

# *LIFE CYCLE OF BUTTERFLIES DEEP ALIGNMENT*

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## **STANDARDS ALIGNMENT KEY**

- ◆ Unit is aligned as is.
- ◆ V Unit is aligned with the intentional use of vocabulary from the Washington Science Standards
- ◆ R Unit is aligned with the intentional use of the STC Children's Book
- ◆ r Unit is aligned with the intentional use of the readings within the unit.
- ◆ E Unit is aligned with the intentional use of the lesson extensions
- ▲ Unit needs identified changes or additions to be aligned

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EALR	Grade Band	Code	Content Standard	Performance Expectation	Lesson Number	Alignment Symbol	Comments/Evidence
System	2-3	SYSA	A <i>system</i> is a group of interacting parts that form a whole.	Give examples of simple living and physical <i>systems</i> (e.g., a whole animal or plant, a car, a doll, a set of table and chairs). For each example, <i>explain how</i> different parts make up the whole.	Addressed throughout the unit.	◆V	This unit contains many opportunities to discuss <i>systems</i> but the teacher must be intentional about using the term <i>systems</i> when describing the adult butterfly and/or the caterpillar.
System	2-3	SYSB	A whole object, plant, or animal may not continue to <i>function</i> the same way if some of its parts are missing.	<i>Predict</i> what may happen to an object, plant, or animal if one or more of its parts are removed (e.g., a tricycle cannot be ridden if its wheels are removed). Explain how the parts of a system depend on one another for the system to function.	Addressed throughout the unit.	◆V	Students are asked to make <i>predictions</i> all throughout the unit.  The teacher needs to be intentional about discussing what might happen to the <i>function</i> of the adult butterfly or caterpillar if one of its parts were missing.
System	2-3	SYSC	A whole object, plant, or animal can do things that none of its parts can do by themselves.	Contrast the <i>function</i> of a whole object, plant, or animal with the <i>function</i> of one of its parts (e.g., an airplane can fly, but wings and propeller alone cannot; plants can grow, but stems and flowers alone cannot).	Lessons 4,5,6,7,10,11	◆V	Intentional use of the term <i>function</i> is needed when talking about the <i>function</i> of an adult butterfly or caterpillar and what the complete organism can do that none of its parts can do by themselves.

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<b>System</b>	2-3	SYSE	Similar parts may play different roles in different objects, plants, or animals.	Identify ways that similar parts can play different roles in different <i>systems</i> (e.g., birds may use their beaks to crack seeds while other birds use their beaks to catch fish).	Lessons 11,14	◆	
<b>System</b>	K-1	SYSA	Living and nonliving things are made of parts. People give names to the parts that are different from the name of the whole object, plant, or animal.	Given an illustration of a whole object, plant, or animal, name at least five different parts.  <i>Compare</i> a part of an object with the whole object, correctly using the words <i>whole</i> and <i>part</i> .	Lessons 4,11,14	◆V	

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Inquiry	2-3	INQA	Scientific investigations are <i>designed</i> to gain knowledge about the <i>natural world</i> .	Explain how observations can lead to new knowledge and new <i>questions</i> about the <i>natural world</i> .	Addressed throughout the unit.	◆	The teacher should intentionally take advantage of the multiple opportunities for sharing that all of the scientific observations students conduct lead to new knowledge and new <i>questions</i> about the natural world.
Inquiry	2-3	INQB	A scientific investigation may include making and following a plan to accurately observe and <i>describe</i> objects, events, and <i>organisms</i> ; make and record measurements; and <i>predict</i> outcomes.	Work with other students to make and follow a plan to carry out a scientific investigation. Actions may include accurately observing and describing objects, events, and <i>organisms</i> ; measuring and recording data; and predicting outcomes.	Addressed throughout the unit.	◆	In this unit, students engage in scientific investigations where they predict, observe, measure time, and record. They are not asked to “make a plan”.
Inquiry	2-3	INQC	<i>Inferences</i> are based on <i>observations</i> .	Distinguish between direct <i>observations</i> and simple <i>inferences</i> .	Lessons 2-7,14,	▲	There is potential for teachers to ask students to infer based on their observations but inferring is not explicit in any lesson.  Teachers need to be intentional about using the terms <i>observation</i> (information gathered through the senses) and <i>inference</i> (information inferred from observations and experiences).

