



EXPEDITIONARY
LEARNING

Grade 4: Module 2B: Unit 1: Lesson 1

Building Background Knowledge: What Are Animal Defense Mechanisms?



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

I can explain what a text says using specific details from the text. (RI.4.1)

I can make inferences using specific details from the text. (RI.4.1)

Supporting Learning Targets

- I can infer about animal defense mechanisms based on information in pictures and text.
- I can support my inferences with details and examples from pictures and texts.
- I can document my research using a research journal.

Ongoing Assessment

- Observations during carousel brainstorm
- Participation during unpacking of guiding questions
- Animal Defense Mechanisms: KWL chart



Agenda	Teaching Notes
<ol style="list-style-type: none"> 1. Opening <ol style="list-style-type: none"> A. Reviewing Learning Targets (5 minutes) 2. Work Time <ol style="list-style-type: none"> A. Discovering Our Topic: Carousel Brainstorm (20 minutes) B. Engaging the Reader: Read-aloud of <i>Venom</i> (10 minutes) C. Preparing to Research (15 minutes) 3. Closing and Assessment <ol style="list-style-type: none"> A. KWL Chart: Animal Defense Mechanisms (5 minutes) B. Launching Independent Reading (5 minutes) 4. Homework <ol style="list-style-type: none"> A. Begin your independent reading book for this unit. 	<ul style="list-style-type: none"> • In this lesson, students use the Carousel Brainstorm protocol to preview <i>Venom</i> and <i>Animal Behaviors: Animal Defenses</i> as a way to build schema on the topic of animal defenses. Since there are 10 posters to use with this protocol, students likely will not get a chance to visit each poster. Strategically group students and decide which posters they will visit—for example, consider assigning ELLs to the same group and assign them to examine Carousel Brainstorm posters 1–7 since they are not as text-heavy as posters 8–10. • The read-aloud of <i>Venom</i> serves as an engagement strategy by having students examine the diagrams to build background knowledge. Students do not receive their own copy. You may invite students to look through <i>Venom</i> during independent reading or other flextime throughout the school day. In subsequent lessons, this text is used as a read-aloud routine for students to listen and then paraphrase to address SL.4.4. • In this lesson, students consider the module’s performance task prompt to help focus their work. To give yourself more context, preview the full performance task: a stand-alone teacher-facing document. • In this lesson students learn a cold call strategy called equity sticks. Equity sticks are Popsicle sticks with each student’s name that can be pulled randomly for students to respond to teacher prompts. Research indicates that cold calling improves student engagement and critical thinking. Prepare students for this strategy by discussing the purpose, giving appropriate think time, and indicating that this strategy will be used before students are asked questions. Feel free to use some other total participation technique instead; the goal is to ensure participation and accountability. • In the closing, students construct a KWL chart. Allow students to generate an initial list in the K, or knowledge column. Students may make statements that you know to be untrue, but these should still be added to the chart. As the class continues to read and learn about animal defense mechanisms, these items can then be confirmed as true or untrue. As this chart is added to in subsequent lessons, the class can mark these items with a Y if they are confirmed to be true or an N if they are confirmed to be untrue. • Each unit in this module is accompanied by a list of Recommended Texts at a variety of reading levels. Students should use the classroom, school, or local library to obtain book(s) about the topics under study at their independent reading level. These books can be used in a variety of ways—as independent and partner reading in the classroom whenever time allows, as read-alouds by the teacher to entice students into new books, and as an ongoing homework expectation. In this lesson, students browse and select one of these texts for reading throughout the unit.



Agenda	Teaching Notes (continued)
	<ul style="list-style-type: none">• In advance: Prepare Carousel Brainstorm posters (see preparation information in supporting materials). Note that this preparation will take time.• Prepare the Animal Defenses research journal, where students will record their research notes and thinking throughout Unit 1. Consider stapling these journals into packets for students prior to this lesson. You may have each student create a research folder for storing their journals and other notes, texts, and writing throughout the module.• In this lesson, students will browse recommended texts to select books for independent reading. Be sure to have prepared students to select these texts by teaching a mini-lesson on selecting “just right” books at their individual reading level. See separate stand-alone document Launching Independent Reading in Grade 3-5 Sample Plan.• Prepare an equity stick for each student by writing the names of students in your class on a Popsicle stick. These can be held in a small jar and will be used as a strategy for cold calling throughout the rest of the modules.• Review: Carousel Brainstorm protocol (see Appendix).• Post: Learning targets.



