Be Thoreau: Naturalist Journal & a Wildflower Garden to Measure Climate Change

“Water the weed till it blossoms; with cultivation it will bear fruit.”

Henry Thoreau from Journal June 20, 1840

Wild Columbine (Aquilegia Canadensis)

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Fox Lane High School
Bedford, New York
Senior English Elective: Philosophy of the Wild
Be Thoreau:
Naturalist Journal & Wildflower Garden to Measure Climate Change
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Title of Unit: Be Thoreau: Naturalist Journal & Wildflower Garden to Measure Climate Change

Name: David Albano

Duration: once a week starting the week prior to the start of spring [during the Spring Academic Quarter]

School: Fox Lane High School
School Cite and State: Bedford, NY

Number of Lessons in Unit: Twelve (some lessons are multiple days; and some lessons are not on successive days)

Subject(s): Writing and Environmental Science
Related Subjects: Literature and Art (drawing and photography)
Grade Level: Senior Elective

Abstract:
This unit will build a sense of place through the study of Thoreau’s writing, wildflowers, phenology, and climate change. The study will enable students to interact with nature on the school campus, then at local nature preserve and ultimately in a wildflower garden; these places are focal points for observations as a way to use a naturalist approach to journaling and ultimately witness the impact of climate change. The first part of the unit (lessons #1-#8), focus on writing and building the skills of a naturalist. The second part of the unit, focuses on the garden, gathering data, and climate change. Students will explore the scientific concepts of ecological succession, phenology, and conservation while also working to enhance their observation skills, interpretive thinking, and collaborative skills. Subjects included: environmental science, art (drawing and photography), writing and literature (creative nonfiction).

Lesson Overview:

<table>
<thead>
<tr>
<th>Lesson Title</th>
<th>Duration/Timeline</th>
<th>Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1 Thoreau and Climate Change</td>
<td>40 minutes</td>
<td>4</td>
</tr>
<tr>
<td>#2 Plant Identification: How to Draw a Leaf and a Flower</td>
<td>40 minutes</td>
<td>6</td>
</tr>
<tr>
<td>#3 Scavenger Hunt: Plant Identification through Journaling and Drawing</td>
<td>40 minutes</td>
<td>7</td>
</tr>
<tr>
<td>#4 Plant Identification Using a Dichotomous Key</td>
<td>40 minutes</td>
<td>8</td>
</tr>
<tr>
<td>#5 Photography in Naturalist Journals</td>
<td>40 minutes</td>
<td>9</td>
</tr>
<tr>
<td>#6 Being a Naturalist: Creative and Scientific Thought</td>
<td>40 minutes</td>
<td>10</td>
</tr>
</tbody>
</table>
#7 Hike in Local Nature Preserve (field trip) | 4.5 hours | 11

#8 Writing a Naturalist Journal or Writing a Naturalist essay (options) | 40 minutes or four 40-minute periods | 12

#9 Planting and Gardening; Observing and Journaling | two 40-minute periods | 14

#10 Naturalist Journals & the Wildflower Garden | 40 minutes; once a week for four to six weeks | 15

#11 Phenology and Participation in Project Budburst | two or three 40-minute periods | 17

#12 Seminar: Thoreau, Flowers, and Climate Change | 40 minutes | 18

**Readings -- List of Core Texts**


*Walden* by H.D. Thoreau

*The Journal of Henry D. Thoreau* [Torrey and Allen editors]

*The Heart of Thoreau’s Journals* edited by Odell Shepard

**List of Equipment and Materials:**

This unit will utilize a school garden; however, a teacher could use wildflowers on his/her campus or grow flowers in his/her classroom. Seed or plantings for the flowers are needed.

Project Budburst [www.budburst.org](http://www.budburst.org) is the online organization that enables students to be citizen scientists through plant observation. To use the site, a teacher will need to register. The site also has resources for all age levels.

Handouts for most lessons are provided in the Materials (handouts) Appendix starting on page 18

**Links to Standards**

For all lessons see Link to NYS Common Core Standards Appendix starting on page 27.
Lesson Plans

Lesson Plan #1
Lesson Title – Thoreau and Climate Change
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:

Information will be presented to introduce students to the recent studies of Thoreau’s journals in connection to climate change.

Goals/Objectives for Lesson:

After listening to, viewing, and reading information about the link between Thoreau’s journals and climate change, students will write investigative and research questions; they will also make a list of what tasks the class needs to do to be able to perform a similar study in our area.

Procedure:

- **Topics Covered** – Thoreau’s Journals, Climate Change Science through phenology
- **Readings and Materials**
  - Smithsonian video (view) [http://microsite.smithsonianmag.com/content/walden/](http://microsite.smithsonianmag.com/content/walden/)
- **Activities**
  1. Start with journal entry. Students paraphrase and explain the following quote by Thoreau: “Facts collected by a poet are set down at last as winged seeds of truth.” Then discuss how do we know climate change is happening? How can we measure the change?
  2. Students then listen to NPR story and write questions or ideas in journal as they listen. Teacher asks comprehension questions to ascertain level of understanding.
  3. Watch Smithsonian video. Students write two questions they have for Professor Primack (scientist using Thoreau’s journals to study climate change)
  4. List all questions and ideas on poster paper. (These questions should be left in class and used as a way to assess the unit with the students. The intent of the unit will come from these questions.)
  5. Read Smithsonian article [may have time for certain portions]
  6. Closure: By monitoring plants and noting when the first buds appear, when the first flowers appear, when leaves drop in the fall, and other parts of plant life cycles, scientists can figure out how seasonal patterns are changing, and make predictions for the future.
What do we need to know to be able to do our own study of Thoreau’s flowers or relevant flowers right here? (Possible answers: learn how to identify flowers, find out the blooming time in during Thoreau’s life time, find out current blooming dates, grow flowers, etc.)
List generated will become the “to do” list for unit.

