Curriculum Unit:
Magnify Your Mind with the Private Eye: Looking & Thinking by Analogy
4th & 5th Grade Gifted Education
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Developed for the NEH Landmarks of American History and Culture Workshop for Teachers
Living & Writing Deliberately: The Concord Landscapes and Legacy of Henry David Thoreau

Thread: Hearing that Different Drummer

HDT Focusing Quote: If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away. -- Walden 1854

Essential/Framing Questions:

- What does it mean to be gifted? *Case study of Henry David Thoreau*
- How do we develop our interests/strengths? *Close observations with loupes*
- How can we be different from our peers but still belong to a community? *Bibliotherapy and creative expression*

Unit Objectives:

- Using children's literature and selections from Thoreau's body of work, students will recognize Thoreau as a gifted individual who was comfortable being different from the mainstream and who thought deeply about the human and natural world around him.
- Using loupes, students will develop the interdisciplinary habits of mind of the scientist, artist, and inventor by looking closely, thinking by analogy, changing scale and theorizing.
- Using class discussions and journaling, students will reflect on how seeing and thinking differently is typical of being gifted and how Thoreau was able to be true to his gifts but still belong to his community.

Note: The lessons using jeweler's loupes are inspired by or adapted from The Private Eye ® Project. http://www.the-private-eye.com/

Needed Materials:

- From http://www.the-private-eye.com/index.html
  - Kerry Ruef, *The Private Eye Teaching Guide - (5X) Looking/Thinking by Analogy: A Guide to Developing the Interdisciplinary Mind*
  - Jeweler's loupes (one per student)
  - Insect specimens (your own or from The Private Eye World in a Box ® collection)
- Pencils, colored pencils, miscellaneous art paper for sketching
- A ruler or retracting tape measure

- A time or stopwatch
- Images of Thoreau's journals, nature sketches, and phrenology charts (Contact the Concord Museum, the Thoreau Society, or the Morgan Library for images and copyright permission.)
- Sweet gum balls (seed pod husk from the sweet gum tree) -- or other locally available plant specimen (the Dusty Miller is a good alternative)
- Books:
    - *If You Spent a Day with Thoreau at Walden Pond* by Robert Burleigh
    - *Henry David's House* by David Schnur
    - *Henry David Thoreau for Kids: His Life and Ideas, with 21 Activities (For Kids Series)* by Corinne Hosfeld Smith
    - *The Trouble with Henry: A Tale of Walden Pond* by Deborah O'Neal, Angela Westengard
    - The *Henry* series by D.B. Johnson
    - *Walden*
    - Annotated Journals of Henry David Thoreau
    - *Transcendental Wordplay: America's Romantic Punsters and the Search for the Language of Nature* by Michael West

Lesson One: "Handsome" Art	Adapted from Ruef, p. 84-90
Objective: Students will learn how to use a jeweler's loupe to examine their hands using the Private Eye ® methodology and write a poem based on their observations.	
HDT Quote: *We must look a long time before we can see. -- Natural History of Massachusetts, 1842*	
Companion Book: *If You Spent a Day with Thoreau at Walden Pond* by Robert Burleigh	

Set:

- **HDT Quote:** Start by introducing students to today's quote with a group discussion: What does it mean to see?
- **Powers of 10 Film:** Students will watch the famous Eames film that explores the concept of magnitudes by moving outward from a picnic scene to the outer reaches of the universe at a rate of ten times per ten seconds and then inward at the same rate to a proton. *(Extension: exponents, units of measurement)* https://youtu.be/0fKBhvDjuy0
- **The Private Eye ® Methodology:** The teacher will introduce students to the 4-step process that teaches students to make keen observations using analogical thinking. Students will record the 4 steps in their journals:
    1. What else does it remind me of? (responses are 1 word nouns)
    2. Why did it remind me of that? (go back to the nouns and add descriptive adjectives)
    3. Why is it like that? (Hypothesizing using analogical relationships)
    4. If it reminds me of that, could it also function like that? (Theorizing form or function; extrapolation → testing theories)

