

# Ants: Teacher's Guide

**Grade Level:** 3-4

**Curriculum Focus:** Animals

**Lesson Duration:** Three class periods

## Program Description

Ants evolved from wasps into perhaps the most socially complex insects ever. This four-segment video covers their build to their buildings. *Ant Anatomy* – What do all the different body parts of an ant do? *Ant Adaptations* – Ants are everywhere. Learn how they can adapt to many different environments. *Ant Communities* – Ants are a highly organized group, with different ants taking on different roles within the colony. *Ant Houses* – Buildings in New York and Des Moines differ, and so do anthills.

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## Onscreen Activities

### Segment 1, Ant Anatomy

- Activity: Create a model of an ant using art supplies like clay and toothpicks. Make sure your model has all the right body parts and label them. Then make a class display of the different ant models.

### Segment 2, Ant Adaptations

- Activity: Use a magnifying glass to observe ants in their environment. Draw pictures of your observations in a nature journal, and describe how the ants you observed have adapted to their environment.

### Segment 3, Ant Communities

- Activity: Discuss how ant jobs are similar to or different from human jobs. Are some ant jobs more important than others? What would happen if different ants stopped doing their jobs? What about humans?

### Segment 4, Ant Houses

- Activity: Find information about different ant houses using books and encyclopedias. Then make a drawing of one ant house and label the materials it's made of. Combine your drawing with the others in the class to create a book about ant architecture.
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## Lesson Plan

### Student Objectives

- Understand how ants create different kinds of shelters, depending on their environment.
- Understand how ants have different behaviors that allow them to survive in different environments.

### *Materials*

- *Ants* video and VCR, or DVD and DVD player
- journals
- glue
- pens or pencils
- books on ants
- scissors
- encyclopedias
- paper (large sheets 18 X 24)
- computer with Internet access
- markers, paints, or colored pencils

### *Procedures*

1. Work with your students to create a KWL chart. Ask them what they already *know* and what they *would like* to know about where ants live. Make a list of student responses (“in the ground,” “in my kitchen,” “on the sidewalk”). Encourage students to focus their thinking on the design of ant shelters and the materials used in making them. What do ants need for protection? What different materials would ants use in other parts of the world?
2. Tell your students that they are going to create a class book about different kinds of ant shelters. The book will help them organize what they will learn about ant architecture. Make sure they know that they will be sharing their book with other classes.
3. Collect encyclopedias and a variety of books on ants. You may also want to review the segment of the *Ants* video on ant houses. If you have Internet access for your students, you might also want to bookmark the ant-related Internet sites listed below.
4. Divide your students into groups. Ask each group to use the resources you have collected to gather information on different ant shelters: what they’re made of, where they’re located, and which species of ants live in them. Students may conduct this research in the classroom and at home. Have them record the information they gather about various species and the materials, designs, and locations of their shelters.
5. After the groups have collected data, have them choose two or three of the ant species they studied. Each group should illustrate and describe the species it selected and the shelters that each species builds. You can have one student in each group be the writer, one the illustrator, and one the page designer.



6. Collate the pages into a class book. You can ask any students who finish quickly to create an index and a table of contents for the book. When the book is complete, allow students time to share it with other classes throughout the school.

### *Discussion Questions*

1. Explain how the environment changes the way that ants and humans build their shelters.
2. All animals—even humans—have to deal with changes in the environment. What if there was no rain or the electricity was going to be off for a long period of time? What would people do? What would happen to the world's wildlife? Would humans or other animals be worse off? Why?
3. Discuss how ant jobs are similar to human jobs. Are some ant jobs more important than others are? Are some human jobs more important? What would happen if different ants stopped doing their jobs? What about different humans?
4. Ants on television and in the movies are almost always portrayed as hard workers. Think about the ants you have seen in stories, fables, movies, and television shows. How are these ant characters different from real ants? How are they the same?
5. Ants may seem bad for the environment, but they can also be good for it! Ants are pests at times, but they also keep the environment free of other bugs by eating them. Should humans destroy ant communities near housing developments. What would occur if all of the ants were destroyed? What would occur if the ants are not destroyed?
6. Compare the body parts of ants to those of another insect, like the bee or the butterfly. Which parts are the same? Which parts are different? Use a Venn diagram to organize your comparison.

### *Assessment*

Use the following three-point rubric to evaluate students' work during this lesson.

- 3 points: Students provided complete facts, colorful and detailed illustrations, attractive page design.
- 2 points: Students provided some facts, colorful or detailed illustrations, complete page design.
- 1 point: Students provided few facts, limited illustration, disorganized page design.

### *Vocabulary*

#### **anatomy**

*Definition:* The structure of an organism.

*Context:* All ants share the same basic anatomy.

#### **architecture**

*Definition:* The science of designing and constructing buildings.

*Context:* Some wood ants use architecture to keep themselves warm in cold England.



**chamber**

*Definition:* An enclosed space within a larger space.

*Context:* Australian ants fold tree leaves into green chambers with floors, walls, and ceilings.

**cold-blooded**

*Definition:* Having a body temperature that varies with the surrounding air, water, or land.

*Context:* Insects are cold-blooded, meaning that their bodies are the same temperature as the air around them.

**exoskeleton**

*Definition:* An outer hard framework of an animal's body.

*Context:* The exoskeleton is a hard waterproof armor that supports and protects the ant.

**survival**

*Definition:* To remain alive or in existence.

*Context:* Ants have gone from being giant flying wasps to tiny earthbound creatures with amazing survival techniques.

## *Academic Standards*

### **National Academy of Sciences**

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following science standards:

- Life Science: The characteristics of organisms; organisms and environments

### **Mid-continent Research for Education and Learning (McREL)**

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit <http://www.mcrel.org/>.

This lesson plan addresses the following national standards:

- Science: Knows about the diversity and unity that characterize life.
  - Science: Understands how species depend on one another and on the environment for survival.
  - Science: Understands the nature of scientific inquiry.
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