

ELA: Grade 8, Lesson 15, Parasites

Lesson Focus: The focus of today's lesson will be on the informational text, "Top 10 Real-Life Body Snatchers."

Practice Focus: Students will analyze an informational text to determine the main ideas and study author's craft.

Objective: Students will use "Top 10 Real-Life Body Snatchers" to determine the main ideas with a focus on author's craft.

Academic Vocabulary: surreptitiously, larva, venom, dung, entraps, mandibles, defecates, rife

TN Standards: 8.RI.KID.1, 8.RI.KID.3, 8.RI.CS.4, 8.W.TP.2

Teacher Materials:

- The Teacher Packet for ELA, Grade 8, Lesson 15
- Chart paper and markers (will need to have Venn diagram drawn on chart paper and ready to display)

Student Materials:

- Paper and a pencil, and a surface to write on
- The Student Packet for ELA, Grade 8, Lesson 15 which can be found on www.tn.gov/education

Teacher Do	Students Do
<p>Opening (1 min)</p> <p>Hello! Welcome to Tennessee's At Home Learning Series for literacy! Today's lesson is for all our 8th graders out there, though everyone is welcome to tune in. This lesson is the fifth in this week's series.</p> <p>My name is ____ and I'm a ____ grade teacher in Tennessee schools. I'm so excited to be your teacher for this lesson! Welcome to my virtual classroom!</p> <p>If you didn't see our previous lesson, you can find it on www.tn.gov/education. You can still tune in to today's lesson if you haven't seen any of our others. But it might be more fun if you first go back and watch our other lessons, since today we'll be talking about things we learned previously.</p> <p>Today we will continue learning about real-life body snatchers! Before we get started, to participate fully in our lesson today, you will need:</p> <ul style="list-style-type: none"> • Paper and a pencil, and a surface to write on • The Student Packet for ELA, Grade 8, Lesson 15 which can be found on www.tn.gov/education <p>Ok, let's begin!</p>	<p>Students gather materials for the lesson and prepare to engage with the lesson's content.</p>
<p>Intro (1 min)</p> <p>[Show Slide 1.] Today our goal is to read the informational text called "Top 10 Real-Life Body Snatchers" so that we can</p>	<p>Students listen to the teacher and learn an overview of the lesson. If applicable, they also recall what</p>

<p>analyze the information in the text to determine its meaning. We will begin with me reading a portion of the text and then we will reread it and pause along the way for deeper understanding. At the end of the lesson, I will assign you independent work that you can complete after the video ends.</p> <p>[Show Slide 2.] Speaking of which: if you tuned in to the previous lesson, you may have completed the independent work assigned at the end of that one. Remember? [Pause.] We asked you to write a brief essay comparing and contrasting the parasitic relationships we discussed: the barnacle and the crab, and then the thorny-headed worm and the crustacean. Take a moment now to reread what you wrote. [Pause.]</p> <p>How did you do? [Pause.] Does your writing help you remember key details from the previous lesson? [Pause.] I hope you explained both similarities and differences between the two parasitic relationships. You may have used your Venn diagram to explain that the barnacle’s case involves laying eggs while the thorny-headed worm’s one involves a chemical. You could have said that the barnacle gets into the crab through a joint in its exoskeleton, but while we’re not sure how the thorny-headed worm gets into the crustacean, we know that it makes the crustacean then try to get inside of a duck by being eaten! You may also have said that in both cases, the parasite controls its host’s behavior, making it do things it wouldn’t normally do.</p> <p>If you didn’t tune in to the previous lesson and none of this makes sense to you, don’t worry! We’ll learn about different parasites today.</p>	<p>they learned in the previous lesson and assess the work they did for independent practice.</p>
<p>Teacher Model/Read-Aloud (20 min)</p> <p>[Show Slide 3.] Now, let’s dig in to the informational text we will be studying, which is an article about real-life “body snatchers.” As a reminder, historically, people who were called “body-s snatchers” were people who stole dead bodies from graves in order to study or sell them. But these aren’t the type of body-s snatchers we’ll be reading about. We’re going to read about certain types of parasites, or living things that survive by using or hurting other living things, which we call their hosts. As a reminder, we will be hearing a lot of scientific names in this text, like <i>Hymenoepimecis argyraphaga</i> from the previous lesson. Don’t worry about understanding or remembering them; just know they’re names scientists use to refer to different species. I’ll be clear about what we are referring to.</p>	<p>Students recall the concepts of body-s snatchers, parasites, and hosts; use the Venn diagram to anticipate the types of information they will be hearing during the lesson; and comprehend key details about specific parasitic relationships.</p>

The text we are studying has a number of different sections in it - one section on each real-life body-snatcher, or parasite. Today, we will study a few more sections. [Show Slide 4.] As a reminder from yesterday, we will use the information we learn today to complete the Venn Diagram on the article. Here is what the diagram looks like.

