



EXPEDITIONARY
LEARNING

Grade 7: Module 4B: Unit 2: Overview



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Unit 2: Research Study: Industrial and Agricultural Water Management

In this unit, students continue to conduct close readings and engage in independent research into the ways that both industry and agriculture currently use fresh water resources and how sustainable water management could be improved. Students keep a researcher's notebook in which they document their research findings, generate supporting research questions, and analyze the credibility of their sources as they determine how different authors use evidence to prove their points. In the mid-unit assessment, students engage in a simulated research task focused on water management strategies (RI.7.9, W.7.7, W.7.8, L.7.4c, L.7.4d). The assessment will incorporate selected response and short constructed response questions in order to assess students' ability to research.

After the mid-unit assessment, students engage in a structured decision-making process to address the question: Which category of water management would be a good place to begin to make the way we manage water more sustainable? The process guides students to consider the information they gathered while researching, as well as the consequences and impact on stakeholders of each possible position. This leads students to the two-part end of unit assessment. In Part 1, students engage in a Fishbowl discussion about the possible positions they can take (SL.7.1). In Part 2, students will formally present their position (SL.7.4, SL.7.5, SL.7.6).

Guiding Questions and Big Ideas

- **How can I use the research process to answer questions and generate more?**
- **How do I best determine what sources to use while researching?**
- **How do I make an informed decision?**
- **What are the consequences of how industry and agriculture use water?**
- **What are the first steps of managing water more sustainably?**
- *More sustainable agricultural and industrial water management can have a big impact on the planet's fresh water.*
- *Research requires finding high-quality sources and relevant information.*
- *Making informed decisions includes weighing evidence and considering personal values.*



Mid-Unit 2 Assessment	<p>Simulated Research Task: Water Management Strategies</p> <p>This assessment centers on NYSP12 ELA CCLS RI.7.9, W.7.7, W.7.8, L.7.4c, and L.7.4d. For this assessment, students will read an excerpt of <i>The Big Thirst</i> before the assessment and the article “Get the Salt Out” during the assessment itself as part of a simulated research task. Then students will answer selected response and short constructed response questions about the two texts and the research process.</p>
End of Unit 2 Assessment	<p>Making a Claim about Water Management</p> <p>This assessment has two parts. In the first part, students engage in a Fishbowl discussion of the two possible answers to the question: Which category of water management would be a good place to begin to make the way we manage water more sustainable? Part 1 of the assessment centers on NYSP12 ELA CCLS SL.7.1, SL.7.1a, and SL.7.1e. In Part 2, students orally present their position in answer to the same question. The second part of the assessment centers on NYSP12 ELA CCLS SL.7.3a, SL.7.4, SL.7.5, SL.7.6, and RI.7.9.</p>



Content Connections

This module is designed to address English Language Arts standards as students read informational texts about water management and sustainability. However, the module intentionally incorporates Science concepts 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 Next Generation Science Standards:

Influence of Engineering, Technology, and Science on Society and the Natural World

All human activity draws on natural resources and has both short- and long-term consequences, positive as well as negative, for the health of people and the natural environment.

The Roles of Water in Earth's Surface Processes

- Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land (MS-ESS2-4).

Earth and Human Activity

- Construct an argument supported by evidence for how increases in human population and per-capital consumption of natural resources impact earth's systems.

Central Texts

1. Barbara Kingsolver, "Water Is Life," in *National Geographic* (April 2010), <http://ngm.nationalgeographic.com/2010/04/water-is-life/kingsolver-text>.
2. Charles Fishman, *The Big Thirst: The Secret Life and Turbulent Future of Water* (New York: Free Press, 2012), ISBN: 978-1-4391-0208-4.
3. Daniel C. Edelson, Adam Tarnoff, Kathleen Schwille, Meridith Bruozas, and Anna Switzer, "Learning to Make Systematic Decisions," in *The Science Teacher* (Vol. 73, Issue 4), 2006.
4. Various research sources (beginning in Lesson 7).



This unit is approximately 3.5 weeks or 17 sessions of instruction.

Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 1	Contrasting Evidence: “Water Is Life” and <i>The Big Thirst</i>	<ul style="list-style-type: none"> I can contrast how multiple authors emphasize evidence or interpret facts differently when presenting information on the same topic. (RI.7.9) 	<ul style="list-style-type: none"> I can contrast how Barbara Kingsolver and Charles Fishman use different evidence to prove similar claims. 	<ul style="list-style-type: none"> Tracing the Argument note-catcher (Kingsolver) (from Unit 1, Lesson 10) Tracing the Argument note-catcher (Fishman) (from Unit 1, Lesson 8) Venn diagram and Venn diagram reflection questions 	<ul style="list-style-type: none"> Domain-Specific Vocabulary
Lesson 2	Analyzing Interaction: Categories of Water Management in <i>The Big Thirst</i>	<ul style="list-style-type: none"> I can analyze the interactions between individuals, events, and ideas in a text. (RI.7.3) I can evaluate the credibility and accuracy of each source. (W.7.8) 	<ul style="list-style-type: none"> I can use close reading strategies to determine the multiple uses of water in society. I can apply the meanings of “personal,” “agricultural,” and “industrial” to examples of water use in my text. I can evaluate the credibility and accuracy of <i>The Big Thirst</i>. 	<ul style="list-style-type: none"> Reader’s Notes for pages 20, 21, and 24 of <i>The Big Thirst</i> (from homework) Excerpts from <i>The Big Thirst</i> Pages 20, 21, and 24 Text-Dependent Questions Thinking Log 	<ul style="list-style-type: none"> Parking Lot-type (optional) Domain-Specific Vocabulary
Lesson 3	Finding Relevant Information and Asking Research Questions: <i>The Big Thirst</i>	<ul style="list-style-type: none"> I can conduct short research projects to answer a question. (W.7.7) I can generate additional questions for further research. (W.7.7) 	<ul style="list-style-type: none"> I can generate strong supporting research questions. I can gather relevant evidence from <i>The Big Thirst</i>. 	<ul style="list-style-type: none"> Reader’s Notes for pages 123–125 of <i>The Big Thirst</i> (from homework) Researcher’s notebook 	<ul style="list-style-type: none"> Domain-Specific Vocabulary



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 4	Paraphrasing and Evaluating Sources: Pages 112–116 of <i>The Big Thirst</i>	<ul style="list-style-type: none"> I can use a variety of strategies to determine the meaning of unknown words or phrases. (L.7.4) I can gather relevant information from a variety of sources. (W.7.8) I can evaluate the credibility and accuracy of each source. (W.7.8) I can quote or paraphrase others' work while avoiding plagiarism. (W.7.8) 	<ul style="list-style-type: none"> I can consult a dictionary to determine or clarify the meaning of a word. I can correctly paraphrase information I gather from <i>The Big Thirst</i>. I can evaluate the credibility and accuracy of a source. 	<ul style="list-style-type: none"> Pages 112–116 of The Big Thirst Text-Dependent Questions Exit Ticket: Practicing Paraphrasing 	<ul style="list-style-type: none"> Domain-Specific Vocabulary
Lesson 5	Contrasting Authors' Use of Evidence: Bottled Water	<ul style="list-style-type: none"> I can contrast how multiple authors emphasize evidence or interpret facts differently when presenting information on the same topic. (RI.7.9) I can gather relevant information from a variety of sources. (W.7.8) I can quote or paraphrase others' work while avoiding plagiarism. (W.7.8) 	<ul style="list-style-type: none"> I can contrast how two authors interpret facts about bottled water differently. I can gather relevant information from <i>The Big Thirst</i>. 	<ul style="list-style-type: none"> Thinking Log Pages 183–186 of The Big Thirst Text-Dependent Questions Researcher's notebook 	<ul style="list-style-type: none"> Evaluating an Argument Domain-Specific Vocabulary
Lesson 6	Using Effective Search Terms: Researching Water Management	<ul style="list-style-type: none"> I can gather relevant information from a variety of sources. (W.7.8) I can quote or paraphrase others' work while avoiding plagiarism. (W.7.8) I can use search terms effectively. (W.7.8) 	<ul style="list-style-type: none"> I can use search terms effectively to gather relevant information about water management. I can gather relevant information from <i>The Big Thirst</i>. 	<ul style="list-style-type: none"> Thinking Log Pages 186–187 of The Big Thirst Text-Dependent Questions Researcher's Notebook Exit ticket: Search Terms 	
Lesson 7	Gathering Information about Water Management: Assessing and Reading Internet Sources, Day 1	<ul style="list-style-type: none"> I can gather relevant information from a variety of sources. (W.7.8) I can use search terms effectively. (W.7.8) 	<ul style="list-style-type: none"> I can use search terms effectively to gather relevant information about water management. I can evaluate a source's accuracy and credibility. 	<ul style="list-style-type: none"> Researcher's notebook 	



