

**Lesson Topic:** Competitive, Predatory, and Mutually Beneficial Interactions

**Objective:**

Students will be able to:

1. Identify and explain the different organism relationships (competition, predation, and mutualism).
2. Simulate real life examples of organism relationships.
3. Draw their own examples of each type of relationship with written explanation.

**Time Required:** 75 minutes

**Materials Needed:**

- Teacher computer with internet access
- Projector/Smartboard
- 1 computer/laptop/iPad per student with internet access
- 3 Example Images (attached)
- Competitive, Predatory, and Mutually Beneficial Interactions handout (attached)
- Relationship Cards (attached)

**Teacher Preparation:**

- Assign a Legends of Learning Instructional [Quick Play](#) playlist for the day(s) you will be teaching the lesson.
  - Instructional - Middle School - Competitive, Predatory, and Mutually Beneficial Interactions
- Make copies of Competitive, Predatory, and Mutually Beneficial Interactions (1 per student)
- Locate the 3 example images
- Cut out Relationship Cards (1 per student so some cards may need to be printed twice).

**Engage (10 minutes):**

1. Show students the image of the Alligator and Plover Bird on the projector.
2. Ask students, "What do you think is going on in this picture? Briefly talk with someone next to you."
3. After students discuss, bring them together as a class and listen to their ideas about the image (Many students will think the alligator is about to eat the bird).
4. Tell students, "The alligator is actually not going to eat the bird. This bird, the Plover Bird, and the alligator have an agreement to help each other out."
  - a. "The plover cleans the alligator's teeth by eating food stuck in his teeth. This keeps the alligator free of bacteria and infection, and in return the plover gets a free meal and protection from the alligator. It's a win-win! Today we will be talking about lots of different ways animals and other organisms interact."

**Explore (20 minutes):**

1. Have your students [sign in to Legends of Learning](#). Instruct students to complete the Instructional playlist.

2. Assist students as needed during game play, pause playlist if you need to address content or questions to the entire class.

**Explain (15 minutes):**

1. Again, show the students the image of the Alligator and the plover.
2. Ask a volunteer to explain the arrangement or agreement that both of these animals have.
  - a. Answer: The alligator protects the bird and allows the bird to eat from its mouth, because the bird rids him of bacteria that could cause infection.
3. Tell students, "Because both animals are affected positively from their relationship this is called "mutually beneficial."
4. Write the definition on the board and have the students fill in their Competitive, Predatory, and Mutually Beneficial Interactions handout.
  - a. Mutualism - close partnership between two species where both benefit from their interaction
5. Show students the image of the lynx and the snow hare.
6. Ask students "What is going on in this image?" (the lynx is chasing after the hare).
  - a. "Yes, the big cat (lynx) is chasing after the bunny (snow hare) in hopes of eating it.
  - b. "Which animal is the predator?"
    - i. Answer: lynx
  - c. "If the lynx is the predator, what is the hare called?"
    - i. Prey
  - d. "This kind of interaction is called predatory, because only one species (the predator) will benefit. It is extremely important, however, because it helps to keep populations in check."
7. Write the definition on the board and have the students fill in their Competitive, Predatory, and Mutually Beneficial Interactions handout.
  - a. Predatory - A member of one species, predator, eats another species, prey, benefitting only one of the species.
8. Show students the image of the many plants.
9. Ask students "What is going on in this image?" (Many plants are growing in one area)
  - a. "Yes, there are many different plants growing in this area. It makes for a very pretty scene, but there is a problem. Turn to the person next to you, and discuss what could be a problem for the plants in this picture."
    - i. Answer: The plants are having to compete for the same resources such as water, sunlight, and space.
10. Listen to what the students discussed.
11. Tell students "Because the plants in this picture all have similar needs, they are having to compete for resources, such as water, sunlight, and space. Animals have to compete for resources as well. Any animals living in the same area with similar needs will have to compete for resources. This means both species would be better off if the other wasn't around."
12. Write the definition on the board and have the students fill in their Competitive, Predatory, and Mutually Beneficial Interactions handout.
  - a. Competition - organisms of different species compete for limited resources negatively impacting both species.