T_2O:

- **Loupe-Looking:** The students will practice looking through a jeweler's loupe that magnifies objects 5 times. *(Tips: Have students hold the wide end of the loupe to one eye while closing the other. Let them experiment with moving their hand closer and farther away from the loupe until it comes into focus, approximately 1"-2" away. This is the "sweet spot." Let students with glasses try using the loupe with and without their glasses to see which way they prefer. The loupes are also sold with attached lanyards for younger students, so if they drop it it doesn't fall to the floor.)*
- **Observing the Hand:** Students will use the loupe to closely observe their hands. As a class, students will brainstorm what their hands remind them of (Question 1 for nouns). The teacher will record students' ideas on the board for reference. The teacher will guide students through their initial hesitation or reticence until each student brainstorms 5-10 things that their hand reminds them of. Students will look at the collection of nouns and add adjectives (Question 2) to each noun. *(Tip: Let students add adjectives to any noun, not just their own, to encourage creative flow.)*

Closure:

- **"My Hand" Poem:** Using the list of words and phrases on the board, students will select, edit, and arrange their favorite observations into a poem and record the poem in their journals. *(Tip: Write a group poem first, modeling how to select and adapt phrases from the group brainstorming list.)*
- **"Handsome" Art:** Students will use a loupe and drawing tips (see below) to select a part of their hand (knuckle, fingernail, palm, etc.) to sketch using colored pencils. Students sketches will be added to their typed poems and displayed in the hallway. *(Tip: Allow students freedom to play with the font, color, and spacing of words to create a visually impactful poem.)*

  Drawing Tips:
  - Fill the frame: Start with a small piece of paper (the frame) with the intent to "fill the frame," leaving no blank spaces. *(Tips: For the first time drawing using loupes, start students with a small 4"x4" square of paper. The Private Eye ® online store offers several cute frame templates.)*
  - Commit: Use pens or colored pencils so you don't have the option to erase; figure out how to work mistakes into the design.
  - Natural Designs: Look for geometric shapes or patterns that Nature used to fill the space and use the same design in your drawing.
  - Detail: When you think you're done, look again with the loupe and see if there are even smaller details you can add. *(Tip: Require students to draw nonstop for a lengthy period, 15-30 minutes, to encourage details.)*
- **Companion Book**: Refer back to today's quote and introduce students to Thoreau with the book *If You Spent a Day with Thoreau at Walden Pond* by Robert Burleigh.

Lesson Two: Before & After	Adapted from Ruef, p. 104, 130
Objective: Students will compare and contrast the level of detail and observation in their work describing an insect specimen before and after the loupe-analogy process.	
HDT Quotes: *The question is not what you look at, but what you see. -- Journal, 5 August 1851* *All this is perfectly distinct to an observant eye, and yet could easily pass unnoticed by most. -- Journal, 3 November 1861*	
Companion Book: Samples of Thoreau's journal illustrations, surveys, and phrenology charts *(Contact the Concord Museum, the Thoreau Society, or the Morgan Library for images and copyright permission.)* *Henry David Thoreau for Kids: His Life and Ideas, with 21 Activities (For Kids Series)* by Corinne Hosfeld Smith	

Set:

- **HDT Quotes:** Start by introducing students to today's quotes with a group discussion. What is the difference between looking and seeing? Observing?
- **Before:** The teacher will list 6 common insect species on the board (ant, wasp, dragonfly, ladybug, etc., depending on which insect specimens are available). Students (or student pairs, depending on class size and number of specimens) will choose one to study. Each student will draw a quick sketch of the insect based on their memory and a few adjective-noun pair descriptions in their journals. *(Tip: Expect lots of cartoon-like drawings.)*

T_2O:

- **During:** After completing their "Before" sketches, students will examine their chosen insect specimen using loupes and the Private Eye ® questioning process. Students sharing an insect specimen may work together to brainstorm what else the insect specimen looks like/reminds them of (question #1) and analogize why it reminded them of that (question #2). Each student will then edit their adjective-noun pair descriptions and draw a more scientific illustration of their specimen to better reflect the more detailed nature of their observations with the loupe.

