Science: Grade 10 (20F)

Course Code	0120
Course Credit	1.0

ENGLISH Program

Discipline Overview

Science is systematic exploration, observation, experimentation, and evidence-based reasoning used to build an understanding of the natural world. It emerges from human curiosity and employs creativity, imagination, and intuition to uncover new knowledge.

Science comprises an established body of knowledge and provides a philosophical framework for generating new insight into the natural world. Science is shaped by historical, political, economic, environmental, and societal factors, which are integral to understanding its significance as a valuable human endeavour.

Science is foundational for understanding natural phenomena, solving problems, and developing new technology. Through the study of science, learners become scientifically literate; they expand their knowledge, develop critical thinking and data analysis skills, and learn to evaluate procedures effectively. Scientific literacy equips learners to critically engage with information, make informed decisions, and address complex issues on both personal and societal levels. Science education fosters responsible citizenship, nurtures curiosity, and encourages interdisciplinary thinking through connections with mathematics, engineering, arts, languages, physical health, and the social sciences.

In Manitoba, Kindergarten to Grade 10 science education rests on the following five strands:

- **Indigenous Peoples within the Natural World:** Indigenous Peoples—First Nations, Métis, and Inuit—have always engaged in scientific ways of knowing, being, and doing. All learners of science benefit from developing an understanding of how different Indigenous communities interpret the natural world, apply scientific principles, and create technologies in interrelated and sustainable ways.
- **Science Identity:** Throughout history, people from diverse backgrounds have played roles in the development of science, and all people, societies, and environments are affected by science and technology. All learners must be empowered to see themselves as participants in the collective scientific endeavour.
- **Practical Science:** This strand includes STSE (science, technology, society, and environment) contexts, measurement, actions and practices, scientific instruments, and the awareness of science application in careers, hobbies, and activities. All learners must be equipped with scientific skills and attitudes to take action for the betterment of society and for a sustainable future.

Manitoba

- **Nature of Science:** This strand includes the purpose, methods, applications, and implications of scientific inquiry. All learners must develop the scientific confidence needed to navigate the complexities of an information-rich environment, including differentiating between legitimate scientific information, pseudoscience, misinformation, and disinformation.
- **Scientific Knowledge:** This strand includes information, concepts, principles, theories, and facts that have been acquired, tested, and validated through the systematic process of scientific inquiry. All learners must acquire a fundamental core knowledge base to become scientifically literate citizens.

Scientific Knowledge and Nature of Science learning outcomes are organized around building an understanding of 14 big ideas* in and about science. Ten big ideas in science are addressed via Scientific Knowledge learning outcomes that are unique to every grade level, while four big ideas about science are investigated through the Nature of Science strand in four progressive grade bands. The contribution of different First Nations, Inuit, and Métis groups are studied in the Indigenous Peoples within the Natural World strand, while connecting all learners to science inclusively is addressed in the Science Identity strand. The Practical Science learning outcomes emphasize that science is active and participatory.

These intertwined strands of learning outcomes put learners on a pathway of increasing scientific literacy. Learners develop their global competencies, which allow them to engage authentically with the curriculum and build enduring understandings of science.

Course Overview

In **Grade 10,** learners conclude their Kindergarten to Grade 10 science learning and are prepared to continue on to optional science courses at the Grades 11 and 12 levels. The knowledge areas of **matter, force, Earth science, space science, life systems,** and **evolution** are explored. An active and practical approach to learning and doing science continues. This includes conducting scientific investigations, furthering tool and measurement skills, exploring science in everyday life, and looking into how science interacts with society and the environment. Learners strengthen their agency and sense of belonging in science, as well as their science literacy. In Grade 10, learners continue to explore Indigenous ways of knowing, being, and doing, including through interacting with the local community and learning in nature. The Grades 10 to 12 Nature of Science learning outcomes are introduced, with a more sophisticated inquiry into the **purpose, method, application,** and **implications** of science.

Inquiry questions to help guide learning and planning for the year may include the following:

- How do various types of matter interact?
- What do we know about Earth and its place in the universe?
- How are human activities affecting the environment?

Please see documents in the curriculum implementation resources section for more information on how to use this curriculum.

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* Harlen, Wynne, editor. *Working with Big Ideas of Science Education*. Science Education Program (SEP) of IAP (InterAcademy Partnership), 2015. Available online at https://www.interacademies.org/publication/working-big-ideas-science-education.

