

Lesson Topic: Interactions in Ecosystems

Objective:

Students will be able to:

1. Identify biotic and abiotic factors in an ecosystem.
2. Describe examples of biotic and abiotic factors.
3. Create their own ecosystem by including both biotic and abiotic factors.

Time Required: 90 minutes

Materials Needed:

- [Coral Reef Video](https://www.youtube.com/watch?v=wbNeIn3vVKM): <https://www.youtube.com/watch?v=wbNeIn3vVKM>
- Flashlight
- Teacher computer with internet access
- Projector/Smartboard
- 1 computer/laptop/iPad per student with internet access
- Coral Reef image (attached)
- Ecosystem Images (attached)
- Interactions in Ecosystems handout (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 - Interactions in Ecosystems

Engage (10 minutes):

1. Show students the image of the Coral Reef (attached).
2. Ask students “what is this a picture of?”
 - a. Answer: coral reef
3. Tell students “With a partner, I want you to discuss what kinds of things interact with the coral reef.”
 - a. Potential answers: fish, sea urchins, other sea animals, current, waves, sand, rocks, sunlight, algae, microscopic organisms, pollution, etc.
4. Make a list of all student answers on the board. Have students copy down the list on the Interactions in Ecosystems handout under Part 1.
5. Tell students “today we are going to talk about all of the different interactions that occur in an ecosystem.”

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 (20 minutes):

1. Tell students “In every ecosystem, there are going to be living things. These are called

the biotic factors in an environment.

- a. Ask “What are the living things in an environment?”
 - i. Answers: plants, animals, fungi, microorganisms.
2. Tell students “There will also be non-living things that will be important to the ecosystem and how it functions. These are called abiotic factors.”
 - a. Ask “Can you think of some other parts of an ecosystem that are not living, or abiotic factors?”
 - i. Answers: soil, temperature, sunlight, water, wind, rocks, sand, storms, etc.
3. Tell students “Thinking back to our image of the coral reef, I am going to show you a quick video clip to give us a better idea about the kind of interactions are going on with the coral reef. On your handout, make a list of any other factors or interactions that are taking place. We may need to add to our list on the board.”
4. Play [video](#).
5. Tell students “On your Interactions in Ecosystem handout, I want you to look back to Part 1 and circle all the biotic factors that you saw. All other words on your paper should be abiotic factors.”
6. Make a T chart on the board; one side that says biotic, the other side says abiotic.
 - a. Have students help you take the examples from the Part 1 list made and place those examples in the proper place on the T chart. Have students write these on the Interactions in Ecosystem handout at the bottom of the Part 1 section.
 - b. “Looking at our chart, are there any new examples we should add?”
7. Tell students “Remember, that even though biotic factors are the factors we think of most when thinking of an ecosystem (all the plants and animals) abiotic factors are just as important. The coral reef needs sunlight, water, and the proper temperature to survive as well as the living things that surround it.”

Elaborate (15 minutes):

1. Have students choose one image from the three images in the Part 2 section of the Interactions in Ecosystems handout (savannah, forest, or tundra).
2. Tell students to write down all the biotic and abiotic factors that they see in the image.
 - a. Go through the answers to all the images (Key attached)

Evaluate (25 minutes):

1. Using colored pencils, have students draw their own ecosystem in the Part 3 section of the Interactions in Ecosystems handout.
2. They must include at least 5 biotic factors and 5 abiotic factors.
 - a. Have them list the answers at the bottom in a T chart.
3. Walk around and monitor as they work. Collect the drawings for a grade if needed.

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.

Coral Reef Image



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Name: _____

Interactions in Ecosystems

Part 1:

Make a list of all of the biotic and abiotic factors in the image.

Biotic Factors -

Abiotic Factors -

Part 2: Ecosystem Images

A - Savannah



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Biotic Factors -

Abiotic Factors -

B - Forest



Microsoft Creative Commons

Biotic Factors -

Abiotic Factors -

C - Tundra



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Biotic Factors -

Abiotic Factors -



Part 3:

In the space below, draw and color your own ecosystem. Be sure to include at least 5 biotic factors and 5 abiotic factors. List the answers in a T chart at the bottom of the page.

Images KEY
A

Biotic	Abiotic
Zebras Elephants Trees Shrubs Tall grasses	Hills/mountains Dead branches Soil Temperature Sunlight

B

Biotic	Abiotic
Deer Trees Leaves Grass	Dead trees Branches Soil Sunlight Temperature

C

Biotic	Abiotic
Elk Grass Trees	Snow Mountains Rocks Soil Temperature Fog