

Lesson Title: Journaling like Botanists

Grade levels: appropriate for all grade levels K-5

Applicable SOL:

Kindergarten: Science K.1 (investigations) K.8 (patterns in nature)

K.9 (change over time) K.5, K.6 (needs, cycles)

Math K.8 (measurement) K.15 (sort according to
attributes) K.16 (identify and describe patterns)

History K.2 (change over time)

English K.2 (describing vocabulary) K.12 (writing)

1st Grade: Science 1.1 (investigation) 1.4 (needs, plant parts)

Math 1.9 (measurement)

History 1.12 (people make contributions in their
communities)

English 1.2 (vocabulary in content) 1.13 (descriptive
words)

2nd Grade: Science 2.1 (investigations) 2.4 (plant lifecycle)

2.5 (habitat change over time)

Math 2.11 (measurement)

English 2.2 (vocabulary) 2.10 (reference materials)
2.12 (descriptive writing)

3rd Grade: Science 3.1 (investigations) 3.6 (population/community)

Math 3.9 (measurement)

English 3.2 (vocabulary in content)

3.7 (reference materials) 3.9 (writing for a
purpose)

4th Grade: Science 4.1 (investigations) 4.4 (plant structure)

4.5 (plants in an ecosystem)

Math 4.7 (measurement)

English 4.6 (nonfiction texts) 4.8 (writing for a purpose)

5th Grade Science 5.1 (investigations) 5.5 (traits of organisms)

Math 5.8 (measurement)

English 5.6 (nonfiction texts) 5.7 (writing for a purpose)

Materials:

- Samples of field guides
- Photos of John Clayton's plant specimens
- Digital version of the Nourse Sketchbook
- Journals for each student (these can be journals they use in class, or ones created for nature journaling -see previous lesson)
- Pencils, color pencils
- Hand lenses
- Measuring tape or rulers

Procedure:

Building Supporting Knowledge: (20 to 30 minutes)

1. Give students the opportunity to view a variety of field guides. Discuss the kinds of information they see, and why it is helpful to the reader. Discuss the kinds of pictures that are in the books. Why are line drawings easier to use to identify plants than photographs?
2. Explain that often botanists, scientists who study plants, will collect samples of plants to preserve and put in collections called herbariums. This helps scientists to study different plants and compare them. Explain that John Clayton was a court clerk in Gloucester County in Virginia in the 1700s. He was also a botanist who wrote the first complete plant book about Virginia. Another was not written until 250 years later (2012)! He sent many of his plant specimens back to England where they are still kept in a herbarium in London's Museum of Natural History. Show photos of some of John Clayton's specimens. Discuss how they are different from the pictures in the field or guide books.
3. Finally, show some of the pages from the Nourse Sketch book. Explain that this was created by a family in the mid 1840's. They used a technique called "nature printing". They would use parts of the plant, such as the leaves, and

print them on their page. They would then use water colors to paint over the leaves and paint in the flowers, or other parts.

Main Lesson: (30 to 40 minutes)

1. Go outside in an area of the schoolyard which has a variety of plants. Allow students the opportunity to spend some time observing the plants, and deciding about which one they would like to journal. Review some of the topics discussed earlier, and remind them to be as detailed as possible in their line drawing. Have them really observe the leaves, using their hand lenses, and be detailed in their representations.
2. Discuss what kinds of information should be written next to their line drawings. (Examples: measurements, date, time of day, detailed descriptions, colors, how many of that plant are in the area)

Follow-up:

1. Allow time to complete their journal entries. Have them share their entries with others, adding details if they get ideas as they listen to their peers.

2. Pose question: Would it be okay for each of them to take the plant they observed and create a preserved specimen like John Clayton? How often do you think a botanist might take a sample?
3. What adaptations does this plant have to survive in this area?
4. Allow students to journal in their plant books throughout the year. They may want to track one or two plants at different times of the year.
5. For grades K-3, have students label the basic plant structures (leaves, stem, roots(if visible) and flower. For grades 4-6 students can label parts of the flower.

Assessment Opportunities:

1. Assess journal entries. Assess progress and growth throughout the year.
2. Informally assess students during group discourse.
3. As students work, check accuracy of measurements and remediate individuals as needed.