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For Teachers

**Medicine and Natural History:
A Lesson in the Physic Garden at
UBCBG**

2024

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GENERAL INFORMATION

Garden Visit, Lesson, and Project
Grade 8 – Social Studies
Umaiyavan Yogamanoharan
June 2nd, 2023

Medicine and Natural History: A Lesson in the Physic Garden at UBCBG

Overview

This lesson and project are designed to provide a hands-on experience for students to engage with natural history and past medicinal practices. Students will begin by learning about the history of botany in medicine from a variety of cultural perspectives. Reflecting on their own relationships to plants and medicine, students will be introduced to their research project and their visit to a garden specialized in historical medicine.

UBCBG's Physic Garden collection displays plants used in early European pharmaceutical practices. Throughout a tour of the Physic Garden, students will learn about the history and science of the plants in the garden. During their visit, students will get the chance to explore and select a plant that they would like to research. Once returned from the Garden, students will complete a research project in which they compare and contrast modern and historical medicinal uses of their chosen plants. These projects can be shared with the class and assessed.

Core Competencies

Thinking

Students learn to analyze and make judgments about a work, a position, a process, a performance, or another product or act. They reflect to consider purpose and perspectives, pinpoint evidence, use explicit or implicit criteria, make defensible judgments or assessments, and draw conclusions. Students have opportunities for analysis and critique through engagement in

Curricular Competencies

Students will be able to:

1. Use Social Studies inquiry processes and skills to ask questions; gather, interpret, and analyze ideas; and communicate findings and decisions
2. Assess the justification for competing historical accounts after investigating points of contention, reliability of sources, and adequacy of evidence

formal tasks, informal tasks, and ongoing activities.

Big Ideas

Human and environmental factors shape changes in population and living standards.

Changing ideas about the world created tension between people wanting to adopt new ideas and those wanting to preserve established traditions.

Content

Students will understand:

1. Scientific and technological innovations
 1. How certain plants had historically been used to affect human health and how these effects have been studied and documented in both historical and modern contexts.
 2. Changes in population and living standards
 1. How environmental factors impacted regional ecology and biodiversity.
 2. How different societies have utilized plants for healing and medicinal purposes.
 3. Exploration, expansion, and colonization
 1. How colonialism and European expansion impacted the use of certain plants and access to medicinal practices.
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Objectives

Students will learn to view the natural world as an inherent part of history.

Students will learn history through the lens of medicine.

Students will be able to identify a variety of different species of plants that can be used for a plethora of natural remedies.

Students will learn to analyze text and interpret the accuracy of historical traditional medicine.

Cross-curricular + Trans-disciplinary Connections and Critical Questions

1. Geography and Cultural Studies: Examine how the geographical distribution of medicinal plants has influenced traditional medicines in different regions. Discuss how cultural beliefs and practices shaped the medicinal use of plants.
 2. Health Education: Reflect on how traditional remedies can complement modern medicine and contribute to holistic health practices. Discuss the potential for sustainable healthcare solutions inspired by traditional knowledge.
 - a. In what ways can understanding the past use of medicinal plants in BC help us address current environmental and health challenges?
 3. Indigenous Studies: Reflect on how local indigenous cultures use and used plants in their medicinal practices.
 - a. How have these practices been impacted by forces such as settler-colonialism?
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Garden Visit Lesson Plan
Grade 8 – Social Studies
Umayyavan Yogamanoharan
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Materials:

Duration:

90-minute Garden visit + 120 minutes in class
(1 lesson before visit, 1 lesson after visit)

Resources:

Modern:

<https://strictlymedicinalseeds.com/>

<https://www.herb-pharm.com/pages/herb-library>

<https://www.herbalgram.org/>

<https://sustainableherbsprogram.org/>

Herbal Medicine: Expanded Commission E Monographs

Ethnobotany: A Phytochemical Perspective by Barbara M. Schmidt, Diana M. Klaser Cheng

A Modern Herbal by Maud Grieve

Historical:

Pliny the Elder: Natural History

Nicholas Culpeper: Complete Herbal

Theophrastus: Historia Plantarum

John Gerard: Herball, or Generall Historie of Plantes

Introduction + Minds On

Before the Tour

Spend time explaining how botany was used historically in medicine. Due to lack of access to tools designed to create synthetic medicines, communities throughout most of history relied on the natural world to cure ailments. Include an explanation of the four humours (blood, yellow bile, black bile, and phlegm). Touch on the Doctrine of Signatures, the approach of using visual associations between a plant's physical characteristic and parts of the human body to treat illnesses. (The DoS is featured in the Physic Garden). Lay a general foundation of the different ways that various cultures and peoples used plants and herbs for medicinal purposes.

Below are sources to learn more about historical medicine practices:

1. Pliny the Elder: Natural History
2. Nicholas Culpeper: Complete Herbal
3. Theophrastus: Historia Plantarum
4. John Gerard: Herball, or Generall Historie of Plantes

Try to gauge the cultural background of the class and see if you can incorporate some botanical history relevant or engaging to your class. Chose whichever of the below information you think is best suited for your class.

