

Grade 4: Module 2B: Unit 1: Lesson 5 Reading Scientific Text: Building Expertise on Animal Defense Mechanisms



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Reading Scientific Text:

Long-Term Targets Addressed (Based on NYSP12 ELA CCLS)		
I can paraphrase portions of a text that is read aloud to me. (SL.4.2) I can interpret information presented through charts or graphs. I can explain how that information helps me understand the text around it. (RI.4.7) I can determine the main idea using specific details from the text. (RI.4.2)		
Supporting Learning Targets	Ongoing Assessment	
 I can paraphrase information presented in a read-aloud on animal defense mechanisms. I can make inferences about animal defense mechanisms by examining articles that include text and visuals. I can determine the main idea of a section of <i>Animal Behaviors: Animal Defenses</i>. 	 Listening Closely note-catcher (page 7 of Animal Defenses research journal) Examining Visuals note-catcher (page 8 of Animal Defenses research journal) Determining Main Ideas note-catcher (pages 9 and 10 of Animal Defenses research journal) Observation of participation during Jigsaw 	



Reading Scientific Text:

Agenda	Teaching Notes	
 Opening A. Engaging the Reader: Read-aloud of Venom (10 minutes) B. Reviewing Learning Targets (5 minutes) Reviewing Visuals (20 minutes) B. Rereading an Informational Text: Determining the Main Idea (20 minutes) Closing and Assessment Animal Defense Mechanisms: KWL Chart (5 minutes) Homework Continue your independent reading. 	 During the Opening of this lesson, students listen and take notes as a section in <i>Venom</i> titled, "A Meal to Remember," is read aloud. Note that in Unit 2 students will reread this excerpt of as a part of their mid and end of unit assessment. Students will need to reference their notes on this section of the text during these assessments, so be sure they keep their notes. Students begin the same process used in Lessons 2–4 to closely read a section of the central text <i>Animal Behavior: Animal Defenses.</i> They examine a visual and think about how it helps them better understand the text, then read and reread the same section for the main idea and supporting details. This process continues into Lesson 6. Students will use the Jigsaw protocol to read the predetermined sections in <i>Animal Behavior: Animal Defenses.</i> In Lesson 5, they work with their expert groups to closely examine a visual and determine the main idea of their section. In Lesson 6, they will continue working in these groups to identify details that support that main idea, and then will meet with students who read different sections of the text to share the main idea and supporting details. The four sections from <i>Animal Behavior: Animal Defenses</i> that students work with in Lessons 5 and 6 were chosen based on the overall structure of the book. By reading these specific sections, students will get a general overview of what animal defense mechanisms are as well as an introduction to several types of defense mechanisms (chemical defenses and warning colors, venom, and mimicry). Since one section is about venom, which has been discussed in previous lessons, consider assigning this section to students who are struggling. The background knowledge they have built in Lessons 1–4 will support them in tackling this text. In advance: Determine expert groups for Jigsaw protocol (three groups total). Post: Learning targets. 	



Reading Scientific Text:

Lesson Vocabulary	Materials
determine, camouflage, mimicry	• <i>Venom</i> (book for teacher read-aloud, pages 74–75)
	Document camera
	Animal Defenses Research Journal (from Lesson 1)
	• Listening Closely note-catcher (page 7 of Animal Defenses research journal; one per student and one to display)
	Listening Closely note-catcher (completed, for teacher reference)
	Equity sticks
	Animal Behavior: Animal Defenses (one per student and one to display)
	 Teacher model—"Avoiding Danger" (pages 7–9, stopping at "Self-Defense"; last 2 paragraphs on page 21; "Escape Artists" first two paragraphs on page 22)
	 Group 1—"Bad Smells, Bad Tastes, and Powerful Poisons" (page 55-top of 56, stopping at "Poisonous Prey"; pages 58–60)
	 Group 2—"Venomous Stings and Bites" (page 83; "How Venom Works" box on page 86; "Stinging Tentacles" pages 77–78)
	- Group 3—"Mimicry" (pages 91–94)
	• Examining Visuals note-catcher (page 8 of Animal Defenses research journal; one per student and one to display)
	Examining Visuals note-catcher (completed, for teacher reference)
	Sticky notes
	• Determining the Main Idea note-catcher (pages 9 and 10 of Animal Defenses research journal; one per student and one to display)
	Determining the Main Idea note-catcher (completed, for teacher reference)
	Animal Defense Mechanisms: KWL Chart (page 1 of Animal Defenses research journal; from Lesson 1; one per student and one to display)



