EXPEDITIONARY LEARNING

Grade 6: Module 4: Unit 2:
Overview

GRADE 6: MODULE 4: UNIT 2: OVERVIEW

Research:
Do the Benefits of DDT Outweigh Its Harmful Consequences?

Unit 2: Research: Do the Benefits of DDT Outweigh Its Harmful Consequences?

In this unit, students grapple with the question "Do the benefits of DDT outweigh its harmful consequences?" In the first half of the unit, students use a guided researcher's notebook, research folder, and a WebQuest to research informational texts about DDT's benefits and harmful consequences. The researcher's notebook requires students to cite their sources, assess the credibility of each source, paraphrase the information relevant to their research question, and decide if the evidence from their research changes the focus of their inquiry. Students also analyze an author's presentation of information and ideas, and then compare and contrast that presentation of information and ideas with the presentation by another author. Additionally, students revisit strategies they have learned throughout the year to address new vocabulary: context clues, affixes, and resource materials such as dictionaries and thesauruses.. In their mid-unit assessment, students read two unfamiliar informational articles about DDT. They complete a page identical to their researcher's notebook for one article, as well as a graphic organizer in which they compare and contrast the presentation of ideas in these two articles. In the second half of the unit, students work toward making a claim based on the evidence of their research, a similar skill to the work of Module 2 in which students made a claim on which they built a literary argument. Students learn the important skill of sifting through all the materials they have thus far encountered, deciding what is relevant to their research question and what is not. They use a Cascading Consequences chart, visually tracking the chain reaction of a decision, and a Stakeholders chart, tracking who is affected by a decision, as integral tools in making their claim. After reviewing research, considering a particular decision's consequences, and who it affects, students draft and revise a claim about the use of DDT. In their end of unit assessment, students are asked to orally present their final claim to an audience and include the use of multimedia components such as charts and graphs. This claim will launch students in their argument writing of Unit 3.

Guiding Questions and Big Ideas
• **How do we balance the needs of people and the condition of the natural world?**
• **Do the benefits of DDT outweigh its harmful consequences?**
• **How do I integrate ideas from multiple sources to help me make a claim?**
• *Research includes close reading of multiple sources, evaluation of those sources, and collecting relevant information.*
• *Thorough research of multiple perspectives of an issue builds toward an informed decision and claim.*

Mid-Unit 2 Assessment	**Comparing and Contrasting Two Texts: Simulated Research** This assessment centers on NYSP12 ELA CCLS RI.6.9, W.6.7, W.6.8, L.6.4b, L.6.4c, and L.6.4d. In this assessment, students read two unfamiliar articles about the use of DDT. Students collect basic bibliographic information about each article in a research notebook page (which is identical to the one they have been using in their own research), paraphrase the information and conclusions of each author, and reflect on whether these articles affect the focus of their inquiry. Students then compare and contrast the authors' presentations of similar ideas. Finally, students identify new vocabulary presented in these articles. They use context clues, affixes, and root words to make a preliminary determination of the meanings, and then verify their definitions using reference materials.
End of Unit 2 Assessment	**Making a Claim: Where Do You Stand on the Use of DDT?** This assessment centers on NYSP12 ELA CCLA RI.6.9a, W.1, W.9, SL.6.4, SL.6.5, and SL.6.6In this assessment, students will present their claim and findings, outlining their position on the use of DDT. Using both information from their reading as well as multimedia components, such as charts and graphs, students are expected to advocate persuasively, sequence their ideas logically, and use pertinent facts and details to accentuate their main ideas.

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Content Connections

This module is designed to address English Language Arts standards as students read literature and informational text about the use of DDT. However, the module intentionally incorporates Social Studies Practices and Themes to support potential interdisciplinary connections to this compelling content. These intentional connections are described below.

Big ideas and guiding questions are informed by the New York State Common Core K–8 Social Studies Framework:
http://engageny.org/sites/default/files/resource/attachments/ss-framework-k-8.pdf

Unifying Themes (pages 6–7)
- Theme 4: Geography, Humans, and the Environment: The relationship between human populations and the physical world (people, places, and environments); impact of human activities on the environment; interactions between regions, locations, places, people, and environments.
- Theme 9: Science, Technology, and Innovation: Applications of science and innovations in transportation, communication, military, technology, navigation, agriculture, and industrialization.

Social Studies Practices, Geographic Reasoning, Grades 5–8:
- Descriptor 2: Describe the relationships between people and environments and the connections between people and places (page 58).
- Descriptor 3: Identify, analyze, and evaluate the relationship between the environment and human activities, how the physical environment is modified by human activities, and how human activities are also influenced by Earth's physical features and processes.

