

ELA: Grade 2, Lesson 5, Insects

Lesson Objective: Students will know about the life cycle of insects

Practice Focus: Accessing prior knowledge, and making predictions

Today we will be learning about an insect's life cycle and complete and incomplete metamorphosis. By the end of the lesson, you will be able to create and label an insect's life cycle. You will also be able to determine if that insect goes through complete or incomplete metamorphosis with one piece of evidence to support your claim.

TN Standards: 2.RI.KID.1; 2.RI.IKI.7; 2.W.RBPK.8

Teacher Materials:

- ELA, Grade 2, Lesson 5 Teacher Packet – printed (will hold up images for students to see)
- One piece of paper

Student Materials:

- Piece of paper
- Pen or pencil

Teacher Do	Student Do
<p>Opening Hello! Welcome to Tennessee's At Home Learning Series for literacy! Today's lesson is for all our 2nd graders out there, though all children are welcome to tune in. This lesson is the fifth in our 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>Before we get started, to participate fully in our lesson today, you will need:</p> <ul style="list-style-type: none">• Something to write with and a surface to write on• Piece of paper <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 see any of our others. But, it might be more fun if you first go back and watch our other lessons since we'll be talking about things we learned previously.</p> <p>Ok, let's begin!</p> <p>Today we will be learning about metamorphosis and how that impact's an insect's life cycle. At the end of the lesson, you get to make an insect life cycle poster! Based on our reading today, you will determine whether the insect's life</p>	<p>Collects materials needed to engage in the lesson.</p>

<p>cycle is one of complete metamorphosis or incomplete metamorphosis. You will also make a claim of the type of metamorphosis that your insect goes through with reasons supporting that claim. Your poster will be super interesting if you use vocabulary that you have learned in our read aloud lessons.</p> <p>Let's check out a few of those vocabulary words now.</p> <ul style="list-style-type: none"> • <u>Metamorphosis-</u> (Please repeat after me) METAMORPHOSIS This word is a noun. The definition is, the process of change, taking place in two or more distinct stages, in the life of an insect Here is an example of the word in a sentence: Tadpoles develop into frogs during a process of change known as metamorphosis. You might also hear the plural form, metamorphoses. • <u>Progression-</u> (Please repeat after me) PROGRESSION This word is a noun. The definition is, a continuous and connected series of actions or events Here is an example of the word in a sentence: The progression of the phases of the moon from new moon to full moon and back to new moon again follows a predictable pattern. You might hear the plural form, progressions. 	
<p><u>Intro</u> What Have We Already Learned? [Ask students the following]:</p> <ul style="list-style-type: none"> • What are three body parts all insects have? [Pause] Yes, head, thorax, and abdomen. • How many legs all insects have? [Pause] Yes, 6 legs. Remember most, but not all insects, have wings. The cockroach in the previous lesson gave us a hint about the insect we will meet today, an insect that holds its front legs together in a prayer position. • What might that insect be? [Pause] This insect will be the narrator of today's read-aloud. Today you will learn about the stages in the life of an insect. All living things are born, and all living things die, but different types of animals experience different stages of development in between. 	<p>Student interacts with teacher's questions as posed. Student will access prior knowledge about insects.</p>