Global Competencies in Science

Critical Thinking

Critical thinking in science involves using evidence based on observation, experience, and experimentation to test ideas, solve problems, and deepen scientific knowledge; critical thinking is an essential aspect of scientific inquiry. Critical thinkers use various processes and wide sources of evidence to distinguish accurate and reliable information from biased information or misinformation. Thinking critically leads to the discovery of relationships within and among various phenomena. Through scientific critical thinking, theories are formed and tested; they are reinforced, challenged, shifted, or abandoned.

When critical thinking as a competency is applied in science, learners

- use strategic, efficient, and effective research skills to find and use reliable sources
- display scientifically valid skepticism when evaluating sources of information for bias, reliability, and relevance
- observe, test, and experiment to explore and connect ideas, patterns, and relationships, using scientific criteria and evidence
- reflect on a position from multiple scientific perspectives and defend, adjust, or change position based on scientific evidence and feedback from peers
- are willing to ask scientifically relevant questions to further their understanding
- make judgments based on the best available scientific evidence, observations, and experiences
- weigh criteria to make ethical scientific decisions when their actions may affect themselves, others, living things, or the environment

Creativity

Creativity in science drives the exploration of scientific ideas, processes, problems, and issues. Science is a deeply creative process aimed at generating new ideas, designing innovative products and processes, and producing evidence to support well-informed decision-making. Scientific thinkers use imagination and evidence to build theories and models that explain phenomena in the physical world, and they design experiments to test those theories. This process may lead to shifts in human understanding and to new technologies.

When creativity as a competency is applied in science, learners

- demonstrate initiative, open-mindedness, inventiveness, flexibility, and a willingness to take prudent risks
- demonstrate curiosity about the natural world, ask scientifically relevant questions, and are comfortable playing with ideas

- employ scientific strategies to solve problems by applying knowledge and ideas in innovative ways
- deepen their understanding of scientific concepts by building on the ideas of their peers and endeavouring to see the world through a variety of lenses
- create plans and adjust them as needed in product design or to experimentally investigate a problem
- test and adapt plans used during inquiry, design, or decision-making processes, and persevere through obstacles to improve

Citizenship

Citizenship in science involves a recognition and an understanding of the consequences of scientific decisions and practices on oneself, others, and the natural world. Scientific approaches to knowledge acquisition recognize the fallibility of human faculties, including natural human biases and the limitations of perception. Citizenship in science involves participating in a process of peer review and acknowledging the breadth and depth of people and cultures that contribute to understanding the physical world. The world's accumulated scientific knowledge serves to help sustain the world. It should be ethically gathered, willingly shared, and passed from generation to generation.

When citizenship as a competency is applied in science, learners

- understand that science often deals with complex issues, on which varying perspectives may exist
- explore the interconnectedness of self, others, and the natural world
- evaluate factors and propose scientifically valid solutions considerate of the well-being of self, others, and the natural world
- welcome diverse scientific viewpoints because they understand that contributions to science come from those with varied backgrounds, experiences, and world views
- are respectful of their peers' perspectives, including those that do not fit their own
- communicate with their science community in responsible, respectful, and inclusive ways
- contribute to the betterment of community both near and far, in doing scientific investigations
- seek equitable solutions to scientific issues that support diversity, inclusivity, and human rights
- make ethical decisions based on evidence, which have a positive and sustainable impact on self, others, and the natural world

Connection to Self

Connection to self in science involves learners developing confidence in their abilities in science and a positive relationship to science. Scientific thinking is a skill that can be developed, and it has valuable applications to daily life. The practice of science involves prudent risk taking, exercising curiosity, analytical evaluation of beliefs, and a willingness to grow and change based on verifiable information. Engaging in scientific practice teaches individual resiliency and perseverance, and promotes an understanding of one's place in the natural world.

