# *Weather Watch* Teaching and learning plan

## Learning intentions

Students will be able to:

* explore and make observations about features of the weather (cloud and cloud formation, wind, temperature) using the senses
* respond to questions about familiar objects and events, such as different features of the weather
* engage in discussions about observations of weather features (cloud and cloud formation, wind, changes in temperature)
* use drawings and language to represent ideas about features of the weather (cloud and cloud formation, wind, temperature)
* use comparisons to describe the strength of wind or temperature of the air.

## Suggested time frame

The time needed to complete the *Weather Watch CLE* will depend on the depth of the prior knowledge of students, the time to perform the three investigations—‘Cloud in the sky’, ‘Wind, ‘Temperature’—and follow up with any further extension activities. Allow 3–4 hours.

[**Planning ahead and equipment list**](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YrF_Planning%20and%20equipment%20list.docx)

## Safety considerations

When you and your class are completing your Risk Assessment consider the following safety points and add any other relevant ones to the list:

* When using thermometers, identify and explain the parts of a thermometer, particularly, the glass tube that holds the dyed alcohol.
* Show students how to carry and use a thermometer safely.
* When working outdoors, ensure that students are properly supervised and know the boundaries and limits of the outdoor space in which they are working. Students must be able to see the teacher at all times, and the teacher must be able to view any student working outdoors at any given time.
* When asking the students to observe the sky, make sure they understand that they must not look directly at the sun.

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## Introduction

This CLE focuses on investigating weather in the context of the weather conditions experienced in an environment, and links to the Foundation Australian Curriculum: Science.

### Equipment needed

* stimulus images in [Weather images PowerPoint](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YrF_Weather%20images%20PowerPoint.pptx), projected on an IWB
* data projector and screen

**What to do**

Observing the weather today

1. Take the students outside and find a spot where they can lie or sit quietly and look at the sky. Invite pairs of students to identify and describe what they see in the sky and feel in the air around them. Explore weather terminology, namely, *rain*, *cloud*, *wind*, *breeze*, *moving*, *air*, *hot*, *cool*, *warm*, *dull*, *bright*, *cloudy*, *overcast*, *clear*.
2. Use a Thinking Routine such as ‘I see, I think, I wonder’ to elicit responses from students. Alternatively the following teacher prompts may assist with observations and comments.

* How does your skin feel in the open air?
* What do you observe in the sky?
* What things is the wind moving?
* How bright is light from the sun?
* Are there signs of rain? How can you tell?
* What things can you tell me about cloud cover?
* How can you tell what the weather might be like tomorrow?

1. Return to the classroom and ask students to recall the observations that they made outside about the weather.

Record on a whiteboard or chart (or use icons or drawings to represent observations). For example:

|  |
| --- |
| Things we observed about the weather today |
| **Observation** |
| It was partly cloudy. |
| We could see the sun some of the time. |
| The wind blew softly. |
| The sky was mostly blue. |
| The clouds were a white colour. |
|  |

1. Check students’ understanding of the term ‘weather’.
2. Use a data projector and a screen to show the stimulus images on the [Weather images PowerPoint](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YrF_Weather%20images%20PowerPoint.pptx) to promote discussion and raise questions about various weather conditions.
3. Students draw (and label if possible) at least five different things related to weather. Discuss.
4. Record questions raised by students about weather on a whiteboard or chart. Students may add their questions to the board as this unit progresses.

## Core

### Investigation 1: Cloud in the sky

This investigation comprises numerous experiences requiring students to **explore and make observations about** a feature of the weather (cloud), **using the senses** and **use drawing to represent ideas on** a feature of the weather (cloud and cloud formation). Students will **respond to questions about familiar objects and events, such** as a feature of the weather (cloud).

This investigation can be conducted as a whole-class investigation or as a smaller group task. It is recommended that students work in pairs.

A clear view of the sky needs to be readily available to students. It is advisable that a teacher prompts students to describe what they observe.

#### **Equipment needed**

Per student:

* a HB or 2B pencil
* a sheet of A4 paper

### What to do

1. Place students in pairs. In their pairs, instruct them to identify and describe clouds to each other.
2. Invite each student to represent their ideas on clouds and cloud formations in a drawing.
3. Display student drawings and ask students to describe the cloud formations that they observed. Use a question prompt to probe student thinking. For example:

* What was the shape of a cloud you observed?
* What colours did you observe in a cloud?
* How much of the sky was covered by cloud?
* Did a cloud shape remind you of other things?

1. Take note of terminology that students use, for example, ‘clear,’ ‘cloud’, ‘cloudy’, ‘white’, ‘grey’, ‘float’, ‘narrow’, ‘huge’, ‘overcast’, ‘sky’.

