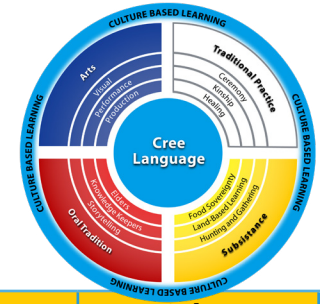












Science
















Knowledge	Understanding	Skills & Procedures	ᓂᓄᓄᓄ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA Matter(M) : Understandings of the physical world are deepened through investigating matter and energy.				
GUIDING QUESTION How can the suitability of materials be determined for specific purposes?				
LEARNING OUTCOME 2M 1.1 Students investigate the properties of materials and relate them to a purpose.				
Materials are used to make objects	Materials can be combined in a variety of ways to make objects.	Identify the materials used to make various objects. Combine materials to create an object for a specific purpose.	   Moose, Elk, and Deer Calling Series: <ul style="list-style-type: none"> • Harvesting Birch • Making a Moose Caller with Birch Bark 	
LEARNING OUTCOME 2M 1.2 Students investigate the properties of materials and relate them to a purpose.				
Properties of materials that can be tested include <ul style="list-style-type: none"> • if light passes through (transparency) • if water is absorbed • if the material can be shaped (malleability) • if light is reflected (reflection) 	Materials have unique properties.	Test properties of various materials. Measure various materials using non-standard measurements.		
LEARNING OUTCOME 2M 1.3 Students investigate the properties of materials and relate them to a purpose.				
Natural materials are those that come from plants, animals, the land, or the sky. Processed materials are made by humans.	Materials are natural or processed. All processed materials originate from natural materials.	Sort various materials as natural or processed.	 Making Dry Meat Series: <ul style="list-style-type: none"> • Traditional • Contemporary    Fall Whitefish Series (2 videos)	




Essential Learning Outcomes (ELOs) are identified in these charts in **bold**. Educational authorities from different regions of Alberta may identify different ELOs, based on their context. All outcomes in Alberta Education's Program of Studies must be taught, but what is deemed essential may look different.







 Knowledge	Understanding	Skills & Procedures	ᑭᐱᐱᑦ Nehiyaw Ways of Knowing	Other Suggestions
LEARNING OUTCOME				
2M 1.4 Students investigate the properties of materials and relate them to a purpose.				
<p>An object can be made from different materials; e.g., a canoe can be made from wood or aluminium.</p> <p>Examples of objects made from natural materials that are created and used by First Nations, Métis, and Inuit are</p> <ul style="list-style-type: none"> • Dene birchbark baskets • travois • Red River carts • canoes • Inuit scraping tools; e.g., ulu 	<p>Natural and processed materials are used to make objects that serve a variety of purposes.</p>	<p>Identify natural and processed materials that could be used for a specific purpose.</p> <p>Identify an object that can be made from different materials.</p> <p>Identify natural materials used by local First Nations, Métis, or Inuit and relate the materials' uses to specific purposes.</p>	 Beading	
LEARNING OUTCOME				
2M 1.5 Students investigate the properties of materials and relate them to a purpose.				
<p>Knowledge of the properties of materials and their purposes is important in many occupations and roles, such as</p> <ul style="list-style-type: none"> • carpenter • engineer • designer • Knowledge Keeper or Elder <p>First Nations, Métis, and Inuit use of materials is informed by</p> <ul style="list-style-type: none"> • traditional knowledge • time of year • availability • taking only what is needed • respect for the land 	<p>The purpose of an object influences the choice of materials used to produce it.</p> <p>Some materials are more suitable than others for making a product for a specific purpose.</p>	<p>Compare the properties of materials to determine what material is best suited for a specific purpose.</p> <p>Explain the relationship between suitability of materials and purpose.</p> <p>Select a material and use it to create an item for a specific purpose.</p> <p>Discuss the choice of material based on availability and purpose.</p>	 Stewardship and Community – Sharing	<p>Animal hides and furs – moose hide is stronger than rabbit fur, but rabbit fur is warmer than moose hide.</p> <p>Certain willow is used to make whistles; sap is used for gum; antlers used for moose scraping; prairie chicken food bag is dried and used for a baby rattle.</p> <p>Each season has its own time and purpose.</p>