When connection to self as a competency is applied in science, learners

- acknowledge their personal interests, strengths, gifts, and challenges in making connections between science and their lives
- come to know factors that shape their scientific identity and to understand that everyone is a scientist
- understand and use strategies to support self-regulation during scientific investigations and when receiving peer feedback
- reflect on their scientific decisions, effort, and experience, and accept that acknowledging feedback from others is part of the scientific process
- set goals to strengthen their scientific learning progress and well-being, as part of the scientific process
- recognize that a scientific understanding of the natural world can instill hope and optimism about the future
- are resilient and persevere through obstacles, recognizing that they will learn from mistakes and build upon their successes
- demonstrate the ability to critically evaluate their own ideas and beliefs, and are open-minded to adapt and change in response to new evidence
- value their own voice, build their confidence, and embrace their role as lifelong science learners

Collaboration

Collaboration in science involves learning with and from others to develop scientific ideas and processes. The process of peer review and the seeking of expert consensus are valued practices in the scientific endeavour. The advancement of science often occurs through collaboration among scientists and teams of scientists.

When collaboration as a competency is applied in science, learners

- seek to understand diverse perspectives, voices, and ideas, seeing these as integral components of the scientific process
- understand that in science, new ideas often build upon the contributions and ideas of others

- value the scientific contributions of others
- participate in the process of asking scientific questions of themselves and others and actively listening to responses
- contribute by working through differences, and show a willingness to compromise or change perspective in response to scientific evidence, as participating members of scientific teams
- collaboratively gather and interpret empirical data, striving for a shared understanding of its scientific meaning
- commit to their role as part of a team with a collective purpose toward a common goal in inquiry, design, and decision-making processes

Communication

Communication in science involves interaction with others to share scientific ideas and information in diverse contexts. The clear communication of scientific information is a vital part of the scientific endeavour. What is communicated as scientific knowledge must be credible, open to interrogation by experts, testable, and verifiable. Scientific communication often conveys information in mathematical, graphical, and technical formats, and must acknowledge the limitations and uncertainties inherent in quantitative empirical investigations. The language and symbols within narrow fields often become extremely specialized. Communication among fields, and from scientific communities to the public, often requires interpretation by teachers, journalists, and other science communicators.

When communication as a competency is applied in science, learners

- express ideas and organize information, including uncertainty and error, clearly and succinctly using appropriate scientific terminology and representations
- use multiple modes and forms of communication, which take into account purpose, context, and audience, to share scientific ideas
- understand how their words and actions shape their identity, whether in person or online
- use their scientific background and context cues to enhance understanding of scientific communications
- seek to understand the scientific perspective of their peers through active listening and questioning
- deepen their understanding of scientific ideas by making connections and building relationship through conversation, discussion, and interaction in a variety of contexts and through varied media
- advocate for themselves and others in constructive and responsible ways to strengthen their scientific community

Enduring Understandings

Science is about explaining phenomena.

Science explains the cause or causes of phenomena observed in the natural world using various scientific practices.

Science is a collective endeavour.

Science is a collective human endeavour that discovers laws, builds models, and formulates theories that best fit the empirical evidence available at a particular time.

Science is interconnected with technology.

In science, there is a symbiotic relationship between scientific understandings and technological developments for the solution of problems.

Science has complex implications.

Science and its applications have ethical, social, personal, economic, political, cultural, and environmental implications, such as considerations of sustainability and social justice.

Science empowers human agency.

Science fosters curiosity that supports the development of a science identity, a lifelong interest in science, and the ability to make informed decisions and have agency in everyday life.

Learning Outcomes

Science learning outcomes are organized into five strands. These strands and learning outcomes are intended to be woven together throughout all learning experiences while supporting the development of global competencies. All strands equally and cohesively build scientific literacy, skills, and attitudes, inclusive of Indigenous ways and knowledge. Teachers can tailor curriculum implementation to the learners' specific interests and needs.

Legend

Include the following = cumpulsory content

Examples/e.g., = suggestions for learning

Learning Outcome Key

Subject ↓ *Strand* ↓

SCI.K.A.1

↑ *Grade Level* ↑ *Learning Outcome*

Strand A: Indigenous Peoples within the Natural World

SCI.10.A.1 Demonstrate an understanding of different First Nations, Métis, and Inuit ways of knowing, being, and doing in relationship with the land and the natural world by exploring Indigenous methods of observing and interpreting the world, applying scientific principles, and creating technologies within local traditional and contemporary cultural contexts (e.g., wholistic, reciprocal, interconnected, and sustainable ways; land-based learning; outdoor learning; intersections with Western science).