Methods and Techniques

- Modes of action for Herbs
 1. Astringent: dry out the skin and can help with irritation or inflammation. They create barriers that protect against infection.
 2. Tonic: Are meant to be used consistently over a long period of time to strengthen bodily systems.
 3. Vermifuge: Used to kill or expel parasites from the body.
 - Types of preparation:
 1. Infusion: Steeping herbs in water until it absorbs the oils, then consuming it for medicinal purposes.
 2. Decoction: Boiling a plant in order to dissolve the chemicals for use in teas or medicine.
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3. Poultice: Grounding the herbs into a paste to them be applied on the skin.
 4. Tincture: Soaking the herbs in alcohol or vinegar to pull out the active ingredients creating a more concentrated liquid.
 5. Ground/pills: Grinding up the plants and putting them into pill form for easier consumption.

Various cultures' traditional medicine

1. Chinese traditional medicine

- White Peony Root (Bai Shao)

White peony thins your blood so clots do not form, thus helping your body combat existing blood clots.

In ancient Chinese medicine, white peony root is used to prevent thrombosis (blood clots).

- Jujube (Suan Zao Ren)

Used for 3000 years to help cure insomnia. Evidence shows that it does work as a natural sedative.

- Honeysuckle (Jin Yin Hua)

In herbal medicine honeysuckle was used as an anti-inflammatory, however in more modern uses it works as a laxative for sweating and detoxification.

2. Indian traditional medicine

- Water hyssop (Brahmi)

It is proven to function as an antioxidant, however ayurvedic medicine claims it helps with a series of other issues such as brain function.

- Licorice root

Commonly used in a variety of forms including pills to solve issues like heartburn, acid reflux and ulcers. There is not much evidence to prove that it is effective in curing any of these ailments.

- Cumin
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Commonly used in cuisine, but is said to have medicinal effects in ayurvedic tradition. It is proven to have anticancer properties as well as antioxidants.

3. Greco-roman medicine

- Sage

Sage works as an antioxidant, but was thought to solve diabetes, oral health and menopause symptoms.

- Fennel

The Greeks used it to treat eye infections, remove worms from the ears and to help produce milk for mothers.

- Garlic

Historically considered to be a cure all, but has been proven to help with heart disease and blood pressure issues.

- Silphium

Thought to be extinct, but was used for both birth control and as an aphrodisiac. Was widely used in cuisine across the mediterranean.

4. Cree Traditional Medicine

- Sage

Used in smudging ceremonies with a deep religious meaning said to help people get closer to the creator.

- Balsam Fir

When turned into tea, it can help with inducing sleep and curing cold symptoms.

- Sweetgrass

Similarly, sage is used in smudging ceremonies designed to purify the body.

- Cedar

Used in a variety of ways including in tea to solve fevers, cold, and rheumatic diseases. It is often used in baths or burned to purify indoor air.

Have the students discuss their own relationship with medicine through a series of questions. (This can be done verbally or be written down)

- In what ways do we still use plants as a form of medicine?
- What is your prior plant knowledge?
- Does your family have any traditional remedies for illness?
- In what ways does food play a role in medicine?
- How can elements of the garden help create food that can serve as medicine?
- Give an example of a medicinal plant that were used historically
 1. Foxglove
 2. Lenten Rose
 3. Christian Rose
 4. Achillea millefolium (Yarrow)
 5. Musk Mallow

Inform the students that they will be exploring a garden specialized in historical medicine, and they will be tasked with studying a specific species in detail.

Lesson

At the Garden:

- Once the students get to the Physic Garden, give them some time to explore and select a plant that they would like to research. (Take pictures of the plaque if possible or write information down on a notebook) If students want to be more specific in their search or swap plants, they may use <https://collections.botanicalgarden.ubc.ca/> to search for the species in the Physic Garden.
- Encourage the students to ask the guides about specific plants, while focusing on how these plants relate to medicine.
- Students will choose one or two of the plants present in the Garden as the focus of their research.

After the Garden:

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- Students firstly will create a document compiling the important aspects of the plant itself including:
 1. Range (regions the plant is native to)
 2. Taxonomic details (Kingdom, Clade, Order, Family and Genus)
 3. Describe how it looks in detail or draw a diagram with text explanations.
 4. Ecology (How is it related to the environment it is in, why is it important to that ecosystem, do fauna consume it?)
 5. Reproduction/Life Cycle (Explain how it reproduces (asexually, pollination) (How can it be cultivated?))
 - After they have compiled all of the basic details of the plant they may begin providing a historical analysis of its uses. including:
 1. Which ancient cultures utilized their chosen flora for medicine?
 2. What remedies did each culture claim the plant provided?
 3. How was the plant viewed in folklore? Did they believe it held spiritual or ritualistic values?
 4. Are there any stories, beliefs or myths that mention the plant's importance? (Achilles and yarrow)
 5. How do those same cultures view the plant now? Do they still use it in rituals or religion? Is it still utilized as a remedy?
 6. Have the students create their own folk story based on the information they have gathered on the plant.
 - Finally, students will look at the modern uses of the plant they chose.
 1. What remedies does it actually provide? (include elements of it that can be isolated)
 2. Does it do anything that ancient societies were not aware of?
 3. Can anyone use it effectively or does it require processing?
 4. How can we integrate this plant into modern medicine? Is it more affordable or ecologically friendly than synthetic products?
 5. Have students compare and contrast the modern and historical uses for the plant.
 - Students may then present a compilation of all of their research in any format that is able to communicate it clearly.
 1. Powerpoint Presentation
 2. Journal Entry
 3. Essay
 4. Poster
 5. Infographic
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Debrief + Consolidation

- Students will present their final project to the class by explaining each element of their chosen plant and its relationship to history.
 - Students will be assessed on their ability to communicate the plant's historical use compared to its modern use, the details of the plant itself and how effectively they communicated their information.
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