

A Story about Plant Classification

Summary of a series of lessons about plant classification.
Approximate Timeframe: approx. 2 weeks of 30-40 min. lessons
Grades 3 & 4

Note: This series of lessons requires coordination with the school's art teacher, classroom resources, and availability of plants in the school's garden or grounds (September–October would be best).

KEY QUESTIONS

How do botanists use physical characteristics to classify plants?

What are the three primary classifications of plants?

What does plant reproduction look like in the three primary classifications of plants?

OBJECTIVES

- Students will classify flowering and nonflowering plants into groups based on adaptations and traits
- Students will compare, contrast, and discuss traits of different plants and plant reproduction
- Students will interpret a plant based on their knowledge of three classes of plants to write a creative story about plant reproduction

ELEMENTS OF LESSON

Timeframe: 2 weeks

1. Preparation (2 days, 30 min each)

- Botany lesson on flowering and nonflowering plants (what are the adaptations and traits to look for?) Use *Encyclopedia of Life* EOL Species Cards (those common in Pennsylvania) to introduce plants with flowers/seeds (angiosperms), plants with cones (gymnosperms), and plants with spores.
- Activity: Pass out EOL Species Cards and ask students to form groups based on plant classification. Once in groups, ask each student to read the name of the plant on their card. Ask students to display cards organized by plant classification in classroom.

2. Gathering information (group or independent reading or listening, collecting and preparing plants)

- Reading book materials or listening to podcast (1 day, 30 min)
- Activity: collect plant specimens from garden and place each plant in classroom plant press to preserve for printing in the next two days, label, date, and note plant name

3. Printing plants on large piece of paper (small poster) (group work in art room, 45 min, 1 day)

- classify plants by arranging non flowering and flowering plants in groups

- students work together to print images of the fronts and backs of the plants (2 prints each group)
 - teacher duplicates pages of plant prints for future independent analysis by each student
4. Analysis (classroom group and independent work, 2 days)
 - Using prints, compare, contrast and discuss the traits of different plants (in groups discuss key traits of plants on prints, use EOL Species Cards as guides.)
 - Annotate observations and key traits about each plant on copies of prints (independent work)
 5. Creative Interpretation (classroom independent work, 2 +1 days)
 - OPTION 1: Pick one classification of a plant and tell a story of its reproduction: spore bearing, Gymnosperm (cone bearing), Angiosperm (flower bearing). Imagine and describe the reproductive life of the plant. (One paragraph.)
 - OPTION 2: Pick one plant and describe its shape, form, and reproductive parts. (analytical writing)
 - OPTION 3: Talk to your plant. Tell your plant a story about yourself as a seed, cone, or spore.
 - Student display of all prints and stories

MATERIALS

1. EOL Plant Species Cards (Deck made of plants found on school grounds and in school garden)
2. Plant Press and plant printing supplies
3. Book for group and independent reading.
 - *The Secret Lives of Plants*, Janet Slingerland, Oksana Kemarskaya (Illustrator) (K–6)
 - *Botanicum*, Katie Scott (Illustrator), Kathy Willis (author) (K–6)
 - *Botanicum Activity Book*, Katie Scott (Illustrator), Katherine Willis (author) (K–6)
 - *Plants: Flowering Plants, Ferns, Mosses, and Other Plants*, Sshar Levine, Leslie Johnstone (K–6)
 - *Investigating plant life cycles*, Lisa J. Amstutz. (hoopla digital audio-book, 2–6)
4. Podcasts for group or independent listening
 - “Tulips, *Tulipa*”, Interview of Dutch geneticist and gardener Ben Zonneveld about the genetics of Tulips and how he propagates Tulips. (5 minutes) (<https://education.eol.org/podcasts>)
 - Clair at *Brilliant Botany* (<https://www.brilliantbotany.com/about>) You Tube (<https://www.youtube.com/user/BrilliantBotany/featured>): “The Story of Roses,” “How to Press a Plant,” & “Five Botany Facts”

ALIGNMENTS WITH EDUCATIONAL STANDARDS

1. Pennsylvania Common Core

Writing (Informative/Explanatory, Narrative, Range of Writing):

1.4.4.A Write informative / explanatory texts to examine a topic and convey ideas and information clearly.

1.4.4–5 Identify and write about the topic clearly.

1.4.4 Use precise language and domain-specific vocabulary to inform about or explain the topic.

1.4.1–12 Write narratives to develop real or imagined experiences of events.

PA Academic Standards for Environment and Ecology

4.6.4 Understand that living things are dependent on nonliving things in the environment for survival.

Science

3.2.4.A. Describe objects in the world using the five senses. Use observations to develop a descriptive vocabulary.

3.2.4.C. Recognize and use the elements of scientific inquiry to solve problems. Generate questions about objects, organisms and/or events that can be answered through scientific observation.

3.3.4.A Know the similarities and differences of living things.

3.3.4.B. Know that living things are made up of parts that have specific functions.

2. Next Generation Science Standards

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.