Homework
Finish reading “Teaming Up with Thoreau” Smithsonian article.
Read and annotate “Spring” chapter in Walden [http://thoreau.eserver.org/walden17.html].
Student will be asked to look for his observations of plant life and his use of nature as metaphor.

Assessment:
Students assessed on quality of journal and participation during discussion. They will also hand in their copy of the “Spring” chapter and their annotations will be assessed.
(How to annotate effectively will be covered earlier in the semester.)
Lesson Plan #2
Lesson Title – Plant identification: How to Draw a Leaf and a Flower
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:
Art teacher from school will be a guest speaker and will teach students how to draw leaves and other parts of a plant in preparation for plant identification and field journals.

Goals/Objectives for Lesson:
Students will produce four or more drawings of the leaves, pine cones, and photos of flowers provided.

Procedure:

- Topics Covered – botany, drawing, field journal
- Readings –
  Thoreau Journal Entries with sketches [Aug 23, 1856; Dec 17, 1856; Nov 11, 1858; Nov 27, 1858]
  Smithsonian “Introduction to Nature Journal”
  [http://www.smithsonianeducation.org/educators/lesson_plans/journals/smithsonian_siyec_fall06.pdf]
- Activities
  1. A simple leaf from a beech tree will be projected using overhead (Elmo) onto the board. Students will be asked to draw it. After most students have attempted fairly complete drawing they will be asked: Which aspect of rendering the leaf was the easiest and the most difficult? What did you notice about the leaf? What details? Ask one or two students to share their sketches and note whether the student was attentive to the details that make this leaf the leaf of a beech.
  2. Art teacher then gives lesson on “how to sketch.” Show model of nature/field journals from Thoreau Journal and Smithsonian “Introduction to Nature Journal”.
  3. Students provided with leaves, cones, photographs of flowers (if flowers not in season) to sketch.
  4. Closure: Ask students to identify the specie of leaf, cone, or flower. (Most won’t have this knowledge yet but wrestling with the specific parts will enable them to see how one decides which specie he/she is observing.)

Homework: Students should come tomorrow with the specie of each of the items they sketched identified. Students will be given a vocabulary list of terms for identifying plants (opposite versus alternating, serrated, pinnate, cluster needles, tendril, herbaceous, dicot, monocot, palm leaf, woody stem)

Assessment:
Participation through drawings rendered and accurate identification of species.
Lesson Plan #3
Lesson Title – Scavenger Hunt:
    Plant Identification through Drawing and Journaling
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:
Reinforce drawing lesson by bring students outside to draw and combine drawing with a written journal.

Goals/Objectives for Lesson:
Students will produce drawings of the leaves and plants found on school grounds. They will also use empirical observation to record observations and so practice a nature journal.

Procedure:

- Topics Covered – drawing, environmental science
- Readings/Materials – handout for scavenger hunt
- Activities
  1. Set up guidelines for going outside.
  2. Through handout and verbally explain how plant ID will be connected to nature journal and eventually to study climate change.
  3. Go outside and students will attempt to find the following:
     - Simple serrated leaf
     - Opposite leaves
     - Alternate leaves
     - Cluster needles
     - Leaf with red pigmentation
     - Vine with tendrils
     - Acorn or seed pod
  4. Students find and collect all on the list and choose to draw one. Then write an empirical description of the plant observed and sketched. Students will use the plant identification terms in their drawings and/or written descriptions.

Homework
Students will finish sketches and descriptions. Students will also add a personal reflection or realization about the plant they observed.

Assessment:
Journals will be assessed as a class assignment using the Thoreauvian Nature Journal Rubric found in materials appendix. This will be a chance for students to receive feedback on the type of journal which will be central to the wildflower garden portion of the unit.
Lesson Plan #4
Lesson Title – Plant Identification Using a Dichotomous Key
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:
Students will learn a technique for identifying plants so that they can start to build some
expertise and be able to identify species of trees and flowers around their homes. The focus of
the lesson will be tree identification because we will be gather specimens (leaves) in March and
because basic tree identification is less complicated than flower identification. Later the skills
gained will be put to use for wildflower identification.

Goals/Objectives for Lesson:
Using specimens gathered from previous outside class, students will identify the trees using a
dichotomous key.

Procedure:
- Topics Covered – plant identification, environmental science
- Readings/Materials
  Dichotomous key handout [http://www.exploringnature.org/graphics/tree_key.pdf]

- Activities:
  1. Review overall goal and why indemnification and naming is relevant to our eventual
     study of flowers and data collection for climate change research.
  2. Distribute and explain how dichotomous key works.
  3. Model identification of one of the species collected during the outside class. For example,
     a red oak.
  4. In partners, students identify leaves using dichotomous key all leaves collected.
  5. Students trace and/or sketch each leaf in journal
  6. To practice the two core types of observation for a successful journal entry, students will
     write two sentences of empirical observation (objective) and two sentences of creative
     description (subjective) in journal for no less than two leaves.

    EXAMPLE: Red Oak
    Empirical -- The leaf has 5 pointed lobes on each side. A vein runs from the center stem
to the top of each lobe. It is about 6 inches from the stem to the top.
    Creative -- The red oak leaf is ragged color like an abused baseball glove. The stem runs
    and splits as if it is a thin river.

Homework
Finish assignment sketching and describing two leaves.