Reading Scientific Text:

Opening	Meeting Students' Needs
 A. Engaging the Reader: Read-aloud of Venom (10 minutes) Display the cover of Venom so all students can see. Open to pages 26 and 27 and ask: "What did we learn about animal defense mechanisms when we read aloud Venom a few days ago?" Listen for responses like: "Fire ants sting their enemies to defend themselves." Validate responses and explain to students that they will be listening to another section of Venom today. Using a document camera, display blank Listening Closely note-catcher and invite students to open to the next one on page 7 in their Animal Defenses research journals. Remind students that they have been using this note-catcher to record information heard during a read-aloud. Use equity sticks to call on students. Review how to use the note-catcher by asking: "What kind of information do we record in each part of this note-catcher?" Listen for responses like: "We record facts about ants in the first column, how ants protect themselves in the middle column, and explain how that helps the ant survive in the right-hand column. We write a gist statement at the bottom." Remind students that they will listen to a new part of Venom read aloud several times. Remind them that the first time they hear it, they should begin to fill in the table. Read aloud the section "A Meal to Remember—If You Live That Long" on pages 74 and 75. Do not read the other sections: "Danger Down Below" or "And Now for Something Completely Different." Invite students to turn and talk with a neighbor, sharing one interesting thing they heard during the read-aloud. Use equity sticks to call on two students to share what their partners found interesting. Tell students to turn and talk with a neighbor, sharing one interesting thing they heard during the read-aloud. Use equity sticks to call on two students to share what their partners found interesting. Tell students to turn and talk with a neigh	 Whole class discussions encourage respectful and active listening, as well as social construction of knowledge. Hearing a complex text read slowly, fluently, and without interruption or explanation promotes fluency for students; they are hearing a strong reader read the text aloud with accuracy and expression, and are simultaneously looking at and thinking about the words on the printed page. Be sure to set clear expectations that students read along silently in their heads as you read the text aloud.



Reading Scientific Text:

Opening (continued)	Meeting Students' Needs
 Listen for responses like: "They inflate themselves so they are too large to swallow." Ask: Ask: "What was the gist of this section?" Listen for responses like: "This section was mostly about how pufferfish protect themselves by inflating or by their poison." Point to the question below the table on the graphic organizer—"Explain in your own words what this section of <i>Venom</i> was about?" Tell students to jot down the gist of this part of the text on these lines. If necessary, prompt students by asking: "What was this part of the text mostly about?" Remind students they will have many more opportunities to read this book, and can read through it on their own during independent reading or in their free time during the school day if they wish 	• Discussing and clarifying the language of learning targets helps build academic vocabulary.
 B. Reviewing Learning Targets (5 minutes) Use equity sticks to call on a student to read the remaining learning targets: "I can paraphrase information presented in a read-aloud on animal defense mechanisms." "I can make inferences about animal defense mechanisms by examining articles that include text and visuals." "I can determine the main idea of a section of <i>Animal Behaviors: Animal Defenses.</i>" Tell students that they will begin reading a new text about animal defense mechanisms. Build up the excitement! 	• Discussing and clarifying the language of learning targets helps build academic vocabulary.