Lesson Vocabulary	Materials
infer, inference, defense, mechanism, support, document, inform, entertain; venom/venomous, poison/poisonous, self-defense, survive, toxic, predator, prey	<ul style="list-style-type: none">• Carousel Brainstorm Poster Preparation (for teacher reference)• Carousel Brainstorm posters (new; teacher-created; see poster preparation information in supporting materials)• Carousel Brainstorm: Photos for Posters (one photo per posters 3–10; see supporting materials)• Document camera• Directions for Carousel Brainstorm (one to display)• Markers (different colors for each group)• Equity sticks (Popsicle sticks with each students' names written on them)• <i>Venom</i> (book for teacher read-aloud, cover and pages 4–5)• Guiding Questions anchor chart (new; teacher-created)• Performance Task anchor chart (new; teacher-created)• Animal Defense research journals (one per student and one to display; see Teaching Notes)• KWL chart from page 1 of Animal Defenses research journal (model, for teacher reference)• Unit 1 Recommended Texts (see Module overview documents)• Launching Independent Reading in Grade 3-5 Sample Plan (stand-alone document on EngageNY.org, for teacher reference)



Opening	Meeting Students' Needs
<p>A. Reviewing Learning Targets (5 minutes)</p> <ul style="list-style-type: none"> Read the first learning target aloud to students: <ul style="list-style-type: none"> * “I can infer about animal defenses based on information in pictures and text.” Circle the word <i>infer</i> and ask students to Think-Pair-Share reviewing what it means to infer about something. Listen for responses like: “You use what you know and what the text says to figure out something the author doesn’t specifically say.” If clarification is needed, explain what it means to infer or to draw an inference. Say something like: “To make an <i>inference</i>, a reader uses what he or she already knows about a topic and combines it with the text he or she read (and notes about the text) to figure out something that the author does not explicitly tell the reader.” Provide an example if necessary. You might tell students that if someone is crying, you might infer that someone is sad: you take something you see and combine it with something you already know to infer. They didn’t tell you so you can’t be 100 percent sure, but the detail you saw was the person’s tears and your background knowledge is that people tend to cry tears when they are hurt or sad. You put what you saw (the evidence) together with what you already knew (that tears means hurt or sad) to draw an inference. Tell them today they will infer about animal <i>defense mechanisms</i>, the topic the class will be studying for the next few weeks. They will use pictures and text to do this. <ul style="list-style-type: none"> – Explain that the first word in the term <i>defense mechanism</i>, <i>defense</i>, means to protect yourself or keep something or someone from getting hurt. – The second word, <i>mechanism</i>, means natural reaction in response to something else, so the term <i>defense mechanism</i> means how animals react to protect themselves from harm. Ask for a student volunteer to read the second learning target: <ul style="list-style-type: none"> * “I can support my inferences with details and examples from pictures and texts.” Remind students that whenever they make an inference, they must support it with information from the text they are reading and thinking about. Ask for a student volunteer to read the last learning target: <ul style="list-style-type: none"> * “I can document my research using a research journal.” Ask students to Think-Pair-Share about what it means to document research. Listen for responses like: “It means to record information we have learned from things we’ve read.” 	<ul style="list-style-type: none"> Discussing and clarifying the language of learning targets helps build academic vocabulary.



Opening (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> Have students give a quick thumbs-up, thumbs-down, or thumbs-sideways to indicate how well they understand today's learning targets. 	

Work Time	Meeting Students' Needs
<p>A. Discovering Our Topic: Carousel Brainstorm (20 minutes)</p> <ul style="list-style-type: none"> Point out the Carousel Brainstorm posters displayed around the classroom. Using a document camera, review the posted Directions for Carousel Brainstorm briefly with students and remind them about expectations for group work and discussion. Explain that today, they will be in groups of three to four, and rotate through the Carousel Brainstorm posters to discuss the following question: <ul style="list-style-type: none"> * "What can you infer about animal defenses can you make from the pictures and/or text on this poster?" Remind students that inferring is when you see or read new information and take what you know from past experience or reading to come to a conclusion about the new information. It is a guess based on evidence. If necessary, model briefly by saying something like: "For example, if I were in a group visiting poster 1, I would start by looking at the pages book marked in the text <i>Venom</i> by Marilyn Singer. For example, on page 8 there is a picture of a house with a white fence in front of it. I see a heading that says, 'Home Is Where the Venom Is.' I think that venom is like poison because I have heard about poisonous snakes having venom, so I infer that this means there can be poisonous animals in people's houses! The details that support this inference are the picture of the house and the heading. Next, I would share this inference with my group and we would record it on this Carousel Brainstorm poster." Group students and indicate where each group will start. (You may leave this open-ended and allow groups to visit as many charts as time allows or assign particular charts to each group.) Distribute markers (different colors for each group) and ask students to begin. Give them 3 minutes to work on each chart, and then rotate. As students are writing, monitor for text-based inferences. If necessary, gently point participants to interesting comments and inferences, pushing students to cite evidence for their inferences. At the end of 15 minutes, invite students to go back to the poster where they began and read through all of the inferences and comments on their assigned poster. Explain that they should be thinking about what they notice and wonder about what has been written on their poster. 	<ul style="list-style-type: none"> Consider partnering ELL students who speak the same home language, since discussion of complex content is required. This allows students to have more meaningful discussions and clarify points in their native language. Provide ELLs with a sentence starter or frame to aid in language production. For example: <i>In the photograph I see ... this makes me think that ...</i>



