Nature Study for K-12

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Disclosures

• Volunteer on Science Curriculum Committee- Childlight USA
Learning Objectives

• At the end of this presentation, the audience will:
  1) Understand why public schools no longer use this teaching method
  2) Understand how to use nature study for grades K-12
  3) Discuss their possible future contributions to nature study and have resource links
School gardens!
Nature Deficit Disorder!
Nature Journals!
No Child Left Inside Act of 2009!
The Science Pendulum
(for upper class children)

Girls
• American Revolution to Civil War “Science for Ladies”
• 1850-1892 - “study delicate flowers and insects”

Boys
• “Classics for Gentlemen” - Latin, Greek
• 1850-1892 study Physics for factory and machine work
Continued: The Science Pendulum (for upper class children)

**Girls**
- 1890’s college admissions. Anna Comstock on Faculty at Cornell, College of Agric.
- 1892-1940’s Nature Study—more rigor
- 1911- Moved to Dept. of Home Economics
- 1925- 67% of all High School Biology teachers were female

**Boys**
- 1890-1940 High school science popular prep for engineering, mining, and mechanics fields
- 1892-1940’s – Nature Study for boys also but declined in appeal with “feminine” association.
- 1908-Scouting
Differing philosophies

**Charlotte Mason (1880-pres.) England**

- For all school children, supplemented by after-work scouting clubs for those not in school.
- For all grades; a separate curriculum for Science, starting 3rd grade (equivalent).
- Students must be informed by their own books or by listening to local naturalists.

**Nature Study movement (1892-1940’s) - U.S.**

- To promote agriculture for the rural children.
- Gradually became “choose Nature Study or Science” as HS graduation rates/college entry increased. Eventually moved into Home Economics by 1912.
- “Study nature, not books” vs. “Study nature with books”
- **Handbook of Nature Study**: for teachers, not students.
WWII & Sputnik- the death of school nature study

• Science = military applications, not nature study.

• Education reformers saw books, not observation, as a way to organize science materials and keep boys in school*

• Grants were awarded to MEN to become science teachers and professors

• Home economics = proper training for ALL women
Past 20 years

• In full, Charlotte Mason movement-

• In part, Classical Christian Schools, Montessori, and Waldorf (anti-Christian)

• School Garden movement, Alice Waters (Edible Schoolyard)

• No Child Left Inside 2009 S. 866, not yet approved
# Nature Study vs. Science

<table>
<thead>
<tr>
<th>Nature Study</th>
<th>Science</th>
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<tr>
<td>• Direct observation “in situ” in the child’s own environment</td>
<td>• Learn from predecessor's ideas, observations, theories</td>
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<td>• Concrete- look, hear, feel, smell</td>
<td>• Distance learning with webcams, etc.</td>
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<td>• Usually out-of-doors</td>
<td>• Extend learning with experimentation in lab or field</td>
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<td>• Finds recorded in children’s own book; their own possession</td>
<td>• If...then thinking</td>
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<td>• Think locally, act locally</td>
<td>• Hypothesis to theory (or natural law)</td>
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Nature Study: < 6 yrs old

• Play outdoors to burn energy
• THEN, send kids on an exploring expedition, “Who can see the most about yonder hill....” (or sky, garden,...)
• Upon return, “Who can tell the most about what you saw
• If not detailed enough, send back

• Seasonal observation- Ex. Visit “their tree” over the year
Insect on sidewalk,
Age 5
Nature Study, age 6-12

- Theme for the term
- Frequency- once per week- once per month
- Nature notebook
- Date and location of find
- Recording- dry-brush watercolor; also, digital photos, rubbings, pressed specimens, newspaper articles
Plant study, Age 7

Nonvascular Plant
“A plant that does not have tubes inside the leaves.”

Moss
“This plant gets water through the air and damp surfaces. It absorbs water.
We did an experiment with a paper towel, water, and blue food coloring. We put the tip of
the paper towel into the mixture. The paper towel absorbed some of it, and the water kept climbing through the paper towel.” Oral

10-4-04
American Linden Plant
Tilia americana

“An vascular plant has tubes inside of it. The tubes carry plant food and nutrients. My vascular system carries blood and oxygen around my body. Our tubes are called veins and arteries. We call plant tubes veins also.” Oral narration 10-13-04
Clouds, Age 8

- Cumulus
  - 9-27-03

- Clear Sky
  - 9-30-03

- Mare's tail (Cirrus)
  - 10-3-03
  - Stratus + light Rain

- Veil over moon (Cirrostratus)
  - 10-4-03

- 10-5-03
Feathers, Age 8

4-03-06
Feathers as Clothing
Feathers serve as a指标.
They are also like down jackets
which provide insulation.
A hen casts her feathers by shaving
an oil gland at the base of her
back feathers and then rubbing
her back and through her
feathers.

