COLLEGE OF SOCIAL & BEHAVIORAL SCIENCES
Women in Science & Engineering

Bio/Diversity Project
Lesson Title: Interesting Insects

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Grade Level: 3rd Grade

AZ State Science Standard:	3.L1U1.5: Develop and use models to explain that plants and animals (including humans) have internal and external structures that serve various functions that aid in growth, survival, behavior, and reproduction. 3.L2U1.6: Plan and carry out investigations to demonstrate ways plants and animals react to stimuli. 3.L2U1.8: Construct an argument from evidence that organisms are interdependent.
Content Objective: Math, Reading, Science, Writing, Other:	• *Students will be able to differentiate insects from other arthropods* • *Students will be able to explain the functions of each part of an insect.* • *Students will create their own insect with adaptations suited to a certain environment.*
Language Objective: (Optional)	N/A

Vocabulary	**Materials**
• Abdomen • Adaptation • Antennae • Arthropod • Environment • Exoskeleton • Head • Insect • Thorax	Provide a bulleted list of relevant materials for the lesson. • Crayons/colored pencils/markers • Dry erase markers • One large piece of paper per group • One piece of blank paper per student • Preserved insect specimens • Printed images or access to projector/smartboard • Whiteboards • Worksheet/handout of insect diagram
Guiding Questions: • What are insects and how are they different from other arthropods? • How are they able to survive in their environment? • Why are they important to ecosystems?	

Engagement/Introductory Activity:

As a class, ask the students to raise their hand and tell the class what they know about insects. After a few students share, ask the class to take out a piece of blank paper. Individually, students will be asked to make a list of every type of insect they can think of – bumblebees, mosquitoes, grasshoppers, etc. Once students have made their lists, they will discuss their lists with the person sitting next to them. Ask the students to discuss in their pairs: "What do all the insects you've written down have in common? Are you sure that everything you've listed is a true insect and not an arachnid?" After the students have discussed their answers to these questions, ask for one student from each pair to raise their hand to share their answers out loud with the class.

Exploratory Activity:
Split the students into groups and provide each group with a few different preserved insect specimens. Ask the students to make observations in their notebooks about the different insects – their body parts, their colors, their shapes, and anything else that stands out to them. As the students work, encourage them to discuss their observations with their groups. In their groups, ask the students to decide on three different characteristics that all the insects they've observed have in common. Ask each group to share their three characteristics and compare the answers from group to group.

Explain:
Show the class pictures of different arthropods (insects, spiders, scorpions, crabs, etc.) and point out that all of these arthropods have exoskeletons and segmented bodies. Define and explain these terms. Explain that there are multiple types of arthropods, and insects are only one of the types. Students will receive an insect diagram with an image of a generic insect and spaces for students to label the different parts. Guide the students through the activity by asking them to hypothesize what each part does based on its location and labeling the parts as you move through the body of the insect. After finishing the worksheet activity, explain to the students that only arthropods with these specific body parts are considered insects. Show the students pictures of different arthropods and ask the students which ones are insects and to explain why.

Extension Activity/Questions:
Using prior knowledge of environments and adaptations, or after a brief recap of these topics, students will understand the relationship between insects and their environments. Divide the students into groups again. Each group will be given a large piece of paper, crayons/colored pencils/markers, and a specific environment, such as a lake or a rainforest, and will be asked to create and draw a new insect that has adaptations to help it survive in its environment. Ensure that each group includes the main parts of an insect that were outlined in the insect diagram, which the students can refer to while participating in this activity. In addition to the main parts, students should also include at least one adaptation that helps the insect survive in its environment. For example, a student may draw an insect with a blood-sucking mouth for an insect that lives on another animal, or an insect with big strong legs that allow it to catch its prey. Have each group share their drawings of their insect with the class, reminding the students to explain each part of the insect their group drew and why they included it.

Evaluation Activity:
Provide each group with a small whiteboard and a dry erase marker. Ask the students review questions about what differentiates insects from other arthropods, what the functions of various parts of an insect are, and other relevant questions. Each group should discuss the question among themselves, write their answer on the board, and when every group has an answer, the students should raise their boards into the air to show the answers. Repeat for each review question. Points can be awarded for correct answers in order to encourage participation.