**Elaborate (15 minutes):**

1. Tell students “In a moment, you will be receiving a Relationship Card.
  - a. Each card is a plant or animal that contains a clue.
  - b. You are to read the card and find the plant or animal that will complete the relationship.
  - c. You need to find your pair and also decide what kind of relationship you have as a pair: mutualism, competition, or predatory.”
2. Pass out the Relationship Cards so that each student has a card (there are 18 total, so you can have repeat cards or make up your own if you need more).
3. Allow time for students to read their card and find their pair.
4. When everyone has found their pair, have each partnership share with the class what organisms they are and what type of relationship they have.
5. Feel free to collect the cards, shuffle them up, and pass them out again for more practice.

**Evaluate (15 minutes):**

1. Using the many examples discussed in class, or a unique example they think up on their own, students will draw sketches of the three different types of relationships.
2. Explain to students: “You will now sketch and explain your own examples of these three types of relationships. On your handout, there is space for you to draw an example with a brief caption/explanation of your drawing.
3. Walk around and monitor as students work. This could be made more formal by asking students to color their drawings and present them, however, it can merely be a 15 minute sketch.

**Additional Lesson Strategies:**

- To use Legends for additional instruction, create a [custom playlist](#) with an [instructional game](#) and pre and post [assessment](#).
- To use Legends for a quick formative assessment, create a 5-question [assessment](#) in a [playlist](#).
- To use Legends for a student-directed experience, create a [targeted freeplay](#) playlist.
- Encourage students to play on their own at home in [Legends of Learning: Awakening](#) for a student-driven experience including avatars, battling, and quests all centered around topics they are covering in class.

Alligator and Plover Bird



[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)

Lynx and Snow Hare



[This Photo by Unknown Author is licensed under CC BY-NC-ND](#)

Garden



[This Photo by Unknown Author is licensed under CC BY-SA-NC](#)



## Competitive, Predatory, and Mutually Beneficial Interactions

Name: \_\_\_\_\_

Write in the definitions for the following vocabulary words.

Mutually Beneficial -

Example:

Predatory -

Example:

Competition -

Example:

Draw an example of each type of relationship. Then, write a brief explanation.

<b>Mutualism</b>	
<b>Predatory</b>	
<b>Competition</b>	

## Relationship Cards

<p>You are an antelope. You have insects that live on your fur.</p> <p>Find an ox bird to help clean you.</p>	<p>You are an ox bird. You eat the insects off the antelopes' fur.</p> <p>Find an antelope to help you in your next meal.</p>	<p>You are a sea anemone. Clownfish live inside, and you live off of their food scraps.</p> <p>Find a clownfish to live with you to find your next meal.</p>
<p>You are a clownfish. You need protection from predators so you live in the sea anemone.</p> <p>Find a sea anemone to protect you.</p>	<p>You are a human. You live alone and are in need of a friendly, four-legged, companion.</p> <p>Find a dog to love and to keep you company.</p>	<p>You are a dog. You are in need of a home, free meal, and attention.</p> <p>Find a human to make your owner.</p>
<p>You are a cheetah. You live in the grasslands and eat gazelles and antelopes.</p> <p>Find a lion to discuss your living situation.</p>	<p>You are a lion. You live in the grasslands and eat gazelles and antelopes.</p> <p>Find a cheetah to discuss your living situation.</p>	<p>You are a hickory tree. You grow in the Midwest and grow very tall.</p> <p>Find a pine tree to discuss your living situation.</p>