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Inquiry	2-3	INQD	Simple instruments, such as <i>magnifiers</i> , <i>thermometers</i> , and rulers provide more information than scientists can obtain using only their unaided senses.	Use simple instruments (e.g., metric scales or balances, thermometers, and rulers) to observe and make measurements, and record and display data in a table, bar graph, line plot, or pictograph.	Addressed throughout the unit.	◆	
Inquiry	2-3	INQE	<i>Models</i> are useful for understanding <i>systems</i> that are too big, too small, or too dangerous to study directly.	Use a simple <i>model</i> to study a <i>system</i> . <i>Explain how</i> the <i>model</i> can be used to better understand the system.	Lesson 4	◆ ◆E	In Lesson 4, the diagram of the caterpillar is a way to study an organism that is too small to see it different parts.  In the extension, the teacher must be intentional about labeling the parts of the model the students make.
Inquiry	2-3	INQF	Scientists develop explanations, using <i>observations (evidence)</i> and what they already know about the world. Explanations should be based on <i>evidence</i> from investigations.	Accurately <i>describe</i> results, referring to the graph or other data as <i>evidence</i> . Draw a conclusion about the <i>question</i> that motivated the study using the results of the investigation as <i>evidence</i> .	Addressed throughout the unit.	◆	
Inquiry	2-3	INQG	Scientists make the results of their investigations public, even when the results contradict their expectations.	Communicate honestly about their investigations, describing how <i>observations</i> were made, and summarizing results.	Addressed throughout the unit.	◆	As students are collecting and communicating data, teachers need to be intentional about discussing the importance of <i>honesty</i> when they communicate the findings of their investigations with others.

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<b>Inquiry</b>	K-1	INQA	<p>Scientific investigations involve asking and trying to answer a <i>question</i> about the <i>natural world</i> by making and recording <i>observations</i>.</p>	<p>Ask <i>questions</i> about objects, <i>organisms</i>, and events in their <i>environment</i>.</p> <p>Follow up a <i>question</i> by looking for an answer through students' own activities (e.g., making <i>observations</i> or trying things out) rather than only asking an adult to answer the <i>question</i>.</p> <p>Observe patterns and <i>relationships</i> in the <i>natural world</i>, and record <i>observations</i> in a table or picture graph.</p>	Addressed throughout the unit.	◆	
<b>Inquiry</b>	K-1	INQB	Many children's toys are models that represent real things in some ways but not in other ways.	Given a child's toy that is a <i>model</i> of an object found in the real world, <i>explain how</i> it is like and unlike the object it represents.	Lesson 8 Extension	◆E	In the extension #3 of Lesson 8, the teacher makes a sock puppet to dramatize the life cycle.
<b>Inquiry</b>	K-1	INQC	Scientists develop <i>explanations</i> , using recorded <i>observations</i> ( <i>evidence</i> ).	<p><i>Describe patterns</i> of data recorded, using tallies, tables, picture graphs, or bar-type graphs.</p> <p>Participate in a discussion of how the recorded data might help to <i>explain</i> the observations.</p>	Addressed throughout the unit.	◆	

