

Grade 6: Module 4: Overview





In this eight-week, research-based module, students explore the benefits and harmful consequences of the use of the controversial pesticide DDT. In Unit 1, students begin the novel Frightful's Mountain (640L) by Jean Craighead George. Students will read closely to practice citing evidence and drawing inferences from this compelling text as they begin to think about the interactions between people and the natural world. They also will read informational texts and watch videos to gather evidence and trace arguments about the uses, benefits, and harmful consequences of DDT, its affects on the environment, and its use in the battle against malaria. At the end of this unit, students will participate in a Fishbowl discussion to begin to articulate their evidence-based opinions about the central question: "Do the benefits of DDT outweigh its harmful consequences?" In Unit 2, students will read the remainder of the novel, focusing on the how the main character, Frightful, is affected by the actions of other people and her own interactions with the natural world. Students also will engage in a research project, continuing to explore the central question of the module. Students will read several complex texts, both print and digital, in order to collect relevant information in a

structured researcher's notebook. To help them grapple with this issue, students learn a decision-making process called "Stakeholder Consequences Decision-Making" (see the end of this document for details). This process will help students understand the implications of various choices, and will scaffold their ability to determine—based on evidence and their own values—what they believe can and should happen. Unit 2 culminates with students synthesizing all their reading thus far in order to make and present their own evidence-based claim about the use of DDT. In Unit 3, students choose the most compelling evidence and write a position paper in which they support the claim they made (at the end of Unit 2). As a midunit assessment, students will submit their best draft of this position paper. As an end of unit assessment, students will submit a published copy, as well as a reflection on the writing process. As the final performance task, students share their findings by creating a scientific poster and presenting that poster to peers during a hosted gallery. This task addresses NYSP12 ELA CCLS R.6.1, W.6.1, W.6.4, and L.6.6.



Reading for Research and Writing an Argument:

Insecticides: Costs vs. Benefits

Guiding Questions And Big Ideas

- Human actions have environmental consequences.
- Reading for research can lead to informed claims and powerful argument writing.
- Do the benefits of DDT outweigh its harmful consequences?
- How do human actions affect the natural world?
- How do different authors approach providing information and making an argument?
- · How does reading for research help me to form an opinion and make an argument?

Performance Task

This performance task gives students a chance to demonstrate the ideas and evidence from their position papers, in which they answered the question: "Do the benefits of DDT outweigh its harmful consequences?" Students will craft and share a scientific poster that serves as a visual representation of their position papers, including their claim, reasons, and evidence based on their research and the decision-making process in Unit 2. Students then participate in a hosted Gallery Walk in which they present the scientific poster they have created. (Speaking and listening standards are not formally assessed in the performance task, as they were taught and assessed in Unit 2 of this module.) This hosted Gallery Walk is written with students' peers as their intended audience; however, other interested members of the community could be invited as an extension. **This task addresses NYSP12 ELA Standards RI.6.1, W.6.1, W.6.4, W.6.5, and L.6.6.**

Reading for Research and Writing an Argument:

Insecticides: Costs vs. Benefits

Content Connections

This module is designed to address English Language Arts standards as students read literature and informational text about the Second Sudanese Civil War. 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:

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.



CCSS Standards: Reading—Literature	Long-Term Learning Targets
• RL.6.1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	I can cite text-based evidence to support an analysis of literary text.

Standards: Reading—Information	Long-Term Learning Targets
• RI.6.1. Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.	I can cite text-based evidence to support an analysis of informational text.
 RI.6.8. Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. 	 I can identify the argument and specific claims in a text. I can evaluate the argument and specific claims for sufficient evidence.
• RI.6.9. 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).	I can compare how different authors portray the same idea or event.
 RI.6.9a. Use experience and knowledge of language and logic, as well as culture, to think analytically, address problems creatively, and advocate persuasively. 	I can use my experience and knowledge of language and logic, as well as culture, to think analytically, address problems creatively, and advocate persuasively.



