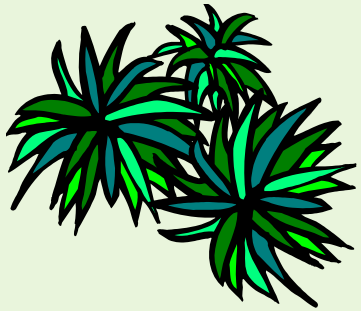
Plant Life Cycles



1a- Living and Non-living

Pre-Assessment

- 5 things that are living
- 5 things that are non-living

Student Journal p. 2

1b- What do we know about plants?

Pre-assessment and Post-assessment

What We Think We Know About Plants	What We Think – Wonder About Plants

Student Journal p. 3

2- Are all plants the same?

- Observe (Take a walk.)
- Question (“Are all plants the same?”)
- Hypothesize (Answer the question.)
- Gather data (Use data as “evidence” to prove or disprove hypothesis.)
  - Record observations
  - Use words, drawings, graphic organizers

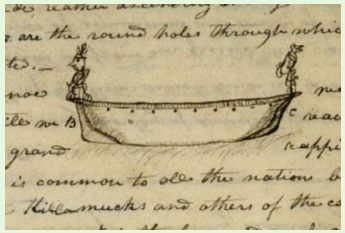
- Share thoughts, data, observations and opinions.

Student Journal p. 4

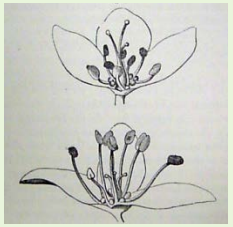
Science Journals or Notebooks

- Journals of the Lewis and Clark Expedition at http://lewisandclarkjournals.unl.edu/index.html (journal entries and sketches)

- Lewis and Clark Trail at http://www.lewisandclarktrail.com/elearning.htm (E-learning podcasts, mp3 files)



- The Drawings of Charles Darwin on the Web at http://darwin-online.org.uk/graphics/illustrations.html



- Collection of C. Darwin at http://www.sc.edu/library/spcoll/nathist/darwin/darwin9.html

Blackline Master p. A

3a- How are seeds different?

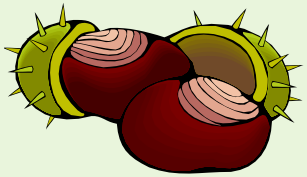
- **Comparing Seeds**
  - Seed Collection
    - from nature at home/school, from a store, inside food
  - Seed properties
    - Look for seeds with different: color, shape, size, texture, weight

In botany, a **fruit** is the ripened ovary, together with the **seeds**, of a flowering plant. When discussing food, the term usually refers to just those plant fruits that are sweet and fleshy (plum, apple, orange). However, a great many common vegetables, as well as nuts and grains, are the fruit of the plant they come from (tomato, squash, cucumber).

3b- How are seeds different?

- Seed dispersal
  - Wind (weight)
  - Water (float and sink)
  - Animals (eat, bury, carry on fur/hair)

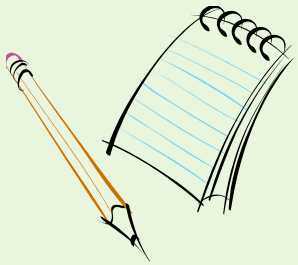




What seed properties would be important in each of the above dispersal methods?

3- How are seeds different?

- Seed descriptions (Seed stations)
  - Classifying seeds using a seed property (p. 5)
  - Notebooking: recording information, observations, and questions about a seed (p. 6-7)



Student Journal p. 5 - 7

4- How can we build a seed that travels in the wind?

- One seed
- One piece of paper
- Tape (glue?)

Task:

Engineering and building a seed design that will go the farthest in the wind.

Student Journal p. 8

5a- How can we test what a seed needs to germinate and grow?

- Review basic needs of plants

- Statement:
  Seeds need air, water, nutrients and light in order to live and grow.
- “I wonder” chart
- Investigate a seed question.

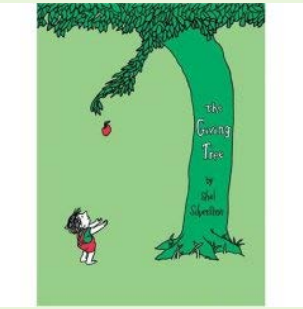
5b & c- Seed Inquiry Planning

- Identify question
  - "Fine tune" question
- Plan the inquiry. (p. 9)
- Gather the materials
- Carry out the inquiry project
- Evaluate the project (p. 10)

Student Journal p. 9 - 10

Blackline Master p. B

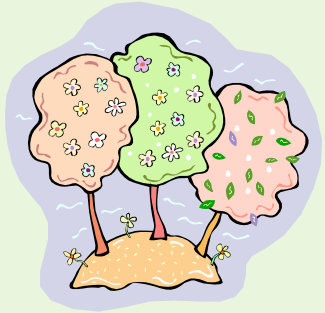
6- What are some of the characteristics of different trees?