Assessment:
Student will hand in journals and receive feedback on attentiveness of sketches and whether their
descriptions qualify as empirical and creative. This will count as a participation grade.
Lesson Plan #5
Lesson Title – Incorporating Photography into Naturalist Journals
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:
A published photographer and wildflower naturalist will come to class to explain to students about her photographic and artistic techniques. In part, this lesson will serve to reinforce some of the concepts introduced in the drawing/sketching lesson (lesson#2).

Goals/Objectives for Lesson:
Students will define and apply basic artistic terms such as composition, color, lighting, shape, balance, background, perspective, shape and texture. Students will assess specific photographs by listening to an expert and journaling personal responses to the photographs presented.

Procedure:
- Topics Covered – environmental science, photography
- Readings and Materials
  (provided by guest speaker)
- Activities
  The photographer will speak and present her photographs. She will explain why she took the photograph the way she did and what she believes to be the “successes” of the work. She will further explain how photographs help to inform text but using pages of her book.

Homework
Students find one photograph of a wildflower they believe is effective based on concepts covered during the class. Student must be able to identify the name of the wildflower. Each student will be asked to identify a camera he/she is willing to bring on our hike.

Assessment:
Students will take notes while listening to the guest speaker.
Lesson Plan #6
Lesson Title – Being a Naturalist: Creative and Scientific Thought
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:
In preparation for field trip/hike, students will read model essays to gain an understanding of what a naturalist is and how a writer can move from nature observations to a structured naturalist piece of writing such as an essay.

Goals/Objectives for Lesson:
Students will read and annotate model essay(s) for environmental details, geological details, creative observations and realizations.

Procedure:
- Topics Covered – essay writing, defining naturalist, environmental science
- Readings – Naturalist Essays
  “Thinking Like a Mountain” by Aldo Leopold
  “Death Valley” and “Come On In” by Edward Abbey
  “Everything is a Human Being” by Alice Walker
  Excerpt from Wild Trees (pages 234-237) by Richard Preston
- “How Do Naturalist Essays Work?” directions for annotations handout

- Activities
  1. Define naturalist essay.
  2. Read through “Thinking like a Mountain” as a model and annotate. Students will annotate environmental observations, geological observations, creative observations, and personal reflection and realizations.
  3. In groups of three or four, students read choose of the four remaining models and annotate.
  4. Closure: each group elects a spokesperson and this person shares aloud two of their annotations.

Homework
Read and annotate two other of the model essays.

Assessment:
The two essays annotated for homework will be collected and graded. (How to annotate effectively will be covered earlier in the semester.)
Lesson Plan #7
Lesson Title – Hike in Local Nature Preserve
Lesson Duration/Timeline – 4 ½ hours

Abstract for Lesson:
Students will have the opportunity to get outside for a hike and so apply the knowledge and skills recently learned.

Goals/Objectives for Lesson:
Students will apply knowledge about plant identification, sketching, journaling, photography and the naturalist approach during a four mile hike at Ward Pound Ridge Reservation (local Westchester County Park). They will use the data and observations for the naturalist essay they will write after the hike.

Procedure:
- Timeline – arrive at trailhead at 9 a.m.; depart trail head at 1:30 p.m.
- Topics Covered – journal writing, environmental science
- Readings and Materials
  Map for hike
  Handout for journal entries during hike (see materials appendix)

- Activities
  During the hike, the class will make three designated stops to observe and journal information. Students will work in pairs. One person will be the “scientific/empirical” observer. The other student will be the “creative/subjective” observer. Students will be given time to sketch and to take photographs. For specific journal assignments during hike, see appendix of materials (handouts).

Homework
Re-read and review journal entries. In journal, write a summary of the most memorable portions of the hike.

Assessment:
Students will hand in journals completed during the hike and receive a participation grade.
Lesson Plan # 8 [options for utilizing hike experiences]

Lesson Title – Writing Naturalist Journal or Naturalist Essay

Lesson Duration/Timeline – for journal one 40-minute class period
for essay 3 or 4 40-minute class periods

Abstract for Lesson:
Journal option: Students will write a naturalist journal entry. This entry will prepare them for journal entries later in the semester.

Essay option: Over three or four class periods and using the writing process, students will compose a naturalist essay about their experience on the hike. Writing this essay will prepare them so they will understand how to write effective journal entries later in the semester.

Goals/Objectives for Lesson:
Journal option: Students will write a naturalist journal entry to bring together the skills of empirical and creative observation in conjunction with illustrations or photos and then draw conclusions about the impact of the hiking trip.

Essay Option: Students will draft, revise, edit, and redraft a naturalist essay based on class day hike to reinforce observation skills and knowledge about and plant identification. Students will use the experience and the essay to arrive at realization(s) about the natural world.

Procedure:

• Topics Covered
• Readings and Materials (see materials appendix)
  Journal option:
  Handout for Journal Assignment
  Essay option:
  Handout for Essay Assignment
  Handout for peer revision

• Timeline and Activities
  A. Journal option:
  1. Discuss what makes an effective piece of naturalist writing by reviewing the essays from previous lesson.
  2. Student share the homework journal regarding memorable parts of the hiking trip.
  3. Students begin drafting naturalist journal entry. Students make decisions about what photography or sketches to include.
  4. Journal entry to be completed outside of class.

  B. Essay option:
  1. Drafting [first class period] – review of what makes a naturalist essay; discuss possible ways to structure the essay; students asked to review the journal writing done on hike and highlight the portion they feel will work best for their essay; students given computer lab writing time to compose first draft. HW – finish first draft
2. Revision [second (and third) class period] – using handout provided (see readings appendix), students revise example essay following procedure they will use for revision of partner’s essay; students assigned to a revision partner (or the teacher can let students pick partner); partners follow procedure to revise each other’s essay. [Note: if the teacher can choose to spend a full class period revise example essay and then have students begin partner revision the second day, and/or the teacher can choose to have each student sit with two different partners. If either of these options are chosen, an additional class period will be needed.]

