



Birds

# The flap challenge

Age: 7-14

Topic: Physical Education

Time: 30 minutes



## What should learners already know?

- Birds have different methods of flight.

## What equipment will I need?

- Stopwatches
- Maths workbooks

## How will learners explore this?

1. Go out into a large open space. Split children into pairs, and give each pair a stopwatch.
2. One child will flap their arms as quickly as possible while the other child times 15 seconds on their stopwatch.
3. The child flapping will count the number of flaps they do, and note it down. Children will now swap roles.
4. Now, as a class, ask children to flap at the pace of one wingbeat per second for a minute. Could they keep it up? Was this harder or less hard than flapping as quickly as possible for 15 seconds?
5. Back inside the classroom, multiply the number of flaps each child by 4. This is the wingbeat per minute each child managed to achieve.
6. Collect the wingbeats per minute of the class, and get children to calculate the mean, median and mode of the wingbeats.
7. Take the mean wingbeat, and look it up on the internet to find the bird that has the most similar wingbeat to you as a class.

## How can we show the learning?

- Use this exercise as an opportunity to discuss different approaches to flight that birds might have. Why might birds flap their wings very quickly? Why might birds flap their wings very slowly?
- Which is most tiring? Flapping quickly and slowly are both tiring! Sustained flapping slowly can make our muscles ache, but a short burst of quick flapping can make us out of breath.
- The fastest wingbeat seen in a bird is 80 wingbeats per second – that is 4,800 per minute! How did the class compare? Discuss with children why it might be useful for a bird to flap its wings that quickly.
  - This is because the hummingbird hovers in the air while it drinks nectar from flowers. Because the hummingbird wing is so small, it has a small surface area, meaning each flap does not generate much lift. Therefore, they must flap a lot! But this burns a lot of energy, so they do not stay in the air for very long at a time.
- The slowest wingbeat seen in a bird is just 1 per second, seen in the New World Vulture. Discuss with children why it might be useful to beat its wings that slowly.
  - This is because vultures soar high up in the mountains over vast areas looking for food; this means they want to stay in the air for long periods of time without burning too much energy. Their large wings have a high surface area, creating more lift per flap, and they use air currents to stay up in the air for long periods of time.
- Therefore, different species of birds have different approaches to flight, depending on their environment, diet and behaviour.

If you would like to develop your outdoor learning knowledge and skills, take a look at our range of training courses: [ltl.org.uk/outdoor-learning-training](http://ltl.org.uk/outdoor-learning-training)

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