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<b>Inquiry</b>	K-1	INQD	Scientists report on their investigations to other scientists, using drawings and words.	Report <i>observations</i> of simple investigations, using drawings and simple sentences. Listen to and use <i>observations</i> made by other students.	Lessons 6,7,9,14	◆ ▲ ▲	In Lessons 6 and 7, students draw and label.  In Lessons 9,14 teachers should be intentional about having students create their own drawings and label them.  Teacher needs to be intentional in having students listen to and use the observations of others
<b>Inquiry</b>	K-1	INQE	<i>Observations</i> are more <i>reliable</i> if repeated, especially if repeated by different people.	State verbally or in writing a need to repeat <i>observations</i> to be certain the results are more <i>reliable</i> .	Addressed throughout the unit.	◆	Every investigation is completed by partner pairs to validate the observations. Teachers need to be intentional to point out the importance of <i>repeated trials</i> for <i>reliability</i> . They should also stress that <i>repeated trials</i> are occurring when multiple teams in the classroom are all making the same observations and comparing results.
<b>Inquiry</b>	K-1	INQF	All scientific <i>observations</i> must be reported honestly and accurately.	Record <i>observations</i> honestly and accurately.	Addressed throughout the unit.	◆	As students are collecting and communicating data, teachers need to be intentional about discussing the importance of <i>honesty</i> when they communicate with others the findings of their investigations.

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EALR	Grade Band	Code	Content Standard	Performance Expectation	Lesson Number	Alignment Symbol	Comments/Evidence
Life Science	2-3	LS1A	Plants have <i>life cycles</i> that include sprouting, growing to full size, forming fruits and flowers, shedding seeds (which begins a new cycle), and eventually dying. The details of the <i>life cycle</i> are different for different plants.	<i>Describe the life cycle</i> of a common type of plant (e.g., the growth of a fast-growing plant from seed to sprout, to adult, to fruits, flowers, and seeds).	Lesson 15	◆	Teachers should intentionally use the example given in this lesson (Brassica life cycle).
Life Science	2-3	LS1B	Animals have <i>life cycles</i> that include being born, developing into children, adolescents, then adults, reproducing (which begins a new cycle), and eventually dying. The details of the <i>life cycle</i> are different for different animals.	<i>Describe the life cycle</i> of a common type of animal (e.g., the development of a butterfly or moth from egg, to larva, to pupa, to adult; or the development of a frog from egg to tadpole to adult frog).	Addressed throughout the unit.	◆	
Life Science	2-3	LS3A	There are <i>variations</i> among the same kinds of plants and animals.	Give examples of <i>variations</i> among individuals of the same kinds of plants and animals within a <i>population</i> (e.g., tall and short pine trees, black cats and white cats, people with blue eyes or brown eyes, with freckles or without).	Addressed throughout the unit.	◆	

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Life Science	2-3	LS3B	The offspring of a plant or animal closely resembles its parents, but close inspection reveals differences.	<i>Compare</i> the offspring of a plant or animal with its parents, listing features that are similar and that are different.	Addressed throughout the unit.	◆	The teachers must be intentional about communicating with students that each egg of the Painted Lady butterfly contains the inherited information from the parent to produce a new butterfly that will resemble its parent.
Life Science	2-3	LS3C	Sometimes differences in <i>characteristics</i> give individual plants or animals an advantage in surviving and reproducing.	<i>Predict</i> how differences in <i>characteristics</i> might help one individual survive better than another (e.g., animals that are stronger or faster, plants or animals that blend into the background, plants that grow taller or that need less water to survive).	Lessons 4, 9, and 11.	▲	Teachers must be intentional to point out characteristics that give the butterfly an advantage of survival and reproduction by pointing out examples (the larva/caterpillar's bristles, and the adult butterfly camouflage when wings are folded at rest). The Teacher Background of Lesson 4 and 11.  If deformed butterflies emerge, this can be an opportunity to discuss the how a change in the inherited characteristics can impact the animal's survival. See Teacher Background in Lesson 9.
Life Science	K-1	LS1B	All plants and animals have various external parts.	Identify the external parts of different plants and animals (e.g., legs on an insect, flowers, stems, and roots on many plants, feathers on birds, scales on fish, eyes and ears on many animals).	Addressed throughout the unit.	◆	
Life Science	K-1	LS1C	The parts of a plant or animal appear different under a <i>magnifier</i> compared with the unaided eye.	Observe how parts of a plant or animal look under a <i>magnifier</i> and draw or use words to <i>describe</i> them (e.g., a single hair, the leg of an insect, a fingerprint).	Addressed throughout the unit.	◆	