3. Publication [third (or fourth) class period] – Student will share their naturalist essay with other students on this day. There are multiple ways to “publish.”
One method is to have students’ desks in one larger circle. Give each student four or five post-its. Students pass essays around the circle (three or four times so their neighbor is not the person reading his/her paper). As an essay comes to a student, he/she reads silently for five or more minutes; at the end of the silent reading time, he/she writes a positive critique of one aspect of the essay (based on what the class has identified as a strong naturalist essay). Then when all students are done reading and commenting, he/she passes the paper around the circle and the process continues. All students should pass the essays as the same time.
A second method is to put students in groups of 4 or 5 and have them pass their papers within their group. As an essay comes to a student in the group, he/she reads silently for five or more minutes; at the end of the silent reading time, he/she writes a positive critique of one aspect of the essay (based on what the class has identified as a strong naturalist essay). All students in the group should pass the essays at the same time. At the end of the group reading time, the members of the group decide which essay is the strongest and then the writer of the essay chosen reads his/her essay (or a portion of it) aloud to the entire class.

Homework
Journal option: complete journal

Essay option:
After drafting day – finish first draft
After revision day – finish final draft

Assessment:
Essay option: see handout for scoring of essay in materials appendix.
Lesson Plan #9

Lesson Title – Planting and Gardening; Observing and Journaling

Lesson Duration/Timeline – 40 minutes and two class periods

Abstract for Lesson:
Students will plant wildflowers in our school garden so that weekly observations can be made and eventually bloom dates can be recorded.

[Note about this lesson: I have the good fortune of knowing a wildflower expert and she provided me with the list of flowers that work well for my area, the lower Hudson Valley. A teacher hoping to replicate a similar garden would need to research wildflowers that grow well in his/her area. Other factors to consider are blooming time (do the flowers come before the students go), sun versus shade, quality of soil, and cost of seeds.]

Goals/Objectives for Lesson:
Students will plant wildflowers, utilize observation, sketching, and photography skills to produce a nature journal that is a record of specific flowers phenology.

Procedure:

- Timeline
  We will plant in the early spring. However, depending on the flower, we may start the flowers from seed in the classroom and then transplant into the established plants into the garden.

- Topics Covered – environmental science, botany

Activities

Plant the following flowers:
Native wildflowers for Hudson Valley area and bloom in a garden situation [i.e. a sunny, open area rather than a woodland] and additionally are spring bloomers that can take sun include bluets (*Houstonia ceruleana*), common violet (*Viola sororia*), spring beauty (*Claytonia virginica*), red (wild) columbine (*Aquilegia canadensis* -- which generally prefers shade) VA bluebells (*Mertensia virginica* – also needs shade).

Forsythia (*Forsythia intermedia*), although not a native species, will also be planted; it has a high success rate and it is on Project Budbursts “10 Most Wanted” list. To further connect students’ efforts with the Project, purple coneflower (*Echinacea angustifolia*) and black-eyed susan (*Rudbeckia hirta*) will be planted as well.

Student will work in the garden to plant flowers.

Homework
Students will write a brief journal entry recounting what they enjoyed about the planting and then explain how the planting the flowers is connected to climate change.

Assessment:
Journal entry will be collected and given a participation score.
Lesson Plan #10
Lesson Title – Naturalist Journals and the Wildflower Garden
Lesson Duration/Timeline – 40 minutes; once a week for four to six weeks

Abstract for Lesson:
We will return to the garden each week to record through writing, sketching, and/or photography in our journal.

Goals/Objectives for Lesson:
Students will learn through hands-on experience how to maintain the growth of the wildflowers. They will also write five Thoreau-like naturalist journals. These journals will be connected to their work in the garden. They will also record changes in the flowers as a way to understand phenology and participate in a climate change study.

Procedure:
- Timeline – After garden is planted, students will monitor it once a week.
- Topics Covered – journal writing, botany (specifically phenology)
- Readings
  Thoreau Journal entries from *The Heart of Thoreau’s Journals*
  August 21, 1851 (p 53-54)
  Sept 27, 1857 (p 181)
  Oct 9, 1857 (p 183-4) & Oct 18, 1858 (p 200)
  Oct 31, 1857 (p 188)
  May 1, 1859 (p208-9)
- Garden Journal Assignment handout

Activities
1. Students tend the garden.
2. While working on garden, they will make brief written observations, make sketches and take photographs.

3. Homework:
   After each “garden day” students will be given a week to write a naturalist journal.
   a. For each naturalist journal, they will first read the passage about a tree or flower from Thoreau’s journal provided; this will serve as a model.
   b. They will then write their naturalist journal entry including sketches and/or photographs.
   c. For a portion of the journal entry they will be given the opportunity to craft their entry like the Thoreau journal and/or respond the Thoreau’s ideas in the journal. For each of the journal entry dates listed below, there is brief explanation of how the students might utilize the passage in connection to the garden.
   (Note: this handout is not in materials appendix because passages used are not in digital format.)
For August 21, 1851 – Thoreau states that sometimes it is better to see things as a poet only. Do you agree or is there always a place for science and for the naturalist view?

For Sept 27, 1857 – Thoreau describes and celebrates a red maple tree’s place in the ecosystem. Pick a wildflower we are studying or a tree from near your house and write a similar journal entry.

