested. Create a phenological calendar based on

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## Plant Power! (cont.)

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this information and related pictures or photographs of the plants.

- See “A Seed’s Journey” activity to learn about plants brought to North America for food and medicine by Europeans. See the Winter 1999 issue of *Earthteaching News* for a copy of the activity, or visit the Earth Partnership for Schools website: <<http://wiscinfo.doit.wisc.edu/arboretum>>
- Research how pioneers used native plants for food or medicinal purposes.
- Research what modern-day medicines originally came from native North American plants.

### Additional Resources

- Bliss, A. (1980). *North American dye plants*. New York: Charles Scribner’s Sons.
- Densmore, F. (1974). *How Indians use wild plants for food, medicine, and crafts*. New York: Dover.
- Foster, S. (1990). *Field guide to medicinal plants: Eastern and central North America*. Boston: Houghton Mifflin.
- Kindscher, K. (1992). *Medicinal wild plants of the prairie: An ethnobotanical guide*. Lawrence, KS: University Press of Kansas.
- Kindscher, K. (1987). *Edible wild plants of the prairie: An ethnobotanical guide*. Lawrence, KS: University Press of Kansas.
- Knutson, A. (1998). Add flavor to your landscape with edible native plants. *Wild Garden*, (Spring 1998), 30–39.
- Letcher Lyle, K. (1997). *The Complete Guide to Edible Wild Plants, Mushrooms, Fruit, and Nuts; How to Find, Identify, and cook them*. Guilford,CT: The Lyons Press
- Meeker, J., Elias,J.,Heim,J. (1993). *Plants used by the Great Lakes Ojibwa*. Odanah, WI: Great Lakes Indian Fish and Wildlife Commission
- Peterson, L.A. (1977). *Edible Wild Plants Eastern and Central North America*. Peterson Field Guide Boston: Houghton Mifflin.
- Thayer, S. (2006) *The Forager’s Harvest A Guide to Identifying, Harvesting, and Preparing Edible Wild Plants*. Forager’s Harvet
- Vogel, V. (1970). *American Indian medicine*. Norman, OK: University of Oklahoma Press.

### Assessments

- Compare and contrast past and present uses of prairie plants
- Research a native wild plant; describe its characteristics, history, and uses over time; and make an oral report to the class. Have students conduct peer reviews of these reports.
- Describe two important uses of native plants
- Describe three safety measures that should be taken if collecting native plants
- Create a mobile that includes the plants they identified, their uses, and how the senses might help to identify the plant

1 Ojibwa is what other tribes called the Anishinabe, which is the name these people used to describe themselves. Chippewa is what non-Indians called the Ojibwa. For more information, see Benton-Benai, E., *The Mishomis Book*, pp. 94-102.

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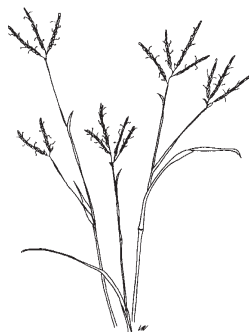
## Plant Power!: Field Sheet

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### Native American Medicinal Uses of Plants



*Baptisia leucophaea*, Prairie False Indigo. The seeds were ground up and mixed with Bison fat to make an ointment to rub on the bellies of colicky babies. Children used the seedpods as rattles.



*Andropogon gerardi*, Big Bluestem. Used as medicine to treat indigestion and stomach pains. The lower leaves were boiled in water to make a decoction. To reduce fevers, a small cut was made on the head and then it was bathed with the decoction.



*Eryngium yuccifolium*, Rattlesnake Master. Roots were used as an expectorant and emetic, to induce perspiration, and to treat snakebite.



*Ceanothus Americanus*, New Jersey Tea. Native Americans called this plant "kituku manito" meaning "spotted snake spirit." This plant had many uses including treatment for sore throats, gonorrhea, dysentery, eye troubles, and high blood pressure. The roots and bark were used to tan hides.



*Monarda fistulosa*, Beebalm. Leaves were boiled for the minty oil to treat pimples. A tea was used for fevers, sore throats, colds and headaches.

*Liatris pycnostachya*, Gayfeather. The Corm, an underground, thick fleshy stem, was chewed then blown into horse's nostrils to increase its endurance. The corms taste somewhat like carrots and were dug up and stored for winter meals.

