Mapping E.O. Wilson’s Journey from Biophilic Kid to Famous Naturalist: a Student Design Challenge

ACTIVITY OVERVIEW
This activity integrates literacy, arts and science by asking students to process scientific information in graphic and text form, and then producing a product in the form of box or panel for a graphic novel. Students work in collaborative groups to learn more about Dr. Wilson through a series of multimodal activities. They will watch short video clips about Dr. Wilson to discuss his scientific ideas and develop their own questions. They will read and annotate passages from Naturalist by E.O. Wilson to identify main ideas, supporting details, and imagery for illustration, and then create illustrations of their passage. Students will compare their illustrations with those produced by the creative team for Naturalist: A Graphic Adaptation. Using the work of the entire class, students will synthesize the information into a map detailing Dr. Wilson’s journey using Google Earth and Tour-Builder.

Contents
• Appendix A: Excerpts from Naturalist: A Graphic Adaptation
• Appendix B: Resources
• Appendix C: Modifications and Extensions

Recommended Grades:
6-8 grade

Time
Three 50-minute class periods.

LEARNING OBJECTIVES AND PERFORMANCE STANDARDS
Learning Objectives:
• Gain practice in creating illustrations that interpret, complement, and enhance passages from a book (E.O. Wilson’s memoir Naturalist).
• Compare and contrast student illustrations to those done by a professional creative team (Naturalist: A Graphic Adaptation).
• Document a young person’s explorations through his home state (Alabama), citing textual evidence on his journey and how it contributed to his development as a scientist.
• Synthesize text-based evidence to create an interactive map documenting a scientists journey.
Common Core State Standards for Science and Technical Subjects

- **CCSS.ELA-LITERACY.RST.6-8.1** - Cite specific textual evidence to support analysis of science and technical texts.
- **CCSS.ELA-LITERACY.RST.6-8.2** - Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- **CCSS.ELA-LITERACY.RST.6-8.5** - Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.

PREPARATION

Prepare a brief introduction to Dr. E.O. Wilson and why his book *Naturalist* might be important and interesting to read. Important science concepts associated with Dr. Wilson are Biodiversity, Half-Earth and Conservation, Biogeography, Biophilia, and Diversity of Ant Species. Appendix B contains resources that could be useful in preparing your introduction to students, and for them to conduct their own research.

Make a list of short passages from *Naturalist* ahead of time for students to read and analyze. You can also give students the choice of choosing their own passages. If needed, make copies of these passages for each student.

Create an account and familiarize yourself with Tour-Builder and Google Earth. The following links introduce how to use Tour-Builder and Google Earth. Google Tours are free and easy to create. You can create (or have your students create) a tour in five simple steps:

1. Visit [https://tourbuilder.withgoogle.com/](https://tourbuilder.withgoogle.com/) and select “build a tour.” You will be prompted to log in with your Google Account.
2. Name your tour, and get started.
3. Use the left side to add new locations. The search bar will help you locate what you are looking for and add it to your map.
4. Once your location is added, add text, images, and video without leaving Google Tours.
5. To present, click on the three lines in the upper right of the screen. Either “play full screen” or “open in Earth” (this option makes very dynamic presentations).

MATERIALS

- *Naturalist* by E.O. Wilson
- *Naturalist: a Graphic Adaptation* by E.O. Wilson and J. Ottaviani, illustrated by C.M. Butzer
- Drawing software or paper and colored pencils
- Computers or tablets with internet access
- Google Earth account
- Tour Builder account
Note: You need at least one copy of both the full text version of *Naturalist* and of *Naturalist: A Graphic Adaptation*. You can make copies of select pages for students. You can also make use of the excerpts found in Appendix A.

LESSON SEQUENCE/INSTRUCTIONS:

**Day 1**
Introduce students to Dr. E.O. Wilson, highlighting the importance of some of his scientific and literary accomplishments. Show students the first video clip from [eowilsonfoundation.org/e-o-wilson/](https://eowilsonfoundation.org/e-o-wilson/) titled “E.O. Wilson: The Naturalist.”

Ask students to consider the following:

1. Why is E.O. Wilson considered a giant in the world of biology?
2. How has he influenced or changed our perspective of the world?

Have students develop questions regarding what more they’d like to know about Dr. Wilson or what information they need to know to understand how he has influenced the scientific community.

Jigsaw the remaining video clips from [https://eowilsonfoundation.org/e-o-wilson/](https://eowilsonfoundation.org/e-o-wilson/) Have small groups of students watch their assigned video clip and discuss the questions provided for each clip. You can also include the text that accompanies each video for further reading and comprehending with your students.

- **Wilson’s Boyhood** - What makes you similar or different to Dr. Wilson? How do you think his childhood influenced his future life as a scientist? What more do you need or want to know beyond what’s in the video?
- **Why Did He Choose Ants?** - Why does Dr. Wilson study ants? How do you think studying ants has changed the world of science? What more do you need or want to know?
- **The Theory of Island Biogeography** - What is the theory of island biogeography? How has this theory changed our thinking on evolution? What more do you need or want to know?
- **The Chemical Language of Ants** - How do ants use chemicals to communicate? How did E.O. Wilson discover this? What more do you need or want to know?
- **Sociobiology** - What does E.O. Wilson claim in sociobiology? Do you agree or disagree? Can you think of other examples of this? What more do you need or want to know?
- **E.O. Wilson: Attacked for an Idea** - How was E.O. Wilson attacked for some of his sociobiology ideas? Have you or someone you know experienced similar response to an idea you have had that seems different from others? What more do you need or want to know?
After the small group discussion, have the groups share in one of the following ways.