Knowledge	Understanding	Skills & Procedures	ᑭᑦᑎᑦᑎᑦ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA				
Energy (E): Understandings of the physical world are deepened through investigating matter and energy.				
GUIDING QUESTION				
Where do light and sound come from, and how do they move?				
LEARNING OUTCOME				
2E 1.1 Students investigate the behaviours of light and sound.				
<p>Sound behaves in various ways, including</p> <ul style="list-style-type: none"> • travelling in a straight line from its source • transferring from one object to another • bouncing off a surface (reflection/diffusion) • stopping in an object (absorption) <p>Sound is produced by vibrations of objects.</p> <p>Vibration is a rapid back-and-forth movement.</p> <p>Sources of sound can be natural or human-made, such as</p> <ul style="list-style-type: none"> • musical instruments • speakers and headphones • vocal cords of humans and other animals • objects hitting each other <p>Characteristics of sound include</p> <ul style="list-style-type: none"> • volume, which can be described as quiet or loud • pitch, which can be described as high or low • duration, which can be described as short or long <p>Sound can travel through air, water, and some solids.</p> <p>Properties of materials that affect the production and behaviour of sound include</p> <ul style="list-style-type: none"> • size • texture • shape • type 	<p>Behaviours of sound affect its characteristics.</p>	<p>Relate vibration to the production of sound.</p> <p>Identify sources of sound.</p> <p>Listen to sounds and describe their characteristics.</p> <p>Safely explore the production and behaviour of sound.</p> <p>Build a device to change the behaviour of sound.</p>	<p>   Moose, Elk, and Deer Calling Series:</p> <ul style="list-style-type: none"> • How to Harvest Birch-Bark for a Moose Caller • Making the Moose Caller • How to Call a Moose <p> Legend of the Drum</p>	<p>Listen to bird songs, frogs, etc.</p> <p>  Listen to traditional lullabies; e.g., Darlene Auger's Lullaby Teachings</p>












 Knowledge	Understanding	Skills & Procedures	ᑭᑭᑭᑭ Nehiyaw Ways of Knowing	Other Suggestions
LEARNING OUTCOME 2E 1.2 Students investigate the behaviours of light and sound.				
<p>Sources of light include</p> <ul style="list-style-type: none"> • the Sun • electricity • fire • some plants and animals (bioluminescence) <p>Light behaves in various ways, including</p> <ul style="list-style-type: none"> • travelling in a straight line from its source • bouncing off a surface (reflection) • bending as it travels from one material to another (refraction) • splitting into colours (dispersion) <p>Light travels through objects that can be seen through (transparent).</p> <p>The path of light is affected by mirrors, prisms, and water.</p> <p>The path of sunlight can be affected in a variety of ways by natural objects, such as</p> <ul style="list-style-type: none"> • leaves • trees • bodies of water • mountains 	Behaviours of light affect its path.	<p>Identify sources of light.</p> <p>Conduct an investigation to determine how the path of light can be affected.</p> <p>Examine how natural objects affect the path of sunlight.</p>	<p>  Legend of Night and Day</p> <p>  13 Moons</p> <p>  Legend of Solstice</p>	

 Knowledge	Understanding	Skills & Procedures	ᑭᐱᐱᑦ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA				
Earth Systems (ES): Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.				
GUIDING QUESTION				
How can Earth's components and relationship to the Sun be understood?				
LEARNING OUTCOME				
2ES 1.1 Students investigate Earth, its landforms, its bodies of water, and its relationship to the Sun.				
<p>Components of Earth include</p> <ul style="list-style-type: none"> land water air plants, humans, and other animals <p>At this time, Earth is the only planet known to support life.</p> <p>Scientists are looking for life on other planets and moons.</p>	<p>Earth consists of many components that support life.</p>	<p>Represent various components of Earth.</p> <p>Discuss how the various components of Earth interact to support life.</p>	<p> Animate and Inanimate (Throughout Environment)</p>	
LEARNING OUTCOME				
2ES 1.2 Students investigate Earth, its landforms, its bodies of water, and its relationship to the Sun.				
<p>A landform is a natural feature of Earth's surface.</p> <p>Alberta has many different landforms, such as</p> <ul style="list-style-type: none"> plateaus mountains valleys hills prairies <p>Landforms can be described as</p> <ul style="list-style-type: none"> hilly rocky steep or flat big or small <p>Some places and landforms in Alberta have been identified as UNESCO World Heritage Sites, such as</p> <ul style="list-style-type: none"> Dinosaur Provincial Park Wood Buffalo National Park Head Smashed-In Buffalo Jump 	<p>Earth's surface consists of various types of landforms.</p>	<p>Identify landforms that are found locally or in Alberta.</p> <p>Compare various landforms on Earth's surface.</p> <p>Identify UNESCO World Heritage Sites found in Alberta.</p>	<p> The Rolling Head</p>	