### Expected results and explanations

The learning intention can be addressed by students exploring, observing, describing and drawing cloud formations. By undertaking the recommended tasks, it is expected that students will identify a range of cloud shapes and cloud formations.

Providing each student with a piece of paper and pencil is intended to assist students to represent their ideas on clouds and cloud formations through drawing.

Students may describe or explain their ideas about clouds and cloud formations and use appropriate terminology. It assists student learning when a teacher introduces and uses given terms as opportunities arise.

### Investigation 2: Wind

This investigation comprises numerous experiences requiring students to **explore and make observations about** a feature of the weather, namely, wind, **using the senses.** Students will feel wind and identify things that are moved by wind in the outdoors. Students will **engage in discussions about observations of** the effects of wind. Students will **respond to questions about familiar objects and events, such** as a feature of the weather, namely, wind.

This investigation can be conducted as a whole-class investigation or as a smaller group task. It is recommended that students work in pairs. A school oval would suit this investigation.

It is advisable that a teacher prompts students to describe what they observe using their senses of touch, hearing and seeing.

#### **Equipment needed**

Per student:

* A streamer of about 1 metre length

### What to do

1. Invite students to stand in a large open area. Ask students to stand still and feel the wind on their faces. Ask students to point in the direction they think the wind is blowing from.
2. Invite each student to hold up their streamer so it blows in the wind so they can observe and judge from which direction the wind is blowing.
3. Repeat the above tasks and invite students to make judgements about the strength of the wind using the following cues—‘calm (no wind)’, ‘light air’, ‘light breeze’, ‘gentle breeze’, ‘strong breeze’. Ask students to identify and indicate things in the environment that are moving or not moving in the wind.
4. Use question prompts to probe student thinking. For example:

* How strong is the wind that you are observing?
* Could you feel the wind?
* How can you tell how strong the wind is?
* Which things in the school ground did you see moving?
* Where do you think wind comes from?

1. Ask students how they can tell if there is a wind.
2. Take note of the terminology that students use. For example, ‘wind’, ‘breeze’, ‘strong’, ‘weak’, ‘moving air’, ‘direction’, ‘speed’.
3. Repeat the wind explorations and observations when there are different wind strengths. Compare the following in both a gentle breeze and a stronger wind: how your face feels, a flag, a small tree, a bush, large branches, leaves, and how long grass moves.

### Expected results and explanations

The learning intention can be addressed by students feeling the breeze on their skin and observing the movement of outdoor objects to determine the direction of a wind and by making judgements about the strength of the wind. This judgement relies on their prior knowledge of wind as you are asking them to assign a relative strength (comparison) not make a measurement. Students may identify numerous examples where they have heard and seen things moving in a windy situation, such as tree branches, bushes, swing, flags, washing on a line and a wind turbine.

By undertaking the recommended tasks it is expected that students will point in the direction of the prevailing wind and judge its strength.

Students may describe the wind in clear simple terms—‘calm’, ‘slight breeze’, ‘gentle breeze’, ‘moderate breeze’, ‘fresh breeze’, ‘strong breeze’, ‘near gale’, ‘strong gale’, ‘stormy’.

Students may describe or explain their ideas about wind and use appropriate terminology. It assists student learning when a teacher introduces and uses given terms as opportunities arise.

### Investigation 3: Temperature

This investigation comprises numerous experiences requiring students to **explore and make observations of a feature of the weather,** namely, temperature, **using the senses.** Students will report on how hot, cool or warm they feel in a range of situations. They will **engage in discussions about observations** of temperature.

This investigation can be conducted as a whole class investigation or as a smaller group task. It is recommended that students work in pairs. Comparing outdoor and indoor temperatures would suit this investigation.

As a teacher interacts with a pair of students it is advisable that a teacher prompts students to describe what they observe.

#### **Equipment needed**

Per class:

* [Temperature word prompts](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YF_Temperature%20word%20prompts.docx) – cold, cool, warm, hot
* a whiteboard or display size sheet of card
* a large wall thermometer
* [student worksheet](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YrF_Student%20worksheet.docx), class set

Per pair:

* a thermometer

### What to do

1. Take students for a brief walk in the outdoors. Have the [word prompt cards](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YF_Temperature%20word%20prompts.docx) spread in a line on the ground cold cool warm hot

Read each prompt card to the students and ask them to respond by standing next to a prompt card that best describes how they felt on their walk. This task will have better outcomes on very hot or very cold days where the inside and outside temperatures are very different.

Repeat the task inside the classroom.