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Life Science	K-1	LS1D	Different animals use their body parts in different ways to see, hear, grasp objects, and move from place to place.	<i>Compare</i> how different animals use the same body parts for different purposes (e.g., humans use their tongues to taste, while snakes use their tongues to smell).	Lessons 4, 6, 10, 11, and 14	◆	The teacher needs to be intentional about pointing out how the same body parts (mouth, feet, legs, spinnerets, eyes) on different animals (butterfly, human, spider, and caterpillar) are used in different ways.
Life Science	K-1	LS1E	Animals have various ways of obtaining food and water. Nearly all animals drink water or eat foods that contain water.	<i>Compare</i> how different animals obtain food and water (e.g., a squirrel hunts for nuts, a pet dog eats prepared food and drinks water from a bowl or puddle, many birds and insects find nectar in flowers, which contain food and water, people may grow food in gardens and many shop for food in stores and get water from the tap).	Lessons 3, 9, 10	◆	
Life Science	K-1	LS2A	There are different kinds of natural areas, or <i>habitats</i> , where many different plants and animals live together.	<i>Investigate</i> an area near the students' home or school where many different plants and animals live together (e.g., a lawn, a vacant lot, a wooded park, a flower bed) and <i>describe</i> the different plants and animals found there.	Lesson 2	▲E	To address this standard, the teacher would need to take advantage of the opportunity in Lesson 2, Extension #2 to take children outside to examine and describe the different kinds of plants and animals living in the schoolyard.

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Life Science	K-1	LS2B	A habitat supports the growth of many different plants and animals by meeting their basic needs of food, water, and shelter.	Identify the <i>characteristics</i> of a habitat that enable the habitat to support the growth of many different plants and animals (e.g., have trees to provide nesting places for birds and squirrels; pond water for tadpoles and frogs; blackberry bushes for rabbits to hide in).	Lessons 2, 3, 10, and 12	▲	When discussing the needs that are met for the caterpillar and butterfly in a habitat, the teacher would need to be intentional about pointing out the <i>other</i> plants and animals who live there and how the <i>characteristics</i> of the habitat are meet their basic needs as well.
Life Science	K-1	LS2C	Humans can change natural <i>habitats</i> in ways that can be helpful or harmful for the plants and animals that live there.	List two or more things that humans do that might harm plants and animals in a given habitat (e.g., throwing litter in a pond might cause difficulty for water birds and fish to find food or might poison the plants and animals that live there).  Communicate ways that humans protect <i>habitats</i> and/or improve conditions for the growth of the plants and animals that live there. (e.g., reuse or recycle products to avoid littering.)	Lessons 2 and 3	▲	The teacher would need to intentionally share an example of humans spraying to destroy the plants used as a food source by the butterfly and the caterpillar (thistle, mallow, rose of sharon, hollyhock).
Life Science	K-1	LS3A	Some things are alive and others are not.	Use logical rules to sort objects into two groups, those that are alive and those that are not.	Lesson 3	▲	The teacher could take advantage of Lesson 3's discussion in Procedure #2 of how you know something is alive by asking students to sort objects or pictures that represent living and non-living.

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Life Science	K-1	LS3C	External features of animals and plants are used to classify them into smaller groups.	<p><i>Describe</i> several external features and behaviors of animals that can be used to classify them (e.g., size, color, shape of body parts).</p> <p><i>Describe</i> several external features of plants that can be used to classify them (e.g., size, color, kinds of seeds, shapes, or texture of plant parts).</p> <p>Give examples to illustrate how pairs of plants and/or animals are similar to and different from each other (e.g., cats and dogs both have four legs, but many dogs have longer snouts than cats).</p>	Lessons 4, 11, and 14	◆	These lessons address the external features and behaviors of the caterpillar, the butterfly and the spider that can be used to classify them into smaller groups (number of legs, body parts, etc.).
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