

Achievements and Competencies

Learning Outcomes

K-Grade 3	Grades 4-6
Daily and seasonal changes	Weather
Liquids and solids	
Relative position and motion	
Air and water in the environment	

Achievements and Competencies are based on the Common Framework of Science Learning Outcomes (K-12) set by the Canadian Council of Ministers of Education (1997).

Specific Expectations

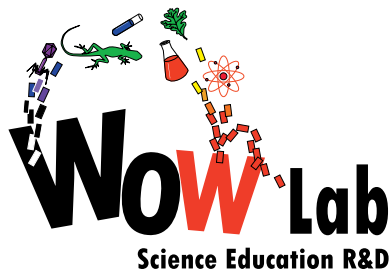
Grade 1

EARTH AND SPACE SCIENCE

Daily and seasonal changes

101-6 Describe ways of measuring and recording environmental changes that occur in daily and seasonal cycles (e.g., investigate and describe ways of measuring daily and seasonal changes in light and temperature. Observe and describe changes that occur in a cyclic pattern and relate these changes to the passage of time).

Creating a thermometer allows the students to investigate how daily temperature changes can be measured and observed. The students can use the thermometer at different times of the day to determine whether or not there is a cyclic pattern.



a WOW Lab

BLUEPRINT

Weather Station - Achievements and Competencies

Grade 2

PHYSICAL SCIENCE

Liquids and solids

103-6 Describe the characteristics of the three states of water and predict changes from one state to another (e.g., predict changes that will occur when ice or water is heated or cooled and demonstrate awareness that these changes are reversible, compare the characteristics of ice, water and vapour).

While creating the *Stormy Day*, ice, water and vapour are used to replicate the sound of thunder and rain. There are three changes in the state of matter: the ice will melt to form water, water will turn into vapour, and the vapour will accumulate and change back into water.

PHYSICAL SCIENCE

Relative position and motion

100-25 Investigate and describe different patterns of movement and identify factors that affect movement (e.g., describe the movement of objects that are spinning, swinging, bouncing, rolling, sliding, vibrating or moving in a straight line. Investigate the movement of film canisters down a slope, with different materials inside them).

The Twist and the *Windy City* create patterns of movement that the students can observe. Pinwheels spin when they come into contact with the wind. Similarly, *The Twist* forms a spinning movement when the bottle is moved in a circular motion and the water is allowed to travel from one end of the Tornado Tube to the other.

200-3 Make predictions, based on an observed pattern (e.g., predict how an object will move and where it will stop).

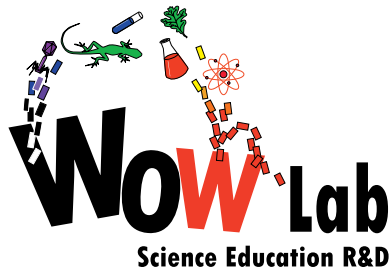
The *Windy City* activity creates different wind patterns based on the milk carton building structure. The students can predict how the wind will act when they are in different areas with similar building structures.

EARTH AND SPACE SCIENCE

Air and water in the environment

102-9 Identify evidence of moisture in the environment, in materials and in living things (e.g., observe condensation on the exterior of a glass of cold water. Identify and describe different forms of precipitation, observe perspiration on their skin when they exercise).

Stormy Day creates moisture by boiling water underneath a tray containing cold water and ice. Condensation is observable and is used to illustrate how precipitation occurs.



a WOW Lab
BLUEPRINT

Weather Station - Achievements and Competencies

102-10 Demonstrate how air, as a substance that surrounds us, takes up space and is felt as wind when it moves (e.g., observe and describe evidence of moving air, design and create a device that is powered by wind).

Using pinwheels, milk cartons and a fan, the *Windy City* is created to demonstrate how the air circulates differently depending on the structure of buildings.

Grade 5

EARTH AND SPACE SCIENCE

Weather

106-2 Describe examples of tools and techniques that have contributed to scientific discoveries (e.g., explain how a thermometer, a hygrometer and a barometer work).

The students will be able to create a thermometer using rubbing alcohol, tap water, a plastic bottle and a straw. The warmth from their hands or a glass of warm water will allow the students to investigate how a thermometer works.

204-8 Identify appropriate tools, instruments, and materials to complete their investigations (e.g., identify examples of instruments such as thermometers, rain gauges, anemometers and barometers).

The *Homemade Thermometer* is used as a tool to investigate the relative difference in temperature between the warm water bath and the surrounding air.

205-6 Estimate measurements (e.g., estimate the temperature at different times of the day).

Comparing the relative temperature of the warm water and the surrounding air using the *Homemade Thermometer* gives students the opportunity to estimate the difference in temperature between the two environments.

205-7 Record observations using a single word, notes in point form, sentences, and simple diagrams and charts (e.g., record both qualitative and quantitative observations of weather over a period of time).

The students are asked to visit every weather station, make observations and draw a picture which describes the different weather situations.

300-13 Describe weather in terms of temperature, wind speed and direction, precipitation and cloud cover.

The combination of all the various weather stations gives students the chance to describe weather in terms of temperature using the *Homemade Thermometer*, wind speed and direction using *Windy City*, precipitation using *Stormy Day* and cloud cover using *Blue Cloud*.