Ontario

2022

Science and Technology Grade 3

OVERALL AND SPECIFIC EXPECTATIONS

STRAND A: STEM Skills and Connections

A

Throughout Grade 3, in connection with the learning in the Life Systems, Matter and Energy, Structures and Mechanisms, and Earth and Space Systems strands, students will:

A1. STEM Investigation and Communication Skills: use a scientific research process, a scientific experimentation process, and an engineering design process to conduct investigations, following appropriate health and safety procedures

A1.1 use a scientific research process and associated skills to conduct investigations

A1.2 use a scientific experimentation process and associated skills to conduct investigations

A1.3 use an engineering design process and associated skills to design, build, and test devices, models, structures, and/or systems

A1.4 follow established health and safety procedures during science and technology investigations, including wearing appropriate protective equipment and clothing and safely using tools, instruments, and materials

A1.5 communicate their findings, using science and technology vocabulary and formats that are appropriate for specific audiences and purposes

A2. Coding and Emerging Technologies: use coding in investigations and to model concepts, and assess the impact of coding and of emerging technologies on everyday life

A2.1 write and execute code in investigations and when modelling concepts, with a focus on testing, debugging, and refining programs

A2.2 identify and describe impacts of coding and of emerging technologies on everyday life

A3. Applications, Connections, and Contributions: demonstrate an understanding of the practical applications of science and technology, and of contributions to science and technology from people with diverse lived experiences

A3.1 describe practical applications of science and technology concepts in their home and community, and how these applications address real-world problems

A3.2 investigate how science and technology can be used with other subject areas to address real-world problems

A3.3 analyse contributions to science and technology from various communities

STRAND B: Life Systems
Growth and Changes in Plants

B

By the end of Grade 3, students will:

B1. Relating Science and Technology to Our Changing World: assess ways in which plants are beneficial to society and the environment, and ways in which human activity has an impact on plants and plant habitats

B1.1 assess ways in which plants are important to humans and other living things, taking different perspectives into consideration, and identify ways in which humans can protect native plant species and their habitats

B1.2 assess ways in which human activities have an impact on plants and plant habitats, and identify personal actions that they could take to minimize harmful effects and enhance positive ones

B1.3 assess the benefits and limitations of locally grown food

B2. Exploring and Understanding Concepts: demonstrate an understanding of characteristics and uses of plants and of plants' responses to the natural environment

B2.1 describe the basic needs of plants, including the need for air, water, light, heat, nutrients, and space, and identify environmental conditions that may threaten plant survival

B2.2 identify different parts of plants, including the root, stem, flower, stamen, pistil, leaf, seed, cone, and fruit, and describe how each part contributes to plants' survival within their environment

B2.3 describe changes that different plants undergo in their life cycles

B2.4 describe ways in which a variety of plants adapt and/or react to their environment and to changes in their environment

B2.5 demonstrate an understanding that most plants get energy directly from the Sun through the process of photosynthesis, which involves the absorption of carbon dioxide and the release of oxygen

B2.6 describe ways in which people, including Indigenous peoples, from various cultures around the world use plants for food, shelter, medicine, and clothing

B2.7 describe various plants used for food, including those grown by First Nations, Métis, and Inuit, and identify local settings where these plants are grown or found

B2.8 describe ways in which plants and animals, including humans, depend on each other

STRAND C: Matter and Energy
Forces and Motion

C

By the end of Grade 3, students will:

C1. Relating Science and Technology to Our Changing World: assess the impacts of various forces on society and the environment

C1.1 assess the effects of the action of forces from natural phenomena on natural and built environments, and identify ways in which human activities can reduce or enhance these effects

C1.2 assess harmful effects of forces that may result from various human activities, and describe how health and safety devices can minimize these effects

C2. Exploring and Understanding Concepts: demonstrate an understanding of how forces cause motion and changes in motion

C2.1 describe different types of contact forces and non-contact forces

C2.2 describe different ways a force can be exerted on an object

C2.3 describe how different forces applied to an object, including forces of varying magnitude, can cause the object to start, stop, or change its direction, speed, or shape

C2.4 identify ways in which forces are used in their daily lives

STRAND D: Structures and Mechanisms
Strong and Stable Structures

D

By the end of Grade 3, students will:

D1. Relating Science and Technology to Our Changing World: assess the importance of form, function, strength, and stability in structures to society and the environment

D1.1 assess effects on society and the environment of strong and stable structures

D1.2 assess the environmental impact of structures built by various animals, including structures built by humans

D2. Exploring and Understanding Concepts: demonstrate an understanding of the concepts of *strength* and *stability* as they relate to structures with various forms and functions, and of the factors that affect structures' strength and stability

D2.1 describe a structure as a supporting framework that holds a load and has a definite size, shape, and function, and identify structures in the natural environment and in the built environment

D2.2 demonstrate an understanding of the relationship between form and function for various structures

D2.3 identify the strength of a structure as its ability to support a load and describe ways to increase the strength of structures, including ways to increase the strength of different materials used to build them

D2.4 describe the stability of a structure as its ability to keep its shape, maintain balance, float, and/or stay fixed in one spot when a force is applied to the structure, and describe ways to improve a structure's stability

D2.5 identify properties of materials that need to be considered when building structures

D2.6 describe ways in which different forces can affect the shape, balance, or position of structures

D2.7 explain the role of struts and ties in structures under load

STRAND E: Earth and Space Systems
Soils in the Environment

E

By the end of Grade 3, students will:

E1. Relating Science and Technology to Our Changing World: assess the importance of soils for society and the environment, and the impact of human activity on soils
E1.1 assess the importance of soils for society and the environment
E1.2 assess the impact of human activity on soils, and describe ways in which humans can improve the quality of soils and/or lessen or prevent harmful effects on soils
E2. Exploring and Understanding Concepts: demonstrate an understanding of the composition of soils, of different types of soils, and of processes and practices that can affect the health of soil
E2.1 identify the living and non-living components of soil, and describe the characteristics of healthy soil
E2.2 identify different substances that are commonly added to, or absorbed by, the soil, and describe their effects on soil health
E2.3 examine different types of soils found in Ontario, and describe how different soils are suited to growing different types of food, including crops
E2.4 explain the process of erosion, including its causes and its impact on soils
E2.5 identify various strategies used to maintain and improve soil health in Ontario
E2.6 describe the process of composting, and explain some benefits of composting