Strand B: Science Identity

SCI.10.SI.1 Develop a sense of agency, identity, and belonging in science by

- cultivating natural curiosity about the world
- acquiring scientific skills and fostering scientific attitudes
- building a personal connection to nature
- establishing links between science concepts and personal experience
- recognizing that everyone can contribute to science

Strand C: Practical Science

Science, Technology, Society, and Environment (STSE) Contexts

SCI.10.C.1 Demonstrate an awareness of the dynamic interplay between science, technology, society, and the environment (STSE), thereby being empowered to critically evaluate the impacts of scientific and technological advancements on individuals, communities, and ecosystems, and to make informed decisions for a sustainable future.

Examples:

types of reactions seen in everyday life (combustion, oxidation, acid base chemistry); chemistry in health care; the importance of systematic organization in chemistry; transportation; physics safety and technology; atmospheric pressure and weather; pressure-based technologies (pneumatics, hydraulics); forces and Indigenous technologies; the development of and evidence for the Big Bang theory; cosmologies of various cultures, including intersection of science, religion, and philosophy; significance of celestial bodies (Earth, Sun, Moon, stars) in various cultures; causes and consequences of climate change; climate change mitigation strategies and sustainability; geological time scales and evidence of past and current extinction events; conservation and protection of land, water, and ecosystems; sustainable resource management; wildlife-human interactions and coexistence; the relationship between human culture and technological development

Scientific Measurement

SCI.10.C.2 Demonstrate an understanding of units, measuring tools, and the nature of measurement in science. (**Bold** indicates items introduced for the first time at this grade level.)

Include the following:

- Tools: thermometer, ruler, volumetric vessels, stopwatch, spring scale, caliper, digital scale, **barometer, telescope**
- Attributes: temperature, length, mass, volume, time, speed, force, direction, energy, density, pressure
- Units: length/distance (**parsec, light year, astronomical unit,** km, m, cm, mm, mm fractions), mass (kg, g, **cg, mg**), volume (L, mL), time (h, min, s), temperature (^{o}C), speed (km/h, m/s), force (N), energy (J), density (kg/m^3, g/cm^3), pressure (kPa, Pa)

- Skills: measure and estimate using standard SI tools and units; select measurement tools; display quantitative data (charts, line graphs, tables, etc.); recognize importance of standard units; convert between SI length, time, and volume units; understand the meaning of SI prefixes and their symbols (micro, milli, centi, deci, deka, hecto, kilo, mega); describe the definition and relationship between SI units m and kg (historical and modern definitions); differentiate between base SI units (m, kg, s, A) and derived units (N, C, W, etc.); understand measurement precision, accuracy, and uncertainty **(+/- notation)**; use unit/dimensional analysis techniques to check computation; **use scientific notation and metric prefixes to represent large and small SI measurements**

Action and Practice

SCI.10.C.3 Demonstrate practical scientific skills through safely and actively participating in a variety of scientific practices such as inquiry-based learning experiences, experimentation, scientific observation, data analysis, measurement, debate, communicating scientific information, and designing and building.

Examples:

- Participate in learning experiences that include an Indigenous community member (e.g., Elder, Knowledge Holder, Knowledge Keeper) to share knowledge, experience, or teachings related to the curriculum.
- Investigate the potential impact of introducing invasive species to an ecosystem or removing a species from an ecosystem.
- Design and perform an experiment to determine how various factors affect chemical reaction rates, including identifying and controlling major variables.
- Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.
- Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
- Demonstrate knowledge and use of relevant safety precautions, Workplace Hazardous Materials Information System (WHMIS) regulations, and emergency equipment.

Scientific Instruments

SCI.10.C.4 Demonstrate an understanding of the purpose and functioning of various scientific instruments and materials (considering availability and appropriateness), as well as competence in using them safely.

Examples:

glassware, hot plate, chemical substances, Bunsen burner, telescope, craft and recycled materials, classroom materials, materials from nature, logbook, diagrams, charts, graphs, spreadsheets, safety procedures

Careers, Hobbies, and Activities

SCI.10.C.5 Demonstrate an understanding of the connections between the scientific ideas studied and a range of careers, hobbies, and activities.

Examples:

chemist, firefighter, emergency medical technician (EMT), engineer, materials scientist, pharmacist, driver, astronomer, space scientist, rocket engineer, communications expert, roboticist, miner, ecologist, environmental scientist, waste management expert, gardening, ethnobotany, Indigenous teachings related to life interconnectedness, model building, skateboarding, biking, star gazing, nature walks, camping, nature photography, bowling, basketball, rock climbing, rock and mineral collecting

Strand D: Nature of Science (Grades 10 to 12 Band)

Purpose: Science is about finding the cause or causes of phenomena in the natural world.

