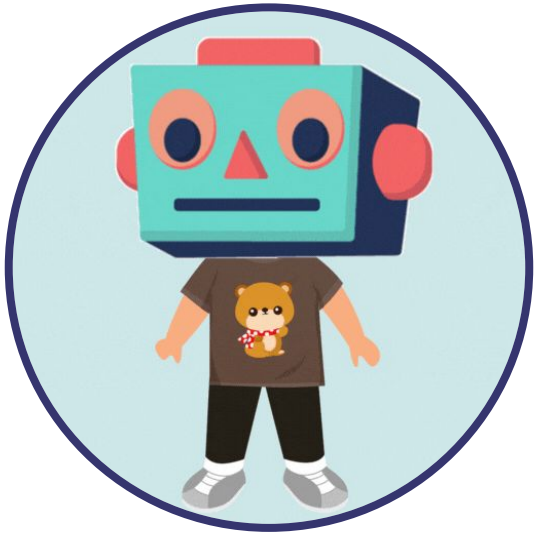
Making Connections

Earth Systems

Computer Science

grade 3

Organizing Idea	**Computer Science: Problem solving and scientific inquiry are developed through the knowledgeable application of creativity, design, and computational thinking.**
Guiding Question	**How does creativity contribute to computational thinking?**
Learning Outcome	**Students investigate creativity and its relationship to computational thinking.**

Knowledge	Understanding	Skills & Procedures
Computational thinking includes ● breaking a task into smaller chunks ● finding patterns and similarities in tasks ● identifying the important details when reading or solving a problem ● designing instructions ● working backward if a mistake is made Computational thinking can be used by humans to communicate with computers more efficiently; e.g., apps, virtual reality, and robotics.	Computational thinking is a problem-solving process that uses creativity. 	Create a set of instructions that could be followed by a human or a machine to complete a task. Identify computational thinking used to solve problems or achieve desired outcomes.

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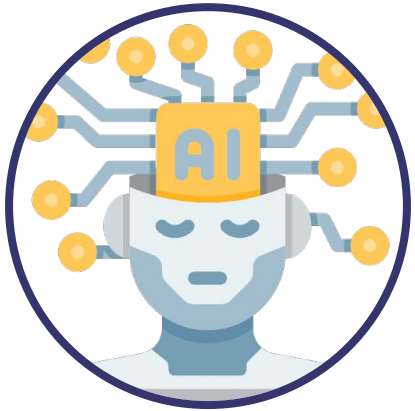
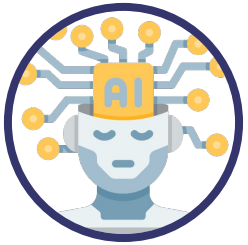
Knowledge	Understanding	Skills & Procedures
The same outcome, such as arriving at school, can be achieved in different ways. Divergent thinking is the process of generating multiple unique ideas or solutions. Creativity is an important part of computer science, technology, and engineering; e.g., computer programming, robotics. Creativity involves combining, changing, or reapplying existing ideas to produce something new. Canadians are responsible for many creative inventions, such as the Canadarm.	Creativity involves divergent thinking and can be used to develop different ways to achieve the same outcome. Creativity involves imagination, observation, and making connections.  	Collaborate to write two different sets of instructions that achieve the same outcome. Relate creativity to engineering, computing, and the development of new technologies. Create something new by combining, changing, or reapplying existing ideas. Examine a Canadian invention. Identify examples of creativity in computer science, technology, or engineering.