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 8	Gathering Information about Water Management: Assessing and Reading Internet Sources, Day 2	<ul style="list-style-type: none"> I can gather relevant information from a variety of sources. (W.7.8) I can use search terms effectively. (W.7.8) I can evaluate the credibility and accuracy of each source. (W.7.8) 	<ul style="list-style-type: none"> I can use search terms effectively to gather information about water management. I can evaluate a source's accuracy and credibility. 	<ul style="list-style-type: none"> Researcher's notebook Assessing Sources document Exit Ticket: Next Steps 	<ul style="list-style-type: none"> Domain-Specific Vocabulary
Lesson 9	Gathering Information about Water Management: Assessing and Reading Internet Sources, Day 3	<ul style="list-style-type: none"> I can contrast how multiple authors emphasize evidence or interpret facts differently when presenting information on the same topic. (RI.7.9) I can gather relevant information from a variety of sources. (W.7.8) I can use search terms effectively. (W.7.8) 	<ul style="list-style-type: none"> I can contrast how two authors emphasize different evidence on the topic of water management in agriculture. I can use search terms effectively to gather relevant information about water management. I can evaluate a source's accuracy and credibility. 	<ul style="list-style-type: none"> Researcher's notebook 	<ul style="list-style-type: none"> Domain-Specific Vocabulary Evaluating an Argument



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 10	Mid-Unit 2 Assessment: Research Task: Comparing and Contrasting Texts	<ul style="list-style-type: none"> I can contrast how multiple authors emphasize evidence or interpret facts differently when presenting information on the same topic. (RI.7.9) I can conduct short research projects to answer a question. (W.7.7) I can generate additional questions for further research. (W.7.7) I can gather relevant information from a variety of sources. (W.7.8) I can use search terms effectively. (W.7.8) I can evaluate the credibility and accuracy of each source. (W.7.8) I can quote or paraphrase others' work while avoiding plagiarism. (W.7.8) I can use a variety of strategies to determine the meaning of unknown words or phrases. (L.7.4) 	<ul style="list-style-type: none"> I can contrast how two authors emphasize different evidence on the topic of desalination. I can gather relevant information from sources. I can correctly paraphrase information I gather from "Get the Salt Out." I can generate strong supporting research questions. I can use search terms effectively to gather relevant information about water management. I can evaluate a source's accuracy and credibility. I can consult a dictionary to determine or clarify the meaning of a word. I can use a dictionary to verify the preliminary determination of the meaning of a word or phrase. 	<ul style="list-style-type: none"> Mid-Unit 2 Assessment 	
Lesson 11	Forming a Research-Based Claim: Cascading Consequences Charts	<ul style="list-style-type: none"> I can write arguments to support claims with clear reasons and relevant evidence. (W.7.1) I can select evidence from literary or informational texts to support analysis, reflection, and research. (W.7.9) 	<ul style="list-style-type: none"> I can create a Cascading Consequences chart based on industrial management of water, using my researcher's notebook. 	<ul style="list-style-type: none"> Researcher's notebook Cascading Consequences chart for industrial management of water 	<ul style="list-style-type: none"> Academic Vocabulary



