
Insects, Spiders and Other Arthropods



Pre-Kindergarten Teacher Resource Guide

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Insects, Spiders and Other Arthropods: Lesson Summary and Vocabulary

Lesson Summary: The YSI *Insects, Spiders & Other Arthropods* program allows students to touch and examine samples of the arthropod phylum while learning about their characteristics and development. The presentation focuses on both instructor-led discussion and hands-on activities. Students will work as a group to assemble an insect and spider, observing the functions and variations in each body part. Discussion will continue as the instructor presents live examples, covering the arthropods' physical adaptations, diets, habitats, and roles both in nature and with humans. Students will learn about the insect life cycle and get a chance to touch and interact with mealworms in each stage of their metamorphosis. Throughout the program, students will be challenged to use their critical thinking skills to answer a wide range of open-ended questions and expand their understanding of insects and the arthropod phylum as a whole.

Vocabulary: Below are words and concepts that relate to the *Insects, Spiders & Other Arthropods* program.

Abdomen: the large third body part of an insect (and the second of a spider); contains organs

Antennae: the sensing organs of insects; used to listen, taste, feel, smell, and communicate

Arachnid: an arthropod with two body parts and eight legs; includes spiders and scorpions

Arthropod: an animal with an exoskeleton and jointed legs

Camouflage: something (such as color or shape) that protects an animal from attack by making the animal difficult to see in the area around it

Cephalothorax: the first body part of an arachnid; houses brain and attaches to limbs

Decomposer: an animal that feeds on dead matter and breaks it down into simpler compounds

Environment: the sum of everything that surrounds animals and humans in the natural world, including the air, the water, and the soil

Exoskeleton: the shell or external skeleton that supports and protects an arthropod's body

Habitat: the natural environment of a plant or animal

Insect: an arthropod with six legs and three body parts; more than half of the organisms on earth

Larva (Entomology): the wingless, feeding stage of an insect that undergoes complete metamorphosis

Metamorphosis: insect life cycle; development from larva to pupa to adult

Nymph (Entomology): the young of an insect that does not undergo complete metamorphosis, usually differs from the adult in that it is smaller and does not have wings

Pedipalps: extra frontal appendages or "arms" of a spider or other arachnid

Predator: an animal that hunts and eats other animals

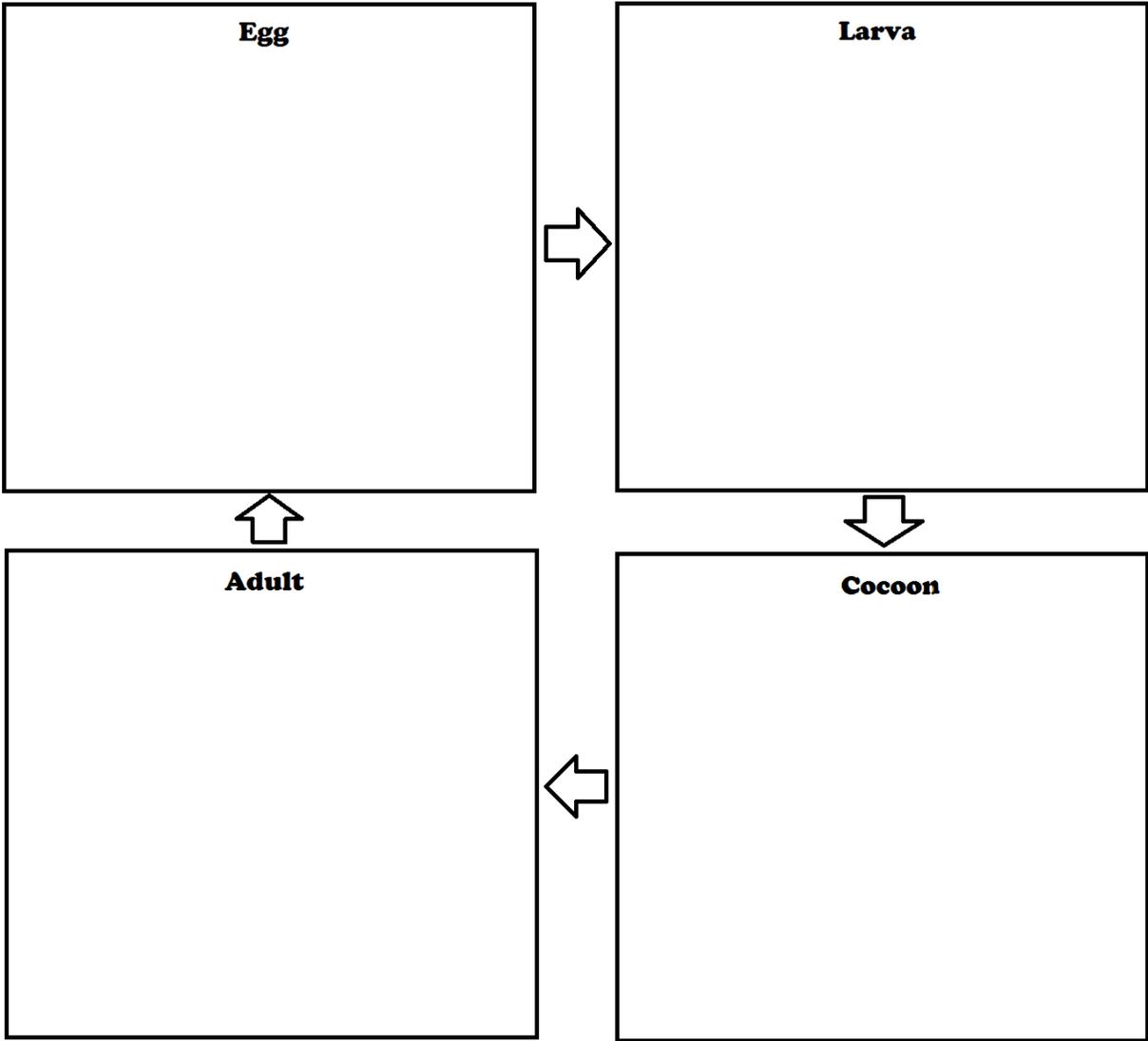
Pupa: an insect in the non-feeding, usually immobile, transformation stage between the larva and the adult

