Grade 7: Module 4B: Unit 2: Lesson 11

Forming a Research-Based Claim: Cascading Consequences Charts

Long-Term Targets Addressed (Based on NYSP12 ELA CCLS)
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)

Supporting Learning Target	Ongoing Assessment
• I can create a Cascading Consequences chart based on industrial management of water, using my researcher's notebook.	• Researcher's notebook • Cascading Consequences chart for industrial management of water

Agenda	Teaching Notes

1. Opening
 	
   A. Introducing Essay Prompt; Reviewing Learning Target (10 minutes)
 	
2. Work Time
 	
   A. Modeling Creating a Cascading Consequences Chart for Industrial Management of Water (10 minutes)
 	
   B. Cascading Consequences Chart for Industrial Management of Water (10 minutes)
 	
   C. Partner Work to Add to the Cascading Consequences Chart (10 minutes)
 	
3. Closing and Assessment
 	
   A. Debrief (5 minutes)
 	
4. Homework
 	
   A. Complete a Cascading Consequences chart for the agricultural management of water. Continue reading your independent reading book for this module.
	• As noted in the module overview, this module focuses on just two of the steps in the SCDM process. In this lesson, students are introduced to the Cascading Consequences chart, which provides a way for them to create a visual "map" of the consequences of a particular choice or course of action. Students will add consequences to the chart as they continue reading *The Big Thirst*, as well as those they learn about through their independent research. They will refer to this chart throughout the rest of the unit for several important reasons, including to determine who the stakeholders are for the issue they are learning about and to use as a reference for writing about their position on the issue.
	
	• Students will create two Cascading Consequences charts to organize the information they gathered in their research. Once the charts are completed, they will be able to clearly see all the consequences (positive, negative, and neutral) of choosing to begin with reforms to either industrial or agricultural management of water. This will help them to answer the overarching research question: "How do industry and agriculture currently manage water? What strategies exist for industry and agriculture to manage water better?"
	
	• In this lesson, the class begins a Cascading Consequences chart specifically for the notes they have taken in their researcher's notebook. Since this is the first time students work with this type of chart, their work is highly scaffolded, with you modeling using notes from the researcher's notebook. After the modeling, students have a chance to practice with the same notes and get immediate feedback. Then, they have time to work with a partner to add to the chart, using another section of the researcher's notebook. For homework, they will finish a second Cascading Consequence chart on the agricultural management of water.
	
	• The lessons on "cascading consequences" are among the most challenging of this unit. Feel free to modify and differentiate the lessons according to your professional judgment so that all students may reach the learning targets.
	
	• Encourage students to return to their original texts at any point for any clarification they require. Returning to the text consistently is a "habit of mind" that should be emphasized.

Agenda	Teaching Notes (continued)
	• The next lesson will extend the scaffolded learning process, asking students to once again work with partners, and then individually, on a Stakeholder chart for the industrial management of water. These two charts (Cascading Consequences and Stakeholder) will form the basis for organizing the students' thoughts on the upcoming essay prompt, which they will develop and present in Unit 3: "Which category of water management would be a good place to begin to make the way we manage water more sustainable?"
	• The homework for this lesson is detailed and challenging. Consider making advanced preparations within the next lesson in case students need extra assistance with the homework upon coming to class, and/or using the "Meeting Students' Needs" column to differentiate the homework ahead of time.
	• In advance: Review the "Learning to Make Decisions Systematically" article (see Module Overview), which provides a concise explanation and useful student work examples of the research process the unit employs; review the sample Cascading Consequences charts in the supporting materials and the think-aloud portion of the lesson. Note especially that the think-aloud example provided here is one of specific consequences cascading from a specific situation; students may volunteer more wide-ranging examples from industrial water use and may work with wide-ranging examples in their own Cascading Consequences charts; find an image of a waterfall to display to illustrate the meaning of "cascading" when unpacking the learning targets; review the Fist to Five protocol (see Appendix).
	• Post: Learning target, Unit 3 essay prompt.