Standards: Writing	Long-Term Learning Targets
• W.6.1. Write arguments to support claims with clear reasons and relevant evidence.	I can write arguments to support claims with clear reasons and relevant evidence.
 a. Introduce claim(s) and organize the reasons and evidence clearly. b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text. c. Use words, phrases, and clauses to clarify the relationships among claim(s) and reasons. d. Establish and maintain a formal style. e. Provide a concluding statement or section that follows from the argument presented. 	 a. I can create an introduction that states my main argument and foreshadows the organization of my piece. b. I can support my claim(s) with clear reasons and relevant evidence. b. I can use credible sources to support my claim(s) c. I can identify the relationship between my claim(s) and reasons by using linking words, phrases, and clauses. d. I can maintain a formal style in my writing. e. I can construct a concluding statement or section that reinforces my main argument.
• W.6.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	I can produce clear and coherent writing that is appropriate to task, purpose, and audience.
 W.6.5. With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. 	With support from peers and adults, I can use a writing process to produce clear and coherent writing.
 W.6.6. Use technology, including the Internet, to produce and publish writing, as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of three pages in a single sitting. 	 I can use technology to publish a piece of writing. I can use technology to collaborate with others to produce a piece of writing.
W.6.7. Conduct short research projects to answer a question, drawing on several sources and refocusing the inquiry when appropriate.	 I can conduct short research projects to answer a question. I can use several sources in my research. I can refocus or refine my question when appropriate.





 W.6.8. Gather relevant information from multiple print and digital sources; assess the credibility of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and providing basic bibliographic information for sources. 	 I can gather relevant information from a variety of sources. I can assess the credibility of each source I use. I can quote or paraphrase what others say about my topic while avoiding plagiarism. I can provide a list of sources I used to gather information in a bibliography.
 W.6.9. Draw evidence from literary or informational texts to support analysis, reflection, and research. Apply grade 6 Reading standards to literary nonfiction (e.g., "Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not"). 	I can use evidence from a variety of grade-appropriate texts to support analysis, reflection, and research.
• W.6.10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	I can adjust my writing practices for different time frames, tasks, purposes, and audiences.



Standards: Speaking and Listening	Long-Term Learning Targets
 SL.6.2. Interpret information presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how it contributes to a topic, text, or issue under study. SL.6.2a. Use experience and knowledge of language and logic to address problems and advocate persuasively. 	 I can interpret information presented in different media and formats. I can explain how new information connects to a topic, text, or issue I am studying.
SL.6.3. Delineate a speaker's argument and specific claims, distinguishing claims that are supported by reasons and evidence from claims that are not.	 I can outline a speaker's argument and specific claims. I can determine whether a speaker's argument is supported by reasons and evidence or not.
SL.6.4. Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation.	 I can present claims and findings in a logical order. I can support my main points with descriptions, facts, and details. I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation).
SL.6.5. Include multimedia components (e.g., graphics, images, music, sound) and visual displays in presentations to clarify information.	• I can include multimedia components and visual displays in a presentation to clarify information.
SL.6.6. Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate.	I can adapt my speech for a variety of contexts and tasks, using formal English when indicated or appropriate.



Standards: Language	Long-Term Learning Targets
• L.6.1e. Recognize variations from standard English in their own and others' writing and speaking, and identify and use strategies to improve expression in conventional language.	 I can identify when standard English is and isn't being used. I can convert language into standard English.
 L.6.4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 6 reading and content, choosing flexibly from a range of strategies. a. Use context (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) as a clue to the meaning of a word or phrase. b. Use common, grade-appropriate Greek or Latin affixes (prefixes and suffixes) and roots as clues to the meaning of a word (e.g., audience, auditory, audible). c. Consult reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning or its part of speech. d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). 	 I can use a variety of strategies to determine the meaning of unknown words and phrases. a. 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 the meaning of a word or phrase. b. 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). c. I can use resource materials (glossaries, dictionaries, thesauruses) to help me determine or clarify the pronunciation, meaning, and part of speech of key words and phrases. d. I can check the accuracy of my guess about the meaning of a word or phrase by using resource materials.
L.6.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases; gather vocabulary knowledge when considering a word or phrase important to comprehension or expression.	 I can accurately use sixth-grade academic vocabulary to express my ideas. I can use resources to build my vocabulary.