Social Studies Practices, Gathering, Using, and Interpreting Evidence, Grades 5-8:
- Descriptor 1: Define and frame questions about events and the world in which we live and use evidence to answer these questions.
- Descriptor 2: Identify, describe, and evaluate evidence about events from diverse sources (including written documents, works of art, photographs, charts and graphs, artifacts, oral traditions, and other primary and secondary sources).
- Descriptor 4: Describe and analyze arguments of others.
- Descriptor 6: Recognize an argument and identify evidence that supports the argument; examine arguments related to a specific social studies topic from multiple perspectives; deconstruct arguments, recognizing the perspective of the argument and identifying evidence used to support that perspective.

Central Texts
1. Jean Craighead George, *Frightful's Mountain* (New York: Dutton Children's, 1999), ISBN: 978-0-141-31235-4.
2. Robert W. Peterson, "Rachel Carson: Sounding the Alarm on Pollution," in *Boy's Life* (Vol. 84, Issue 8), Aug. 1994, 38.
3. Kathy Wilmore, "Rachel Carson: Environmentalist and Writer," in *Scholastic Junior Magazine*, 2013, as found at http://www.scholastic.com/browse/article.jsp?id=4964.
4. Adam Allie, "Malaria Carrying Mosquito Crash Lands Due to His Insecticide," ScienceHeroes.com, as found at http://www.scienceheroes.com/index.php?option=com_content&view=article&id=71:mueller-ddt&catid=55:paul-muller&Itemid.
5. Gil Valo, "How DDT Harmed Hawks and Eagles," Helium.com, July 26, 2007, as found at http://www.helium.com/items/2203587-how-ddt-harmed-hawks-and-eagles.
6. Utah Education Network, "Biological Energy—Here, Let Me Fix It!", as found at http://www.uen.org/core/science/sciber/sciber8/stand-2/humanimp.shtml.
7. Donald Roberts, "A New Home for DDT," *The New York Times*, Aug. 27, 2007, as found at http://www.nytimes.com/2007/08/20/opinion/20roberts.html?_r=0.

This unit is approximately 3 weeks or 15 sessions of instruction.

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 1	Getting the Gist and Paraphrasing: "Rachel Carson: Environmentalist and Writer"	• I can conduct short research projects to answer a question. (W.6.7) • I can quote or paraphrase what others say about my topic while avoiding plagiarism. (W.6.8) • I can gather relevant information from a variety of sources. (W.6.8)	• I can set a purpose to guide me in my research. • I can get the gist of the informational article "Rachel Carson: Environmentalist and Writer." • I can paraphrase information from my reading to answer a question.	• Learning from Frightful's Perspective: Chapter 12 (from homework) • Researcher's notebook • Exit Ticket: Paraphrasing Information from "Rachel Carson: Environmentalist and Writer"	• Peregrine Falcon Facts
Lesson 2	Applying Research Skills: "Rachel Carson: Environmentalist and Writer"	• I can compare how different authors portray the same idea or event. (RI.6.9) • I can provide a list of sources I used to gather information in a bibliography. (W.6.8) • I can assess the credibility of each source I use. (W.6.8)	• I can record bibliographic information for the sources I read in my research. • I can assess the credibility of the article "Rachel Carson: Environmentalist and Writer." • I can analyze the author's presentation of information and ideas in "Rachel Carson: Environmentalist and Writer."	• Learning from Frightful's Perspective: Chapter 13 (from homework) • Researcher's notebook • Comparing and Contrasting Authors' Presentation graphic organizer	• Peregrine Falcon Facts

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 3	Comparing an Author's Presentation of Ideas: "Rachel Carson: Sounding the Alarm on Pollution"	• I can compare how different authors portray the same idea or event. (RI.6.9)	• I can analyze the author's presentation of ideas in "Rachel Carson: Sounding the Alarm on Pollution." • I can compare and contrast the authors' presentation of ideas for "Rachel Carson: Environmentalist and Writer" and "Rachel Carson: Sounding the Alarm on Pollution."	• Learning from Frightful's Perspective: Chapter 14 (from homework) • Comparing and Contrasting Authors' Presentation graphic organizer	• Authors' Presentation of Ideas • Peregrine Falcon Facts
Lesson 4	Research Tasks: New Words, Relevant Information, Revision	• I can use common Greek and Latin affixes (prefixes and suffixes) and roots as clues to help me determine the meaning of a word (e.g., audience, auditory, audible). (L.6.4b) • I can conduct short research projects to answer a question. (W.6.7) • I can use several sources in my research. (W.6.7) • I can refocus or refine my question when appropriate. (W.6.7) • I can gather relevant information from a variety of sources. (W.6.8) • I can assess the credibility of each source I use. (W.6.8) • I can quote or paraphrase what others say about my topic while avoiding plagiarism. (W.6.8) • I can provide a list of sources I used to gather information in a bibliography. (W.6.8)	• I can use affixes to help me determine the meaning of unfamiliar words. • I can gather relevant information from my research materials. • I can revise my research question if necessary.	• Learning from Frightful's Perspective: Chapter 15 (from homework) • Research vocabulary • Researcher's notebook, Source 2	• Things Close Readers Do