Reading Scientific Text:

Building Expertise on Animal Defense Mechanisms

Work Time **Meeting Students' Needs** • The teacher may offer selected A. Examining Visuals (20 minutes) shorter passages to specific groups Distribute copies of *Animal Behavior: Animal Defenses*. Invite students to flip through the book and Think-Pairbased on the readiness and needs of Share, discussing what they notice and wonder about the book. the group. This provides an • Use equity sticks to call on students to share their observations and questions. Listen for students sharing observations opportunity for students to read a about the parts of the book like the table of contents, glossary, and index and point out these parts if students do not share complex text within the fourththem on their own. Only answer clarifying questions for now; for other questions, respond with something like: "You'll find grade level span, but differentiates that out as you read this book and work with it more closely throughout this module." the length of the text, not the Preview Lessons 5 and 6: Tell students that they are going to go through the same process they just went through in reading ٠ complexity. "Award-Winning Survival Skills" to closely read and reread sections of this book in order to learn more about animal defense Graphic organizers and recording mechanisms. Explain that they will begin by examining visuals and reading sections for the gist, and then reread for the forms engage students more actively main idea and supporting details. They will work in expert groups to read specific sections and then, in the next lesson, share and provide the necessary what they have learned from that section in Jigsaw groups. scaffolding that is especially critical Tell students that today, they will start by examining a visual in a section of the book using the Examining Visuals notefor learners with lower levels of catcher (page 8 of their research journals) to record information and inferences about the visual their group is examining language proficiency and/or closely. Remind students that they did this in Lesson 2. Display a copy of the note-catcher and invite students to turn to the learning. For students needing Examining Visuals note-catcher on page 8 of their research journals. additional support, provide a partially filled-in graphic organizer. Briefly review Steps 1–3 and the first two columns on the note-catcher. Clarify that students will complete only the first two columns prior to reading their section of text. Review Steps 4 and 5 and the heading of the last column ("Details in the Text Provide ELLs with a sentence That Support My Inferences"). Clarify that students will read their section of the text and then complete the last column. starter or frame to aid in language

- Explain to students that before they break into groups to do this, they will practice while looking at a visual in the text together.
- Invite students to turn to page 8 in the book and examine the photograph and caption, thinking about what details they notice. Use equity sticks to call on three to four students to share their observations. Listen for things like: "I noticed that this is also a photograph of a springbok," or "The springbok bounces into the air with stiff legs to show predators they are hard to catch." Add students' observations to the "Details from the Visual" column. Tell students not to write anything on their graphic organizers.
- Point to Step 3 on the graphic organizer and explain to students that now they will use the details they observed in the visual and their background knowledge to make inferences about the springbok.

- production. For example: In the visual I see ...
- · Some students may benefit from having key sections pre-highlighted in their texts. This will help them focus on small sections rather than scanning the whole text for answers.



Reading Scientific Text:

Work Time (continued)	Meeting Students' Needs
Invite students to Think-Pair-Share. Ask:	
* "What do you infer about the springbok? What details from the visual did you base your inference on?"	
• Once students have had time to discuss their inferences, use equity sticks to call on students to share an inference. Tell students to use the sentence frame: "We infer because the visual/caption shows/says" Record what students share in the "My Inferences" column on the graphic organizer.	
• If necessary, model briefly. Say something like: "I infer that the springbok's jumping shows it's hard to catch because the predator can see its muscles and see how quick it is. I infer this because the visual shows the springbok's leg muscles and the caption says 'hard to catch,' which means they must be fast." [Write inference in the "My Inferences" column.]	
• Point to the note on the graphic organizer and remind students that they will not be filling in the right-hand column yet. Explain that now they will listen to the text read aloud, listening for details that support their inferences.	
• Read aloud pages 7–9, the last two paragraphs on page 21, and the first two paragraphs on page 22. Invite students to follow along in their copies of the text as you read, placing a sticky note in the text by details that support their inferences.	
After reading, ask:	
* "What details support our inferences about the springbok?"	
• Listen for responses like: "On page 8 it says, 'Their odd jumping behavior, called stotting, signals to the cheetah, 'We have seen you, so do not bother to chase us—we are strong and healthy and can outrun you.'" Model writing details on the note-catcher, including the page number after each detail.	
• Tell students that now they will do this in small groups. Break students into three groups. Tell students to circle their group page assignments on the note-catcher for Steps 1 and 4.	
• Ask students to review what it looks like and sounds like when working in a small group of peers. Listen for responses like: "Wait my turn to speak, so I am heard; don't shout/speak too loudly; make sure everyone gets a turn to speak; no one person does most/all of the speaking; use information from text to support my ideas."	
• Prompt students through the steps by inviting them to turn to the visual for their group (the assigned page in Step 1—group 1 turns to page 59, group 2 turns to page 78, and group 3 turns to page 92).	



