



Observing and Modeling Specific Relationships

Part 1: Taking a Neighborhood Walk to Observe Relationships

Take a walk in your neighborhood and see if you can find examples of some of the relationships listed in the chart. Then draw or write about the relationship(s) you observed. Don't worry if you do not observe all of these relationship types. The point is to document the relationships you do observe. (If you have gone on other walks as part of LEs 1, 2, 3, and 4, you can use your observations from those walks too.)

Where we went for our walk: _____

The temperature is: _____ *The time of day is:* _____ *The weather is:* _____

The season is: _____

Part 1.A: Put a star or a checkmark next to each type of relationship you observed out on your walk.

| | | | |
|--|--|--|---|
| | Animal-Animal | | Animal-Plant |
| | Animal-Human | | Plant-Plant |
| | Plant-Human | | Animal-Natural Kind (for example: water, rock, sun, air) |
| | Plant-Natural Kind (for example: water, rock, sun, air) | | Human-Natural Kind (for example: water, rock, sun, air) |
| | Human-Human | | Other? |



Part 1.B: Draw or Write about the Relationship(s) You Observed

| Type of Relationship You Observed | Draw and/or Write about the Details | What questions and wonderings do you have? |
|--|--|---|
| | | |
| | | |
| | | |



Part 2: Modeling a Specific Type of Relationship

One reason scientists use models is to help them make their thinking visible so that they can better explore their ideas.

Pick several relationships that you observed, and create an initial model of those relationships. *The point of your model is to capture your initial thinking about how the “who” and “what” you observed interacts.*

- How are they connected, and why might they be connected in those ways? Who benefits and why?
- How might any of this be impacted by the season, the temperature, the time of day, the weather, etc.?

If you want to look at some examples of initial models, check the example guide. If you want to keep revising your model, consider revisiting what you’ve done in LEs 1-5 to look for other relationships (or parts of them) that you might add to your initial model, and/or do activities in LEs 1-5 that you haven’t yet done with an eye toward revising your initial model.

Create your initial model on the next page (or on a blank sheet of paper). Use drawings, diagrams, words, arrows, and/or other symbols to help you express your ideas about the relationships you observed.



Our Family's Initial Model





Extension Activities:

- **Add another type(s) of relationship you observed to your initial model.** For example, maybe your family chose to model an animal-animal relationship that you observed, but you also noticed that one (or both) animals were in relationship with a plant. You can continue to add to your model so that it represents the range of relationships you saw. Then you can discuss the following types of questions:
 - Why do you think these relationships are important and for whom?
 - What do you think is happening in these relationships?
 - Do you think these relationships change when the seasons change? If so, how? Why?
- After you have these types of discussions, are there other things you want to add to your initial model (like changes in the relationships you modeled over time, or because of the seasons, for example)?
- **Find out more about some of the connections and relationships** you might have observed and modeled by talking to other people, reading books and magazines, watching videos, and finding online resources.
 - **Learn some new ideas!** See the chart on page 7 to learn about some example types of interactions between and among organisms in ecosystems. If you observed relationships among plants, animals, and/or humans, these types of interactions might apply. Did you notice any of these interactions when you were making observations? If so, did you represent them in your initial model? If not how could you revise your initial model to capture the specific type(s) of interaction(s) you observed? (NOTE: these types of interactions do not apply to relationships involving natural kinds.)
 - **Symbiosis, Competition, Mutualism, Commensalism, Predation, Parasitism, & Amensalism**
- Continue to go outside and make observations of relationships that you included in your initial model. Then, **revise your model to incorporate new information** that you've learned (from observations and from any other sources you have consulted). This will allow you to track your family's thinking over time.
 - How has your thinking changed?
 - How has it stayed the same?
 - What more did you learn and how does your revised model show that?



Example Interactions among Organisms in Ecosystems

| Example Type of Interaction | Description |
|-----------------------------|---|
| Symbiosis | Symbiosis is when two or more separate organisms live together in a long-term, intimate association, typically each benefiting from the relationship. |
| Competition | Competition takes place when two (or more) organisms struggle for the same resources in an environment. Resources include things like food, water, shelter, light, and territory. For example, woodpeckers and squirrels often compete for the same holes in trees to build their nests. |
| Mutualism | Mutualism is an interaction between two (or more) organisms where each organism benefits from the interaction. For example, plants and pollinators (like bees and butterflies) both benefit from their interaction. Bees get nectar and pollen from plants and plants get help reproducing because bees spread pollen from flower to flower. |
| Commensalism | Commensalism is an interaction between two (or more) organisms where one organism benefits from the interaction while the other organism(s) is neither harmed or helped by the interaction. For example, tree frogs often use plants for protection (so the frogs benefit but the plants are not harmed or helped). |
| Parasitism | Parasitism is an interaction between two organisms where one organism (the parasite) feeds off of the other organism (called the host). For example, fleas are parasites that live off of the blood of some animals like dogs, cats, and rabbits. |
| Predation | Predation is when one organism eats another organism. For example, lions (predators) eat gazelles (called prey). Owls (predators) eat mice (prey). |
| Amensalism | Amensalism is a routine interaction in which the presence of one species has a negative effect on another. For example, a herd of elephants walking across a landscape may crush fragile plants. |