Central Texts

- 1. Jean Craighead George, Frightful's Mountain (New York: Dutton Children's, 1999), ISBN: 978-0-141-31235-4.
- 2. "Welcome Back," in Skipping Stones, March-April 2010, 26.
- 3. "John Stossel—DDT" video, as found at http://www.youtube.com/watch?v=kHwqandRTSQ.
- 4. Kirsten Weir, "The Exterminator," in *Current Science*, Nov. 5, 2004, 4–7.
- 5. "DDT—Dichloro-diphenyl-trichloroethane" video, as found at http://www.science.gc.ca/default.asp?lang=en&n=730d78b4-1. (for assessment)
- 6. Robert W. Peterson, "Rachel Carson: Sounding the Alarm on Pollution," in Boy's Life (Vol. 84, Issue 8), Aug. 1994, 38.
- 7. Kathy Wilmore, "Rachel Carson: Environmentalist and Writer," in *Scholastic Junior Magazine*, 2013, as found at http://www.scholastic.com/browse/article.jsp?id=4964.
- 8. 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.
- 9. 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.
- 10. Utah Education Network, "Biological Energy—Here, Let Me Fix It!" as found at http://www.uen.org/core/science/sciber/s
- 11. 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.



Calendared Curriculum Map: Week at a Glance

Week	Instructional Focus	Long-Term Targets	Assessments		
Unit 1: Learnin	Unit 1: Learning From Frightful's Perspective				
Weeks 1-3	Launch the novel <i>Frightful's Mountain</i> and routines for reading the novel	I can cite text-based evidence to support an analysis of literary text. (RL.6.1)			
	Build background knowledge about falcons.Build background knowledge about DDT.	• I can identify the argument and specific claims in a text. (RI.6.8)			
	Begin to trace an argument in text and video.	• I can evaluate the argument and specific claims for sufficient evidence. (RI.6.8)			
		• I can outline a speaker's argument and specific claims. (SL.6.3)			
		• I can determine whether a speaker's argument is supported by reasons and evidence or not. (SL.6.3)			
		• I can use resources to build my vocabulary. (L.6.6)			
	Continue to trace an argument in text and video.	I can cite text-based evidence to support an analysis of literary text. (RL.6.1)	Mid-Unit 1 Assessment: Tracing and Evaluating an Argument: "Rachel Carson: Sounding the		
	Look closely at how text features support an argument.	I can identify the argument and specific claims in a text. (RI.6.8)	Alarm on Pollution" and the Video about DDT (NYSP12 ELA CCLS RI.6.8 and SL.6.3)		
	• Begin Cascading Consequences anchor chart using <i>Frightful's Mountain</i> .	• I can evaluate the argument and specific claims for sufficient evidence. (RI.6.8)			
	• Build Cascading Consequences anchor chart using informational texts.	• I can write arguments to support claims with clear reasons and relevant evidence. (W.6.1)			

• I can use evidence from a variety of gradeappropriate texts to support analysis, reflection, and research. (W.6.9)

• I can interpret information presented in

• Begin to practice Fishbowl protocol.



Calendared Curriculum Map: Week at a Glance

	 different media and formats. (SL.6.2) I can explain how new information connects to a topic, text, or issue I am studying. (SL.6.2) 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 outline a speaker's argument and specific claims. (SL.6.3) I can determine whether a speaker's argument is supported by reasons and evidence or not. (SL.6.3) I can use resources to build my vocabulary. (L.6.6) 	
 Interpret information from charts and graphs. Incorporate information from charts and graphs into understanding of DDT, human needs, and the natural world. Share information, understanding, and evidence-based opinions in a Fishbowl discussion. 	 I can interpret information presented in different media and formats. (SL.6.2) I can explain how new information connects to a topic, text, or issue I am studying. (SL.6.2) 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) 	End of Unit 1 Assessment: Fishbowl Discussion: DDT: Do the Benefits Outweigh the Harmful Consequences? (NYSP12 ELA CCLS SL.6.2 and SL.6.2a)



Calendared Curriculum Map: Week at a Glance

Week	Instructional Focus	Long-Term Targets	Assessments		
Unit 2: Researc	Unit 2: Research: Do the benefits of DDT outweigh its harmful consequences?				
Weeks 4–6	 Analyze an author's presentation of ideas and events. Compare and contrast two authors' presentation of information, ideas, and events. Begin to collect relevant information to answer the research question, as well as bibliographic information about sources in a researcher's notebook. Assess the credibility of sources used for research. Learn and practice multiple strategies for determining word meaning. 	 I can compare how different authors portray 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 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 use resource material (glossaries, dictionaries, thesauruses) to help me determine or clarify the pronunciation, meaning, and part of speech of key words and phrases. (L.6.4c) 			



Calendared Curriculum Map:

Week at a Glance

- Continue comparing and contrasting two authors' presentation of information, ideas, and events.
- Begin to research texts digitally in a guided Webquest.
- Continue to collect and practice strategies for determining the meaning of unknown words.
- 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 (e.g., the overall meaning of a sentence or paragraph; a word's position or function in a sentence) to determine the meaning of a word or phrase. (L.6.4a)
- 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.6.5b)
- I can use resource materials (glossaries, dictionaries, thesauruses) to help me

 Mid-Unit 2 Assessment: Comparing and Contrasting Two Texts: Simulated Research (NYSP12 ELA CCLS RI.6.9, W.6.7, W.6.8, L.6.4b, L.6.4c, and L.6.4d)



Calendared Curriculum Map:

Week at a Glance

	 determine or clarify the pronunciation, meaning, and part of speech of key words and phrases. (L.6.4c) I can check the accuracy of my guess about the meaning of a word or phrase by using resource materials. (L.6.4d) 	
 Create a Stakeholders anchor chart about the use of DDT. Complete the Cascading Consequences anchor chart about the use of DDT. Make a research-based claim about the use of DDT. Learn effective presentation techniques in preparation for sharing the research-based claim. Create a visual that helps an audience understand the claim and evidence. 	 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 gradeappropriate 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 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) 	End of Unit 2 Assessment: Making a Claim: Where Do You Stand on the Use of DDT? (NYSP12 ELA CCLA RI.6.9a, W.1, W.9, SL.6.4, SL.6.5, and SL.6.6) SL.6.4, SL.6.5, and SL.6.6)



Calendared Curriculum Map: Week at a Glance

Week	Instructional Focus	Long-Term Targets	Assessments		
Unit 3: Writing	Unit 3: Writing: Position Paper about the Use of DDT				
Weeks 7–8	 Analyze a model position paper that makes a claim and uses evidence to support that claim. Analyze the rubric that will be used to assess the position paper. Review the steps for writing a position paper. Plan the claim and evidence that will be used in the position paper. Plan the body paragraphs of the position paper. Peer critique the reasons and evidence being used in the position paper. Draft the complete position paper. 	 I can write arguments to support claims with clear reasons and relevant evidence. (W.6.1) I can create an introduction that states my main argument and foreshadows the organization of my piece. (W.6.1a) I can identify the relationship between my claim(s) and reasons by using linking words, phrases, and clauses. (W.6.1c) I can construct a concluding statement or section that reinforces my main argument. (W.6.1e) With support from peers and adults, I can use a writing process to produce clear and coherent writing. (W.6.5) 	Mid Unit 3 Assessment: Draft of Position Paper: Do the Benefits of DDT Outweigh Its Harmful Consequences? (NYSP12 ELA CCLS RI.6.1, W.6.1, and W.6.9)		
	 Peer critique of drafts of position paper. Incorporate teacher's feedback in revision of position paper. Learn the distinction between informal and formal English in writing, and incorporate this into the revision of the position paper. Revise for appropriate sixth-grade, domain-specific, and academic vocabulary. Prepare a scientific poster showing the claim, evidence, and research that went into the position paper. 	 I can write arguments to support claims with clear reasons and relevant evidence. (W.6.1) I can maintain a formal style in my writing. (W.6.1d) I can produce clear and coherent writing that is appropriate to task, purpose, and audience. (W.6.4) With support from peers and adults, I can use a writing process to produce clear and coherent writing. (W.6.5) I can identify when standard English is and 	 End of Unit 3 Assessment: Reflection on the Writing Process: Moving from Draft to Published Position Paper (NYSP12 ELA CCLS W.6.5, W.6.6, L.6.1e, and L.6.6) Performance Task: Scientific Poster and Hosted Gallery Walk (NYSP12 ELA Standards RI.6.1, W.6.1, W.6.4, W.6.5, and L.6.6) 		



Calendared Curriculum Map:

Week at a Glance

Host a Gallery Walk of scientific posters.	isn't being used. (L.6.1e)	
	• I can convert language into standard English. (L.6.1e)	
	• I can accurately use sixth-grade academic vocabulary to express my ideas. (L.6.6)	

Preparation and Materials

In advance: Read the article about the Stakeholder Consequences Decision-Making (SCDM) process to build your own background knowledge about it. You can download the article "Learning to Make Systematic Decisions" at:

 $http://education.nationalgeographic.com/education/media/learning-make-systematic decisions/?ar_a=1.$

This article is not used with students during the module, but it provides some examples of how students have used this process in a science curriculum. Also note that in this module, students are not using the entire SCDM process; they will be learning only the Cascading Consequences and Stakeholders charts.