Knowledge	Understanding	Skills & Procedures	ᑭᓄᓐᓂᓐ Nehiyaw Ways of Knowing	Other Suggestions
LEARNING OUTCOME				
2ES 1.3 Students investigate Earth, its landforms, its bodies of water, and its relationship to the Sun.				
<p>Bodies of water on Earth's surface include</p> <ul style="list-style-type: none"> oceans glaciers lakes wetlands rivers <p>Water flows downhill from smaller bodies of water to larger bodies of water in the following ways:</p> <ul style="list-style-type: none"> small creeks flowing downhill and merging to form small streams small streams merging to form larger streams and rivers streams and small rivers merging to form larger rivers large rivers merging into major waterways, such as oceans <p>Water found on Earth can be either fresh or salt water.</p> <p>Freshwater bodies include</p> <ul style="list-style-type: none"> glaciers most lakes wetlands rivers <p>Saltwater bodies include oceans and seas.</p>	<p>Earth's surface is mostly covered by bodies of water.</p>	<p>Investigate local and provincial bodies of water.</p> <p>Diagram the flow of water from small creeks to an ocean.</p> <p>Create a model to represent various types of landforms and bodies of water.</p> <p>Identify bodies of water on Earth that contain fresh water.</p> <p>Identify bodies of water on Earth that contain salt water.</p>	<p> Legend of Raven and Water</p>	<p> Water: the sacred relationship</p>
LEARNING OUTCOME				
2ES 1.4 Students investigate Earth, its landforms, its bodies of water, and its relationship to the Sun.				
<p>A year is the length of time it takes Earth to revolve around the Sun.</p> <p>A day is the length of time it takes Earth to rotate fully (on its axis).</p> <p>Earth's surface experiences day when it faces the Sun, and night when it does not face the Sun.</p>	<p>Earth revolves around the Sun and rotates.</p>	<p>Describe the relationship between time and Earth revolving around the Sun.</p> <p>Represent ways that Earth's rotation connects to patterns of day and night.</p>	<p> Legend of Night and Day</p> <p> 13 Moons</p> <p> Legend of Solstice</p>	<p> "The Origin of Day and Night," by Paula Ikuutaq Rumbolt (author), Lenny Ilishchenko (illustrator), 2018.</p>



Knowledge	Understanding	Skills & Procedures	ᑭᐱᐱᑦ Nehiyaw Ways of Knowing	Other Suggestions
ORGANIZING IDEA				
Living Systems (LS): Understandings of the living world, Earth, and space are deepened through investigating natural systems and their interactions.				
GUIDING QUESTION				
How do plants and animals live and grow?				
LEARNING OUTCOME				
2LS 1.1 Students investigate the growth and development of plants and animals and consider their relationship to humans.				
<p>Some human behaviours can positively affect plants and animals, such as</p> <ul style="list-style-type: none"> • reducing, reusing, recycling, and repurposing • recovering natural areas • protecting natural spaces • creating parks <p>Some human behaviours can negatively affect plants and animals, such as</p> <ul style="list-style-type: none"> • littering • polluting • using up materials from nature that plants and animals need to live • introducing plants and other animals that are not native to the area 	<p>Plants and animals can be affected by human behavior.</p>	<p>Discuss ways to respect plants and animals while interacting in various environments.</p> <p>Explain positive and negative impacts of human behaviour on plants and animals.</p>	<p> Animate and Inanimate (Throughout Environment)</p> <p> The Legend of Muskrat</p>	
LEARNING OUTCOME				
2LS 1.2 Students investigate the growth and development of plants and animals and consider their relationship to humans.				
<p>Offspring are the children of plants or animals.</p>	<p>Plants and animals share similarities with their offspring.</p>	<p>Identify similarities between offspring and their parents.</p>		
LEARNING OUTCOME				
2LS 1.3 Students investigate the growth and development of plants and animals and consider their relationship to humans.				
<p>A life cycle shows the different stages of life that a plant or an animal goes through.</p> <p>Life cycles can be represented in many ways, such as through</p> <ul style="list-style-type: none"> • illustrations • diagrams • models • stories 	<p>Plants and animals have observable patterns or stages in their development.</p>	<p>Represent the life cycles of various plants and animals.</p> <p>Discuss and compare life cycles of various plants and animals.</p>	<p> Dog Stars/ Little Dipper</p> <p> Little Dipper</p>	<p>Discuss why it's important not to disturb the life cycle (e.g., not touching birds' eggs, not disturbing cocoons, etc.).</p>