For Oct 9, 1857 & Oct 18, 1858 – Thoreau writes about the joyful impact the elm trees have on his town of Concord. Write about the impact the garden or a particular flower has on your mood and your perspective of others.

For Oct 31, 1857 -- Thoreau celebrates the uplifting quality of skunk cabbage (a wildflower). Pick a plant or an aspect of the garden and celebrate it. Explain why everyone should experience it and the impact it will have on him/her.

For May 1, 1859 – Thoreau explicates how anthropocentric we often are in our view of nature. In our garden are we growing weeds or flowers? How do you know? Is a garden always an anthropocentric creation?

Assessment
Grading of journal entries will be done using the Thoreauvian Nature Journal Rubric. See materials (handouts) appendix.
Lesson Plan #11
Lesson Title – Phenology, Participation in Project Budburst Research
Lesson Duration/Timeline – two or three 40-minute periods

Abstract for Lesson:
Once blooming date occurs, we will enter our data onto the Project Budburst website.

Goals/Objectives for Lesson:
Students will participate in a climate change study by entering five phenology phases of the flowers grown in the school garden onto a national database. Students will be able to apply the phases to the individual flowers he/she observed.

Procedure:
- Topics Covered – environmental science, botany, technology
- Readings and Materials
  Project Budburst website for recording data
  Computers with internet capability
  “Slavery in Massachusetts” (handout with final three paragraphs)

- Activities
1. After visiting the garden and observing the flowers, students will enter the data from report sheets. First this will be done on the “regular reports” data sheets provide by Project Budburst. These reports divide plant phenology into five distinct and observable phases: first flower, full flower, first ripe fruit, full fruiting, and all leaves withered.

2. Second, students will enter data online at the Project’s site for each phase. Directions for entering data is explain on the Project’s site. The Project’s entry system allows individual students to enter data using their name and under the classroom teacher’s account.

Homework
1. Prepare for final seminar about how the study of Thoreau, flower phenology helps in understanding climate change.
   To prepare: (a) Re-read “Teaming Up with Thoreau”, (b) “Spring” from Walden (lesson#1) and, read and annotate the final three paragraphs of “Slavery in Massachusetts.”

2. Final journal entry: students will write a final journal connecting reflecting on their experiences in the garden. This entry will emphasize the reflective aspect of naturalist writing. The entry will be more developed than the previous five entries; students will include final observations and photography. They will be required to make personal connections to the natural world and realizations about how their observations shaped the way they see the natural world. [Sue after the seminar.]

Assessment
Students will be given participation grade for correctly entering data online.
Lesson Plan #12
Lesson Title – Seminar: Thoreau, Flowers and Climate Change
Lesson Duration/Timeline – 40 minutes

Abstract for Lesson:
After students have tended the garden and written five naturalist journals, the class will have a final seminar to bring together Thoreau, the flower garden and climate change.

Goals/Objectives for Lesson:
Students will discuss and analyze their own data relative to the flower phenology of previous years. They will evaluate the success of flowers as a measure of climate change, the successes of Thoreau’s approach to nature, and the success of their own naturalist journals in a seminar format.

Procedure:

- **Topics Covered** – Thoreau’s writing, environmental science—specifically climate change
- **Readings**
  - “Teaming Up with Thoreau” (see lesson#1)
  - “Spring” from *Walden*
  - the final three paragraphs of “Slavery in Massachusetts.”
  - Data for comparison of our phenology dates with those from past years

- **Activities**
  1. Students will be provided with data for the flowers we grew so we can compare our blooming and phenology dates with past dates.
  2. Begin seminar with the mission of Project BudBurst. According to Project BudBurst: “By monitoring plants, scientists can figure out how seasonal patterns are changing, and make predictions for the future…When you report to Project BudBurst, you are contributing scientific data that can help all of us understand how plants are responding to this year’s seasons and long-term changes in climate. Scientists are using data about the timing of seasonal changes in species in computer models to predict how climate and ecosystems will change decades and even centuries into the future.”
  3. Students will discuss which portions of these statements they believe are accurate based on their experience and their journal entries.
  4. Students will discuss what makes Thoreau’s journals and use of nature successful by looking specifically at the use of nature as metaphor in the “Slavery in Massachusetts” essay.
  5. Students will discuss what makes their journals successful and our garden.

Homework
Final journal entry: students will write a final journal connecting reflecting on their experiences in the garden. This entry will utilize skills gained in writing the naturalist journal/essay (lesson#8). The entry will be a substantial length; students will include observations and photography. They will be required to make personal connections to the natural world and realizations about how their observations shaped the way they see the natural world.
Assessment
Students will be scored using seminar rubric (see materials appendix). Expectations for seminars are covered earlier in the semester.

Final Assessment
Students submit all six journals (typed) which will be graded based on Thoreauvian Nature Journal Rubric.
Hiking - Journal Assignments

Directions: Your goal for the hike is to gather information that will enable you to write an effective naturalist essay

Journal #1
Empirical Observation and Creative Observation
Pick an object. Write 5 sentences of sensory, objective, empirical observations [go through all your senses].

Then write 5-10 sentences of creative description using simile, metaphor, etc. In your description, try to create a tone. The tone can be positive and joyful (Transcendentalism) or try to capture cold indifference (Naturalism).

Journal #2
Nature as Metaphor for Self
Journaling Like Henry David

*Thoreau Journal – June 22, 1851*

*There is a calmness of the lake when there is not a breath of wind. So with us. Sometimes we are clarified and calmed healthily, as we never were before in our lives by some unconscious obedience to the all-just laws, so that we become like a still lake of purest crystal and without an effort our depths are revealed to ourselves. All the world goes by us and is reflected in our deeps. Such clarity! Obtained by simple living, by honesty of purpose... To the sane man the world is a musical instrument. The very touch affords an exquisite pleasure.*

Directions:

A. Pick a part of the natural world and connect to some thought about yourself or truth about life; for example start with concrete details (empirical description) and then move to beauty, hope and optimism and joy or even spirituality.

