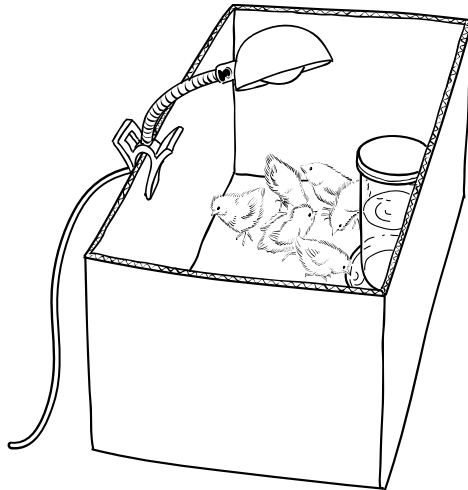


OVERVIEW

ANIMALS TWO BY TWO



GOALS

Animals Two by Two provides young students with close and personal interaction with some common land and water animals. Appropriate classroom habitats are established, and students learn to care for the animals. In four activities the animals are studied in pairs. Students observe and care for one animal over time, and then they are introduced to another animal similar to the first but with differences in structure and behavior. This process enhances opportunities for observation, communication, and comparison.

FOSS EXPECTS STUDENTS TO

- Develop a growing curiosity and interest in the living world around them.
- Observe and describe the structures of a variety of common animals—fish, snails, earthworms, isopods, and chicks.
- Compare structures and behaviors of different pairs of animals.
- Observe interactions of animals with their surroundings.
- Communicate observations and comparisons.
- Acquire the vocabulary associated with the structure and behavior of animals.
- Handle animals carefully, and participate in the care and feeding of classroom animals.

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ANIMALS TWO BY TWO MODULE MATRIX

SYNOPSIS

SCIENCE CONTENT

THINKING PROCESSES

1. GOLDFISH AND GUPPIES

Students observe the structures and behaviors of goldfish. They feed the fish and enrich the environment in which the fish live. They compare the structures and behaviors of the goldfish to those of other fish, guppies.

- Fish have identifiable structures.
- Fish behavior is influenced by conditions in the environment.
- Fish have basic needs.
- Fish change their environment.
- Each kind of fish has unique structures and behaviors.
- All animals deserve respect and gentle care.

- Observe two aquatic animals.
- Compare the structures of two fish.
- Communicate observations of fish structure and behavior.

2. LAND AND WATER SNAILS

Students observe the structures and behaviors of land snails. They race the snails. Water snails are compared to land snails. Students work with a variety of shells to match pairs, make designs, and create patterns.

- Snails have identifiable structures.
- Snails have senses.
- Snail behavior is influenced by conditions in the environment.
- Snails have basic needs.
- There is great diversity among snails.

- Observe the structure and behavior of land and water snails.
- Compare two kinds of snails.
- Communicate observations of two kinds of snails.

3. BIG AND LITTLE WORMS

Students dig for redworms, rinse them off, and look at their structures. They study some of their behaviors. They compare the redworms to night crawlers, which are much larger than the redworms.

- Worms have identifiable structures.
- Worm behavior is influenced by conditions in the environment.
- Worms have basic needs.
- Each kind of worm has unique structures and behaviors.

- Observe structure and behavior of two kinds of worms.
- Compare redworms and night crawlers.
- Communicate observations of the structure and behavior of the worms.

4. PILL BUGS AND SOW BUGS

Students begin by observing structures of the two kinds of isopods. They learn to identify which are pill bugs and which are sow bugs. They may have isopod races. Students make a terrarium in which all of the land animals live together.

- Isopods have identifiable structures and behaviors.
- Animals have similar needs.
- Each kind of isopod has unique structures and behaviors.
- Isopod behavior is influenced by conditions in the environment.

- Observe the structure and behavior of isopods.
- Communicate observations.
- Compare the two kinds of isopods.
- Observe several kinds of animals living together.

5. EGGS AND CHICKS

Students monitor the incubation of fertilized eggs for 21 days until they hatch. They look at the structures and behaviors of the chicks for the next week or two.

- Chicks have identifiable structures and behaviors.
- Eggs and chicks require certain environmental conditions to survive.
- Young chicks resemble their parents.
- All animals deserve respect and gentle care.

- Observe chicks hatching from eggs.
- Observe the changes of structure and behavior of growing chicks.
- Communicate observations.

INTERDISCIPLINARY EXTENSIONS

- Create science journals.
- Play a camouflage game.
- Obtain other fish food.
- Train the goldfish.
- Identify animals that eat fish.
- Write about fish.
- Make your room an aquarium.
- Count the fish in the tank.
- Do fish arithmetic.
- Make a fish collage.

- Go on a schoolyard field trip.
- Compare slugs to snails.
- Measure how far a snail moves in 1 minute.
- Test for surface preferences.
- Use shells for addition and subtraction.
- Use shells to make patterns.
- Divide the shells into sets.
- Observe snail trails.

- Make a worm observation terrarium.
- Look at earthworm paths.
- Take a schoolyard field trip.
- Compare the lengths of worms.
- Set up a vermicompost system.

- Go on a schoolyard field trip.
- Make a classroom mural.

- Make a classroom chick journal.
- Make math sentences.
- Research animals and their young.

READING CONNECTIONS

- *FOSS Science Stories: Animals Two by Two*, “Learning about Animals” and “Goldfish and Guppies”
- *A Fish Out of Water* by Helen Palmer

- *FOSS Science Stories: Animals Two by Two*, “Land and Water Snails”
- *The Snail’s Spell* by Joanne Ryder

- *FOSS Science Stories: Animals Two by Two*, “Big and Little Worms”
- *It Could Still Be a Worm* by Allan Fowler

- *FOSS Science Stories: Animals Two by Two*, “Isopods”
- *A Pill Bug’s Life* by John Himmelman
- *Animals Two by Two* by Larry Lowery

- *FOSS Science Stories: Animals Two by Two*, “Eggs and Chicks”
- *Chickens Aren’t the Only Ones* by Ruth Heller

HOME /SCHOOL CONNECTION

- Make a fish-in-a-bowl twister.

- Play animal charades.

- Match earthworm questions and answers and take a neighborhood field trip.

- Complete a drawing by placing animals in their proper environments.

- Look for pictures of baby and adult animals in magazines, newspapers, and cards. Talk about the similarities between parents and their young.



FOSS AND NATIONAL STANDARDS

The *Animals Two by Two* Module emphasizes the development of observation and descriptive communication and building explanations based on experience. This module supports the following National Science Education Standards.

SCIENCE AS INQUIRY

Develop students' abilities to do and understand scientific inquiry.

- Ask and answer questions.
- Plan and conduct simple investigations.
- Communicate investigations and explanations.

CONTENT: LIFE SCIENCE

Develop students' beginning awareness of the characteristics of organisms.

- All organisms have basic needs. Animals need air, food, water, and space to live.
- Animals have different structures that serve different functions in growth and survival.
- The behavior of an animal is influenced by cues. Animals have senses to detect cues and changes in their environment.

Develop students' understanding of the life cycles of organisms.

- Animals closely resemble their parents.

Develop students' beginning awareness of organisms and the environment.

- Many animals eat plants.
- Animals react to the conditions of their environment.
- All animals, including humans, change their environment. Some changes are detrimental; some are beneficial.

SCIENCE IN PERSONAL AND SOCIAL PERSPECTIVES

Develop students' beginning awareness of personal health.

- Cleanliness is important for maintaining health.