Knowledge	Understanding	Skills & Procedures	ᑭᓴᓴᑦ Nehiyaw Ways of Knowing	Other Suggestions
LEARNING OUTCOME				
2LS 1.4 Students investigate the growth and development of plants and animals and consider their relationship to humans.				
<p>First Nations, Métis, and Inuit relate to land, plants, and animals as equals.</p> <p>Care and consideration for land, plants, and animals can be demonstrated through cultural practices, such as</p> <ul style="list-style-type: none"> • taking only what is needed • using the whole plant or animal • protecting water and soil • treating land, plants, and animals as relatives 	<p>The ways in which individuals or groups relate to land, plants, and animals can influence cultural practices.</p>	<p>Discuss how humans might interact with land, plants, and animals if they see land, plants, and animals as equals.</p> <p>Identify ways in which people show care for land, plants, and animals through cultural practices.</p>	<p> Moose, Elk, and Deer Calling Series: Hunting Protocols and Stewardship</p> <p>   Harvesting Medicines Series: Protocol on Herb Gathering</p> <p>  How Medicines Came to Man</p>	
ORGANIZING IDEA				
Computer Science (CS): Problem solving and scientific inquiry are developed through the knowledgeable application of creativity, design, and computational thinking.				
GUIDING QUESTION				
How can creativity support design?				
LEARNING OUTCOME				
2CS 1.1 Students apply creativity when designing instructions to achieve a desired outcome.				
<p>Creativity is the ability to generate something original, such as</p> <ul style="list-style-type: none"> • ideas • technology • tools • products <p>Creativity can be used to design instructions for</p> <ul style="list-style-type: none"> • games • sports • investigations • recipes • computer programs <p>Collaboration can result in improved ideas, which may enhance creativity and problem solving.</p>	<p>Instructions are designed using creativity and problem solving, which can be enhanced through collaboration.</p>	<p>Identify ways creativity is used to design instructions.</p>	<p>   Moose, Elk, and Deer Calling Series: How to Call a Moose</p>	<p>  Identify creativity used to build a hide tool out of a skidoo part in Moose Hide Scraper with Robert Badine.</p>



Knowledge	Understanding	Skills & Procedures	ᑭᐱᐃᑦ Nehiyaw Ways of Knowing	Other Suggestions
LEARNING OUTCOME 2CS 1.2 Students apply creativity when designing instructions to achieve a desired outcome.				
<p>Precise instructions have a variety of components, including</p> <ul style="list-style-type: none"> • verbs • simple language • clear steps • a starting and stopping point <p>Reliability of instructions means they consistently lead to the same desired outcome.</p> <p>Efficiency of instructions refers to designing in a way that yields desired outcomes with the least amount of wasted energy, time, or steps.</p> <p>The reliability and efficiency of instructions can be affected by how they are communicated, including</p> <ul style="list-style-type: none"> • form; e.g., verbal, visual, written • order • clarity <p>Many people, individually or in groups, can create instructions, such as</p> <ul style="list-style-type: none"> • teachers • parents • students • computer programmers <p>Many activities at school and in the workplace require creativity and collaboration to improve ideas.</p> <p>Debugging is the process of identifying and removing errors in a set of instructions to achieve a desired outcome.</p> <p>Debugging can increase the reliability of instructions.</p>	<p>Instructions can be created to be precise, reliable, and efficient to achieve the desired outcome.</p>	<p>Work individually or in groups to create instructions using precise words, pictures, or diagrams.</p> <p>Create three-step to four-step instructions that achieve a desired outcome.</p> <p>Predict the outcome of instructions that have three to four steps.</p> <p>Refine instructions to more efficiently achieve a desired outcome.</p> <p>Test instructions with three to four steps to verify that a desired outcome is achieved.</p> <p>Debug any errors in a set of instructions to achieve a desired outcome.</p>		



Knowledge	Understanding	Skills & Procedures	ᑭᑭᑭᑭ Nehiyaw Ways of Knowing	Other Suggestions
LEARNING OUTCOME 2SM 1.2 Students examine investigation and explain how it is influenced by purpose.				
<p>Data should relate to the purpose of an investigation.</p> <p>Observations and data should be similar if the investigation is repeated.</p> <p>Repetition of an investigation includes performing the same procedures in the same way.</p> <p>Data collected by people performing the same investigation can be combined.</p>	<p>Investigations can involve comparing data.</p>	<p>Determine if observations relate to the purpose of the investigation.</p> <p>Collaborate to combine recorded data into a single list or chart.</p> <p>Compare observations and data with others.</p>		