[Show Slide 5.] Yesterday, we read about a few parasites including *Sacculina carcini*, a parasitic barnacle that invades crabs and turns them into surrogate mothers, *Polymorphus paradoxus*, a type of thorny-headed worm that infects crustaceans and makes the infected practically throw themselves at their predators, Which has been your favorite so far? [Pause.]

[Show Slide 6.] This Venn diagram shows some of the things parasites do when they infect their hosts. Some change body features, some use chemicals and venoms, some lay eggs in their hosts, and many do a combination of two or even all three of these things.

As we continue to read about different parasites this week, we're going to be sorting them into the various sections of this Venn diagram. For example, if we read about a parasite that uses venom and changes body features but does not lay eggs, we'll put it in this upper left section where the circles overlap [Point.] to show that it is in the "chemicals and venoms" and "changing body features" circles but not in the "laying eggs" circle. If we read about a parasite that changes body features, uses chemicals or venoms, *and* lays eggs, we'd write its name in the very center. Don't worry about this just yet, though, as we will complete this exercise over the course of the lesson.

So let's begin the text! I will begin by reading a section of the text about parasites and their hosts. We will then reread the section and analyze it on a deeper level. As I read the text, please take notes on your paper. Try to focus on the relationship between each parasite and its host and write down key details about them. Let's begin:

[Show Slide 7.] "*Dinocampus coccinellae* A female parasitic wasp of the species *Dinocampus coccinellae* surreptitiously lays one egg in the abdomen of the ladybug *Coleomegilla maculata*."

[Show Slide 8.] **Surreptitiously** may be a new word for you. It means in a way that attempts to avoid notice or attention. So the wasp lays one egg in the ladybug secretly. Parasites can be so sneaky! Be sure to add surreptitiously to your notes along with its meaning: sneaky or secretive, trying to avoid attention. [Pause.]

Let's keep reading.

[Show Slide 9.] **"Like many parasites, the wasp larva munches on the ladybug's tissues, or body. Once it reaches a particular stage in its growth, the maggot-like larva inches its way out between segments of the ladybug's underside."**

[Show Slide 10.] **Do you remember what larva is?** [Pause.] **That's right. Larva is the stage in an insect's life between egg and adulthood. Larva looks like a worm, or as the author describes above, a maggot.**

[Show Slide 11.] **Let's jot down a few notes about what we've read so far. I wrote:**

- **A female wasp secretly lays one egg in a ladybug.**
- **When it's ready, the larva emerges from the ladybug.**

Okay. Let's keep reading.

[Show Slide 12.] **"As it does, scientists suspect the larva leaves venoms behind that subsequently (or afterward) alter the ladybug's behavior. Stunned into a zombie-like state, the ladybug provides cover for a cocoon that the larva spins between the bug's legs."**

[Show Slide 13.] **So, the ladybug is zonked out from the wasp larva venom or poison, and literally protects the larva as it spins a cocoon between its legs. It sounds like that venom is strong enough for mind control! What do you think will happen next?** [Pause.] **Let's keep reading to find out.**

[Show Slide 14.] **"After the adult wasp emerges from the cocoon, about 25 percent of ladybugs actually recover from the trauma."**

So, it sounds like, next, an adult wasp emerges from the cocoon and 75% of the ladybugs involved with this parasitical invasion never recover. There's still a little more to this story.

[Show Slide 15.] **"Scientists were surprised to find that**

there is a cost to the parasite: The longer the ladybug guards the cocoon, the less fertile the emerging wasp will be.”

What does fertile mean again? [Pause.] Be sure to write what it means in your notes. [Pause.] Fertile refers to the wasp’s ability to reproduce. So, in this case, the longer the ladybug hangs around, the less the adult wasp will be able to breed.

[Show Slide 16.] What did you write in your notes about this section? [Pause.] I added:

- The larva uses a venom to stun the ladybug.
- The larva spins a cocoon for itself, protected between the ladybug’s legs.
- An adult wasp comes out of the cocoon.

[Show Slide 17.] Let’s also add the details to our Venn Diagram, while it’s fresh on our memory. Go ahead and take out your copy of the Venn Diagram you drew yesterday. If you were not able to draw it yesterday, go ahead and draw a fresh copy. [Pause.]

This parasite doesn’t really change body features, but it does use a venom and lay eggs. So I’m going to add it here. [Write “wasp & ladybug” in the space where the chemicals and venoms and laying eggs circles overlap.]