OR

B. Compare yourself to a natural object, like Thoreau does with the lake in the passage above. You can use the following as a start.
“There is a ______________ (quality or idea) to be found in ____________ (object in nature); So with us. Sometimes we are ______________, and so that we are like ________ (same object in nature) because…” [Compare yourself to something in the natural world.]

Journal #3 -- Solo

Solo – find a spot with solitude; stay silent, put yourself where no person is in your field of vision, don’t stop writing, fill a page+; put one of the following quotes on the top of your page. Start with empirical observation, only with five senses. Describe only what you take in; then move to how the landscape fits together; then to your thoughts and ideas about the landscape and how the quote fits (or counters) what you observe.

Quotes
- “The voice of nature is always encouraging.” Thoreau, from Journal, March 18, 1858
- “Silence is of various depths and fertility, like soil.” Thoreau
- “The land is always talking to us. We have forgotten to listen” J. Bruchac
- “When we try to pick out anything in nature, we find it hitch to everything else in the universe” J. Muir
- “Nature has many tricks wherewith she convinces man of his finity--the ceaseless flow of the tides, the fury of the storm, the shock of the earthquake, the long roll of heaven's thunder--but the most tremendous, the most stupefying of all, is the passive phase of the White Silence. All movement ceases, the sky clears, the heavens are as brass; the slightest whisper …, and man becomes timid, affrighted at the sound of his own voice. Sole speck of life journeying across the ghostly wastes of a dead world, he trembles at his audacity, realizes that his is a maggot's life, nothing more.” Jack London
- “A vast silence reigned over the land. The land itself was a desolation, lifeless, without movement, so lone and cold that the spirit of it was not even that of sadness. There was a hint in it of laughter, but of laughter more terrible than any sadness—a laughter that was mirthless as the smile of the Sphinx, a laughter cold as the frost and partaking of the grimness of infallibility. It was the masterful and incommunicable wisdom of eternity laughing at the futility of life and the effort of life. It was the Wild.” Jack London
For Lesson #8 – Journal Option

English 4: Philosophy of the Wild

3rd Quarter

Name _________________________________ Due Date ______

Naturalist Journal Assignment: the Hike

Task: Write a naturalist journal entry using your experiences and observations on the hike at Ward Pound Ridge Reservation.

Your journal entry should include:
- empirical observation that is science-based and accurate
- creative description that uses literary devices (simile, metaphor, personification, images, etc)
- specific names of species and geologic features given
- connections between various aspects of the landscape/environment made
- clear tone (emotion) is conveyed throughout the essay so reader understands writer’s relationship to natural world
- one or more field sketches
- one or more photographs
- final realization and conclusion about nature, self, and/or the connection between self and nature

Development:
An effective entry is two or more pages (500+ words) typed.

For scoring see Thoreauvian Nature Journal Rubric.
For Lesson #8 – Essay Option

Philosophy of the Wild 3rd Quarter

Name __________________________________________ Due: _________________

Naturalist Essay

Write a paper in which you investigate your view of nature using your experience on the hike. Your paper should utilize your creative, ecological, and geological observations and reflections from the hike. 800+ words

Step 1 - Pre-write
Prepare for hike by making sure you have the correct tools. For example, field guides, sketch pad, camera, and journal.

Step 2 – Prewrite
Take a hike. While on the hike do all journal assignments. These assignments will count as a separate journal/writing grade. Attending the hike will count towards your participation grade.

Step 3 – Upon return from the trip, begin to write essay.
Select the strong writing in your journal.
Research the ecology and geology of the area where we hiked. Make sure you know the names of species, etc. and why they are found there and the basic geologic history prior to writing draft.
C. Decide on which photos or sketches or other images will be used in essay.
D. Begin writing draft.

Step 4 – First draft of 300+ words.

Step 5 – Begin revision and addition to group draft. Complete a second draft 500+ words. DUE ________________

Step 6 – Revision and Editing

Step 7 – Final Draft (800+ words) and Publication. Share essay with others and/or read part of your essay aloud.
Essay Checklist and Scoring

Meaning [10]
___ understands the genre
___ understands naturalist concepts

Development [30]
___ use of clear and specific description
___ has description that is science-based and accurate
___ has description that uses creative literary devices (simile, metaphor, personification, images, etc)
___ specific names of species and geologic features given
___ connections between various aspects of the landscape/environment made
___ clear tone (emotion) is conveyed throughout the essay so reader understands writer’s relationship to natural world
___ effective use of photos or drawings

Organization [30]
___ Introduction: utilizes a technique to draw reader in or set up background; sets up tone for essay
___ Introduction: makes main idea apparent; clear to the reader what will be covered
___ Body: organized into logical paragraph(s)
___ Body: logical order—follows a clear narrative structure
___ Body: connects and unifies concepts, ideas, observations
___ Body: explains concepts, ideas, observations clearly
___ Body: uses transitional words
___ Conclusion: writer draws conclusions and/or gives some realization about self or natural world

Language Use [5]
___ style fits task – natural, conversational voice but doesn’t shift point of view
___ sentence variety to create pacing and emphasis
___ concise: no filler words
___ diction/precise: the right word chosen; no weak words (such as “thing”)
___ style, voice, and diction work to convey a tone