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> • Ask: <ul style="list-style-type: none"> * “What patterns or themes did you notice in all of the Carousel Brainstorm posters?” • Invite each group to share out round-robin style what they noticed and wondered until all posters have been shared. Listen for responses like: “I noticed that many of the posters had animals on them,” or “I saw the word <i>defenses</i> repeated again and again.” 	
<p>B. Engaging the Reader: Read-aloud of <i>Venom</i> (10 minutes)</p> <ul style="list-style-type: none"> • Introduce equity sticks by explaining to students that before you begin today’s lesson you would like to share a new strategy the class will use to help them with their learning. Show students the equity sticks. • Tell them that each student has a Popsicle stick with his or her name on it. Tell them that the class will use these sticks as a way to call on students to participate during class. This will help you check their understanding during lessons. Tell them the reason they are called equity sticks is because everyone has one and will get a chance to think about questions asked in class and share their thinking. • Remind students that all learners, including adults, must be willing to take risks to learn something new. They may not always be confident in their thinking, but sharing their thinking is important to learn new things. • Discuss the importance of being respectful of everyone’s learning by asking: <ul style="list-style-type: none"> * “How can the class be respectful when others are sharing their thinking about questions?” • Listen for responses like: “We’ll actively listen to the speaker by looking at him or her while he or she talks,” or “Only one person will speak at a time.” • Display the cover of <i>Venom</i> so all students can see. Read the title and author aloud to students. Ask: <ul style="list-style-type: none"> * “What do you think <i>venom</i> means?” • Use equity sticks to call on a few students. Accept all responses, but do not clarify the meaning at this point. Ask: <ul style="list-style-type: none"> * “What do you notice about this book? What do you think you will learn from it?” • Read the back cover of the book, then ask: <ul style="list-style-type: none"> * “Now what do you think <i>venom</i> means?” • Display pages 4 and 5 to students. Read the title: “Introduction: Don’t Eat, Don’t Touch, Don’t ... Well, Just Don’t!” Ask: <ul style="list-style-type: none"> * “What do you notice about these pages? What do you wonder about these pages?” 	<ul style="list-style-type: none"> • Research indicates that cold calling improves student engagement and critical thinking. Be sure to prepare students for this strategy by discussing the purpose, giving appropriate think time, and indicating that this strategy will be used before students are asked questions. • Whole class discussions encourage respectful and active listening, as well as social construction of knowledge. • Consider taking more time to practice respectful use of the equity sticks if students demonstrate a need for this.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> Listen for students to notice the text features, headings, color, and use of punctuation (all of which are to capture the reader's attention and cue them to the topic's dangerous nature). Read aloud the three paragraphs on page 4. Invite students to turn and talk, sharing one interesting thing they learned while listening to page 4. After a minute, use equity sticks to cold call several students and ask: <ul style="list-style-type: none"> * "What is one thing your partner learned while listening to page 4?" As students share their partner's learning, ask students to give a thumbs-up to show if they found the same thing interesting. Validate responses, then ask the following questions and continue to use equity sticks to cold call students: <ul style="list-style-type: none"> * "According to this text, what does <i>poisonous</i> mean?" Listen for responses like: "Something that has poison," or "something that can make you sick." * "What do you think the suffix <i>-ous</i> means?" Guide students in noticing that the suffix <i>-ous</i> turns a word into an adjective that describes the quality of the base word. A word ending in <i>-ous</i> means it has an abundance of, or is full of, something. Ask for other examples of words that end in <i>-ous</i> (dangerous, envious). Then ask: <ul style="list-style-type: none"> * "After reading this page, did your definition of 'venom' change? Why or why not?" Listen for students to define "venom" as "poison." * "Why do you think the author titled this book <i>Venom</i>?" Validate responses. If it did not come up in the discussion, explain to students this book is all about animals that use venom and poison to survive. Invite students to look at the visual on page 4. Read aloud the title and question. Read about each pair of animals. Ask students to hold up one finger if they think the animal on the left is poisonous, or two fingers if they think the animal on the right is poisonous (i.e., hold up one finger for the American toad or two fingers for the bullfrog for the first set of animals). Read aloud the title and two paragraphs on page 5. Invite students to turn and talk, sharing one interesting thing they learned while listening to page 5. After a minute, use equity sticks to cold call several students and ask: <ul style="list-style-type: none"> * "What is one thing your partner learned while listening to page 5?" As students share their partner's learning, ask students to give a thumbs-up to show if they also think what the student is sharing is interesting. Validate responses. Ask: 	<ul style="list-style-type: none"> 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. Set clear expectations that students read along silently in their heads as you read the text aloud.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none"> * “Why might an animal use venom?” Listen for responses like: “To catch prey,” “for self-defense,” or “to defend their family or community.” • Invite students to look at the diagram on page 5. Read aloud the title and directions. Invite students to match the animal with how it injects venom. • Tell students that they will use this book throughout the module to learn about animal defense mechanisms. 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. 	
<p>C. Preparing to Research (15 minutes)</p> <ul style="list-style-type: none"> • Display Guiding Questions anchor chart. Use equity sticks to call on a student to read each question aloud. • Invite students to focus on the first question: “How do animals’ bodies and behaviors help them <i>survive</i>?” to Think-Pair-Share. Ask: <ul style="list-style-type: none"> * “What does survive mean?” Listen for responses like: “It means to stay alive.” * “What do you think is meant by animals’ bodies and behaviors?” Listen for responses like: “Their bodies are how they physically look and are made, and their behaviors are how they act.” • Explain to students that scientists call what animals do to protect themselves and survive <i>animal defense mechanisms</i>, and in this module, they will learn about defense mechanisms of all kinds of animals. • Invite students to focus on the second question: “How can a writer use knowledge from their research to <i>inform</i> and <i>entertain</i>?” to Think-Pair-Share. Ask: <ul style="list-style-type: none"> * “What does it mean to inform?” Listen for responses like: “It means to teach someone about something.” * “What does it mean to entertain?” Listen for responses like: “It means to do something for someone to enjoy.” * “What does the word research mean?” Listen for responses like: “It means you learn about something by reading.” • If necessary, give an example of something that informs (the nightly news) and something that entertains (a sitcom or movie), and something that does both (a nature show or a show about a period in history). 	<ul style="list-style-type: none"> • Guiding questions provide motivation for student engagement in the topic, and give a purpose to reading a text closely.