<ul style="list-style-type: none"> • What are the stages of a human being's life cycle. [Pause] The stages of the human life cycle are infant, child, adolescent, adult. <p>Purpose for Listening Not all insects experience the same stages of development. Their life cycles vary according to the types of insects.</p> <p>Please listen carefully to be able to identify two distinctly different ways insects develop and to be able to name the stages of each kind of change.</p>	
<p><u>Teacher Model</u> Life Cycles of Insects</p> <ul style="list-style-type: none"> • [Show image 3A-1 Praying Mantis] Hi, boys and girls. It's time to meet one of the most fascinating insects on the planet. That's me. I'm a praying mantis, named for the way I hold my two front legs together as though I am praying. I might look like I am praying, but my incredibly fast front legs are designed to grab my food in the blink of an eye! I'm here to talk to you about the life stages of insects—how insects develop from birth to adult. Many insects undergo a complete change in shape and appearance. I'm sure that you are already familiar with how a caterpillar changes into a butterfly. The name of the process in which a caterpillar changes, or morphs, into a butterfly is called metamorphosis. • [Show image 3A-2: Life Cycle of a Butterfly] Insects like the butterfly pass through four stages in their life cycles: egg, larva [LAR-vah], pupa, and adult. Each stage looks completely different from the next. The young never resemble, or look like, their parents and almost always eat something entirely different. The female insect lays her eggs on a host plant. • When the eggs hatch, the larvae [LAR-vee] that emerge look like worms. • Different names are given to different insects in this worm-like stage, and for the butterfly, the larva state is called a caterpillar. • [Show image 3A-3: Insect Larvae] Fly larvae are called maggots; beetle larvae are called grubs; and the larvae of butterflies and moths, as you just heard, are called caterpillars. • Larvae feed and grow as quickly as they can. They also molt, or shed their hard exoskeletons, many times as they grow, because the exoskeletons don't 	<p>Student interacts with teacher's questions as posed and discussion as presented. Student will access prior knowledge about insects.</p>

<p>grow with them. In this way, insect larvae grow larger each time they molt, until they are ready to change into adult insects.</p> <ul style="list-style-type: none"> • [Point to each stage of the life cycle as you read it.] What is a host? [Pause] Well, a host is an animal or plant on which, or in which, another organism lives. • The word larva is singular, and the word larvae is plural. • [Show image 3A-4: Cocoon (soft silk) and Chrysalis (hard case)] Once the larvae have eaten all that they can eat, they take a break. Sometimes people call this next stage a resting stage, but the larvae are hardly resting. A larva often spins a cocoon to protect itself during the pupa stage when it will remain quite still for several weeks. Inside this shell-like covering, the pupa transforms, or changes, into something that looks altogether different than before. Some insects have a soft cocoon for the pupa stage, and some, like the butterfly, have a harder case called a chrysalis. • [Show image 3A-5: Butterfly Emerging from Chrysalis] If you have ever seen a butterfly emerge from its chrysalis, you know how extraordinary it is to watch the first flutter of its fully developed butterfly wings. Its wings were completely invisible before it disappeared into its seemingly magic chrysalis. It looks nothing like it did at any of its earlier stages. Scientists call this progression, through four separate stages, a complete metamorphosis. • I can't argue with that, can you? The change is indeed complete. Butterflies, moths, beetles, and flies all undergo a complete metamorphosis. • [Show image 3A-6: Life Cycle of Praying Mantis] Not all insects change so completely. Some insects' young, like mine, are miniature, or very small, models of their parents after hatching. They do change, so they do experience a metamorphosis, but because it is not a complete change, scientists call it an incomplete metamorphosis. Just like you, the young start off as a smaller version of what they will end up being. Just as you started off as a baby person and are slowly growing into an adult person, some young insects slowly grow and change into an adult. A praying mantis goes through three life stages: egg, nymph, and adult. 10 In the autumn, the female mantis lays as many as 400 eggs inside an egg case, attached to a plant. 	
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- The tiny praying mantis babies emerge from the egg case. These brand-new hatchlings, or nymphs, don't quite look like me, do they? [Pause]
- A little later, the nymph resembles me more—the only thing it is missing is its wings. Even though you can't see them yet, there are tiny developing wing buds. These nymphs eat the same sorts of food as I do as an adult praying mantis—flies, aphids, moths, and other insects—just smaller. Let's take a close look at one of these nymphs.
- [Show image 3A-7: Praying Mantis Nymph]
Can you find its head? [Pause] How many legs are on its thorax? [Pause] Yes, they are right here!
Can you see how many pairs of wings it has? [Pause] Let's count them.
- What is the outside skeleton of an insect called? [Pause] Right— an exoskeleton. The baby insect, or nymph, is born with an exoskeleton, but these hard, nonliving coverings do not grow with the growing praying mantis nymph. As a nymph grows, its exoskeleton splits open.
- [Show image 3A-8: Praying Mantis Nymph]
The nymph wriggles out to reveal softer skin that can stretch and expand before it hardens. It molts its exoskeleton again and again, growing a new one as many as ten times before it reaches adulthood. The nymph stage often lasts all summer long. After its final molt, each surviving praying mantis has a fully developed exoskeleton and full-grown wings like mine.
- Grasshoppers, crickets, and cockroaches belong to the group of insects that experience an incomplete metamorphosis similar to this one. An insect's life cycle is quite short compared to yours. In some cases, it takes only a few weeks. Scientists believe that this is one reason there are so many insects on the planet. They are forever breeding and need to reproduce rapidly because they have so many enemies. Not all insects, however, have short life cycles.
- There are two tiny wing buds, but they are hard to see. 13 (abdomen) 14 What does the word molt mean? [Pause] to shed, to make way for new growth
- [Show image 3A-9: Cicada and Molted Skin]
The cicada looks a little like a grasshopper and is thought to have the longest life cycle of any insect, ranging from two to seventeen years. The adult

