

## WORLD - Unit 7 of 8 Endangered Animals



"This is the best time ever to save species because so many need our help."

Learn about Boolean logic by playing Guess Who with Sphero, then use the logic to search for endangered animals.

### LEARNING OBJECTIVES:

- I can explain why and how Boolean logic is used
- I can explain why some species become extinct.
- I understand how operators are used in programming Sphero

**Tags:** science   vocabulary   geography   animals   biology   operators  
randomization   block coding

**Grades:** 5 to 9 | **Duration:** Up To 1 Hour

**Key Stages:** Computing.KS3.4, Science.KS3.BG6

**NGSS:** HS-LS4-5, HS-LS4-6

**Supplies:** Tablets or computers

## Step #1: Exploration - Endangered Animals

Watch the attached video about some of the world's most **endangered** animals.

1. *Can you name any other endangered animals that are not mentioned in this video?*
2. Many species like the ones in the video are at risk of becoming **extinct**. *What is the difference between endangered and extinct?*
3. *What do you think can cause a species to become extinct?* Choose one extinct species (e.g. the dodo) and find out what caused it to die out.
4. Share your examples and create a list of the different causes of extinction with the class.

**YouTube video:** [https://youtu.be/\\_WLcGRMNj0U](https://youtu.be/_WLcGRMNj0U)

### **Educator Tip:**

Changes in the environment may leave individuals less well adapted to compete successfully for resources such as food, water and mates. Sometimes an entire species may become unable to compete successfully and reproduce. These problems can lead to extinction. Here are some of the changes in the environment that can cause a species to become extinct:

- a new disease
- a new predator
- a change in the physical environment, such as climate change
- competition from another species that is better adapted, including competition from humans

See if students can come up with these on their own. Create a list for the class as the call out different causes of extinction.

From: <https://www.bbc.co.uk/education/guides/zw9jq6f/revision/2>

## Step #2: Exploration - Boolean logic

Use the BBC website to learn more about [Boolean logic](#) and why or how it's used.

1. **AND, OR** and **NOT** are key terms in Boolean logic which is used in computing. Boolean logic is either true or false (e.g. you either have brown eyes or you don't).
2. *Can you think of examples of true or false statements that you've included in other Sphero programs?*
3. *What is the difference between OR and AND? Discuss and share.*

### Educator Tip:

AND has a TRUE outcome if **both** statements are true.

OR has a TRUE outcome if **either one** or **both** statements are true.

NOT requires the statement to be false.

## Step #3: Exploration - Using Boolean Logic to Search

Boolean logic is really helpful when using a search engine.

*If you wanted to find out which animals are endangered in the India, what would you put into a search engine?*

Re-write your UK endangered animals search term three different times using **AND, OR** and **NOT**.

Create a table with a list of the terms you will use on the left and the number of search results on the right.

*How do your results differ using the three different terms?*

### Educator Tip:

Using the word AND narrows the results.

Using OR broadens the results.

The word NOT narrows the results by eliminating terms.

#### Step #4: Skills Building - Guess who using Boolean Logic

Open the linked program and when Sphero asks a question, write down your answer on a piece of paper. You only have 10 seconds!

1. When Sphero has finished all 6 questions. Rewrite each answer in the form of a **Guess Who** statement using Boolean logic (eg: Question #1- if you answered Pizza: My favorite food is Pizza OR French Fries) *Be sure to use all Boolean Logic statements: AND, OR and NOT.*
2. Hand your papers into your teacher
3. The teacher chooses one of the pieces of paper (and therefore unknowingly chooses one student).
4. The teacher begins to read the statements on the paper, describing the person, one statement at a time and students must sit down if it is false.
5. After each question the class can "Guess Who" the teacher might be describing.