- Introduction to trees:
  Giving Tree by Shel Silverstein
- “Meet” a tree and make tree observations by studying, writing about and drawing in their Science Journal (p. 11).
- Gather additional information (rubbing, sample such as a leaf, flower, seed…) (p. 12)

Student Journal p. 11 - 12

6b- Reading: What Shapes Trees?



- Read (BLM p. C & D)
- Write. What did you learn? (BLM p. E)
- Re-read
- Write. What else did you learn?

Blackline Master p. C - E

6c- Adopt a Tree

- One tree or several trees
- Make observations, monitor or collect data over a period of time.

7- What traits are inherited and what traits are acquired on a tree?

- Discuss inherited vs acquired traits.
  - Use the class (people) to show examples of inherited and acquired traits.

- Using the adopted tree(s), classify it's traits as inherited or acquired.
  - Use p. 13 for this part of the activity. Refer back to p. 11 for tree characteristics or traits.

Student Journal p. 13

8- How can leaves help us to identify trees?

Bridge: Are leaf shapes inherited or acquired traits? Are they unique enough to allow us to identify a tree?

- Use reference materials to identify some leaves (previously collected or newly collected).
- Helpful pages:
  - Tree Detectives! Leaf and Bark Clues (p. 14)
  - Leaf Clue Sheet (p.15)
  - Maple-Sugar Maple (BLM p.G)
  - Type of tree (BLM p.F)

Student Journal p. 14 - 15

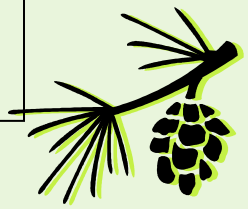
Blackline Master p. F - G

Identifying Trees Resources

- On-line Tree Identification Guide (Ohio Public Library) at www.oplin.org/tree/leaf/byleaf.html
- On-line LEAF at http://www.uwsp.edu/cnr/leaf/Treekey/tkframe.htm
- Tree Finder (May Theilgaard Watts), Nature Study Guild, $3.50 at amazon.com

9- How can measurement help us learn more about trees?

Bridge: Trees can be divided into two groups based upon their leaves.
There are Conifers and Broadleaf trees.
Students can sort leaves into these two groups.



- Tree Measurements (BLM p. H-I), (p. 16)
  - Tree circumference
  - Tree height
  - Crown spread
- Tree research: Report on one particular family of trees.

Student Journal p. 16
Blackline Master p. H - I

9b- Where does tree grow occur?

- Tips of twigs activity
- Tree rings (tree girth)
    - BLM p. J

Blackline Master p. J

10- What is the life cycle of a tree?

- Pre-assessment: Apple tree life cycle (p.17)
- Flower (structure and function) dissection (p. 18 – 19)
- Apple dissection: relate to flower parts
- Summarizing: Life cycle of a tree
- Planting a tree seed or seedlings
- Johnny Appleseed Chapman (1774-1845) (**BLM p.K)**

Student Journal p. 17 - 19
Blackline Master p. K

11- Besides seeds, what other ways can plants propagate?

- Runners (Spider plant)
- Tubers* (potato)
- Cuttings (Wandering Jew)
- Bulbs (onion)

Call (email) for a plant delivery. DO this about 2 weeks before the plants are needed.

* Provided by Teacher/Students

12 - What role do trees play in our environment?

- Lorax by Dr Seuss
- “The Benefits of Trees” (BLM p. L-M)
- What can we do to preserve trees?
- Poster creation activity

Blackline Master p. L - M

Resources

- National Arbor Day Foundation
  http://www.arborday.org/kids/resources.cfm
- DEC School Seedling Program
  http://www.dec.state.ny.us/website/dlf/privland/nursery/school.html
- DEC: How to plant a tree
  http://www.dec.state.ny.us/website/dlf/privland/urban/planting.html
- New York State Tree
  http://www.50states.com/tree/newyork.htm
- Journey North
  http://www.learner.org/jnorth/

Simple Leaves

Dogwood

Sassafras

If it's 3 let it BE!
Poison Ivy

Maple

Black Cherry

Oaks

Basswood

Birch

Beech

Quaking Aspen

Big Toothed Aspen

Cottonwood (Aspen)

Compound Leaves

White Ash

Shagbark Hickory

Staghorn Sumac

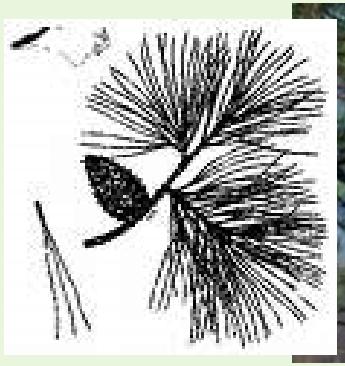
Black Ash

Black Locust

Conifers

White Pine (5)

Red Pine (2)



Pitch Pine (3)

Spruce

Scotch Pine (2-short)

Cedar

Arborvitae

Juniper