SCI.10.D.1 Demonstrate the understanding that scientific evidence is gathered through experimentation where possible, or systematic observations where it is not.

SCI.10.D.2 Demonstrate the understanding that patterns in data may reveal correlations among factors in phenomena.

SCI.10.D.3 Demonstrate the understanding that correlations in data suggest relations among factors but are not conclusive evidence that one factor is the cause of change in another because undiscovered factors could be causing both.

SCI.10.D.4 Demonstrate the understanding that in science, there is a difference between theories, models, hypotheses, and laws, including the fact that one does not become another, and all are important parts of the development of scientific understandings.

Method: Scientific explanations, theories, and models are those that best fit the evidence available at a particular time.

SCI.10.D.5 Demonstrate an understanding of how models are used in science. Examples: prediction, simplification, representation, testing

SCI.10.D.6 Demonstrate the understanding that theories and models are created by humans using intuition, reason, imagination, and consideration of evidence.

SCI.10.D.7 Demonstrate an understanding of the nature of scientific theories and models and how they may change as new evidence becomes available.

Examples: modify, replace, discard, paradigm shift

SCI.10.D.8 Demonstrate the understanding that theories are tested by experiment and observation and may be strengthened, modified, or discarded, but they cannot be proven correct.

Include the following: problem of induction, black swan theory, falsifiability.

Application: The knowledge produced by science is used in engineering and technologies to create products and processes.

SCI.10.D.9 Demonstrate an understanding of how scientific knowledge and technological advancement enable and reinforce each other in a reciprocal fashion.

SCI.10.D.10 Demonstrate the understanding that while technologies may provide advantages, they may also have detrimental aspects.

Examples: climate change, environmental damage, disposal, mass consumption

SCI.10.D.11 Demonstrate the understanding that some technologies consume rare and finite resources, requiring collaboration among scientists, engineers, and others to find sustainable solutions.

Examples: sustainable development, environmental damage, non-renewable resource, rare metals, recycling, reuse

Implication: Applications of science often have ethical, environmental, social, economic, and political implications.

SCI.10.D.12 Demonstrate the understanding that established science is not a matter of opinion; however, the application of scientific knowledge requires ethical and moral decisions that are outside the realm of science.

SCI.10.D.13 Demonstrate the understanding that all technologies consume or degrade resources, requiring considerations beyond what the technology or science itself can provide.

Examples: economical, social, health, ethical, political, environmental, sustainability

Strand E: Scientific Knowledge

Matter: All matter in the universe is made of very small particles.

SCI.10.E.1 Demonstrate the understanding that chemical reactions involve the joining or rearrangement of atoms in the reacting substances, resulting in the formation of new substances.

Include the following: conservation of mass, reaction equations, balancing equations, chemical bonds.

SCI.10.E.2 Demonstrate the understanding that the observable properties and behaviours of elements and compounds can be explained in terms of the arrangement of electrons, and the bonds between atoms or molecules.

Examples: metals, non-metals, Bohr models, ionic compounds, molecules, solids, liquids, gasses, boiling point, melting point, reactivity

SCI.10.E.3 Demonstrate an understanding of the nature of the formation and properties of binary ionic compounds.

Include the following: metal, non-metal, valence electron, ionic bond, crystal, melting point, boiling point, electrolyte.

SCI.10.E.4 Demonstrate an understanding of the nature of the formation and properties of simple molecular compounds.

Include the following: valence shell, covalent bond, single bond, double bond, triple bond, melting point, boiling point, states of matter.

SCI.10.E.5 Demonstrate the understanding that scientists name molecular and ionic compounds systematically, according to International Union of Pure and Applied Chemistry (IUPAC) rules.

Include the following: prefix, suffix, Stock system.

Note: All learners should demonstrate an awareness of the importance of systematically naming compounds. Those planning to enter Grade 11 Chemistry should learn basic naming.

Force: Changing the movement of an object requires a net force to be acting on it.

SCI.10.E.6 Demonstrate an understanding of the concepts of position, time, displacement, velocity, and constant acceleration.

Include the following: vector, scalar, distance, speed, and correct application of related SI units.