Conventions [10]
___ spelling
___ punctuation: no run-ons, sentence fragments, correct use of commas
___ capitalization
___ standard usage: verb tenses, pronoun agreement, use the correct form [their, they’re, there, etc.]
___ neatness: typed, doubled-spaced,
___ length (800+ words)

Writing Process [15]
___ journal entries from day hike complete [very important!], rough drafts and revision work
___ significant change and effort from rough to final draft
# Thoreauvian Nature Journal Rubric

<table>
<thead>
<tr>
<th></th>
<th>Distinguished &amp; Thoreauvian</th>
<th>Proficient</th>
<th>Apprentice</th>
<th>Novice</th>
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<tbody>
<tr>
<td><strong>General Information</strong></td>
<td></td>
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<tr>
<td>Context</td>
<td>Provides detailed and thorough information about place, date, time, and weather conditions. In completed journal, each page titled and numbered.</td>
<td>Provides basic information about the place, date, time, and weather conditions. In completed journal, basic information with each page titled and numbered.</td>
<td>Provides only some information about either the place, date, time or weather conditions. In completed journal, some pages titled and numbered.</td>
<td>Provides no information about the place, date, time, or weather conditions. In complete journal, page titles and/or numbering are missing</td>
</tr>
<tr>
<td><strong>Content &amp; Empirical Observations</strong></td>
<td>The experience of observing nature is described thoroughly and eloquently. There is empirical observation using sensory details that demonstrates acute awareness of all senses. The entry is specific with ample use of evidence and exhaustive details.</td>
<td>The experience of observing nature is described effectively. There is empirical observation using sensory details that fairly effectively demonstrates awareness of the senses. The entry is convincing and specific but may lack an attempt to use all senses or lack thorough evidence or detail.</td>
<td>The experience of observing nature is described somewhat effectively but not fully empirically. Use of few sensory details that demonstrates awareness of the senses. The entry is convincing and specific only in spots to suggest not fully “seeing.” May rely on cliché.</td>
<td>The experience of observing nature through empirical observation is not used. Does not use sensory details that demonstrate awareness of the senses. The entry lacks specifics, suggesting attentive observation was not attempted occur.</td>
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<tr>
<td><strong>Creative (poetic) Observations</strong></td>
<td>Skillfully uses of a variety of literary devices to describe observations and experiences. Thoughtful comparisons of the object observed to other</td>
<td>Effective use of literary devices to describe observations or experiences. Effective attempts at comparisons and relevant details.</td>
<td>The writer uses few literary devices as well as few attempting to make a few comparisons or giving a few specific, creative details.</td>
<td>The writer does not use literary devices nor does the writer attempt to make comparisons or give details.</td>
</tr>
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</table>

For Lessons #7, #10, and final grading of journals
<table>
<thead>
<tr>
<th>Sketches and Photographs</th>
<th>Sketches exhibit unique and careful observation and include realistic details that show an artful understanding of the natural object. Sketches or photos reveal an excellent understanding of composition. Sketches or photos are complex and show relationships. All are integrated effectively into text.</th>
<th>Sketches exhibit careful observation and include some realistic details. Sketches and photos reveal a solid but mixed understanding of composition. Some sketches and photos show relationships. All are integrated into the text.</th>
<th>Sketches are not completely accurate nor do they contain details. Sketches and photos do not consider composition. Sketches and photos are present but not integrated.</th>
<th>Sketches and/or photos not included. Sketches and photos are placed in a way that reveals little consideration for how they inform the writing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflections and Connections</td>
<td>Well developed and clear. Includes a thoughtful connection and/or reflection to the natural phenomenon observed. Considers connections to self, to larger world or discusses impact on feelings/mood or poses unique, thoughtful question(s). Connects observations to larger eco-system. Concludes with an interesting realization.</td>
<td>Clear reflections or connections. Includes a connection and/or reflection to the natural phenomenon observed. Considers connections to self, to larger world or discusses impact on feelings/mood or poses question(s). May connect observations to larger eco-system. Concludes with a thoughtful realization.</td>
<td>Reflections or connections are vague in places. Includes one of the following: connections to self, to larger world, discusses impact on feelings/mood, poses a question. No connection larger eco-system. Concluding realization is vague or not present.</td>
<td>Unclear, incomplete or missing reflections and/or connections to self or larger world.</td>
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</table>
For Lesson #12  
Philosophy of the Wild  

Name _____________________________________________ Seminar #2  

Thoreau, Wildflower Garden and Climate Change – Seminar  

Directions:  
(1) To prepare, re-read “Teaming up with Thoreau, “Spring” chapter from Walden and the passage from “Slavery in Massachusetts (attached).”  
(2) Participate in the whole class seminar using the information we read, the questions below and your journals about the garden. Remember to take notes while others are speaking.  
(3) After seminar, score yourself.  

Discussion Questions:  

6. Look at the data provided for the flowers we studied. Have the blooming dates and the overall phenology changed? Have we in some way measured climate change using our garden?  

7. According to Project Budburst: “By monitoring plants, scientists can figure out how seasonal patterns are changing, and make predictions for the future…When you report to Project BudBurst, you are contributing scientific data that can help all of us understand how plants are responding to this year’s seasons and long-term changes in climate. Scientists are using data about the timing of seasonal changes in species in computer models to predict how climate and ecosystems will change decades and even centuries into the future.”  
   (a) Did we achieve some of the Project’s mission?  
   (b) Which portions of these statements do you believe are accurate based on their experience and their journal entries.  

8. What makes Thoreau’s writing and journals and use of nature successful? [Cite the use of nature as metaphor in the “Slavery in Massachusetts” essay in your answer.]  

