

### Summary Description

This is the final lesson in a series of 11 lessons that introduces the student to Biology.

### Learning Objectives

To have the student learn a few key facts about birds.

### Approximate Time for Lesson

35 minutes

### Suggested Maturity Level for Instruction

Student should be able to read simple words and perform simple addition and subtraction. Also, student should be able to sit still and engage in one-on-one conversation.

### References:

"Birds", Yahoo Kids - <http://kids.yahoo.com/animals/birds>

### Materials Needed

1. Internet Access – Pull up the following:
  - a. Picture of duck feet (go to <http://www.ericarnold.us/images/photo-duckfeet.jpg>)
  - b. Picture of an airfoil (go to <http://www.rcgroups.com/forums/attachment.php?s=c9e005702ba7e5c0688721f7ea0479d3&attachmentid=1397934>)
  - c. Video of air passing through airfoil (go to <http://www.youtube.com/watch?v=9u5Am0Ut6gY>)
  - d. Picture of a cheetah (go to <http://www.uwyo.edu/dbmcd/molmark/lect11/Cheetah.jpg>)
  - e. Picture of a Peregrine Falcon (go to <http://gallery.photo.net/photo/5704604-1g.jpg>)
  - f. Picture of a Formula One race car (go to [http://upload.wikimedia.org/wikipedia/commons/d/d3/Michael\\_Schumacher\\_Ferrari\\_2004.jpg](http://upload.wikimedia.org/wikipedia/commons/d/d3/Michael_Schumacher_Ferrari_2004.jpg))

### Preparation

Make sure you have materials open, printed and/or available prior to beginning the lesson.

### Script

#### Introduction (5 minutes)

1. Teacher: So, do you remember what kind of animal we learned about last time? It was mammals. And can you tell me some things about these animals that make them mammals? [Engage the Student in conversation but any of the following are correct responses: 1) mammals are warm-blooded, 2) mammals have hair/fur, 3) mammals

have bigger brains compared to other animals, 4) mammal mothers create milk for their young, and 5) most mammal mothers have live young instead of laying eggs]

2. Teacher: Great. Now today, we're going to learn about one last group of animals called birds. I picked this lesson to teach as the last one because, as you'll see, birds are a mix of mammals and reptiles. So, are you ready to learn about birds? [Get positive response from Student and begin lesson]

Lesson (25 minutes)

1. Teacher: Great - now there are over 9,000 kinds of birds. And birds, just like mammals, are warm-blooded. This means that they can keep their body temperature warm even if it isn't warm outside. And, just like mammals, this is great since this means they don't need sunlight to keep their body warm. But of course, one bad thing about being warm-blooded is that birds must eat more compared to cold-blooded animals such as fish, amphibians, or reptiles. This is because birds, just like mammals, need the extra food to keep their body temperatures warm. Also, just like mammals, some birds are carnivores (they eat meat), some are herbivores (they eat plants), and some are omnivores (they eat both meat and plants).
2. Teacher: However, like reptiles, birds lay eggs and also, bird mothers cannot create milk for their babies.
3. Teacher: Also, it doesn't matter what kind of bird, but have you noticed that birds' feet look really close to reptile skin? Birds' feet are tough and kind of scaly-looking. Check out the feet of this duck and tell me if it reminds you of reptile skin [Show the Student the picture of duck feet]
4. Teacher: Now, even though birds share some things in common with mammals and reptiles, there is one thing that birds have that only belong to birds, can you guess what that is? [Engage the Student in conversation]
5. Teacher: If you guessed the right answer, great! There is one thing that birds have that no other animal has, and it's not the ability to fly (because some mammals, like bats, fly and not all birds, such as chickens, can fly). The answer is...feathers.
6. Teacher: That's right. All birds have feathers and most birds use those feathers to fly. And speaking of flying, do you ever wonder exactly how birds fly? [Get the Student's positive response and move on]
7. Teacher: Well, listen up, because this may be a little complicated, but since you asked, here's how birds fly. First, to fly a bird must have wings. And not just any wings, they need the wings to be a certain shape, called an airfoil, which looks like a shape of a tear drop lying on its side. Here's a picture of the shape of an airfoil. [Show the Student the picture of an airfoil]

8. Teacher: Now, if a bird does not have wings in the shape of an airfoil, then that bird can just forget about trying to fly no matter how much it flaps its wings. This tear drop shape is very important to making a bird fly because of the way that air flows and separates as it hits the airfoil. You can't see this in real life because you can't see the air, but when air hits the airfoil from the front, the air gets split into air that flows above the airfoil and air that flows below the airfoil.
9. Teacher: Well, because of the way that the airfoil is shaped, the air that flows above the airfoil actually flows faster and then flows down towards the ground while the air that flows below the airfoil flows slower. Here is a video of what happens to the air - the red part represents the air - notice how the air that flows above the airfoil flows faster than the air that flows below the airfoil: [\[Show the Student the video of air passing through the airfoil\]](#)
10. Teacher: When the air cuts and flows through the airfoil like this, this makes the entire airfoil go up into the air. And so, that's how birds (and actually, airplanes) fly.
11. Teacher: Now that you know how birds fly, let's look into why they like to chirp and sing. First of all, in most birds, only the boy birds do all the chirping and singing. This may sound nice and beautiful to us, but for birds, this singing is really serious. This is because all that singing is to scare away all the other boy birds, kind of like a "Beware!" sign. Another reason why the boy birds sing is to make the girl birds come to them so they can have a family.
12. Teacher: Before we finish our lesson for today, I want to tell you one last thing about birds. Birds are the fastest animals on Earth. Let me explain. The fastest mammal is a cheetah, which can run about 70 miles per hour, which is a little faster than how fast your parents drive their car on a big highway. Here's a picture of a cheetah [\[Show the Student the picture of a cheetah\]](#)
13. Teacher: Now the fastest bird is called a falcon, a Peregrine Falcon, to be exact. Here's a picture of a Peregrine Falcon. [\[Show the Student the picture of a Peregrine Falcon\]](#)
14. Teacher: So, what do you think about the Peregrine Falcon, did you see those perfect airfoils that are its wings? How fast do you think that falcon can fly? [\[Engage the Student in conversation\]](#)
15. Teacher: Well, that bird can go as fast as 200 miles per hour, which means that the Peregrine Falcon can finish a short race almost 3 times by the time the cheetah finishes the same race just once. To put it another way, the Peregrine Falcon can fly almost as fast as a Formula One race car going full speed! [\[Engage the Student the picture of a Formula One race car\]](#)
16. Teacher: And as far as defending goes, birds mostly use their speed, claws, and beaks to fight enemies. But just like the other animals we studied, birds are so important to us

because they are part of the food chain. Without them, the world would be a very different and sadder place.

17. Teacher: Ok – time for review. Stand up and get in front of the class (consider inviting other members of the family also to set the stage). [Ask Student the following:
- a. Can you name one thing that makes birds different from other animals? Birds are the only animals to have feathers
  - b. What do birds eat, meat, plants, or both? Some eat meat, some eat plants, and others eat both meat and plants
  - c. What is the name of the shape of the wings that makes birds fly? An airfoil
  - d. What's faster, a mammal or a bird? A bird – birds are the fastest animal on the planet
  - e. Why are birds important to our planet? Because they are part of the food chain

Teacher reviews any questions that the Student missed].

Wrap Up (5 minutes)

Teacher: [Clapping] You did GREAT! Wonderful job! Are there any questions that you have regarding birds? [Engage in conversation with the Student and follow up with questions you cannot answer by researching the Internet]