- **Option 1:** Jigsaw students so that there is one person from each group in a new group. Each student can share what they learned about E.O. Wilson from their video and discussion with the rest of the small group.
- **Option 2:** Each group presents their findings to the class in a whole group discussion. Teacher summarizes and documents the questions students ask for further investigation upon reading *Naturalist* and *Naturalist: A Graphic Adaptation*.

**Day 2**

Sort your class into collaborative groups and share a list of short passages from the book *Naturalist*. You can assign the passages to the groups, have the groups choose their passage, or have the groups blindly select the passage they will be reading together. In small groups, students will read their assigned/selected passage and annotate for essential details and imagery. After reading the passage, they will brainstorm and discuss what types of images they could include in an illustration of the passage based on the details in the reading. They will also discuss what text or quotes they want to include in the illustration that seem important to the main idea of the passage. Students will then illustrate the passage.

Over the next few days, students will read *Naturalist: A Graphic Adaptation* to learn more about E.O. Wilson’s life and scientific contributions. As students arrive at the professional illustration of the passage they were assigned, they will compare their own illustrations with the ones found in the graphic novel. The class will be able to compare each group’s illustration as they arrive at the section of the Graphic Adaptation chosen by one of the teams. Guide students to key in on: What did the professional illustrator choose to highlight in the picture? How was their depiction similar or different than yours? What details did you include compared to the details the professionals included in the graphic version?

Note: Strive to focus student comparisons on content and representation and not on the artistic “quality” of the student work compared to the professional work. You can also provide passages of differentiated length and comparison depending on your students’ needs and the composition of different teams.

Option: If class sets of the graphic novel are unavailable, make copies of the necessary pages for each passage that was selected and have the class read each passage and compare the professional illustrations to the illustrations of their classmates.

**Day 3**

After passages from the graphic novel have been read, annotated, and compared to the students’ illustrations, place students back into their collaborative groups and have them use *Tour-Builder* to create a story map tour of Dr. Wilson’s journey in the book *Naturalist*. Have the students use the same quotes and illustrations to tell the personal story of Dr. Wilson’s childhood. Have teams upload tours to *Google Earth* to create 3D annotated journeys.
Appendix A: Excerpts from *Naturalist: A Graphic Adaptation*

Page A from *Naturalist: A Graphic Adaptation*
Page B from *Naturalist: A Graphic Adaptation*

**Left Panel:**
- A young boy sits on the ground, reading a book.
- He later sits with a magnifying glass, examining something on the ground.

**Right Panel:**
- A young man pours liquid into a glass bottle.
- He later sits at a desk, working with delicate tools and equipment.

**Bottom Panel:**
- A man sits at a desk, writing notes or examining something.
- Another man sits in a library, reading a book.

Caption:
- **Top Panel:** "My old acquaintances, some of my earliest fascinations."
- **Middle Panel:** "From a local drugstore I purchased dozens of five dram prescription bottles, the old-fashioned glass ones with metal screw tops.
- **Lower Panel:** "To this day I still occasionally consult my early Alabama specimens and notes on questions of classification and ecology."
Appendix B: Resources

- The E.O. Wilson Biodiversity Foundation provides a brief biography of Dr. Wilson including several short videos and a full length feature from PBS. Consider using these videos to help spark student interest in. Groups of students could each watch a different video clip and share what they found interesting about Dr. Wilson with the class.

- The Half-Earth Map is putting species on the map. The interactive tool allows students explore where biodiversity is found all over the globe and how that compares to areas of existing protection and human pressures.

- Incorporate literacy in science using excerpts from Naturalist - A Graphic Adaptation. This mini-lesson introduces students to some of E.O. Wilsons adventures and scientific discoveries while also encouraging them to reflect on their own experiences with nature.

- Learn about how the Half-Earth Project is protecting biodiversity

- Why does Dr. Wilson and the Half-Earth Project strive for Half-Earth? Learn about why the goal is half and which half that should be. Check out this interview with Dr. Wilson.

Appendix C: Modifications and Extensions

MODIFICATIONS:
Student teams can work virtually and upload teamwork and individual contributions to shared online files.

A version of the activity can be done without digital technology similar to the Half-Earth Map Design Challenge (half-earthproject.org/mapping-design-challenge/). Students can create their maps and illustrations by hand on paper. Additional maps for printing can be found here, nationalgeographic.org/education/mapping/outline-map/

While Alabama was used in this lesson because it is central to Dr. Wilson’s career and personal development, there are many interesting locations in Dr. Wilson’s life story that can draw students into important questions of biogeography.

EXTENSIONS:

Have students write an essay or story about Dr. Wilson’s journey as told in Naturalist, or have them tell a story from their own life inspired by Dr. Wilson. They might illustrate a sample.

Have students create a graphic adaptation of a story, book, or topic of their own choosing.

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