Work Time (continued)	Meeting Students' Needs
<ul style="list-style-type: none">• Explain to students that their written performance task for this module will have to inform and entertain their readers on the topic of animal defense mechanisms and that they will have an opportunity to learn about research during the study of this topic.• Display Performance Task anchor chart. Use equity sticks to call on a student to read the prompt (the first three sentences only). Invite students to give a thumbs-up if they have read a choose-your-own-adventure-type book before, or a thumbs-down if they have not.• Explain that a choose-your-own-adventure is a story that has two possible endings and the reader decides what a character will do at certain points in the story. Tell students that they will learn more about this genre later in the module; for the time being, they just need to know they will research an animal and its defense mechanisms to write a narrative.• Distribute Animal Defense research journals. Invite students to look through their journals and think about what they notice and wonder about them.• Invite students to do a quick go-around in which each person shares in turn. Ask:<ul style="list-style-type: none">* “What do you notice about the research journal?”• Validate student responses and summarize what students noticed. This may sound something like: “Great observations! I heard several of you say that you noticed there were three different sections—one for general animal defense mechanisms, one for the millipede, and one for expert group animals.”• Explain to students they will be using the research journal during the entire module, first to collect and document research about animal defense mechanisms in this unit and in Unit 2, and then later to write their choose-your-own-adventure narratives in Units 2 and 3.• Invite students to Think-Pair-Share, sharing what they wonder about the research journal. Answer any clarifying questions students may have about it, and say that other things they are wondering about it will be answered as they use the journal.	



Closing and Assessment	Meeting Students' Needs
<p>A. KWL Chart: Animal Defense Mechanisms (5 minutes)</p> <ul style="list-style-type: none"> • Invite students to open to page 1 in their research journals, the Animal Defense Mechanisms: KWL chart. Explain the KWL table to students if a KWL chart has not been used yet with your class (K = what we know or think we know; prior knowledge about the topic, W = what we want to know; our questions, and L = what we learned; answers to our questions or information that confirms/refutes our prior knowledge). • Tell students that for the next several days, the class will record their knowledge, questions, and learning using this chart. Invite the students to take several minutes to list all they already know about animal defense mechanisms in the left K column. • Use equity sticks to cold call several students to share out with the class. Record students' comments (both accurate and inaccurate) in the K column. For example, a student may share correct information such as: "Venom is a defense mechanism of some snakes." Or they might inaccurately say: "Tigers use venom as a defense mechanism." Tell students that during this unit, they will continue to learn about animal defense mechanisms and will be looking for evidence from different texts to either confirm or revise their current knowledge. This chart will grow throughout this unit as a way to document class growth in their knowledge about animal defense mechanisms. 	<ul style="list-style-type: none"> • Graphic organizers engage students more actively and provide the necessary scaffolding 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.
<p>B. Launching Independent Reading (5 minutes)</p> <ul style="list-style-type: none"> • Tell students that you have gathered many books related to this topic for them to read independently throughout the module. • Remind students that they should use the Goldie Locks Rule for selecting "just right" texts for independent reading. • Invite students to browse the recommended texts you have displayed for them. • Tell students they will now think of what they are curious about regarding animal defense mechanisms. What do they want to learn about them? Explain that this is a process that researchers go through to guide their research and discovery. Without curiosity, researchers wouldn't have any motivation to learn deeply about a topic. Researchers often ask: "Why?" or "How come?" or "What if?" • Invite students to record at least three questions that they want to know concerning animal defense mechanisms in the middle W column. If students do not have much background knowledge about this topic, they may not have many questions at this time. This is okay; the class will revisit and record more on this chart as they read other texts. Reiterate that they will look for answers to these questions as they continue learning about animal defense mechanisms during this unit. 	<ul style="list-style-type: none"> • You may wish to provide students with additional time to browse and select a text for reading at their independent reading level.