Spider: the most common type of arachnid; spins webs and has fangs

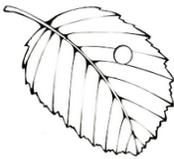
Thorax: the second or middle body part of an insect, attaches to limbs and sometimes wings

Insects, Spiders and Other Arthropods: Life Cycle Activity

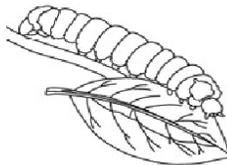
Draw the four life stages of a butterfly!



Here are some pictures to help you get started!



Egg



Larva



Cocoon



Adult

Insects, Spiders and Other Arthropods: Extension Activities

The extension activities listed below are from RAFT (Resource Area For Teaching). RAFT educational content is available online (www.raftbayarea.org) at no cost and is aligned to California Science Standards and Next Generation Science Standards. Below is a selection of post-visit activities from RAFT to extend student learning about insects and arthropods.

[RAFT Idea: Bug Pooter – RAFT Bay Area](#)

Grades Covered: K through 10

Subjects Covered: Life Science

Curriculum topics: Arthropods; Observation; Classification; Insects

Description: A safe, humane way to collect and observe small creatures...

<http://www.raftbayarea.org/ideas/Bug%20Pooter.pdf>

[RAFT Idea: Camouflage – RAFT Bay Area](#)

Grades Covered: K through 12

Subjects Covered: Life Science

Curriculum topics: Natural Selection, Ecosystems, Probability, Design.

Description: Learn how coloration helps animals hide from predators...

<http://www.raftbayarea.org/ideas/Camouflage.pdf>

[RAFT Idea: Folded Flutterbys – RAFT Bay Area](#)

Grades Covered: K through 4

Subjects Covered: Life Science, Art

Curriculum topics: Art, Butterflies, Shapes

Description: Create a butterfly shape from two diagonally folded squares...

<http://www.raftbayarea.org/ideas/Folded%20Flutterbys.pdf>

Insects, Spiders and Other Arthropods: Education Standards

Our Insects, Spiders, and Other Arthropods program will contribute to students' ability to meet the following standards from the Head Start Framework for 3-5 year olds:

Physical Development & Health: Health Knowledge & Practice

- Follows basic health and safety rules and responds appropriately to harmful or unsafe situations.
- Participates in structured and unstructured physical activities.

Fine Motor Skills

- Develops hand strength and dexterity.
- Manipulates a range of objects such as blocks or books.

Social & Emotional Development: Social Relationships

- Cooperates with others.
- Uses socially appropriate behavior with peers and adults, such as helping, sharing, and taking turns.
- Recognizes how actions affect others and accepts consequences of one's actions.

Self-regulation

- Follows simple rules, routines, and directions.

Emotional & Behavioral Health

- Adapts to new environments with appropriate emotions and behaviors.

Approaches to Learning: Initiative & Curiosity

- Demonstrates eagerness to learn about and discuss a range of topics, ideas, and tasks.
- Asks questions and seeks new information

Cooperation

- Helps, shares, and cooperates in a group.

Logic & Reasoning: Reasoning and Problem Solving

- Recognizes cause and effect relationships.
- Classifies, compares, and contrasts objects, events, and experiences.
- Uses past knowledge to build new knowledge.

Language Development: Receptive Language

- Attends to language during conversations, songs, stories, or other learning experiences.
- Comprehends increasingly complex and varied vocabulary.
- Comprehends different forms of language, such as questions or exclamations.

Mathematics Knowledge & Skills: Number Concepts & Quantities

- Recognizes numbers and quantities in the everyday environment.
- Uses one-to-one counting and subitizing (identifying the number of objects without counting) to determine quantity.

Number Relationships & Operations

- Uses a range of strategies, such as counting, subitizing, or matching, to compare quantity in two sets of objects and describes the comparison with terms, such as more, less, greater than, fewer, or equal to.

Geometry & Spatial Sense

- Compares objects in size and shape.
- Understands directionality, order, and position of objects, such as up, down, in front, behind.

Measurement & Comparison

- Compares objects using attributes of length, weight, and size (bigger, longer, taller, heavier).
- Uses nonstandard and standard techniques and tools to measure and compare.

Science Knowledge & Skills Scientific Skills & Method

- Uses senses and tools, including technology, to gather information, investigate materials and observe processes and relationships.
- Observes and discusses common properties, differences, and comparisons among objects.
- Participates in simple investigations to form hypotheses, gather observations, draw conclusions, and form generalizations.

Conceptual Knowledge of the Natural & Physical World

- Observes, describes, and discusses living things and natural processes.

Social Studies Knowledge & Skills: People & the Environment

- Recognizes that people share the environment with other people, animals, and plants.
- Understands that people can take care of the environment through activities, such as recycling

Excerpted from: <http://www.acf.hhs.gov/programs/ohs/resource/hs-child-development-early-learning-framework>