Ontario

2022

Science and Technology Grade 6

OVERALL AND SPECIFIC EXPECTATIONS

STRAND A: STEM Skills and Connections

A

Throughout Grade 6, 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 and in STEM-related fields

A2.1 write and execute code in investigations and when modelling concepts, with a focus on obtaining input in different ways for a variety of purposes

A2.2 identify and describe impacts of coding and of emerging technologies on everyday life, including skilled trades

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 various occupations, including skilled trades, 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
Biodiversity

B

By the end of Grade 6, students will:

B1. Relating Science and Technology to Our Changing World: assess the importance of biodiversity, and describe ways of protecting biodiversity

B1.1 assess the benefits of biodiversity and the consequences of the diminishing of biodiversity

B1.2 analyse a local issue related to biodiversity while considering different perspectives; plan a course of action in response to the issue; and act on their plan

B2. Exploring and Understanding Concepts: demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans

B2.1 describe the distinguishing characteristics of different groups of organisms, and use these characteristics to further classify these organisms using a classification system

B2.2 demonstrate an understanding of biodiversity as the diversity of life on Earth, including the diversity of organisms within species, among species in a community, and among communities and the habitats that support them

B2.3 describe ways in which biodiversity within species is essential for their survival

B2.4 describe ways in which biodiversity within and among communities is essential for maintaining the resilience of these communities

B2.5 describe interrelationships within species, between species, and between species and their natural environment, and explain how these interrelationships sustain biodiversity

B2.6 explain how invasive species reduce biodiversity in local environments

B2.7 explain how climate change contributes to a loss of biodiversity, and describe the impact of this loss

B2.8 describe the importance of biodiversity in supporting agriculture, including Indigenous agriculture around the world

STRAND C: Matter and Energy
Electrical Phenomena, Energy, and Devices

C

By the end of Grade 6, students will:

C1. Relating Science and Technology to Our Changing World: evaluate the impact of the use and generation of electrical energy on society and the environment, and suggest ways to use electrical energy responsibly

C1.1 assess the short- and long-term impacts of electrical energy generation technologies in Canada on society and the environment, including impacts on First Nations, Métis, and Inuit communities, and on climate change

C1.2 assess choices that reduce personal use of electrical energy from both renewable and non-renewable sources, and advocate for the responsible use of electrical energy by the school community

C2. Exploring and Understanding Concepts: demonstrate an understanding of the principles of electrical energy and its transformation into and from other forms of energy

C2.1 explain commonly observed electrostatic phenomena, using the principles of static electricity

C2.2 describe current electricity, and compare and contrast current electricity with static electricity

C2.3 identify materials that are good conductors of electric current and materials that are good insulators

C2.4 describe how technologies transform various forms of energy into electrical energy

C2.5 describe ways in which electrical energy is transformed into other forms of energy

C2.6 explain the functions of the components of a simple electrical circuit

C2.7 distinguish between series and parallel circuits, and identify common uses of each type of circuit

STRAND D: Structures and Mechanisms
Flight

D

By the end of Grade 6, students will:

D1. Relating Science and Technology to Our Changing World: assess the environmental impacts of flying machines

D1.1 assess the impacts on society of aviation technologies, while considering both local and global perspectives

D2. Exploring and Understanding Concepts: demonstrate an understanding of the ways in which properties of air can be applied to the principles of flight and flying machines

D2.1 identify flight-related applications of the properties of air

D2.2 describe the relationships between the four forces of flight – lift, weight, thrust, and drag – that make flight possible

D2.3 describe ways in which flying machines and various organisms use balanced and unbalanced forces to control their flight

D2.4 describe ways in which the four forces of flight can be altered

D2.5 describe characteristics and adaptations that enable organisms to fly

STRAND E: Earth and Space Systems
Space

E

By the end of Grade 6, students will:

E1. Relating Science and Technology to Our Changing World: assess the impact of space exploration on humans, society, and the environment

E1.1 analyse the impact that conditions in space have on humans engaged in space exploration, and explain how humans meet their social, emotional, and physiological needs in space

E1.2 assess the role of space exploration technology in observing and understanding environmental changes on Earth, including climate change

E1.3 evaluate the social and environmental impacts of space exploration, while taking various perspectives into consideration

E2. Exploring and Understanding Concepts: demonstrate an understanding of the solar system, the phenomena that result from the movement of different bodies within it, and the technologies used in space exploration
E2.1 identify components of the solar system, including the Sun, Earth and other planets, natural satellites, comets, asteroids, and meteoroids, and describe their main physical characteristics
E2.2 distinguish between the concepts of *mass* and *weight*
E2.3 describe the relationship between the force of gravity and the weight of a body
E2.4 identify the types of bodies in space that emit light and those that reflect light
E2.5 describe various effects of the relative positions and motions of Earth, the Moon, and the Sun
E2.6 identify various technologies used in space exploration, and describe how technological innovations have contributed to our understanding of space