<p>cicada lays her eggs on twigs. When the eggs hatch, the nymphs fall to the ground and burrow into the soil, searching for tree roots. They feed on the tree's sweet root sap. Cicadas undergo incomplete metamorphosis, so there is no pupal stage. The nymphs remain hidden beneath the ground, continuing to shed their exoskeletons. Once they are fully grown, they make their way to the surface again, shed their skin one last time, and emerge as winged adults. For some reason, all of the cicadas in an area emerge at once either every thirteen years or every seventeen years.</p> <ul style="list-style-type: none"> • [Show image 3A-10: Swarm of Cicadas] When the cicadas all emerge, they fly everywhere, and their calls are very loud. When hundreds of flying insects swarm through the air, their loud buzzing noises and the snapping of their wings make quite a loud noise! Next time, you will meet some other flying insects that may also travel in swarms. Can anyone guess what insects they might be? I'll give you a clue: Bzzzzzzz..... 	
<p><u>Guided Practice</u> [Show image 3A-11 Cockroach, Praying Mantis, Grasshopper, and Cricket and then show image 3A-12- Incomplete Complete Metamorphosis] Each of the insects pictured in this group of images undergoes incomplete metamorphosis. Remember the three stages of incomplete metamorphosis are: egg, nymph, and adult.</p> <p>[Show image 3A-13- Complete Metamorphosis] Complete metamorphosis: Each of the insects pictured in this group of images undergoes complete metamorphosis. Remember the four stages of complete metamorphosis: egg, larva, pupa, adult.</p>	<p>Students identify the difference between complete and incomplete metamorphosis.</p>
<p><u>Independent Practice</u></p> <ul style="list-style-type: none"> • You get to make an insect life cycle poster! You will draw a picture of the life cycle of one insect on a piece of paper. • Based on what you heard in the read-aloud you just completed, you will determine whether the insect's life cycle is one of complete metamorphosis or incomplete metamorphosis. To add to your poster, you will write a sentence telling the type of metamorphosis and at least one reason supporting that claim. Your poster will be super interesting if 	<p>Students create an insect life cycle poster.</p>

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<p>you use vocabulary that you have learned in our read aloud lessons.</p> <ul style="list-style-type: none">• Additionally, you can write down any questions you have about the life cycles of insects. <p>Once you are done with your poster, share with family or a friend. Tell them about everything you learned!</p>	
<p><u>Closing</u></p> <ul style="list-style-type: none">• I enjoyed learning about the life cycle of insects 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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