Reading Scientific Text:

Work Time (continued)	Meeting Students' Needs
• Tell students to independently examine the photograph and caption, thinking about what details they notice and writing them in the "Details from the Visual" column on their note-catcher. After several minutes, invite students to share what they wrote in that column with their partners. Listen for students following class norms when working in a group and identifying explicit details from the picture when sharing their notes. Support students who rated themselves with a fist, one finger, or two fingers during the Fist-to-Five for this target in Lesson 2.	
• After several minutes, point to Step 3 on the graphic organizer and remind students that now they will use the details they observed in the visual and their background knowledge to make inferences about the animal in their group's visual.	
• Invite students to think to themselves for a minute before sharing with their group. Ask:	
* "What do you infer about the animal in your visual? What details from the visual did you base your inference on?"	
 Once students have had some time to discuss their inferences, invite students to write their inferences on their note-catchers. Tell students to use the sentence frame: "We infer because the visual/caption shows/says" Circulate and support students as necessary, paying special attention to students who rated themselves with a fist, one finger, or two fingers during the Fist-to-Five for this target in Lesson 2. 	
• Remind students that they will be filling in the right-hand column after reading their section of the text.	
• Tell students that the text is challenging and may have many unfamiliar words. Reassure them that just like when they read "Award-Winning Survival Skills," they are not expected to understand it fully the first time they read it. Remind them that one key to being a strong reader of difficult text is being willing to struggle.	
• Remind them that when readers read a text, they use many strategies to make sense of what is being read. Ask:	
* "What strategies do readers use to make sense of a text?"	
• Listen for responses like: "Readers infer," or "Readers pay attention to what they understand and what they don't." Validate responses and write this question on the board:	
* "When you read this text for the first time, what made sense? What didn't?"	
• Tell students to jot down their notes about what made sense on a sticky note and what is confusing on another sticky note.	
• Give students 6–8 minutes to read their section of the text independently. Circulate to support as needed. Probe by asking: "What's making sense? What is confusing?" and encourage them to persist. Support students who rated themselves with a fist, one finger, or two fingers during the Fist-to-Five for this target in Lesson 2.	



Reading Scientific Text:

Work Time (continued)	Meeting Students' Needs
• After 6–8 minutes, invite students to share initial thinking in their small groups:	
* "What makes sense? What is confusing?"	
• Then ask them to reread their section of the text together, looking for details that support their inferences about the visual examined earlier. Ask students to record these details in the right-hand column of their note-catchers, including the page number where they found that detail. Circulate to support as needed. Probe by asking: "What details support your inferences about the visual?" or "How does that detail support your inference?" Support students who rated themselves with a fist, one finger, or two fingers during the Fist-to-Five for this target in Lesson 2.	
• Use the Fist-to-Five Checking for Understanding technique to have students briefly reflect on the learning target: "I can make inferences about animal defense mechanisms by examining an article that includes text and visuals," with a fist being "I am not confident that I can meet this target on my own" and a five being "I can make inferences about articles that include texts and visuals on my own." Note students who show a fist, one, or two fingers to provide further support in future lessons.	