I can’t wait to learn about more parasites. Let’s read about two more to complete the series. Don’t forget to jot down notes as we read.

[Show Slide 18.] “*Dicrocoelium dendriticum* One of the most active hitchhikers has to be a lancet fluke, or flatworm, called *Dicrocoelium dendriticum*. During its life cycle, the parasite lives in three hosts. First, a snail eats cow dung (Do you know what dung is? [Pause.] That’s right, poop.) rife (or full) with the worm’s eggs. The eggs hatch inside the snail, and in defense, the snail produces a slime that entraps the larvae. Eventually, the snail hocks a slimy, larvae-filled loogie.”

[Show Slide 19.] Ok, let’s take a look at a challenging word in one of the sentences. The sentence reads “The eggs hatch inside the snail, and in defense, the snail produces a slime that entraps the larvae.” [Show Slide 20.] Based on the context of the passage, what do you think the word “entraps” means? [Pause.] Take a moment and write your answer on your paper. [Pause.] Based on the passage, it

sounds to me like the snail's body tries to protect itself from the parasite by wrapping (or entrapping) the parasite in phlegm (or snot) and then spitting it out.

Let's reread this section one more time before we continue.

"Dicrocoelium dendriticum One of the most active hitchhikers has to be a lancet fluke, or flatworm, called ***Dicrocoelium dendriticum***. During its life cycle, the parasite lives in three hosts. First, a snail eats cow dung rife with the worm's eggs. The eggs hatch inside the snail, and in defense, the snail produces a slime that entraps the larvae. Eventually, the snail hocks a slimy, larvae-filled loogie."

Jot down a few notes about this section. [Pause.] [Show Slide 22.] In my notes, I wrote:

- A flatworm's eggs are in cow dung (poop).
- A snail eats the dung (poop) and the flatworm's eggs.
- The eggs hatch in the snail.
- The snail wraps the larvae in slime and spits it out.

This is certainly a glamorous voyage! Let's see where the adventure takes the parasite next.

[Show Slide 23.] "Then, an ant comes along and slurps up the slime. The parasites set up two outposts, one around the nerves that control the ant's mandibles and another in its head."

[Show Slide 24.] So, I'm going to add to my notes here. [Pause.]

- An ant eats the larva filled slime.
- The parasites hang out in the ant's head and in the nerves that control its mandibles. Mandibles are the ant's jaws.

Let's continue. [Show Slide 25.] "Here is where it gets tricky. The parasite needs to spend its adulthood in the liver of a cow, so it has to get a cow—an herbivore—to eat the ant it has infected. With a little mind control, the parasite gets the ant to crawl up to the top of a blade of grass each night and bite down to stay in place. This way, a cow is more likely to chomp on it while grazing."

[Show Slide 26.] Let's think about this for a moment. Why would an ant need to be forced to hang out at the top of a blade of grass all night? [Pause.] Jot down a few notes about

this behavior. [Pause.] Think about what you already know about how ants normally behave. [Pause.] When I think about ants, I imagine that they often travel in groups, are continuously busy, and have a strong will to survive. Hanging out on a blade of grass doesn't fit with this routine, and the parasite must have strong mind control powers to be able to make an ant act so out of character.

Ok. Let's add this part to our notes as well. Summarize what we just read. [Pause.]

[Show Slide 27.] In my notes, I added:

- The parasite makes the ant crawl to the top of blades of grass until a cow eats it.

Let's finish the passage.

[Show Slide 28.] "In the cow's liver, adult worms reproduce, and the cow later defecates the eggs. And so, the cycle continues."

[Show Slide 29.] So this explains how the larvae get in the cow dung in the first place! After the cow eats the infected ant, the parasites reproduce in the cow. When the cow defecates (another word for poops), the larvae await the snail and the cycle continues.

[Show Slide 30.] Okay, let's take a step back and summarize what we just read. Be sure to check your notes for the summary. [Pause.] This parasite's lifecycle is a journey. First, its eggs are in cow dung, or poop. Then what happens? [Pause.] Yes, that's right, a snail eats the cow dung and the eggs. The snail then coughs up the flatworm in a slimy loogie. What happens next? [Pause.] An ant comes along and eats the loogie. The parasite uses mind control to make the ant hang out on blades of grass where a cow will chomp it up. And, how does the journey end? [Pause.] Once in the cow's belly, the parasites reproduce and make more eggs. The cow poops them out and the journey begins again.

[Show Slide 31.] Jot down a few notes about this parasite. Be sure to include the answers to the following questions in your notes. [Pause.]

- How does the flatworm use the snail, the ant, and the cow? [Pause.]
- How are the parasites' actions manipulative? [Pause.]