Compare responses and probe the students’ thinking and responses to the two tasks. Ask them what made them feel this way?

1. Ask students how they can tell when one place feels colder or warmer than another.
2. Show the class a large wall thermometer. Indicate the parts of the thermometer—the glass tube, the numbers, the marks that indicate temperature, the liquid inside the glass tube.
3. Distribute thermometers. (See Safety Considerations) Ask students to observe the movement of the coloured alcohol in the glass tube of the thermometer when they move from outdoors to indoors. Let them move in and out several times. Discuss whether the liquid was higher or lower in each place. Discuss the link between the level of the liquid and how hot or cold they felt in each place.
4. Distribute the [student worksheet](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YrF_Student%20worksheet.docx). Ask the students to colour in pictures of the blank thermometers showing the level of the liquid in each place. Discuss with the students what prompt card they would use to label each thermometer picture.
5. Adhere the [word prompt cards](http://assist.asta.edu.au/sites/assist.asta.edu.au/files/Weather%20Watch_YF_Temperature%20word%20prompts.docx) onto the large wall thermometer to indicate the link between observed temperature and liquid level in a thermometer.
6. Take note of terminology that students use. For example, ‘air’, ‘temperature’, ‘thermometer’, ‘measure’, ‘hotter than’, ‘warmer than’, ‘cooler than’, ‘colder than’, ‘higher’, ‘lower’.
7. Repeat the air temperature investigations with a thermometer at different times of a school day. Highlight changes in temperature over a period of time and invite students to explain these changes.

### Expected results and explanations

The learning intention can be addressed by students comparing the air temperature in two different locations. Students can be introduced to a thermometer as a tool that indicates differences in temperature. Reading the numerical values on the thermometer is beyond the mathematical skills required at this level. However, teachers may refer to these measurements as students ask.

Students may identify examples where they have felt cold, cool, warm or hot. They may identify examples where they have heard the term ‘temperature’ and seen it reported, for example on a daily news weather report.

Students may describe temperature as a measure of how hot or cold something is. Students may know that temperature is measured using a thermometer. Students may raise questions and make statements about what they think temperature is.

Students may describe or explain their ideas about temperature and use appropriate terminology. It assists student learning when a class teacher introduces and uses terms associated with temperature as opportunities arise.

## Conclusion

Invite students to ask or raise a question about any of the investigations carried out—on any aspect of the weather. The questions (i.e., ‘Alternatively…’, ‘I wonder…’) posed by students can be revisited. This will give students an opportunity to articulate their findings and insights into their understandings as well as identify improvements in skills they practised or acquired through their investigations. It is a prudent practice to revisit a given weather observation as new insights may emerge and ‘light bulb’ moments may occur.

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### Additional lessons and activities about weather:

‘How do you know when rain is coming?’, ABC Splash. Video clip (1:53 min) <https://www.abc.net.au/education/for-the-juniors-how-do-you-know-when-rain-is-coming/13605556> This video clip explains some different ways that people can tell when it's going to rain.

‘How to keep cool in hot weather’, ABC Splash. Video clip (2:44 min) <https://www.abc.net.au/education/for-the-juniors-keeping-cool-in-hot-weather-video/13644278> This video clip explains what’s happening under our skin when it is hot and how this helps to keep us cool.

### Assessment opportunities

**Investigation 1: Cloud in the sky** provides an opportunity to assess student understanding of the concepts related to a feature of the weather, namely cloud and cloud formation. Students could be expected to show what they know about cloud. Set tasks that will motivate students to record what knowledge and understandings they have gained about cloud. Tasks include:

* sharing their knowledge of clouds with a peer
* drawing cloud cover and labelling the work
* attempting to write caption sentences
* devising questions about their observations on cloud that can be recorded on a class chart (include the name of the student).

**Investigation 2: Wind** provides an opportunity to assess student understanding of the concepts related to a feature of the weather, namely, wind strength and direction. In addition, the level of student achievement of the science inquiry skills, **to observe a feature of the weather, namely, wind,** and **use drawing to represent ideas on a feature of the weather, wind** could be assessed.

Invite students to describe and give possible explanations of what they observed when feeling the strength and direction of wind. Tasks include role play, discussions, drawings and writing words in the form of labels and captions

**Investigation 3: Temperature** provides an opportunity to assess student understanding of the concepts related to temperature and how it can be described or measured. In addition, a teacher could assess the level of student achievement of the Science Inquiry Skills, namely, the ability of students to **explore and observe a feature of the weather (temperature), using the senses.** A teacher may observe and assess the following skills:

* How well did a student describe or explain his/her ideas on temperature?
* Which questions do students still have about temperature?