Science 10

Foundational Outcomes

NOVA SCOTIA
NOUVELLE-ÉCOSSE

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EECD has made suggestions for prioritizing outcomes to assist teachers as they support student learning. Teachers will need to make their professional decisions based on the needs of their students.

The Foundational Outcomes identified in this document represent outcomes determined to be relevant for future learning in the discipline. Decisions about foundational outcomes were made in consultation with teachers, science specialists and post-secondary institution expectations. The foundational outcomes are meant to guide teachers in making decisions about creating learning experiences that will prepare and engage their learners in a responsive way. However, a teacher's professional judgment remains the most crucial factor for responding effectively to the needs of learners.

It might be relevant for teachers to review or to seek out learning outcomes from an earlier curriculum or grade level in order to support learners moving forward with current curriculum. Sometimes, however, current curricular learnings do not directly rely on learning from the previous year and current curriculum can be engaged in without additional review.

The learning environment (face-to-face, blended, online) will continue to be an important factor that will impact the types of learning experiences with which learners are able to engage. While learning science in a hands-on, experimental way is preferred, should laboratory experiments not be possible due to public health concerns, teachers are encouraged to offer online experiment simulations, to record scientific phenomena to discuss, notice, observe and unpack with learners, to support simple, safe experiments that could be done at home, to provide authentic data that can be analysed etc…

Integrated, project-based learning and inquiry-based learning (especially in areas that connect STSE) allow for learner choice and flexible pacing which is particularly effective for students to not only learn new concepts but also for demonstrating their learning.

It is suggested that the focus for science in grades 9-12 be on using the foundational outcomes to focus on foundational understandings for future learning, encouraging cross-cutting scientific themes and application of learning. Weighting for course modules should be reflective of the amount of time spent exploring the outcomes in the module.

Unit: Earth and Space Science: Weather Dynamics

Subtopic: WEATHER: OBSERVATIONS AND MEASUREMENTS

- identify questions and analyze meteorological data for a given time span and predict future weather conditions, using appropriate technologies (214-10, 331-5, 212-1)

Subtopic: WATER CYCLE

- use scientific theory, identify questions about, illustrate, and explain heat energy transfers that occur in the water cycle (331-1, 214-3)

Subtopic: WEATHER DYNAMICS: HEAT AND ENERGY

- use weather data to describe and explain heat transfers in the hydrosphere and atmosphere, showing how these affect air and water currents (331-2)
- illustrate and display how science attempts to explain seasonal changes and variations in weather patterns for a given location (215-5)

Subtopic: WEATHER FORECASTING

- analyze and report on the risks, benefits, and limitations of society's responses to weather forecasting (118-7, 214-11, 116-1)

Unit: Physical Science: Chemical Reactions

Subtopic: INVESTIGATING CHEMICAL REACTIONS

- investigate chemical reactions while applying WHMIS standards, using proper techniques for handling and disposing of materials (213-9, 117-5)
- describe how neutralization involves tempering the effects of an acid with a base or vice versa (321-2)

Subtopic: FORMULA WRITING

- name and write formulas for common ionic compounds and molecular compounds and describe the usefulness of the IUPAC nomenclature system (319-1, 114-8)
- classify simple acids, bases, and salts based on their characteristics, name, and formula (319-2)

Subtopic: CHEMICAL REACTIONS

- represent chemical reactions and the conservation of mass using balanced symbolic equations (321-1)
- design and carry out experiments, controlling variables and interpreting patterns, to illustrate how factors can affect chemical reactions (212-3, 213-2, 321-3, 214-5)

Unit: Physical Science: Motion

Subtopic: GRAPHS OF SPEED AND VELOCITY

- using linear experimentation with appropriate technologies, analyze graphically and quantitatively the relationship among distance, time, and speed (scalar quantities) and the relationship among position, displacement, time, and velocity (vector quantities) (325-1, 212-7, 325-2)

Subtopic: MOTION: GRAPHS AND FORMULAS

- distinguish among constant, average, and instantaneous speed and velocity of an object (325-3, 212-2)

Unit: Life Science: Sustainability of Ecosystems

Subtopic: SUSTAINABILITY

- question and analyze how a paradigm shift in sustainability can change society's views (114-1)

Subtopic: SUSTAINABILITY OF AN ECOSYSTEM

- distinguish between biotic and abiotic factors, determining the impact on the consumers at all trophic levels due to bioaccumulation, variability, and diversity (318-2, 318-5)
- predict and analyze the impact of external factors on the sustainability of an ecosystem, using a variety of formats (212-4, 214-3, 331-6)

Subtopic: STSE AND SUSTAINABLE DEVELOPMENT

- describe how different geographical locations can sustain similar ecosystems (331-7, 318-3)