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 5	Resource Materials and Gathering Information: Reading Another "Choice" Text from the Research Folder	• I can use resource material (glossaries, dictionaries, thesauruses) to help me determine or clarify the pronunciation, meaning of key words and phrases, and parts of speech. (L.6.4c) • I can conduct short research projects to answer a question. (W.6.7) • I can use several sources in my research. (W.6.7) • I can refocus or refine my question when appropriate. (W.6.7) • I can gather relevant information from a variety of sources. (W.6.8) • I can assess the credibility of each source I use. (W.6.8) • I can quote or paraphrase what others say about my topic while avoiding plagiarism. (W.6.8) • I can provide a list of sources I used to gather information in a bibliography. (W.6.8)	• I can use resource materials to determine the meaning of unfamiliar words. • I can gather relevant information from my research	• Learning from Frightful's Perspective: Chapter 16 (from homework) • Researcher's notebook	• Peregrine Falcon Facts
Lesson 6	Presentation of Events: Comparing Two Authors	• I can use context (e.g., the overall meaning of a sentence or paragraph: a word's position or function in a sentence) to determine meaning of a word or phrase. (L.6.4a) • I can compare and contrast one author's presentation of events with that of another (e.g., a memoir written by and a biography on the same person). (RI.6.9)	• I can use context clues to determine the meaning of unfamiliar words. • I can compare and contrast two authors' presentation of events.	• Learning from Frightful's Perspective: Chapter 17 (from homework) • Research Vocabulary using context clues • Comparing and Contrasting Authors' Presentation	• Authors' Presentation of Ideas • Authors' Presentation of Events

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 7	Researching Digital Sources, Part 1: Guided WebQuest	• I can conduct short research projects to answer a question. (W.6.7) • I can use several sources in my research. (W.6.7) • I can refocus or refine my question when appropriate. (W.6.7) • I can gather relevant information from a variety of sources. (W.6.8) • I can quote or paraphrase what others say about my topic while avoiding plagiarism. (W.6.8) • I can provide a list of sources I used to gather information in a bibliography. (W.6.8)	• I can choose digital resources that will help me answer my research question. • I can gather relevant information from digital resources about my research question.	• Learning from Frightful's Perspective: Chapter 18 (from homework) • Researcher's notebooks • Exit Ticket: Using Digital Resources	
Lesson 8	Researching Digital Sources, Part 2: Guided WebQuest	• I can conduct short research projects to answer a question. (W.6.7) • I can use several sources in my research. (W.6.7) • I can refocus or refine my question when appropriate. (W.6.7) • I can gather relevant information from a variety of sources. (W.6.8) • I can quote or paraphrase what others say about my topic while avoiding plagiarism. (W.6.8) • I can provide a list of sources I used to gather information in a bibliography. (W.6.8)	• I can choose digital resources that will help me answer my research question. • I can gather relevant information from digital resources about my research question.	• Learning from Frightful's Perspective: Chapter 19 (from homework) • Researcher's notebook	

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 9	Mid-Unit Assessment Comparing and Contrasting Two Texts: Simulated Research	• I can compare how different authors present the same idea or event. (RI.6.9) • I can conduct short research projects to answer a question. (W.6.7) • I can use several sources in my research. (W.6.7) • I can refocus or refine my question when appropriate. (W.6.7) • I can gather relevant information from a variety of sources. (W.6.8) • I can assess the credibility of each source I use. (W.6.8) • I can quote or paraphrase what others say about my topic while avoiding plagiarism. (W.6.8) • I can provide a list of sources I used to gather information in a bibliography. (W.6.8) • I can use a variety of strategies to determine the meaning of unknown words and phrases. (L.6.4) • I can use context to determine the meaning of a word or phrase. • I can use common Greek and Latin affixes (prefixes) and roots as clues to help me determine the meaning of a word. • I can use resource materials (glossaries, dictionaries, thesauruses) to help me determine or clarify the pronunciation, meaning of key words and phrases, and parts of speech. • I can check the accuracy of my guess about the meaning of a word or phrase by using resource materials.	• I can gather relevant information from research materials. • I can assess the credibility of the article "DDT Spray Scares Mosquitoes Away, Study Finds." • I can compare and contrast the authors' presentation of ideas for "DDT Spray Scares Mosquitoes Away, Study Finds" and "You Think You Have It Tough?" • I can use multiple strategies help me determine the meaning of a word.	• Mid-Unit 2 Assessment: Comparing and Contrasting Two Texts: Simulated Research	