Homework	Meeting Students' Needs
<ul style="list-style-type: none">• Begin your independent reading book for this unit.	<ul style="list-style-type: none">• Students who cannot yet read independently at any level will benefit from hearing books read to them, either by a caregiver or through audio recordings. Hearing books/texts can be an ongoing assignment for these students.• In addition, www.novelnewyork.org has a free, searchable database of content-related texts that can be played as audio files on a home or library computer. Texts on this site can also be translated into many languages. Use the database to provide at-home reading of related texts to ELLs and their families in their native languages.



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Supporting Materials



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Carousel Brainstorm:
Poster Preparation Directions for Teacher Reference

Directions: On a sheet of chart paper, create the posters according to the directions below. Post around the classroom in advance of the lesson.

<p>Carousel Brainstorm poster 1</p>	<p>Write the discussion question on the top of the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p> <p>Display the book <i>Venom</i> by Marilyn Singer under the poster.</p> <p>Bookmark the following pages of the book with sticky notes: page 8 (“Home Is Where the Venom Is” and photograph of the house) page 22 (“Pretty Poison” and photos of butterflies) page 81 (“Eight Arms to Hold You” and photos of octopuses)</p>
<p>Carousel Brainstorm poster 2</p>	<p>Write the discussion question on the top of the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p> <p>Display several copies of the book <i>Animal Behaviors</i> by Christina Wilsdon under the poster.</p> <p>Bookmark the following pages of the books with sticky notes: page 15 (a photo of a walkingstick insect) page 36 (a photo of an opossum playing dead) page 57 (a photo of a poison dart frog) page 59 (a photo of a cinnabar caterpillar) page 92 (a photo of a hover fly)</p>

Carousel Brainstorm:
Preparation Directions for Teacher Reference Cont'd.

Directions: On a sheet of chart paper, create the posters according to the directions below. Post around the classroom in advance of the lesson.

<p>Carousel Brainstorm poster 3</p>	<p>Print and display the photo for poster 3.</p> <p>Write the following quote from <i>Animal Behavior: Animal Defenses</i>, page 50, below the photo: “Their name, which means ‘little armored one’ in Spanish, refers to their bony armor.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>
<p>Carousel Brainstorm poster 4</p>	<p>Print and display the photo for poster 4.</p> <p>Write the following quote from <i>Animal Behavior: Animal Defenses</i>, page 8, below the photo: “[It] bounces into the air with arched back and stiff legs. This motion is called stotting or pronking.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>
<p>Carousel Brainstorm poster 5</p>	<p>Print and display the photo for poster 5.</p> <p>Write the following quote from <i>Venom</i>, page 15, below the photo: “They have a tough exoskeleton, and their main defense is to roll into a tight ball.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>



Carousel Brainstorm:

Preparation Directions for Teacher Reference Cont'd.

Directions: On a sheet of chart paper, create the posters according to the directions below. Post around the classroom in advance of the lesson.

Carousel Brainstorm poster 6	<p>Print and display the photo for poster 6.</p> <p>Write the following quote from <i>Animal Behavior: Animal Defenses</i>, page 97, below the photo: “[It] is named for its stunning ability to mimic not one, but at least three dangerous animals that share its tropical ocean home.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>
Carousel Brainstorm poster 7	<p>Print and display the photo for poster 7.</p> <p>Write the following quote from <i>Animal Behavior: Animal Defenses</i>, page 105: “It feeds on poisonous milkweed plants as a caterpillar. It is unharmed by the poison and stores it up in its body to make itself poisonous to predators.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>



Carousel Brainstorm:

Preparation Directions for Teacher Reference Cont'd.

Directions: On a sheet of chart paper, create the posters according to the directions below. Post around the classroom in advance of the lesson.

Carousel Brainstorm poster 8	<p>Write the following quote from Animal Behavior: Animal Defenses, page 9: “Much of an animal’s self-defense behavior comes from within it. Most animals are born ‘knowing’ how to defend themselves. Scientists call this inborn knowledge instinct.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>
Carousel Brainstorm poster 9	<p>Write the following quote from Animal Behavior: Animal Defenses, page 14: “Camouflage, also known as cryptic coloration, is the one-size-fits-all defense in the world of animals. Animals ... depend on their cryptic colorations to help them blend in.”</p> <p>Write the discussion question below the photo and quote on the poster: “What can you infer about animal defense mechanisms from these pictures and/or text?”</p>



Carousel Brainstorm: Photos for Posters

Teacher Directions: On a sheet of chart paper, post each of these photos according to the preparation directions for the Carousel Brainstorm.