Reading Scientific Text:

Work Time (continued)	Meeting Students' Needs
 B. Rereading an Informational Text: Determining the Main Idea (20 minutes) Tell students they will now reread their section of Animal Behavior: Animal Defenses a second time to determine the main idea of their section. Invite students to open to pages 9 and 10 in their research journals, to the Determining the Main Idea note-catcher. Explain that students will continue to work with their expert groups and determine the main idea of their section and that in the next lesson, they will reread to identify details that support the main idea of their section. Ask: * "How do we determine the main idea of a section of text?" Listen for students describing the process introduced in Lesson 3, saying things like: "We read the text paragraph by paragraph, and after each paragraph ask ourselves. What is this text about?' We revise our thinking about the main idea as we read." Tell students they will then write the main idea in the box for their section only. Explain that they should leave the other sections blank for now, and the "Supporting Details" boxes blank for now as well. Review determining the main idea or "avoiding Danger" (pages 7–9, the last two paragraphs on page 21, and the first two paragraphs on page 22) and going through the process just discussed. Have students turn and talk after each paragraph before discussing the main idea or revised thinking with the whole group. Model recording the main idea in the appropriate box on the Determining the Main Idea note-catcher and ask students to do the same. Review working in a small group by asking: * "What does it look like or sound like when working in a small group with your peers?" Listen for responses like: "Wait my turn to speak, so I am heard; don't shout/speak too loudly; make sure everyone gets a turn to speak; no one person does most/all of the speaking; use information from text to support my ideas." Give students 15 minutes to work throu	 The teacher may offer selected shorter passages to specific groups based on the readiness and needs of the group. This provides an opportunity for students to read a complex text within the fourth-grade level span, but differentiates the length of the text, not the complexity. Graphic organizers and recording forms engage students more actively and provide the necessary scaffolding that is especially critical for learners with lower levels of language proficiency and/or learning. For students needing additional support, provide a partially filled-in graphic organizer. Provide ELLs with a sentence starter or frame to aid in language production. For example: <i>I think this text is about</i> Some students may benefit from having key sections pre-highlighted in their texts. This will help them focus on small sections rather than scanning the whole text for answers.
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Reading Scientific Text:

Closing and Assessment	Meeting Students' Needs
 A. Animal Defense Mechanisms: KWL Chart (5 minutes) Invite students to turn to the Animal Defense Mechanisms: KWL chart in their research journals. Remind students that researchers always reflect on and record what they've learned. 	
Invite students to Think-Pair-Share. Ask:	
* "Were any of your questions answered in the text that you read today?"	
* "What new information did you learn from your section of the text?"	
 Tell students to write the answers to any questions they had in the W column in the "I Learned" column, in the "Information" section. Include the name of the book and page number in the "Source" column. 	
• Encourage students to also write one new piece of information they learned from the book in the "I Learned" column.	
Homework	Meeting Students' Needs
Continue your independent reading.	



Grade 4: Module 2B: Unit 1: Lesson 5 Supporting Materials





Animal Defenses Research Journal: Listening Closely Note-catcher (Completed, for Teacher Reference)

Source: *Venom* pages 74–75

Directions: Listen as *Venom* is read aloud. Use the table below to record your notes.

Examples of How Pufferfish Protect Themselves	How This Helps Pufferfish Survive
<i>Venom</i> pages 74–75	
• Inflates itself	Becomes too large for an enemy to swallow
• Prickly	• The prickly skin can hurt the pufferfish's enemy
 Toxic: The fish's skin, blood, and organs contain tetrodotoxin 	• The poison kills its enemy
• Each fish has enough of the stuff to kill thirty people or a dozen elephants	
Other Facts about Pufferfish	
Humans eat the pufferfish	
• Special licensed chefs are the only people allow	ved to prepare it to eat
• Their poison is being used as a non-addictive painkiller for patients with cancer and other illnesses	

Explain in your own words what this section of Venom was about:

This section of *Venom* was about the pufferfish. Its defense mechanisms are that it can inflate itself and that it is poisonous.



Animal Defenses Research Journal: Examining Visuals (Completed, for Teacher Reference)

Source: Animal Behaviors: Animal Defenses

- 1. Look at the visual in your group's section of Animal Behaviors: Animal Defenses.
 - Group 1—page 59
 - Group 2—page 88
 - Group 3—page 92
- 2. In the first column of the graphic organizer below, record three details you see in the visual.
- 3. In the second column of the graphic organizer, record the inferences you make based on these details.