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 10	Forming a Research-Based Claim: Cascading Consequences Chart	• I can use my experience and knowledge of language and logic, as well as culture, t0 think analytically, address problems creatively, and advocate persuasively. (RI.6.9a)	• I can think analytically about my research in order to determine what evidence is important to me. • I can use evidence from my research to add to my Cascading Consequences chart.	• Researcher's notebook • Harmful Consequences Cascading Consequences chart • Benefits of DDT Cascading Consequences chart • Exit Ticket: Reflecting on My Beliefs about DDT	
Lesson 11	Forming a Research-Based Claim: Creating Stakeholders Charts	• I can use my experience and knowledge of language and logic, as well as culture, to think analytically, address problems creatively, and advocate persuasively. (RI.6.9a) • I can use evidence from a variety of grade-appropriate texts to support analysis, reflection, and research. (W.6.9) • I can present claims and findings in a logical order. (SL.6.4) • I can support my main points with description, facts, and details. (SL.6.4)	• I can describe the criteria on which I will be assessed for the end of unit assessment. • I can create a Stakeholders Impacts chart using evidence from my research. • I can explain my position on DDT to my peers using evidence from my research.	• Goldilocks Rule for Choosing Books • Who Are Stakeholders? • Stakeholders Impacts chart • Exit Ticket: Four Corners note card	
Lesson 12	Forming a Research-Based Claim: Cascading Consequences Chart	• I can present claims and findings in a logical order. (SL.6.4) • I can support my main points with descriptions, facts, and details. (SL.6.4)	• I can draft a claim based on my research of DDT. • I can choose evidence from my research that supports my claim. • I can revise my claim based on evidence from my research.	• Forming Evidence-Based Claims graphic organizer	• Types of Claims and Evidence

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 13	Presenting a Research-Based Claim: Effective Speaking Techniques	• I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.6.4) • I can present claims and findings in a logical order. (SL.6.4) • I can support my main points with description, facts, and details. (SL.6.4) • I can include multimedia components and visual displays in a presentation to clarify information. (SL.6.5)	• I can choose a visual aid that supports my claim and findings. • I can identify the qualities of good speaking. • I can use feedback from my teacher and peers to revise my claim and findings.	• Visual Aid selected to support personal claim • Claim and Findings revision • Video Critique	
Lesson 14	Presenting a Research-Based Claim Visual Aid and Peer Critique	• I can include multimedia components and visual displays in a presentation to clarify information. (SL.6.5) • I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.6.4)	• I can create a visual that clarifies information in my presentation. • I can participate in a peer critique of my presentation.	• Visual aid for presentation • Presentation notecards • Presenting a Claim and Findings Peer Critique form	
Lesson 15	End of Unit 2 Assessment: A Hosted Gallery Walk	• I can use my experience and knowledge of language and logic, as well as culture, to think analytically, address problems creatively and advocate persuasively. (RI.6.9a) • I can present claims and findings in a logical order. (SL.6.4) • I can support my main points with descriptions, facts, and details. (SL.6.4) • I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.6.4) • I can include multimedia components and visual displays in a presentation to clarify information (SL.6.5) • I can adapt my speech for a variety of contexts and tasks, using formal English when indicated or appropriate. (SL.6.6)	• I can advocate persuasively my position on the use of DDT to an audience. • I can use my visual to clarify my presentation.	• Presentation Checklist for the Gallery Walk • End of Unit 2 Assessment: Presenting a Claim and Findings	

Optional: Experts, Fieldwork, and Service

Experts:

- Invite a research librarian in to teach students about best practices in the field of research, including evaluating sources for credibility, finding the most current information on a topic, and contacting experts in the field.

- Invite a guest speaker from a country affected by the ban on DDT.

- Invite a local environmentalist to talk about Rachel Carson or the use of pesticides in their local area.