SCI.10.E.7 Demonstrate an understanding of the relationship among forces, masses, and changing velocities as described and understood through Newton's three laws of motion.

Include the following: mass, kilogram, inertia, definition of newton (N), vector, acceleration, friction.

SCI.10.E.8 Demonstrate the understanding that pressure is a measure of force acting on a unit of area.

Include the following: pascal, kilopascal, m^2, N.

SCI.10.E.9 Demonstrate the understanding that liquids, gases, and solids exert pressures, and that the amount of pressure depends on various factors.

Include the following: density, gravity, volume, temperature, depth, height.

Earth Science: The composition of Earth and its atmosphere and the processes occurring within them shape Earth's surface and its climate.

SCI.10.E.10 Demonstrate an understanding of the nature and importance of the ozone layer.

Include the following: formation from oxygen, molecular composition, blocking ultraviolet (UV) rays, chlorofluorocarbon (CFC) damage.

SCI.10.E.11 Demonstrate an understanding of global efforts made to reverse ozone damage.

Include the following: ozone hole, Montreal protocol.

SCI.10.E.12 Demonstrate an understanding of factors that influence Earth's climate system.

Examples: latitude, Sun energy, landscape, prevailing wind, Coriolis effect, ocean currents

SCI.10.E.13 Demonstrate an understanding of the nature, importance, and extraction of natural resources contained within Earth.

Include the following: fossil fuels, ores, minerals, metals.

SCI.10.E.14 Demonstrate an understanding of the mechanism and consequences (e.g., severe weather events, ocean acidification, desertification, loss of polar ice, wildfires, flooding) of human-induced climate change.

Include the following: greenhouse gas emissions.

Space Science: Our Solar System is a very small part of one of billions of galaxies in the universe.

SCI.10.E.15 Demonstrate an understanding of the vast size of the universe, its varied contents, and evidence for its formation in the Big Bang, and subsequent evolution.

Include the following: light year, parsec, astronomical unit, doppler shift, galaxies.

SCI.10.E.16 Demonstrate an understanding of the formation and evolution of our Solar System, and the Solar System's place and time in the larger universe.

Include the following: gravity, accretion, star, age of universe, age of Solar System, age of Earth.

SCI.10.E.17 Demonstrate an understanding of the varying nature of stars, including the formation, types, mechanism of energy production, and progression through a life cycle.

Include the following: types of stars, evolution of stars, star birth, main sequence, star death, nuclear fusion.

SCI.10.E.18 Demonstrate the understanding that celestial objects, and objects on Earth, all obey the same relatively simple laws of gravity and motion, which lead to mainly regular and predictable motions in the night sky, and occasionally to less predictable phenomena.

Example: meteor activity

SCI.10.E.19 Demonstrate the understanding that evidence of life has not been found anywhere beyond Earth.

Life Systems: Organisms require a supply of energy and materials for which they often depend on, or compete with, other organisms.

SCI.10.E.20 Demonstrate an understanding of the nature and functioning of resilient ecosystems.

Include the following: food web, ecological pyramids, biogeochemical cycles, biodiversity, carrying capacity.

SCI.10.E.21 Demonstrate the understanding that many human activities have a detrimental effect on natural, healthy ecosystems.

Examples: monoculture, farming, forestry, mining, lake eutrophication, invasive species, habitat destruction, bioaccumulation, climate change, urbanization, building dams, and dissemination of invasive species

SCI.10.E.22 Demonstrate the understanding that there are sustainable alternatives to most detrimental human activities.

Examples: sustainable agriculture practices, renewable energy resources

Evolution: The diversity of organisms, living and extinct, is the result of evolution.

SCI.10.E.23 Demonstrate the understanding that the evolution of living things is an aspect of a larger process called cosmic evolution, which has led to conditions favorable to life on Earth.

SCI.10.E.24 Demonstrate the understanding that human activity changes environments more quickly than organisms can naturally evolve.

Include the following: climate change, pollution, monoculture, biodiversity, Anthropocene extinction, pesticides, fertilization, habitat destruction.

SCI.10.E.25 Demonstrate the understanding that humans can intentionally or unintentionally influence the evolution of species.

Examples: selective breeding, domestication, genetic modification, antibiotic resistance, peppered moth

Curriculum Implementation Resources

Curriculum implementation resources will include supplementary documents to support implementation. This section and the support documents will continue to be updated, so you are encouraged to visit the site regularly.