

Daily Temperature Changes and their Effect on Local Bird Populations

Challenge

Group Work

Go to your school library and research the local non-migratory bird population. Choose two of these birds to investigate.

Create an information sheet on each of the birds; include as many details as possible.

Work together with your classmates to create a booklet about the birds all of you have researched.

What will we investigate?

We will investigate the behaviour of the non-migratory bird population in our schoolyard. The goal of these observations will be to determine if temperature changes will affect the behaviour of these birds and if so, how their behaviour changes.

In order to do this we will measure the temperature three times a day for three days over the course of one or two weeks while keeping track of the birds' behaviour.

We will keep track of this information by preparing observations sheets. These sheets will include the following information:

Measurable information: Air temperature

Descriptive information:

- The birds' behaviour
- Description of the weather
 - Clouds – Is it cloudy, overcast or clear? If it's cloudy, what types of clouds are there?
 - Rain – Is it a rainy day? If so, is it a heavy or light rain? Is there hail, sleet or snow?
 - Wind – How would you describe the wind? Is it strong or weak? What direction is it coming from?
- Photographs of the Birds – Use the tablet's camera to take pictures of the birds as you are conducting your observations.



Equipment and Materials

- einstein™Tablet+ or einstein™Labmate+™ paired with a tablet



123 Experimental Setup



Group Work

- Below is a sample observation sheet

First observation sheet:

Students in the group _____		Season _____	Date _____				
Temperature Reading	Temperature in °C	Time and Place of Observation	Description of Weather (cloudiness, rain, wind conditions)	Name of Bird	Behavior/Activities of the bird	Any unusual bird behavior you observed	(Place photo of bird here)
Reading 1							
Reading 2							
Reading 3							

- Conduct these observations **at three different times** during the course of the day, filling out a separate observation sheet for each session.
- At the start of each session tap the MiLAB () icon to open the application.
- Make sure the temperature sensor is selected.
- Tap Run () to measure the temperature.
- Measure the temperature twice more to make sure your readings are accurate. The three temperature readings should be similar, if not repeat the procedure making sure you are in a well-ventilated area.
- Write down your observations. Some examples of things you may want to include – Are the birds feeding, are they on their own or part of a flock, if they are part of a flock, what size is the flock? Are they gathering material for nesting?
- Conduct these observations at least three times over the course of one or two weeks.
- Each session should be conducted at the same time each day.
- The observation sheets for all the groups should be put together in a booklet.



Sensor Setup

Tap the **Setup** cog () and use the table below to set up your device for the temperature measurements:

Sensor:	Temperature (-30 to 50 °C)
Rate:	1/Sec
Duration:	30 Sec

Understanding the Experiment

In Depth Learning

Look over the data from your observation sheets:

What was the temperature range during your observations (the range is the difference between the highest and lowest temperatures)?

First day: from ____ °C to ____ °C

Second Day: from ____ °C to ____ °C

Third day: from ____ °C to ____ °C

What were the differences you observed about the birds' behaviour during different times of day?

What were the differences you observed about the birds' behaviour at the same time of day during the different days?

Were there differences in what different groups observed about the same birds at the same date and time?

Were there noticeable temperature differences at the same time of day during the different days?

Were there significant temperature differences recorded by the different groups?

Understanding the Science

Some birds are migratory and some are non-migratory. Migratory birds fly to different areas as the weather changes, non-migratory birds stay in the same location year-round. Many non-migratory birds adjust their daily habits according to the season, perhaps nesting in the summer, forming larger flocks in the fall etc. You will be on the lookout for these behaviours while making your observations.

Further Study

Conduct a similar study during a different season. Compare both the air temperature and the birds' habits during the different seasons. You may also want to study if migratory birds can also be found in your schoolyard and if so, when they appear.