

Michigan State University Extension

Tollgate Farm and Education Center

INSECT INVESTIGATION

Big Idea: Insects are very unique organisms with fascinating life cycles. There is a great diversity of insects that can be found within ecosystems, and they are an integral part of the food web. Although insects are typically pretty small, they play a big role in the world.

Big Question: What role do insects play in an ecosystem?

Michigan NGSS Performance Expectations:

2-LS2-2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.

Common Core ELA and Math Standards:

ELA-LITERACY.SL .2.1a-c	Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups. <ol style="list-style-type: none"> a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion). b. Build on others' talk in conversations by linking their comments to the remarks of others. c. Ask for clarification and further explanation as needed about the topics and texts under discussion.
ELA-LITERACY.SL .2.3	Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
Math.Content.2 .OA.2	Add and subtract within 20. <ul style="list-style-type: none"> • Fluently add and subtract within 20 using mental strategies.2 By end of Grade 2, know from memory all sums of two one-digit numbers.
Math.Content.2 .MD.1-4	Measure and estimate lengths in standard units. <ol style="list-style-type: none"> 1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. 2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. 3. Estimate lengths using units of inches, feet, centimeters, and meters. 4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
Math.Content.2 .MD.10	Represent and interpret data. <ol style="list-style-type: none"> 10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with

	up to four categories. Solve simple put-together, take-apart, and compare problems ⁴ using information presented in a bar graph.
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Content Outcomes:

- Learn the parts of an insect and what their life cycles are like
- Discover and identify various insects in their natural habitat
- Understand the important role insects play in an ecosystem
- Uncover vital interactions between insects and various plants and animals

Assessment:

Revisit the big question at the end of the program and discuss, in pairs, small groups, or as a large group. What new understandings have students gained?

Program Introduction: Welcome to the farm! Today we are going to explore the role insects play in an ecosystem.

Tollgate would like to acknowledge that the land we are meeting on today is the original homelands of the Anishinaabe tribal nations. We owe a debt of gratitude to the people who first lived on this land. We honor and respect the many diverse indigenous peoples still connected to this land on which we gather.

Rotations:

- Build-a-Bug Workshop *Lower Barn/Pavilion*
- Insect Quest *Forest*
- Web of Life *Field/Arboretum*
- Powerful Pollinators *Pond & Bee Boxes*
- Bee A Pollinator *Orchard*

Teacher Resources

Background Information:

- [Insect Anatomy and Identification](#)
- [Insect Life Cycles](#)
- [Basic Steps to Identifying Insects](#)
- [All About Pollinators](#)
- [Pollination and Gardening](#)
- [The Importance of Insects in the Web of Life](#)
- [Project Learning Tree Web of Life](#)
- [Printables, Lessons, and Activities](#)

- [The Beauty of Pollination Video](#)
- [Metamorphosis Video](#)

Children's Literature:

- [Small Wonders](#) by Matthew Clark Smith
- [I Love Bugs!](#) by Philemon Sturges
- [Hey, Little Ant](#) by Phillip M. Hoose
- [Insect Soup](#) by Barry Louis Polisar
- [Amazing Bees](#) by Sue Unstead
- [What if There Were No Bees?](#) by Suzanne Slade
- [Secrets of the Garden: Food Chains and the Food Web in Our Backyard](#) by Kathleen Weidner Zoehfeld

References:

- Web of Life is adapted from Project Learning Tree's [Web of Life](#) activity

CURIOSITY PHOTOS

Following are photographs and questions intended to inspire curiosity and wonder throughout the days leading up to your Tollgate visit.











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