

Weather

In this demonstration, students will explore the various aspects of weather systems including how clouds are created and show how they can be created in class.

Students will have the chance to play with artificial snow, learn how tornadoes develop, and gain an understanding of weather instruments. If the classroom has a supply of water bottles, students will also be able to make their own thermometers.

Grade-Specific Summary Table

This table provides a quick overview of which demo activities match Alberta curriculum for each grade.

Grade	Curriculum Focus	Demo Activity	Key Concepts
Kindergarten	Matter: Properties of Objects Earth Systems: Exploring Environments	Cloud in bottle, Rain cloud demo, Change of state discussion	Water has different properties (hot, cold), Objects move in different ways, Environments change
3	Matter - States of Matter	Cloud in bottle, Rain cloud demo, Change of state discussion	Solid/liquid/gas states, Change-of-state diagrams, Heating/cooling, Evaporation/condensation
5	Living Systems - Weather Measurement	Weather tools discussion, Pressure demonstration	Weather measured with tools, Thermometer, rain gauge, anemometer
6	Matter - Particle Motion	Pressure demo, Particle motion explanation	Particle motion affects temperature/pressure, High/low pressure systems

Detailed Curriculum Links and Objectives by Grade

Kindergarten: Matter – Properties of Objects & Earth Systems: Exploring Environments

Curriculum link:

- Children examine properties of objects
- Explore properties of various objects using one or more of the five sense
- Describe properties of various objects
- Sort various objects according to properties
- Compare properties of various objects
- Objects may be similar in one or more properties and different in another property

Objectives:

Recognize that water can be hot, cold, and can change:

Use sight, touch, and hearing to observe demonstrations and describe what they see cloud forming, water moving, colors mixing

Recognize ice, water, steam, shaving cream, and food coloring as distinct objects with different properties

Watch how water swirls in the tornado bottle, how food coloring spreads through water, and how steam rises

Sort materials by properties: hard/soft, hot/cold, light/heavy, clear/colored

Wonder aloud about "Why does steam disappear?" "Why does the cloud form?" "How does the tornado spin?"

Recognize that weather involves water and changes in the air around us

Grade 3: Matter - States of Matter

Curriculum Link:

- Conduct investigation to demonstrate changes of state.
- Describe solid, liquid, and gas states in terms of shape and volume.
- Discuss daily activities involving heating and cooling.
- Identify solids, liquids, and gases.

Objectives:

- Identify three states of matter: solid, liquid, gas.
- Understand evaporation (liquid to gas when heated).
- Understand condensation (gas to liquid when cooled).
- Label water cycle: evaporation, condensation, precipitation.
- Observe that heating causes expansion, cooling causes contraction.
- Create clouds by condensing water vapor onto particles.

- Learn precipitation occurs when water droplets combine and become heavy.
- Understand tornado formation basics (supercells, updrafts, vortex).

Grade 5: Living Systems - Weather Measurement

Curriculum Link:

- Weather conditions can be measured accurately using variety of tools and methods.

Objectives:

- Identify weather measurement tools.
- Explain how thermometer measures temperature (liquid expands when heated).
- Explain how rain gauge measures precipitation amount.
- Explain how anemometer measures wind speed (rotating cups).
- Understand importance of accurate weather measurement.

Grade 6: Matter - Particle Motion

Curriculum Link:

- Particle motion affects temperature and pressure.

Objectives:

- Define air pressure as weight of atmosphere above us.
- Understand low pressure areas have warm air (air rises, clouds form).
- Understand high pressure areas have cool air (air sinks, clear skies).
- Observe pressure difference causes air/water movement.
- Demonstrate that flame consumes oxygen, creating low pressure.
- Learn atmospheric pressure forces water to rise into low pressure area.
- Connect to weather patterns and storm formation.

Activity-Based Summary Table

Demo Activity	Curriculum Outcome	Key Concepts
Cloud in Bottle	Evaporation and condensation	Pressure change causes water vapor to condense
Rain Cloud Demo (Shaving Cream)	Precipitation formation	Water droplets accumulate until heavy enough to fall
Water Cycle Labeling	States of matter in nature	Evaporation, condensation, precipitation cycle
Tornado in Bottle	Vortex formation	Rotating water creates tornado-like funnel
Weather Tools Discussion	Measurement instruments	Thermometer, rain gauge, anemometer functions

Air Pressure Candle Demo	Pressure differences	Flame consumes oxygen, creates low pressure, water rises
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