Poster #4



Photo by Yathin Krishnappa, Creative Commons.



Carousel Brainstorm: Photos for Posters

Poster #5



Photo by Noelle (pause.reflect), Creative Commons



Carousel Brainstorm: Photos for Posters

Poster #7



Photo by Sid Mosdell, Creative Commons.



Carousel Brainstorm: Photos for Posters

Expeditionary Learning is seeking permission for the remaining poster images. We will post an updated version of the lesson once permission is granted.



Directions for Carousel Brainstorm

Carousel Brainstorm Protocol

In this protocol, you will work with your group to answer the following question as you visit a series of posters and examine their photographs or text. After discussing the question and the poster, your group will record their thinking on the poster below the picture or text.

Discussion question: What can you infer about animal defense mechanisms from these pictures and/or text?

Directions:

1. Examine the poster's picture or text and discuss the question above.
2. Record your group's response using details from the picture or text to support your answer.
3. Move to the next poster when your teacher gives a signal.
4. If another group has visited the poster before your group, respond to both the question and their answer.



Performance Task Anchor Chart
(For Teacher Reference)

Directions: Write the following on a piece of chart paper in advance of this lesson.

Performance Task

After researching informational texts on animal defenses, create a choose-your-own adventure book about your chosen animal. Write an introduction that describes your animal's physical characteristics, habitat, predators, and defense mechanisms. In your narrative, describe an encounter with a predator and two possible defense mechanisms for survival. Use details and examples from your research to develop your narrative, including concrete words, phrases, and sensory details to convey your animal's experiences.



KWL Chart, Page 1 of Animal Defenses Research Journal:
(For Teacher Reference)

Guiding question: How do animals' bodies and behaviors help them survive?

I THINK I KNOW ...		I WANT to know ...	I LEARNED ...	
Information	Y/N		Information	Source
<ul style="list-style-type: none"> • venom is poison • animals have lots of different ways they defend themselves • mimicry is when animals look or act like other animals as a way to protect themselves • some fish use camouflage to blend in with what's around them as a way to hide from predators 		<ul style="list-style-type: none"> • How does a tiger protect itself? • What if a human approaches an animal? Does the animal use the same defenses it would use if a predator came near it? • How does a jellyfish sting an enemy? 		



Animal Defenses Research Journal

Name: _____

Date: _____

KWL Chart: Animal Defense Mechanisms

Guiding question: How do animals' bodies and behaviors help them survive?

I THINK I KNOW ...		I WANT to know ...	I LEARNED ...	
Information	Y/N		Information	Source



Animal Defenses Research Journal:
Listening Closely Note-catcher

Source: *Venom* pages 16–17 and 19–20

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

Examples of How Bees and Wasps Protect Themselves	How This Helps Bees and Wasps Survive
<i>Venom</i> pages 16–17	
<i>Venom</i> pages 19–20	
Other Facts about Bees and Wasps	

Explain what this section of *Venom* was about?



Animal Defenses Research Journal:
Examining Visuals

Source: “Award-Winning Survival Skills: How Animals Elude Predators”

Directions:

Look at the visual on page 2 of “Award-Winning Survival Skills: How Animals Elude Prey.”

In the first column of the graphic organizer below, record three details you see in the visual.

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!**

Read the article.

In the right-hand column of the graphic organizer, record details from the text that support your inferences in the middle column.

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)



Animal Defenses Research Journal:
Listening Closely Note-catcher

Source: *Venom* pages 26–27

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

Examples of How Ants Protect Themselves	How This Helps Ants Survive
<i>Venom</i> pages 26–27	
Other Facts about Ants	

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



Animal Defenses Research Journal:
Determining Main Ideas

Source: “Award-Winning Survival Skills”

Best Action Hero—The spiny pufferfish

Main Idea:

Supporting Details:

Best Special Effect—The three-banded armadillo

Main Idea:

Supporting Details:



Animal Defenses Research Journal:
Determining Main Ideas

Best Impersonator—The mimic octopus

Main Idea:

Supporting Details:



Animal Defenses Research Journal:
Listening Closely Note-catcher

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	
Other Facts about Pufferfish	

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

Animal Defenses Research Journal:
Examining Visuals

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 78
 - 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 73; "How Venom Works" box on page 76; "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.

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)



Animal Defenses Research Journal:
Determining Main Ideas

Source: *Animal Behavior: 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:

Supporting Details:

“Bad Smells, Bad Tastes, and Powerful Poisons” pages 55–56, stopping at “Poisonous Prey”; pages 58–60

Main Idea:

Supporting Details:



Animal Defenses Research Journal:
Determining Main Ideas

***“Venomous Stings and Bites”* page 73; *“How Venom Works”* box on page 76; *“Stinging Tentacles”* pages 77–78**

Main Idea:

Supporting Details:

***“Mimicry”* pages 91–94**

Supporting Details:



Animal Defenses Research Journal:
Preparing for a Science Talk

Question: How do animals' bodies help them survive?