- What are the effects of the parasites' actions on the hosts? [Pause.]

What did you write? [Pause.] I wrote that the flatworm uses the snail, ant, and cow as transportation to take it where it needs to go to survive. The parasites manipulate the hosts by making them do what they normally wouldn't. For example, making the ant crawl to the top of a blade of grass awaiting its death.

[Show Slide 32.] Let's fill in the Venn Diagram with this parasite. [Write "flatworm" in the space between chemicals and venoms and laying eggs.] I am writing flatworm in the space between chemicals and venoms and laying eggs because the flatworm lays eggs in the cow dung and uses chemicals to control the ant. [Pause.] What else can parasites make others do? I can't wait to find out more. Let's read the final section.

[Show Slide 33.] "*Leucochloridium paradoxes* Another parasitic flatworm, *Leucochloridium paradoxum*, infects a snail and then somehow has to get from a snail to a bird, its next and final host. One problem: Birds do not normally snack on snails. Undeterred, the parasite packs itself into the snail's translucent eyestalks. The green and brown-striped worms make the eyestalks, at least to a bird, look like juicy, quivering caterpillars. Infected snails also make themselves more visible to birds because they do not shy away from light as healthy ones do."

Ok, let's think about this section. Based on the context, what do you think the word "undeterred" means? [Pause.]

[Show Slide 34.] Let's read that part again to see if we can infer the meaning. "Another parasitic flatworm, *Leucochloridium paradoxum*, infects a snail and then somehow has to get from a snail to a bird, its next and final host. One problem: Birds do not normally snack on snails. Undeterred, the parasite packs itself into the snail's translucent eyestalks."

[Show Slide 35.] I notice that the author says that the snail somehow has to get to a bird and that this is a problem, since it's on a snail and birds don't usually eat snails. Undeterred, the parasite solves the problem by getting into the snail's eyestalks and making them look like caterpillars, which birds love to eat. So what do you think undeterred might mean? [Pause.] That's right! If you're undeterred, you're persistent,

<p>not afraid of a challenge or problem. You're going to keep going no matter what!</p> <p>If the author had chosen a different adjective, such as slyly, or sneakily, how would that have changed the tone? [Pause.] For example, "One problem: Birds do not normally snack on snails. Slyly, the parasite packs itself into the snail's translucent eyestalks." [Pause.] Changing that one word makes me think the parasite is tricky and maybe like a villain. The author's word choice, undeterred, and the way the author uses the word to describe the parasite, makes me think that the parasite is intelligent, persistent, and even creative. It gets what it wants, even with a challenge!</p> <p>[Show Slide 36.] Let's add this to the Venn Diagram. The <i>Leucochloridium paradoxes</i> changes the snail's body features (the eyestalks) to make them look like caterpillars, so I added that parasite to the changing body features circle. [Pause.] [Write in Venn Diagram.]</p> <p>I hope that you found this exercise to be helpful. The purpose is to make sure we are categorizing the examples and ideas we have read about today as well as observing the relationships among them.</p> <p>[Show Slide 37.] In your notes, be sure to answer the following questions:</p> <ul style="list-style-type: none"> • How does the parasite use the host animal? [Pause.] • How are the parasites' actions manipulative? [Pause.] • What are the effects of the parasites' actions on the hosts? [Pause.] <p>I answered that the parasite changes the snail's eyes to make them look like caterpillars. This is manipulative because it puts the host (the snail) in danger of getting eaten by a bird.</p>	
<p>Independent Work (1 min)</p> <p>Let's reflect on today's lesson. Today we learned about some parasites and the creative ways that they take advantage of their hosts. For your independent work, please respond in writing to the following prompts.</p> <p>[Show Slide 38.] Students, please write the question down on your notebook paper so you will have them handy for when you are responding in writing.</p> <p>Using everything you've learned from the past few lessons on "Top 10 Real-Life Body Snatchers," write a response in</p>	<p>Using their notes and evidence from the texts, students will synthesize their understanding of specific details into a coherent conceptual understanding of how parasites and hosts interact.</p>

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which you cite evidence from the text to support the central idea that parasites “manipulate” other animals. As you give examples of how parasites manipulate their hosts, explain, why each parasite uses that particular host, and the effect of the parasites’ manipulation on the hosts. Your notes from today should give you a good start on writing about at least two parasites, and if you tuned in to the previous lessons you’ll have other evidence to include as well. I’ll give you a minute to write down what you need to do. [Pause.]	
<u>Closing</u> (1 min) Thank you. I enjoyed working on the Body Snatchers informational text with you today! Thank you for inviting me into your home. I look forward to seeing you in our next lesson in Tennessee’s At Home Learning Series! Bye!	

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