Fieldwork:

- Arrange for a visit to a local research library for students to have hands on experience in an authentic research setting.

Service:

- Collaborate with local environmental agencies to educate the community about the risks of pesticides or the need to protect wildlife.

- Organize a service project to support countries where malaria continues to be a public health challenge.

Optional: Extensions

- Some students may benefit from a more independent research process in which they search for sources relevant to their own lingering questions about the use of DDT.

- A study of other pesticides and their advantages and disadvantages. .

- A study of a particular species of animal that has been affected by the use of DDT.

Preparation and Materials

This unit includes a number of routines, some of which involve stand-alone documents.

In this unit, students are engaged in research in which they dig deeper into the guiding question: "Do the benefits of DDT outweigh its harmful consequences?" In order guide students through the research process, while still instilling a degree of independence, this unit relies on multiple structures of organization and note-taking. In the first half of this unit, students continue to read the novel *Frightful's Mountain*, primarily as homework and then as a basis for discussion at the beginning of lessons.

1. Guided Research

This unit is designed as a guided research project for students. The inquiry question regarding the benefits and consequences of DDT springs from students' reading of Frightful's Mountain. Note that the novel was used as a high-interest entry point for students into this issue. By Unit 2, the novel moves into the "background" of students' reading, and their research (using short informational texts) becomes the foreground.

- Note that this research is intentionally guided, with quite a bit of scaffolding from the teacher. This meets the sixth-grade demands for W.7: students "conduct short research projects, drawing on several sources" (W.6.7). This guided research also serves as a scaffold to move students toward the more rigorous seventh-grade standard, which requires that students not only conduct short research projects drawing on several sources, but also generate additional related, focused questions for further research and investigation" (W.7.7). Seventh grade is when the CCLS explicitly expects students to conduct their own additional research.

- During their research, students use a "Credibility Checklist" as they learn to check the credibility of sources. For additional ideas about how to approach this important skill with students, see also the sample checklists for evaluating a website: http://kathyschrock.net/abceval/5ws.pdf or http://www.library.illinois.edu/ugl/howdoi/webeval.html.

- Because the texts used for students' guided research are authentic, not all of them have complete citations. Help students find all the information they can on the source information handouts, but know that for certain sources, the original document did not include all the categories on this handout.

2. Research Folder

The Research Folder is a tool used to help keep students organized. This research folder should be prepared prior to Lesson 1 with several research articles as well as the Researcher's Notebook. All the articles students are provided for this unit are found as supporting materials in Lesson 1.

Create the Research Folder prior to Lesson 1 so it is ready for students to use during this lesson. The Research Folder should contain:

- All the articles found as supporting materials in Lesson 1 of this unit as well as any articles students have from Unit 1

- The Researcher's Notebook (see Lesson 1 supporting materials)

- The Credibility Checklist (see Lesson 1 supporting materials)

- Assessing Sources (see Lesson 1 supporting materials)

3. Researcher's Notebook
The Researcher's Notebook (see Lesson 1 supporting materials) is a tool students use to collect bibliographical information and evidence from the several articles they read throughout this unit. Each day students add a new source to the Researcher's Notebook. The evidence they collect in this resource should be specific to the questions they refine throughout the course of their research.

4. Research Texts
• The texts for students' guided research were chosen based on the accuracy of the information, the reliability of the source, and the accessibility of the text for sixth-graders. Note that as with all science in society topics, research is ongoing, which often results in changes in viewpoints and then changes in policies. • Encourage your students to do additional independent research on this topic. • Collaborate with your school librarian or media specialist to reinforce proper research skills and support additional research on any late-breaking studies on this topic.

5. Reading Calendar
• Students read *Frightful's Mountain* daily during the first half of this unit. • Each night, they read a new chapter and complete the **Learning from Frightful's Perspective graphic organizer**. • Consider providing a reading calendar to help students, teachers, and families understand what is due and when. • See stand-alone document.

The calendar below shows what is due on each day.
Teachers can modify this document to include dates instead of lessons.

Due at Lesson	Read chapters **Complete Learning From Frightful's Perspective for these chapters**
2	Chapter 13, "Sam Takes Charge"
3	Chapter 14, "Sam Battles Bird Instincts"
4	Chapter 15, "A Pal Finds a Pal"
5	Chapter 16, "Frightful and Oksi Run the Show"
6	Chapter 17, "Frightful Feels the Call to the Sky"
7	Chapter 18, "The Earth Calls Frightful"
8	Chapter 19, "Destiny is on the Wing"