9. What makes your journals successful and what makes our garden successful?
Name ________________________ Seminar # ____ Date ______

**Socratic Seminar Rubric**

<table>
<thead>
<tr>
<th>Respect for Seminar</th>
<th>Excellent—5</th>
<th>Good—4-3</th>
<th>Fair—2</th>
<th>Unsatisfactory-1-0</th>
</tr>
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<tbody>
<tr>
<td>-Demonstrates respect for the learning process, different opinions and complexity; -shows initiative by asking others for clarification; -brings others into the conversation; -speaks to all of the participants; avoids talking too much.</td>
<td>Generally shows composure; comments, but does not encourage others to participate; may tend to address only the one person or get into debates.</td>
<td>Participates and expresses a belief that his/her ideas are important in understanding the text; may make insightful comments but does not contribute to the progress of the conversation; tends to debate, not dialogue.</td>
<td>Displays little respect for the learning process; argumentative; inappropriate.</td>
<td></td>
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</tbody>
</table>

| Speaking & Reasoning | | | |
|---------------------| | | |
| -Understands question before answering; -cites evidence from text; expresses thoughts in complete sentences; -moves conversation forward; -makes connections between ideas; resolves apparent contradictory ideas; -considers others’ viewpoints, not only his/her own | Responds to questions voluntarily; comments show an appreciation for the text but not an appreciation for the subtler points within it; comments are logical but not connected to other speakers; ideas interesting enough that others respond to him/her. | Responds to questions but may have to be called upon by others; has read the text but not put much effort into preparing questions and ideas for the seminar; comments take details into account but may not flow logically in conversation. | Does not speak. |

| Listening | | | |
|-----------| | | |
| Pays attention to details; writes down questions; responses take into account all participants; demonstrates that he/she has kept up; points out faulty logic respectfully; takes notes when not speaking. | Generally pays attention and responds thoughtfully to ideas and questions of other participants and the leader. Takes notes when not speaking. | Appears to find some ideas unimportant while responding to others; may have to have questions or confusions repeated due to inattention; takes few notes during the seminar in response to ideas and comments. | Appears uninvolved in the seminar; comments display complete misinterpretation of questions or comments of other participants. Does not take notes. |

| Reading and Prep | | | |
|-----------------| | | |
| Thoroughly familiar with the text; has notations and questions in the margins of all readings; all five of the garden journal entries are complete; key words, phrases, and ideas are highlighted/underlined; possible contradictions identified; articulate when quoting text. | Has read the text and comes with some ideas from it but these may not be written out in advance; good understanding of the concepts but may misunderstand some new terms when quoting text. | Appears to have read or skimmed the text but has not marked the text or made meaningful notes or questions; misunderstands important words; key concepts misunderstood; little evidence of serious reflection prior to the seminar. | Student is unprepared for the seminar; no notes or questions marked in the text; no attempt made to get help with difficult material. |

**SEMINAR SCORE _____/20**
Link to NYS Common Core Standards Appendix

For New York State, the Common Core Standards are now used. Below is a list of the standards that apply to this unit. For full English Language Arts standards go to: [http://www.corestandards.org/ELA-Literacy](http://www.corestandards.org/ELA-Literacy)

Lesson #1
READING LITERATURE
CC Anchor Standard 4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
Focus: Craft and Structure
RL.11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (Include Shakespeare as well as other authors.)

Lesson #6
READING LITERATURE
CC Anchor Standard 11 (Added in by NYSED) Respond to literature by employing knowledge of literary language, textual features, and forms to read and comprehend, reflect upon, and interpret literary texts from a variety of genres and a wide spectrum of American and world cultures.
Focus: Responding to Literature
RL.11-12.11. Interpret, analyze, and evaluate narratives, poetry, and drama, aesthetically and philosophically by making connections to: other texts, ideas, cultural perspectives, eras, personal events, and situations.
   a. Self-select text to respond and develop innovative perspectives.
   b. Establish and use criteria to classify, select, and evaluate texts to make informed judgments about the quality of the pieces.

Lesson #1, Lesson #6 and Lesson #12
READING INFORMATIONAL TEXT
CC Anchor Standard 1 Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
Focus: Key Ideas and Details
RI.11-12.1. Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.

Lesson #1, Lesson #6 and Lesson #12
READING INFORMATIONAL TEXT
CC Anchor Standard 2 Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
Focus: Key Ideas and Details
RI.11-12.2. Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
Lesson #6
READIMG INFORMATIONAL TEXT
CC Anchor Standard 4 Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
Focus: Craft and Structure
RI.11-12.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.

Lesson #6 and Lesson #8
READIMG INFORMATIONAL TEXT
CC Anchor Standard 6 Assess how point of view or purpose shapes the content and style of a text.
Focus: Craft and Structure
RI.11-12.6. Determine an author’s point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness or beauty of the text.

Lesson #1, #6, #11 and #12
READIMG INFORMATIONAL TEXT
CC Anchor Standard 10 Read and comprehend complex literary and informational texts independently and proficiently
Focus: Range of Reading and Level of Text Complexity
By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.

Lesson #4, #7, #8, #10 and #12
WRITING
CC Anchor Standard 4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
Focus: Production and Distribution of Writing

Lesson #8, #10 and #12
WRITING
CC Anchor Standard 5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
Focus: Production and Distribution of Writing

Lessons #1 to #12 and specifically #10 and #11
WRITING
CC Anchor Standard 7 Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
Focus: Research to Build and Present Knowledge

Lesson #12 (final journal entry)
WRITING
CC Anchor Standard 9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
Lesson #12 (final seminar)

SPEAKING AND LISTENING

CC Anchor Standard 4 Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

Focus: Presentation of Knowledge and Ideas

SL.11-12.4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
Bibliography