3-3-06
3-30-06 Contact paper
attracts feathers

Contour (tailor's Wing)
(neck)
Leaves, Age 9
Earthquake! Age 9

Earthquake in Winston-Salem

10-17-05

Dad woke up and Tom Lamp was rattling and thought it would have to be a bigger wind to melt the house.

Bill Pin one day

Tornadoes have occurred. Even reading the news we can see the damage and water from the recent storms. It burns.

Bill Pin one day

Tornadoes have occurred. Even reading the news we can see the damage and water from the recent storms. It burns.

USGS Community Internet Intensity Map (2 miles NE of Winston-Salem, North Carolina)

Map last updated on 10 Oct 17 07:51:51 EDT

Community Internet Intensity Maps
<http://quakes.usgs.gov/shake>
Plants and Eclipse;
Age 12 (New to Nature study)

The colors of the leaves vary from yellow to red.

There are three things as to why leaves change colors:
1. It is like gray hair. Once the green chlorophyll is broken down, then other colors appear.
2. The color acts as sunscreen.
3. The colors act as a signal to bugs that the flowers should not be laid on the tree if the species wants to survive.
Middle-High school journals

- Additional descriptive components
  - Time
  - Weather conditions
  - Unique characteristics
  - Human impacts and disturbance
Metamorphosis, age 12

10/31/02

The Monarch butterfly waves its wings back and forth as it rests in the netted area.

Chrysalis

Antennae

Wings

The Monarch Butterfly
Danaus plexippus

I painted most of this at the butterfly ranch. The butterfly's where in a netted area. There was several caterpillars in it and a few moths.
Age 13, first year of Nature Study

Mexican hat (Hatibird columnaris)

5/23/2005
Yucca plant in bloom

Flower and stalk fall after bloom

Main part of plant
Poinsettia

*Euphorbia pulcherrima*

What appears to be leaves on this plant are actually called bracts and are modified leaves. Very little given to these plants during the night will prevent flowering. These are the most bought plant in the U.S., especially around Christmas.
Esperanza, age 12

September 29, 2005

This pretty plant is a drought plant. It handles heat well. It can grow up to 6 feet high and sometimes more if it does not freeze in the winter. The flower which is like a bell can be an orange color also. The flower has one petal really, but it is in five parts. The orange-yellow in the middle of the flower lines. The pod is green and right now a lot are brown because they are getting ready to open and let seeds fly out. The flowers smell like a lumpy stalk. It has soft petals almost like velvet. The leaves are a darkish avocado green. They have toothed edges and feel somewhat plastic.
Additional Methods
(Middle - High School)

• Personal “First” sighting lists of migrating or seasonal things- hummingbirds, catkins, flowers, baby rabbits...

• Write what you have learned for younger kids

• Community service- Monarch tagging, Bird counts, planning and planting community or school gardens

• After school-
  – Scouting
  – Master Gardener or Master Naturalist certificate
  – Certified Bee-keeper
  – 4-H
  – First Aid/CPR certification
  – Volunteer in nature centers, hospitals, etc
A Call for Action

• Parents- just get started!
• Scientists and educators:
  – Review books in your specialty area that written for kids, both in nature study and science.
    • Literary, accurate, personal interest, do not “dumb down” or get cutesy;
    • Consider the cognitive abilities of the age group for which the book was written.
Call for Action, cont.

• Know your own neighborhood habitat.
• Volunteer in local schools or homeschool co-ops.
• Develop field studies, such as “Maymester” bug camps, for your students
• Consider “Citizen-scientist” opportunities for all
• Do Evidence-based research:
  – Do nature studies increase scientific understanding and/or vocational interest in science?
And God gave Solomon wisdom and understanding. ... He also spoke 3,000 proverbs, and his songs were 1,005. He spoke of trees, from the cedar that is in Lebanon to the hyssop that grows out of the wall. He spoke also of beasts, and of birds, and of reptiles, and of fish. And people of all nations came to hear...
Resources

- www.childlightusa.org

- Contact me for copy of comprehensive outline at cmasonhomeschool@gmail.com

- www.amblesideonline.org for primary sources
Questions and Answers