Closure:

- **After:** Students will make a T-chart to compare and contrast their 2 sets of observations, labeled "Before" and "After." Student pairs may assist each other with their own interpretations and feedback. Both drafts will be recorded in their journals for possible inclusion in their portfolios. *(Tip: Seeing the "Before" and "After" illustrations side by side is visually arresting and leads to a heightened awareness of the need for close observation of details.)*

- **Companion Books**: Refer back to today's quote and show students some of Thoreau's sketches in his journal and field notes. Discuss Thoreau's powers of observation and have students hypothesize what, if any, tools he used. Review the Phenology pages in *Henry David Thoreau for Kids.*

Lesson Three: Using Your Gifts: Think Like a Scientist or Inventor	Adapted from Ruef, p. 54-55, 143, 166-168

Objective: Students will use close observation techniques to illustrate a plant during an outdoor field study, brainstorm questions about a particular aspect of the plant's structure, and theorize possible explanations for how this structure affects its functionality.

HDT Quote: *Follow your genius closely enough and it will not fail to show you a fresh prospect every hour. --Sounds Chapter of Walden*
I learned this, at least, by my experiment; that if one advances confidently in the direction of his dreams, and endeavors to live the life which he has imagined, he will meet with a success unexpected in common hours. --Walden Conclusion

Companion Books: *Henry David Thoreau for Kids: His Life and Ideas, with 21 Activities (For Kids Series)* by Corinne Hosfeld Smith
Transcendental Wordplay: America's Romantic Punsters and the Search for the Language of Nature by Michael West
Henry Works by D.B. Johnson

Set:

- **HDT Quotes:** Start by introducing students to today's quotes with a group discussion: What does it mean to follow your gifts? How do geniuses think differently from other people?
- **Sweet Gum Puzzler:** Today, students will be encouraged to "Think like a scientist" and take their thinking to the next step after close observation. Students will examine a sweet gum ball (seed pod husk from the sweet gum tree) using loupes. After an initial class brainstorming session to answer the Private Eye® questions #1-2 ("What else does it remind me of? Why did it remind me of that?"), the teacher will lead the class in a lesson on theorizing. The class will consider questions #3-4, "Why is it like that? If it reminds me of ___, could it work like that?" to wonder why the sweet gum ball has its distinctive shape and spikes. Students will work in small teams to brainstorm possible hypotheses about the form and function of the sweet gum ball using the starter, "It could be…" and record them in their folders. *(Tip: If time allows, have students sketch the sweet gum ball with loupes before brainstorming.)* Students will share their best guesses about the form and function of the sweet gum ball.

T_2O:

- **Plant Field Study:** Students will visit an outdoor area with various plants growing -- a flower bed, butterfly garden, local park, etc. Each student will select a plant to examine and sketch using a loupe. Next to their illustrations and analogy lists (questions #1-2), students will brainstorm a list of questions and theories for the Private Eye ® questions #3-4, "Why is it like that? How does this attribute help it function?"

- **Scientific Nomenclature:** Back in the classroom, the teacher will explain how scientists name things: after people, after locations, after a physical attribute, or after something the object looks like or reminds the discoverer of, often using Greek or Latin. The class will discuss examples from a teacher-created flipchart or slideshow and theorize how scientists named each example. Each student will use their analogy lists to make up their own name for the plant they studied and record it in their journals next to their sketches.