Lesson Vocabulary	Materials
consequence; effect, result, or outcome; cascading	• Entry Task: Getting an iPad (one per student) • Sample Cascading Consequences chart: Getting an iPad (one per student) • Unit 3 essay prompt (one to display) • Researcher's notebooks (begun in Lesson 3; one per student) • Cascading Consequences chart for Industrial Management of Water (blank; one to display) • Document camera • Cascading Consequences chart for Industrial Management of Water (sample, for teacher reference) • *The Big Thirst: The Secret Life and Turbulent Future of Water (*book; one per student) • 8.5" by 14" (legal size) paper (two per student) • Homework directions (one per student) • Cascading Consequences chart for the Agricultural Management of Water (blank, for teacher reference; students create a similar chart using their Researcher's notebook; see Homework directions) *Note: Supporting materials are not in the order listed above, but they are all there.*

Opening	Meeting Students' Needs
A. Introducing Essay Prompt; Reviewing Learning Target (10 minutes)	• When possible, have students who need physical activity take on the active roles of managing and writing on charts or handing out materials.
• Distribute the **Entry Task: Getting an iPad** and give students 2 minutes to complete it.	
• After two minutes of thinking and writing, invite students to explain to a partner:	
* "What did you decide, and why?"	
• Read the learning target:	• For all vocabulary, consider drawing or posting small pictures next to each word on anchor charts to activate as many sensory means of comprehension as possible. The waterfall displayed here, for example, could then be transferred in miniature to the Academic Vocabulary anchor chart. Consider having your artistically talented or motivated students take on this responsibility.
* "I can create a Cascading Consequences chart based on industrial management of water, using my researcher's notebook."	
• Circle the word *consequences* on the posted learning target. Invite students to review with a partner what a consequence is. Remind them of their discussion of this word in Lesson 3.	
• Reiterate that a consequence is an "effect, result, or outcome" of something that occurred earlier. Add new information about the definition by pointing out that often when we use the word *consequence*, it has a negative connotation. For example, parents might say to a child that the consequence of not cleaning his room is that he can't go to the movies with friends on Friday night. However, in some cases, the word *consequence* is neutral, without a negative or positive connotation. When we talk about cascading consequences, we are using consequence as a neutral word. Consider that some consequences are positive, for example. Refer to the "virtuous water cycle" on page 116 of *The Big Thirst*.	
• Circle the word *cascading* on the posted learning target.	
• Display an **image of a waterfall**.	
• Explain that *cascade* is another word for waterfall and that *cascading* can describe anything that resembles a waterfall. Cascading also means that one thing follows the next, like a chain of events. In a waterfall, one water drop follows the next.	
• Distribute the **Sample Cascading Consequences Chart: Getting an iPad**.	
• Invite students to discuss with their partner:	
* "What do you notice about this Cascading Consequences chart?"	
* "What do you wonder?"	
* "How is it similar or different from the entry task you just completed?"	
• Circulate and listen for partners to say: "Some of the consequences on the chart are positive and some are negative," and "It looks like a waterfall because everything is flowing from the center box."	

Opening (continued)	Meeting Students' Needs

• Have students look at the chart a second time:
 	
   * "Where are the consequences on this chart? How do they relate to one another?"
 	
• Circulate and listen for partners to say: "The consequences flow from the decision to get an iPad, and then from each other. Consequences lead to other consequences."
 	
• Explain that creating a Cascading Consequences chart is one piece of the research process that they have already begun with their notes on *The Big Thirst* and their internet research in their researcher's notebooks. Refer to the posted **Unit 3 essay prompt**:
 	
   * "Which category of water management would be a good place to begin to make the way we manage water more sustainable?"
 	
• Have students turn to their partners and discuss for 1 minute what they "notice" and "wonder" about this prompt.
 	
• Explain that they are going to learn to use a structured decision-making process so that each student decides how to best answer this question based on the evidence in *The Big Thirst* and on further research, rather than basing the decision on emotions or gut feelings.
 	
• Explain that students will create a Cascading Consequences chart for both industrial and agricultural water management. These charts will help them collect evidence and analyze which category would be a good place to begin managing water for sustainability and will also help with the Unit 3 essay prompt. Note that students won't decide on an answer for that question until the end of this unit. It's important that they keep an open mind and understand all the reasons and evidence before they make a decision.
 	
• Explain that today students will focus on industrial water management. In their homework, they will focus on agricultural water management.	

Work Time	Meeting Students' Needs

A. Modeling Creating a Cascading Consequences Chart for Industrial Management of Water (10 minutes)
 	
• Invite students to turn to Section I in their **researcher's notebooks**: Research Notes on Text. As they do so, display the **Cascading Consequences chart for industrial management of water** with the **document camera**.
 	
• Ask students to refer to the bottom of Section I of their researcher's notebook, the section called "Paragraph to sum up new information from this text about the use of water in industry." Ask for a volunteer to name three consequences he or she sees based on the contents of this paragraph. Write these three consequences on the side of the Cascading Consequences chart for industrial management of water, but do not chart them yet.
 	
• Begin to think aloud about how to turn this list of consequences into a Cascading Consequences chart, referring to the **sample Cascading Consequences chart for industrial management of water (for teacher reference)** as needed. Your think-aloud should sound something like this:
 	
  * "Since this is a Cascading Consequences chart about industrial management of water, you can see that the central box is labeled with those words. Now, I'm going to use the chart to connect the three pieces of information you volunteered to the center of the chart with a 'cascade' of boxes: that is, a cascade of consequences. One consequence leads to another, which leads to another, just like on our sample Cascading Consequences chart for getting an iPad.
 	