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 12	Forming a Research-Based Claim: Stakeholder Chart on Better Industrial Water Management	<ul style="list-style-type: none"> I can write arguments to support claims with clear reasons and relevant evidence. (W.7.1) I can select evidence from literary or informational texts to support analysis, reflection, and research. (W.7.9) 	<ul style="list-style-type: none"> I can create a Stakeholder chart based on industrial management of water, using my industrial management of water Cascading Consequences chart and researcher's notebook. 	<ul style="list-style-type: none"> Cascading Consequences chart: agricultural management of water (from homework) Cascading Consequences chart: industrial management of water Stakeholder chart: industrial management of water Researcher's notebooks 	
Lesson 13	Forming a Research-Based Claim: Stakeholder Chart on Better Agricultural Water Management	<ul style="list-style-type: none"> I can write arguments to support claims with clear reasons and relevant evidence. (W.7.1) I can select evidence from literary or informational texts to support analysis, reflection, and research. (W.7.9) I can use my experience and knowledge of language and logic to address problems and advocate persuasively. (RI.7.9a, SL.7.2a) 	<ul style="list-style-type: none"> I can create a Stakeholder chart based on agricultural management of water, using my Cascading Consequences chart for agricultural management of water and researcher's notebook. I can use my knowledge of industrial and agricultural management of water to advocate persuasively for one side or another. I can practice the skills and expectations of a Fishbowl discussion. 	<ul style="list-style-type: none"> Stakeholder chart for industrial management of water (from homework) Stakeholder chart for agricultural management of water Industrial/Agricultural Fishbowl graphic organizer 	<ul style="list-style-type: none"> World Café protocol



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 14	End of Unit 2 Assessment, Part 1A: Fishbowl on Better Use of Water in Agriculture	<ul style="list-style-type: none"> I can present claims and findings with descriptions, facts, details, and examples, using effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.7.4) I can come to discussions prepared to refer to evidence on the topic, text, or issue that probes and reflects on ideas under discussion. (SL.7.1 and SL.7.1a) 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.7.9a and SL.7.9a) I can self-select a text based on personal preferences and read it independently. (RI.7.11a) 	<ul style="list-style-type: none"> I can prepare for a class discussion and participate in it effectively by collecting and explaining appropriate evidence to support my claims. I can engage with my peers to discuss the controversy over water management and persuade them to agree with my point of view using logic, evidence, and appropriate speaking techniques to advocate for my position. I can self-select a text based on personal preferences and read it independently. 	<ul style="list-style-type: none"> Ticket to Enter End of Unit 2 Assessment; Part 1A: Fishbowl 	<ul style="list-style-type: none"> Fishbowl protocol



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 15	End of Unit 2 Assessment, Part 1B: Fishbowl on Better Use of Water in Industry	<ul style="list-style-type: none"> I can present claims and findings with descriptions, facts, details, and examples. (SL.7.4) I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.7.4) I can come to discussions prepared to refer to evidence on the topic, text, or issue that probes and reflects on ideas under discussion. (SL.7.1 and SL.7.1a) 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.7.9a and SL.7.9a) 	<ul style="list-style-type: none"> I can prepare for a class discussion and participate in it effectively by collecting and explaining appropriate evidence to support my claims. I can engage with my peers to discuss the controversy over water management and persuade them to agree with my point of view using logic, evidence, and appropriate speaking techniques to advocate for my position. 	<ul style="list-style-type: none"> End of Unit 2 Assessment, Part 1B: Fishbowl Thinking Log 	<ul style="list-style-type: none"> Fishbowl protocol
Lesson 16	Using Multimedia in Presentations: Presenting Claims	<ul style="list-style-type: none"> I can include multimedia components and visual displays in a presentation to clarify claims and to add emphasis. (SL.7.5) I can present claims and findings with descriptions, facts, details, and examples. (SL.7.4) I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.7.4) 	<ul style="list-style-type: none"> I can create a visual display to clarify the claim in my presentation. I can speak clearly, with appropriate eye contact and adequate volume. 	<ul style="list-style-type: none"> Visual display 	



Lesson	Lesson Title	Long-Term Targets	Supporting Targets	Ongoing Assessment	Anchor Charts & Protocols
Lesson 17	End of Unit 2 Assessment, Part 2: Presenting a Claim	<ul style="list-style-type: none"> I can present claims and findings with descriptions, facts, details, and examples. (SL.7.4) I can use effective speaking techniques (appropriate eye contact, adequate volume, and clear pronunciation). (SL.7.4) I can include multimedia components and visual displays in a presentation to clarify claims and to add emphasis. (SL.7.5) I can adapt my speech for a variety of contexts and tasks, using formal English when indicated or appropriate. (SL.7.6) 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.7.9a and SL.7.9a) 	<ul style="list-style-type: none"> I can present my claim about water management using facts, reasons, details, and examples. I can use effective speaking techniques in my presentation. I can include a multimedia visual display in my presentation to clarify my claim and add emphasis. I can use formal English in my presentation. I can use my experience and knowledge of language and logic to advocate persuasively. 	<ul style="list-style-type: none"> Visual display End of Unit 2 Assessment, Part 2 Exit ticket 	



Optional: Experts, Fieldwork, And Service

Experts:

- Invite someone with water management expertise from a local business, farm, or government office to contribute to the students' understanding of agricultural and industrial water management.

