

Lesson Topic: Artificial Selection via Selective Breeding

Objective:

Students will be able to:

1. Explain that in artificial selection, humans can influence certain traits of organisms.
2. Explain why humans want to use artificial selection.
3. Give an example of artificial selection.

Time Required: 115 minutes

Materials Needed:

- Teacher computer with internet access
- Projector/SmartBoard
- Student copies of the [Breeding Dragons](#) activity (pages 4-8).
- A coin for each pair of students in your class.
- Scissors
- Glue/glue sticks

Teacher Preparation:

- Assign a Legends of Learning Instructional [Quick Play](#) playlist for the day(s) you will be teaching the lesson.
 - Instructional - Middle School - Artificial Selection via Selective Breeding
- Assign a Legends of Learning Content Review [Quick Play](#) playlist for the day(s) you will be teaching the lesson.
 - Content Review - Middle School - Artificial Selection via Selective Breeding
- Make copies of pages 4-8 of the [Breeding Dragons](#) activity for students. Students will work in pairs for this activity. Each pair of students will need one copy. The “dragon cards” can be re-used each class period.

Engage (10 minutes):

1. As a class, come up with as many dog breeds as you can think of in two minutes. Write the list on the board as students name them.
2. Ask students where they think all these different kinds of dogs come from.
 - a. Answers will vary. This is just to get students thinking. The correct answer is not expected here.
3. Show students [this](#) video.
4. Explain to students that they will be learning about artificial selection, the method used to create all of the different dog breeds, in this lesson.

Explore (30 minutes):

1. Have your students [sign in to Legends of Learning](#). Instruct students to complete the Instructional playlist.
2. As students complete the assigned game, students should fill out the Artificial Selection via Selective Breeding Handout.
3. 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. Review answers to the Artificial Selection via Selective Breeding Handout by writing answers on the board or using the Smartboard.
2. Relate student knowledge to the demonstration at the beginning of class.
 - a. How did we get so many different breeds of dogs?
 - i. Answer: artificial selection
 - b. Why do people use artificial selection?
 - i. Answer: To produce offspring that has the human's desired traits.
3. Explain that artificial selection, also called selective breeding, occurs when humans purposefully select particular characteristics in organisms to breed and produce their desired outcome. The outcome could be to remove certain traits, or to ensure certain traits pass on to offspring.

Elaborate (50 minutes):

1. Tell students that they will be working with a partner to apply the concept of artificial selection to breed their own dragon!
2. Show students [this](#) picture on your SmartBoard or other projector. As a class, discuss what traits the dragon does or does not have. Possible observations may include:
 - a. The dragon has horns
 - b. The dragon has a beard
 - c. The dragon has a hairy tail
 - d. The dragon is white
 - e. The dragon has sharp teeth
3. Follow the procedure for steps 4 - 12 described on pages 2 and 3 of [this](#) activity.

Evaluate (10 minutes):

1. Have your students [sign in to Legends of Learning](#). Instruct students to complete the Content Review playlist.
2. [Analyze student results](#) to determine what concepts need to be a focus for reteaching.

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.



Artificial Selection via Selective Breeding

1. What is artificial selection?
2. Why do humans use artificial selection?
3. What is a trait that farmers might want to select for when breeding cows?

Artificial Selection via Selective Breeding

Teacher Key

1. What is artificial selection?
 - a. A process in which humans purposefully select for or against particular characteristics in organisms to produce their desired outcome
2. Why do humans use artificial selection?
 - a. To get the desired results of offspring, such as the best crops or best animals.
3. What is a trait that farmers might want to select for when breeding cows?
 - a. Able to make a lot of milk
 - b. Fat cows that have a lot of meat
 - c. Produce good quality milk
 - d. Produce good quality meat