  * "*The Big Thirst* states that the Royal Caribbean company managed to save 2 gallons of water per passenger by swapping rocks for ice in cruise ship buffets. There are actually two consequences happening in this sentence: the rock-ice swap and the water savings. The rock-ice swap is a direct consequence of Royal Caribbean's management of water, so I'm going to draw a line directly from the center and label the attached box 'rock-ice swap.'
 	
  * "Next, I'm going to draw a line from the 'rock-ice swap,' create another box, and label that '2 gallons per person water savings.' I'm doing this because the water savings was a cascading consequence of the rock-ice swap—the savings was a consequence of using rocks. So it belongs further out on the 'cascade.'"
 	
• Conduct a similar think-aloud for the placement of the second consequence.
 	
• Ask students to work with a partner to verbally place the last consequence from the list on the chart. Encourage them to talk about why they are placing each consequence in a particular place on the chart.
 	
• After about 3 minutes, cold call students to share out where they placed each consequence and why.
 	
• Point out that there is not just one way to create a Cascading Consequences chart from notes. People may disagree as to the exact location of a consequence and whether or not it is a direct or an indirect "cascading consequence."
	• Consider using the "Learning to Make Decisions Systematically" article and its contents as further exemplars of the process for students, either as further scaffolding or as extension material for academically talented students.
	
	• Consider selecting students ahead of time for cold calls. Those who need practice in oral response or extended processing time can be told the prompt before class begins to prepare for their participation. This also allows for a public experience of academic success for students who may struggle with on-demand questioning, or for struggling students in general.
	
	• Think about modifying the materials to meet students' physical and mental needs. Whole sheets of chart paper could be used instead of the recommended 8.5" by 14" versions of the Cascading Consequences charts; charts could be partially or even wholly filled in; vocabulary words could be defined

Work Time (continued)	Meeting Students' Needs
B. Cascading Consequences Chart for Industrial Management of Water (10 minutes) • Distribute two **8.5" by 14" (legal size) pieces of paper** to each student. • Remind them of the steps you took to build the Cascading Consequences chart. • Ask students to read their notes and create a list of the consequences of the industrial management of water on the side of the paper. • Ask them to draw and label the center box and then add each consequence to the chart, deciding what is a direct consequence and what is not. • Invite students to work with their partner to add to the chart using researcher's notebook Sections I and III: Research Notes on Text. Point out that they can use all parts of their notes to help find consequences, not only the one you modeled. • As students work, circulate to observe and assist. Ask: 　* "Why did you place this consequence where you did?" 　* "How do you know this is a consequence of that?" • After 6 minutes of work time, invite one partnership to explain what they added to their Cascading Consequences chart. Make these additions to the displayed chart as they speak. During the explanation, cold call other students to answer these questions: 　* "Did you identify the same consequence as the presenting partnership? Why or why not?" 　* "Would you make any changes to this? What would you change? Why?" • Should the partnership volunteer an answer that is illogical or wrong, thank them for their hard work and record the answer as presented. Use the follow-up questions above to have peers guide the partnership to the correct answer, and make the necessary changes on the displayed chart. • After discussing the presenting partnership's additions to the chart, ask students to work with their own partner to revise their own charts. • Cold call two or three students to explain how they revised their chart and why.	• After stretches of intensive reading and writing during which physical movement is not built into the instruction, consider having students stand up for a quick "brain break" or a physical stretch at natural breaks in the work time (between Work Times A and B, for example). Research indicates that these breaks are important for neurological growth, especially for boys. Their cognitive processing requires more "rest times" away from the subject matter before re-engaging in learning. • Be sure to note, both here and in Work Time C, those students who struggle with creating the charts. Target them for individual, immediate, and/or increased assistance in the next lesson as they create their second chart.

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Work Time (continued)	Meeting Students' Needs
C. Partner Work to Add to the Cascading Consequences Chart (10 minutes) • Invite students to continue to work with their partner on the chart, using the researcher's notebook Sections VII–IX, Internet Research. Remind them to use only those sections in which they explored a supporting research question that related to the industrial use of water. • Circulate to assist individually, taking special note of whether students are working with supporting research questions that relate to the industrial use of water. • After 7 or 8 minutes, invite students to take the consequences they have found so far and add them to their Cascading Consequences chart. They will share these additions during the debrief in a few minutes.	• Some students may finish earlier than others here, depending on what and how many supporting research questions on industrial use of water they explored in their research. They may also have chosen supporting research questions that do not directly involve cascading consequences. Check the charts of those who finish early for accuracy and thoroughness, and encourage them to go back to the Fishman text in particular if there is a shortage of cascading consequences in their notes. • If the work is acceptable, ask these students to now become your "experts." Direct them to circulate quietly among the other students, checking for accuracy, answering questions, giving positive feedback for interesting and thorough work, and letting you know if any of their peers seem stuck.