Preparation: Look back in your Animal Defenses research journal and texts about animal defense mechanisms to find evidence to help you answer the Science Talk question.

When I read or see that (evidence) ...	It makes me think that animals' bodies help them survive by ...
(Example) most spiders are venomous (<i>Venom</i> page 8)	(Example) I think that the venom paralyzes or kills the spider's prey and enemies.



Animal Defenses Research Journal:
Science Talk Notes and Goals

My Science Talk Notes: Ideas and Questions

My teacher's feedback:

My goals for the next Science Talk:



Animal Defenses Research Journal:
Millipede Defense Mechanisms: KWL Chart

Guiding question: How do millipedes' bodies and behaviors help them survive?

I THINK I KNOW ...		I WANT to know ...	I LEARNED ...	
Information	Y/N		Information	Source



Animal Defenses Research Journal:
Millipede Defense Mechanisms
Listening Closely Note-catcher

Source: *Venom* page 15

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

Examples of How Millipedes Protect Themselves	How This Helps Millipedes Survive
<i>Venom</i> page 15	
Other Facts about Centipedes and Millipedes	

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



Animal Defenses Research Journal:
Millipede Defense Mechanisms
Determining the Main Idea

Source: _____

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

Main Idea:	Supporting Details: <i>Explicit information from text</i>

Reading and Writing Like a Researcher:

Summarize page 15 of *Venom*. Use details from the text to support your explanation.



Animal Defenses Research Journal:
Millipede Defense Mechanisms
Listening Closely Note-catcher

Source: _____

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

Examples of How Millipedes Protect Themselves	How This Helps Millipedes Survive
Other Interesting Things:	



Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

Source: _____

Focus question: How do animals use poison to survive?

<p>1. What is the gist of this section of the text?</p>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<p>2. Read Paragraph 1 aloud to a partner. Then use the glossary in the back of <i>Animal Behavior: Animal Defenses</i> to answer the questions on the right.</p>	<p>What does the word “predator” mean?</p> <p>What does the word “prey” mean?</p> <p>Who is usually poisonous, the predator or the prey?</p>
<p>3. Now, reread the first paragraph on page 56 silently. Then use details from the text to answer the questions on the right.</p>	<p>What is a poisonous animal? How is a poisonous animal different from a venomous animal?</p> <p>What is the purpose of this paragraph? What sentence in the text makes you think so?</p>



Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

<p>4. Take turns reading the second and third paragraphs on page 56 to your partner. Then, working together, use details from the text to answer the questions on the right.</p>	<p>The text says, “If the bird swallows the monarch, it regrets it.” What do you think “regret” means?</p> <p>Why would the bird regret it?</p>
<p>5. Look carefully at the following quote: “Scientists have found that the mere sight of a monarch can cause these ‘educated’ birds to gag and retch, as if they were about to be sick.” (page 56) Together, use this quote to answer the questions on the right.</p>	<p>What do you think “retch” means? What words in the text make you think so?</p> <p>Why is the word <i>educated</i> in quotation marks?</p> <p>What does an “educated bird” know?</p> <p>How does poison help the monarch to survive?</p>



Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

<p>6. Reread the focus question. Using evidence from the text, write one way animals use poison to survive in the box on the right. Write the answer to this question with your red pencil.</p>	<p>One way animals use poison to survive is _____</p> <p>_____</p> <p>I think this because _____</p> <p>_____</p> <p>_____</p>
<p>7. Listen as your teacher reads the fourth paragraph on page 56 aloud. Your teacher will help you to choose the right strategy to use in answering the questions on the right.</p>	<p>What familiar word do you recognize in “entrap”?</p> <p>What do you think “entrap” means?</p> <p>What do you think “oozes” means? What words in the text make you think so?</p> <p>What do you think “affect” means? What words in the text make you think so? How is this different from the meaning of the word “effect”? Use a dictionary to help you figure out the difference.</p> <p>What is the purpose of this paragraph? What sentence in the text makes you think so?</p>



Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

<p>8. Using evidence from the text, sketch what the pill millipede does when attacked by a predator.</p>	
<p>9. Reread the focusing question. Using evidence from the text, write another way animals use poison to survive in the box on the right. Write the answer to this question with your red pencil.</p>	<p>Another way animals use poison to survive is _____</p> <p>_____</p> <p>I think this because _____</p> <p>_____</p> <p>_____</p>
<p>STOP HERE: Continue with the questions below in Lesson 12.</p>	
<p>10. Reread the fifth paragraph on page 56 (continued on page 57) silently. Then use details from the text to answer the question on the right.</p>	<p>What is the purpose of this paragraph?</p> <p>What sentence in the text makes you think so?</p>



Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

<p>11. Read the second paragraph on page 57 to a partner. Look carefully at the following quote and use it to answer the questions on the right:</p> <p>“Poison dart frogs (also called poison arrow frogs), which live in Central and South America, excrete a poisonous, foul-tasting fluid from their skin when threatened.” (page 57)</p>	<p>What is another name for “poison dart frogs”? How do you know?</p> <p>What do you think “toxic” means? What words in the text make you think so?</p> <p>The dash “-” in this quote is called a hyphen. Authors sometimes use a hyphen to join two or more words together to make a new word, called a “compound word.” What two words are joined together with a hyphen in this quote?</p> <p>CHALLENGE QUESTION: What part of speech is the compound word “foul-tasting” in this sentence?:</p> <p>The foul-tasting fluid helps the frog survive in two ways. What are they?</p>
<p>12. Think back to the focus question. Using evidence from the text, write one way animals use poison to survive in the box on the right.</p> <p>Write the answer to this question with your red pencil.</p>	<p>Another way animals use poison to survive is _____</p> <p>_____</p> <p>I think this because _____</p> <p>_____</p> <p>_____</p>



Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

<p>13. Examine the photo and caption on page 57. Use details from the text to answer the questions on the right.</p>	<p>Read the caption and look carefully at the photo. What single word in the caption best describes what the photo is meant to show us?</p> <p>What defense mechanism does the poison dart frog use to help it survive?</p> <p>What do you think “excrete” means? What words in the text make you think so?</p> <p>What do poison dart frogs excrete? Use exact words from the text.</p>					
<p>14. Reread the first paragraph on page 58 silently. Then use details from the text to answer the questions on the right.</p> <p>“Of course, if a poisonous animal had a choice, it would rather not be attacked in the first place. It is better for it to stop an attack before it starts.” (page 58)</p>	<p>In the boxes below, draw a picture of each of the ways the text tells us that poisonous animals “stop an attack before it starts.” Be sure to label each picture with words from the text.</p> <table border="1" data-bbox="479 1207 1502 1890"><tr><td></td><td></td><td></td><td></td><td></td></tr></table>					

Animal Defenses Research Journal:
“Poisonous Prey” Note-catcher

Pulling it all together ...	
<p>WORD MEANING</p> <p>15. Reread this note-catcher, noticing the words in bold print. Turn and talk with a partner about three ways you might figure out the meaning of an unknown word. Then, follow the directions on the right.</p>	<p>Add the definitions for “predator” and “prey” to the glossary of your Animal Defenses research journal.</p> <p>Choose three words in bold print on this note-catcher in addition to “predator” and “prey.” Add the definitions of these words to the glossary of your Animal Defenses research journal.</p>
<p>SENTENCE MEANING</p> <p>16. Look back at the answers you wrote in red.</p> <p>What do you notice about sentences that tell the purpose of a paragraph? Hint: You may need to look for these sentences in the text to see a pattern.</p>	
<p>THE BIG IDEA</p> <p>17. Use the evidence you recorded on this sheet, as well as additional evidence from the text, to answer the question below in a well-written paragraph.</p>	<p>THINK: Based on your observations about the paragraphs in this text, what will be important to consider when writing the first sentence of your own paragraph?</p>

Synthesize! Explain how animals use poison to survive (remember to use key words from the focus question in your response):



Animal Defenses Research Journal:
Preparing for a Science Talk

Question: Which millipede defense mechanism is most important? Why?

Preparation: Look back in your Animal Defenses research journal and texts about animal defense mechanisms to find evidence to help you answer the Science Talk question.

When I read or see that (evidence) ...	It makes me think that the most important millipede defense mechanism is ... because ...
(Example) most spiders are venomous (<i>Venom</i> page 8)	(Example) I think that the venom paralyzes or kills the spider's prey and enemies.



Animal Defenses Research Journal:
Science Talk Notes and Goals

My Science Talk Notes: Ideas and Questions

Now that I have heard everyone's reasons and their evidence, the millipede defense mechanism I think is most important is

because

My teacher's feedback:

My goals for the next Science Talk:



Animal Defenses Research Journal:
Glossary

Word/Phrase	Definition	Vocabulary strategy I used to learn this word:	Sketch/Diagram
defenses/defense mechanisms	how animals protect themselves or their kind	inferred from the text	
entrap			
extract			
frantically			
habitat			
injecting			



Animal Defenses Research Journal:
Glossary

Word/Phrase	Definition	Vocabulary strategy I used to learn this word:	Sketch/Diagram
mimicry			
predator			
prey			
poisonous			
quickly			
seizes			
survive			



Animal Defenses Research Journal:
Glossary

Word/Phrase	Definition	Vocabulary strategy I used to learn this word:	Sketch/Diagram
threaten			
unpleasant			
venom	poison that is injected with fangs, stingers, or spines	defined in the text	
warning			