Closure:

- **The Invention of Velcro:** The teacher will share the story of the invention of velcro with the class, emphasizing how the inventor followed the Private Eye ® steps of looking closely, thinking analogically, and changing scale while working through multiple iterations of the engineering design process.
  http://mpb.pbslearningmedia.org/resource/lpsc10.sci.life.velcro/velcro/ https://youtu.be/0IE82Hb8Wt8
- **Think Like an Inventor:** Students will think of a possible invention inspired by the sweet gum ball and/or the plant they studied and record their ideas in their journals. They should also include a diagram of their invention.
- **Companion Books**: Refer to examples of Thoreauvian wordplay (reference his annotated journals, scholarly articles or the book *Transcendental Wordplay: America's Romantic Punsters and the Search for the Language of Nature* by Michael West). Have students revisit their new names for the plants they studied or their inventions to incorporate wordplay. Review the sections on plant inventories, gardens, seeds, rocks, etc. in *Henry David Thoreau for Kids* by Corinne Hosfeld Smith.

Lesson Four: Ultimate Portrait: Think Like Thoreau (Assessment)	Adapted from Ruef, p. 177-178, 210
Objective: Students will make a portrait of a small natural object that combines math, poetry, and science for increased accuracy to set the groundwork that typically precedes insight and breakthrough.	
HDT Quotes: *Will you be a reader, a student merely, or a seer? -- Sounds Chapter of Walden* *Every path but your own is the path of fate. Keep on your own track, then. -- Sounds Chapter of Walden* *Explore your own interior: Nay, be a Columbus to whole new continents and worlds within you, opening new channels, not of trade, but of thought. --Walden Conclusion*	
Companion Book: *Henry David's House* by Steven Schnur	

Set:

- **HDT Quotes:** Start by introducing students to today's quotes with a group discussion: How has using a loupe changed the way they observe the world? How does seeing the world differently relate to thinking differently? Relate thinking differently to being gifted and ask how Thoreau was able to be true to his gifts and live differently from his peers but still belong to his community.
- **Form a Friendship:** Allow students to select a natural object (plant, animal, insect, crystal, stone, etc.) from a classroom collection or their own discovery. Students will "form a friendship" with their chosen object by performing the Private Eye ® loupe + analogy questions: writing, drawing, and theorizing about the purpose of the structures they observe.

T_2O:

- **Become an Accountant:** Students will count what's countable and measure what's measurable using available tools (loupes, timer, retracting tape measure, rulers, protractors, etc.). For example, with a dragonfly students could count the wings, the number of veined divisions in the wings, the angles in the veins, the length of the wings, the length of the whole tail, the length of the tail segments, the hairs on the tail and back, the number of legs, the spines on the legs, etc. With a live specimen, students could observe and record the number of switchbacks during one minute of flight, the number of times it circles to the same spot, the pulsations per minute in a dragonfly's tail, etc.

Closure:

- **Theorize Like Thoreau:** Students will theorize what their statistics might mean: Do they see any patterns? What else do the patterns remind them of? Where else have they seen such patterns and numbers? Students will combine their accounts --

sketches, poetry analogies, statistics and theories -- into a monograph, the “ultimate portrait” of their chosen specimen. Have students display and share their work in a classroom museum and invite other classes to visit and leave their feedback. *(Tips: Students may choose to work in pairs and combine their observations for their final project. The Private Eye ® program offers several reproducible templates that will guide younger students through these steps and that could be used as frames for the museum.)*

- **Companion Book**: Refer back to today’s quotes and appreciate Thoreau’s deliberate lifestyle in his own words (selected for school-age children) with *Henry David’s House* by Steven Schnur.
- **Optional Pre-test/Post-test:** To track student growth in thinking skills, rate students before starting the Private Eye ® program and after a period of regular use. Ruef recommends Arthur L. Costa’s parent/teacher rating scale, “Twelve Ways Your Child/Student Shows Growth in Thinking Skills” from *Developing Minds: A Resource Book for Teaching Thinking Vol. 1* (see Ruef p. 210).