Closing and Assessment	Meeting Students' Needs

A. Debrief (5 minutes)
• Invite students to find a new partner and follow these steps:
   1. Show your Cascading Consequences chart to your partner. Point out the parts that you just added.
   2. Share with your partner one box that you feel very sure of. Explain why you are confident in this.
   3. Return to your original partner, share new insights, and revise your Cascading Consequences chart if needed.
• Review the learning target:
   * "I can create a Cascading Consequences chart based on industrial management of water, using my researcher's notebook."
• Using the Fist to Five protocol, ask students to assess themselves on the target.
• Distribute the **homework directions** and let students know that their homework is to create another Cascading Consequences chart for the agricultural management of water.	

Homework	**Meeting Students' Needs**
• Complete a Cascading Consequences chart for the agricultural management of water. • Continue reading your independent reading book for this module.	• Depending on the effort and abilities of your students, consider differentiating this homework depending on their demonstrated level of need. Students who complete the chart in class may be given the "Learning to Make Decisions Systematically" article for further reading, for example (see Teaching Notes). Other students may be sent home with a specified manageable amount of "cascades" of consequences to develop on their chart; given a "starter" for a cascade; or, as a mental challenge, given a concluding consequence with blank boxes and asked to "backward-design" the cascade.

EXPEDITIONARY LEARNING

Grade 7: Module 4B: Unit 2: Lesson 11
Supporting Materials

Name:

Date:

Imagine you are deciding whether to get an iPad for your personal use.

List all the consequences (effects) of this decision.

Based on these consequences, what would you decide?

Why would you make that decision?

Unit 3 Essay Prompt

Name:

Date:

Which category of water management would be a good place to begin to make the way we manage water more sustainable?

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EXPEDITIONARY
LEARNING

Name:

Date:

- Use the second piece of 8.5-by-14 paper to create a Cascading Consequences chart for the Agricultural Management of Water in your researcher's notebook.

- Use Sections IV–VI Research Notes from Text and Sections VII–IX internet Research.

- Use the Cascading Consequences chart for industrial management of water as your model and guide.

- You can use all parts of your researcher's notebook to find consequences.

- Remember to use only those sections in which you explored a supporting research question that related to the **agricultural** use of water.

- When finished, continue your independent reading.

EXPEDITIONARY
LEARNING

Sample Cascading Consequences Chart
for Getting an iPad

I might lose friends.

I may have to upset my friends by putting limits on when and where they use my iPad.

The house will be quieter and more peaceful.

I will not have to fight my sister for computer time.

I could lose it.

I will need to replace it with my own money.

My friends will ask to use it all the time.

Get an
iPad

I will get in lots of trouble.

My friends might break it.

I could break it.

My parents won't pay for it.

I'll be able to have computer and Internet access more often.

I will do better in school.

This will cost money.

I might lose focus on my chores and schoolwork.

I will be more popular.

I won't have as much money .

I won't be able to buy as many clothes or spend as much on vacation.

I may have to get a part time job.

Cascading Consequences Chart for Industrial Management of Water

Industrial Management of Water

List of Consequences:

1)

2)

3)

EXPEDITIONARY
LEARNING

Cascading Consequences Chart for Industrial Management of Water

Consumers do not buy Levi jeans.

Consumers get angry at being blamed for overuse of water.

The cost of IBM chips goes down.

IBM starts to think about how to use their own resources more efficiently.

IBM becomes an expert on managing water for sustainability.

IBM reduces their use of water with fifty different measures.

Levi puts most of the burden of water use on the consumer.

List of Consequences:

1) IBM reduces their use of water with fifty different measures.

2) Industry starts to make an industry out of water management itself.

3) Levi puts most of the burden of water on the consumer.

Levi doesn't think clearly enough about how to reduce their own use of water.

Industrial Management of Water

Levi sidesteps the problem of water management.

As other companies get "water smart," Levi does not.

Industry starts to make an industry out of water management itself.

Levi loses customers who are concerned about water sustainability.

Levi's prices stay the same while other water smart companies reduce their prices.

Levi cannot compete.

EXPEDITIONARY LEARNING

Cascading Consequences Chart for Agricultural Management of Water

Agricultural Management of Water

List of Consequences:

1)

2)

3)