<p>You are a pine tree. You grow in the Midwest and are frequently shaded by your neighbors, the hickory trees.</p> <p>Find a hickory tree to discuss your living situation.</p>	<p>You are a woodpecker. You prefer to live in the holes of pine trees, but do not always have that option.</p> <p>Find a squirrel to discuss your living situation.</p>	<p>You are a squirrel. You prefer to live in the holes of pine trees, but do not always have that option.</p> <p>Find a woodpecker to discuss your living situation.</p>
<p>You are a bat. You love to come out when the sun is setting and feast on mosquitos.</p> <p>Find a mosquito to have a snack.</p>	<p>You are a mosquito. You are constantly being chased by bats at sundown.</p> <p>Find a bat to rationally discuss this problem.</p>	<p>You are a coyote. You enjoy searching for rabbits for your next meal.</p> <p>Find a rabbit for a quick bite.</p>
<p>You are a rabbit. You are extremely annoyed with being chased by coyotes.</p> <p>Find a coyote to rationally discuss this problem.</p>	<p>You are a shark. Looking for a penguin nest is an easy and delicious meal.</p> <p>Find a penguin for a tasty treat.</p>	<p>You are a penguin. You find it difficult to fight off the sharks when they come towards you.</p> <p>Find a shark to rationally discuss this problem.</p>

**Relationship Card Key** (M = mutualism, C = competition, P = predatory)

<p>You are an antelope. You have insects that live on your fur.</p> <p>Find an ox bird to help clean you. <b>M</b></p>	<p>You are an ox bird. You eat the insects off the antelopes' fur.</p> <p>Find an antelope to help you in your next meal. <b>M</b></p>	<p>You are a sea anemone. Clownfish live inside, and you live off of their food scraps.</p> <p>Find a clownfish to live with you to find your next meal. <b>M</b></p>
<p>You are a clownfish. You need protection from predators so you live in the sea anemone.</p> <p>Find a sea anemone to protect you. <b>M</b></p>	<p>You are a human. You live alone and are in need of a friendly, four-legged, companion.</p> <p>Find a dog to love and to keep you company. <b>M</b></p>	<p>You are a dog. You are in need of a home, free meal, and attention.</p> <p>Find a human to make your owner. <b>M</b></p>
<p>You are a cheetah. You live in the grasslands and eat gazelles and antelopes.</p> <p>Find a lion to discuss your living situation. <b>C</b></p>	<p>You are a lion. You live in the grasslands and eat gazelles and antelopes.</p> <p>Find a cheetah to discuss your living situation. <b>C</b></p>	<p>You are a hickory tree. You grow in the Midwest and grow very tall.</p> <p>Find a pine tree to discuss your living situation. <b>C</b></p>

<p>You are a pine tree. You grow in the Midwest and are frequently shaded by your neighbors, the hickory trees.</p> <p>Find a hickory tree to discuss your living situation. <b>C</b></p>	<p>You are a woodpecker. You prefer to live in the holes of pine trees, but do not always have that option.</p> <p>Find a squirrel to discuss your living situation. <b>C</b></p>	<p>You are a squirrel. You prefer to live in the holes of pine trees, but do not always have that option.</p> <p>Find a woodpecker to discuss your living situation. <b>C</b></p>
<p>You are a bat. You love to come out when the sun is setting and feast on mosquitos.</p> <p>Find a mosquito to have a snack. <b>P</b></p>	<p>You are a mosquito. You are constantly being chased by bats at sundown.</p> <p>Find a bat to rationally discuss this problem. <b>P</b></p>	<p>You are a coyote. You enjoy searching for rabbits for your next meal.</p> <p>Find a rabbit for a quick bite. <b>P</b></p>
<p>You are a rabbit. You are extremely annoyed with being chased by coyotes.</p> <p>Find a coyote to rationally discuss this problem. <b>P</b></p>	<p>You are a shark. Looking for a penguin nest is an easy and delicious meal.</p> <p>Find a penguin for a tasty treat. <b>P</b></p>	<p>You are a penguin. You find it difficult to fight off the sharks when they come towards you.</p> <p>Find a shark to rationally discuss this problem. <b>P</b></p>