Fieldwork:

- Visit a farm or business that has implemented sustainable water management.

Service:

- Prepare students to share their findings with community stakeholders such as local farmers, business people, or government officials with a goal of educating their community about more sustainable water management.

Optional: Extensions

- Students can make formal speeches based on their position. Consider providing an outside audience as well: parents, community members, or students from other schools.



Preparation and Materials

This unit includes a couple of routines that involve stand-alone documents.

1. Reader's Notes

Students will occasionally continue to read or reread a section of *The Big Thirst* for homework. Along with the reading, students will complete the Reader's Notes for that section.

The Reader's Notes are formatted differently depending on the section of text and the purpose for reading. Often, they will use the Main Ideas and Details note-catcher to support students as they read for the gist. Then there will often be room for vocabulary work and/or text-dependent questions to support students' understanding of these complex texts.

Set up a place for students to keep their completed Reader's Notes (such as a folder) so that they can return to them as needed for comprehension purposes.

2. Research

This unit serves as students' opportunity to engage in an extended research process. The skills that students will practice in this unit include generating supporting research questions, gathering information from multiple credible sources, and paraphrasing to avoid plagiarism (W.7.7 and W.7.8).

Notice that students begin their research by gathering information from *The Big Thirst*. The purpose of this is to scaffold the research skills for students using a common text. After that, students use their skills to locate sources independently to gather more information.



3. Researcher's Notebook

The researcher's notebook will be used consistently throughout this unit. It is designed with two purposes in mind: 1) to scaffold research skills for students; and 2) to provide students an organized system to record their research notes, questions, and vocabulary. In many instances, students will add to their researcher's notebooks for homework. Consider how to support students in terms of organization, so that they will have access to their researcher's notebook throughout Units 2 and 3. The entire notebook is included in the supporting materials of Lesson 3 and is intended to be a packet that students use for the rest of the module. In the same lesson, a teacher's guide of the researcher's notebook is included. It is meant to provide a model of the information, questions, and vocabulary students might incorporate based on *The Big Thirst*, although students' research will vary. The teacher's guide does not provide modeling for the research that students do independently; therefore, be prepared to informally assess students' researcher's notebooks as they collect information to be sure they are taking accurate notes.

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4. Stakeholders Consequences Decision-Making Process

This module focuses on a "science and society" topic, engaging students in reading compelling informational text about a current issue. To help students grapple with this issue, the module introduces students to a decision-making process that will help them understand the implications of various choices. It will scaffold their ability to discern what they themselves believe can and should happen. In advance, read the article about the SCDM (Stakeholder Consequences Decision-Making) process to build your own background knowledge about it. You can download the article, "Learning to Make Systematic Decisions," at the following URL:
http://education.nationalgeographic.com/education/media/learning-make-systematicdecisions/?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.



5. Independent Reading

This unit assumes that you have launched an independent reading program with your students. Often the homework assignment in this unit is reading independent reading books, and the plans include time in class to check in on independent reading. See two separate stand-alone documents on EngageNY.org: **The Importance of Increasing the Volume of Reading** and **Launching Independent Reading in Grades 6–8: Sample Plan**, which together provide the rationale and practical guidance for a robust independent reading program. Once students have all learned how to select books and complete the reading log, it takes less class time. After the launch period, the independent reading routine takes about $\frac{1}{2}$ class period per week, with an additional day near the end of a unit or module for students to review and share their books. Unit 2 includes time to maintain the independent reading routine (calendared into the lessons) but does not set a particular routine. As you support students in setting and meeting independent reading goals, encourage them to be done with their books by Unit 3, Lesson 5. Students who have chosen longer books should set a goal part-way through their books, and do the culminating project (in Unit 3) based on part of the book.