Ontario

2022

Science and Technology
Grade 5

OVERALL AND SPECIFIC EXPECTATIONS

STRAND A: STEM Skills and Connections

A

Throughout Grade 5, 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 using different methods to store and process data 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
Human Health and Body Systems

B

By the end of Grade 5, students will:

B1. Relating Science and Technology to Our Changing World: analyse impacts of various social and environmental factors, human activities, and technologies on human health

B1.1 assess effects of a variety of social and environmental factors on human health, and describe ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial

B1.2 evaluate beneficial and harmful effects of various technologies on human health and body systems, while taking different perspectives into consideration

B1.3 explain how food literacy can support decisions that affect physical and mental health

B2. Exploring and Understanding Concepts: demonstrate an understanding of the structure and function of human body systems and interactions within and between systems

B2.1 identify systems of the human body, and describe their basic function

B2.2 describe the basic structure and function of vital organs in various systems in the human body

B2.3 describe interrelationships between human body systems

B2.4 identify various diseases and medical disorders in humans and the organs and/or body system or systems that they affect

STRAND C: Matter and Energy
Properties of and Changes in Matter

C

By the end of Grade 5, students will:

C1. Relating Science and Technology to Our Changing World: assess the impacts on society and the environment of various processes and materials used in the manufacture of common products, and ways to mitigate negative impacts

C1.1 assess the impacts on society and the environment of various processes used in the manufacture of common products

C1.2 assess how the use of specific materials in the manufacture of common products affects the environment, and identify actions that society and individuals can take to mitigate negative impacts

C2. Exploring and Understanding Concepts: demonstrate an understanding of the properties of matter, changes of state, and physical and chemical change

C2.1 describe matter as everything that has mass and occupies volume

C2.2 identify the states of matter, and describe characteristics and properties of solids, liquids, and gases

C2.3 describe changes of state of matter observed at home, in the community, or in the natural environment

C2.4 describe physical changes in matter as changes of the state, volume, or form of the matter that do not result in the formation of a different substance

C2.5 describe chemical changes in matter as changes that result in the formation of different substances, and identify signs that a chemical change has occurred

C2.6 explain how changes of state can occur when matter absorbs or releases thermal energy

C2.7 explain why specific physical properties of various solids, liquids, and gases make them useful for particular applications

STRAND D: Structures and Mechanisms
Forces Acting on Structures

D

By the end of Grade 5, students will:

D1. Relating Science and Technology to Our Changing World: analyse social and environmental impacts of forces acting on structures, and assess ways to mitigate these impacts

D1.1 analyse the effects of forces from natural phenomena on structures in natural and built environments

D1.2 assess various ways in which humans mitigate impacts of forces from natural phenomena on structures in urban, rural, and remote communities

D2. Exploring and Understanding Concepts: demonstrate an understanding of forces that act on structures, and how various structures withstand them

D2.1 identify internal forces acting on a structure, and describe their effects on the structure

D2.2 identify external forces acting on a structure, and describe their effects on the structure

D2.3 describe forces resulting from natural phenomena that can have severe consequences for human-built structures, and identify structural features and materials that can allow such structures to withstand these forces

D2.4 describe ways in which physical characteristics of various animal and plant species help to protect them from potentially harmful effects of forces

D2.5 describe ways in which protective equipment helps to protect humans from potentially harmful effects of forces

STRAND E: Earth and Space Systems
Conservation of Energy and Resources

E

By the end of Grade 5, students will:

E1. Relating Science and Technology to Our Changing World: assess effects of energy and resource use on society and the environment, and suggest options for conserving energy and resources

E1.1 analyse long-term impacts of human uses of energy and natural resources, on society and the environment, including climate change, and suggest ways to mitigate these impacts

E1.2 evaluate effects of various technologies on energy consumption, and describe ways in which individuals can use technology to reduce energy consumption

E1.3 analyse how First Nations, Métis, and Inuit communities use their knowledges and ways of knowing to conserve energy and resources

E2. Exploring and Understanding Concepts: demonstrate an understanding of the conservation of energy, and the forms, sources, and uses of energy and resources

E2.1 identify a variety of forms of energy, and describe how each form is used in everyday life

E2.2 demonstrate an understanding of the law of conservation of energy, including how energy cannot be created or destroyed but can only be transformed from one form to another

E2.3 describe how energy is stored as potential energy and transformed in a given device or system

E2.4 demonstrate an understanding that when energy is transformed from one form to another, some energy may dissipate into the environment in the form of heat, light, and/or sound energy

E2.5 identify renewable and non-renewable sources of energy

E2.6 explain how the use of energy derived from fossil fuels changes the composition of the atmosphere and how these changes contribute to climate change