****NOTE: Do NOT complete the right-hand column of the graphic organizer yet!**

- 1. Read your group's assigned pages.
 - Group 1—"Bad Smells, Bad Tastes, and Powerful Poisons" (page 55–top of 56, stopping at "Poisonous Prey"; pages 58–60)
 - Group 2—"Venomous Stings and Bites" (page 83; "How Venom Works" box on page 86; "Stinging Tentacles" pages 77–78)
 - Group 3—"Mimicry" (pages 91–94)
- 2. In the right-hand column of the graphic organizer, record details from your section of the text that support your inferences in the middle column.



Animal Defenses Research Journal: Examining Visuals (Completed, for Teacher Reference)

p. 59

Details from the Visual (explicit information)	My Inferences (what I infer about this animal)	Details in the Text That Support My Inferences (confirmed with explicit information)
 cinnabar caterpillar on a leaf orange and black stripes hairs coming off of it foul-tasting and poisonous colors keep predators away 	 the colors are of this caterpillar are a defense mechanism because predators see the colors and know it's poisonous, so they stay away 	 "bright colors can also be warning colors" (page 58) "many animals that are poisonous, bad tasting, or both are clad in warning colors. The colors say to predators, 'Don't even think of attacking me. You'll be sorry.'" (page 58) "A predator that licks, mouths, or bites an animal with warning colors often drops or spits out its prey." (page 58) "the orange-and-black- striped caterpillars of the cinnabar moth are poisonous, too." (page 59)



Animal Defenses Research Journal: Examining Visuals (Completed, for Teacher Reference)

p. 78

Details from the Visual (explicit information)	My Inferences (what I infer about this animal)	Details in the Text That Support My Inferences (confirmed with explicit information)
 blue sea wasp four legs or tails a sting from it can kill a person in less than 5 minutes 	 the sea wasp defends itself by stinging its enemies 	 "A venomous animal has a sting, spines, or specialized teeth attached to venommaking glands" (page 83) "A group of ocean animals called cnidarians also use stings for predation and self-defense. This group includes corals, jellyfish, and anemones." (page 87) "The box jelly, also called a sea wasp, is among the most deadly its venom causes extreme pain" (page 87)



Animal Defenses Research Journal: Examining Visuals (Completed, for Teacher Reference)

p. 92

Details from the Visual (explicit information)	My Inferences (what I infer about this animal)	Details in the Text That Support My Inferences (confirmed with explicit information)
 pink flower black and yellow hover fly on flower clear wings hover fly looks just like a bumblebee 	 the hover fly tricks its predators into thinking it's a bumblebee so it doesn't get eaten 	 "to the toad, the insect's color, sound, and behavior all warn 'bumblebee." (page 91) "The hover fly is a mimic—an animal that looks like another kind of animal and benefits from this resemblance." (page 91) "The hover fly gains protection from predators by looking like a bee" (page 91)



Animal Defenses Research Journal: Determining the Main Idea (Completed, for Teacher Reference)

Source: Animal Behaviors: Animal Defenses

Reread the text and identify the main idea for each section of the text.

"Avoiding Danger" pages 7–9, stopping at "Self-Defense"; last two paragraphs on page 21; and "Escape Artists" first two paragraphs on page 22		
Main Idea: Animals use many behaviors to defend themselves from predators.	Supporting Details:	
" <i>Bad Smells, Bad Tastes, and Powerful Poisons</i> " pages 55–56, stopping at " <i>Poisonous Prey</i> "; pages 58–60		
Main Idea: Many animals that protect themselves with chemical defenses are brightly colored to warn predators to stay away.	Supporting Details:	
"Venomous Stings and Bites" page 83; "How Venom Works" box on page 86; "Stinging Tentacles" pages 77–78		
Main Idea: Some animals protect themselves by injecting venom into their enemy.	Supporting Details:	
<i>"Mimicry"</i> pages 91–94		
Main Idea: Some animals protect themselves by mimicking other animals.	Supporting Details:	