Computational Thinking

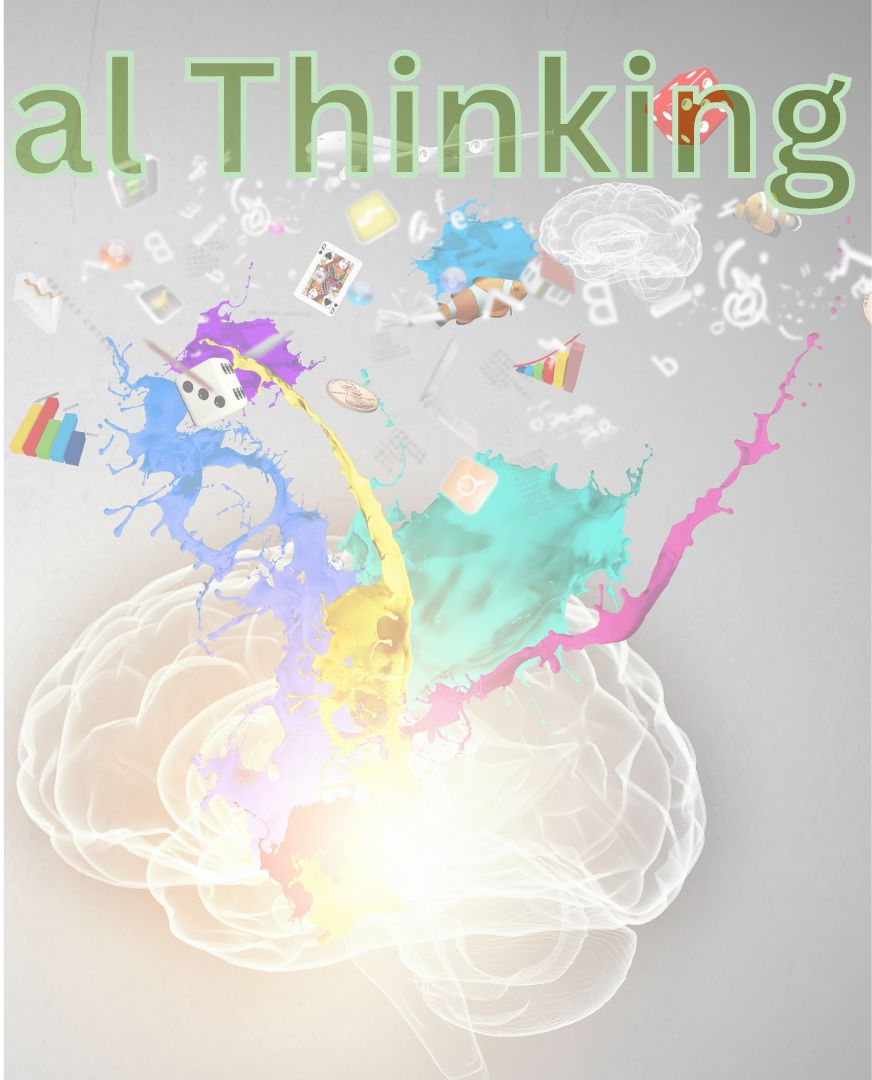


Decomposition

Pattern Recognition

Pattern Abstraction

Algorithm Design



Design Thinking Process

Learn About
Your Audience

Empathize

Define

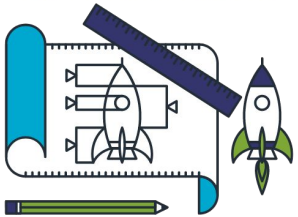
Construct Point
of View Based
on User Needs

Brainstorm and
Come up with
Creative Solutions

Ideate

Prototype

Build
Representation
of Your Ideas



Test Your Ideas

Test

Creativity

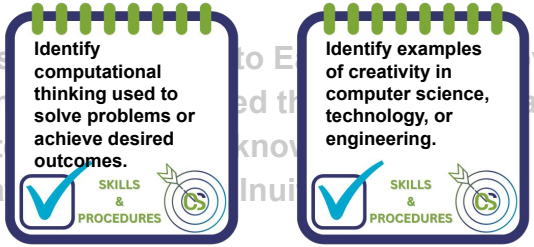
Finding different ways to reach the same outcome.

Problem solving to overcome obstacles to achieve a desired outcome.

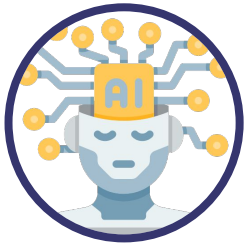
Organizing Idea	**Earth Systems: Understandings of the living world, Earth, and space are deepened by investigating natural systems and their interactions.**
Guiding Question	**What visible changes can be identified by examining Earth's surface?**
Learning Outcome	**Students analyze changes in Earth's surface and explain how its layers hold stories of the past.**

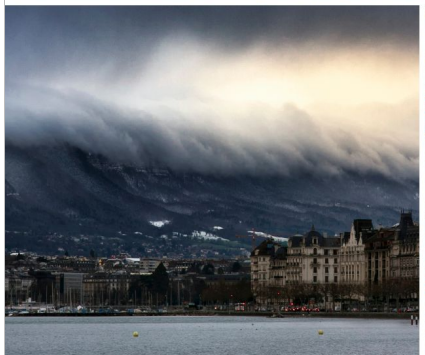
Skills & Procedures

Describe how natural events change Earth's surface.



Investigate natural events that have changed Earth's surface in Alberta.





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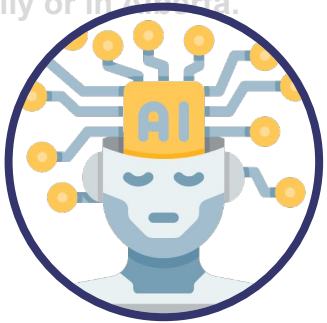
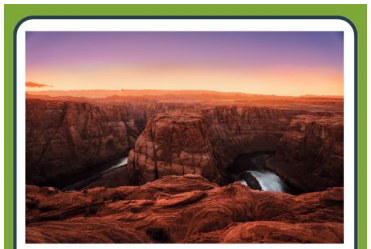
Skills & Procedures

Represent how the movement of water and wind changes Earth's surface over time.

Represent the flow of water from glaciers to an ocean.

Investigate glacier-fed rivers that are found locally or in Alberta.





THE GRAND CANYON
ARIZONA, U.S.

TWELVE APOSTLES
VICTORIA, AUSTRALIA

KIRKJUFELL MOUNTAIN
SNÆFELLSNES, ICELAND

EDMONTON RIVER VALLEY
ALBERTA, CANADA

CALGARY RIVER VALLEY
ALBERTA, CANADA

What do you think was learned from this happening?

Identify computational thinking used to solve problems or achieve desired outcomes.

SKILLS & PROCEDURES

Identify examples of creativity in computer science, technology, or engineering.

SKILLS & PROCEDURES

Edmonton · FROM THE ARCHIVES

Oct. 26, 1999: Landslide sends Riverbend homes into the valley

'Where do we go from here?'

John Zazula · CBC News · Posted: Oct 27, 2016 12:38 PM MDT | Last Updated: October 27, 2016

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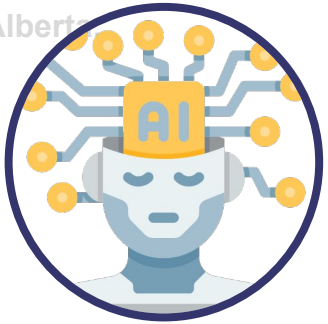

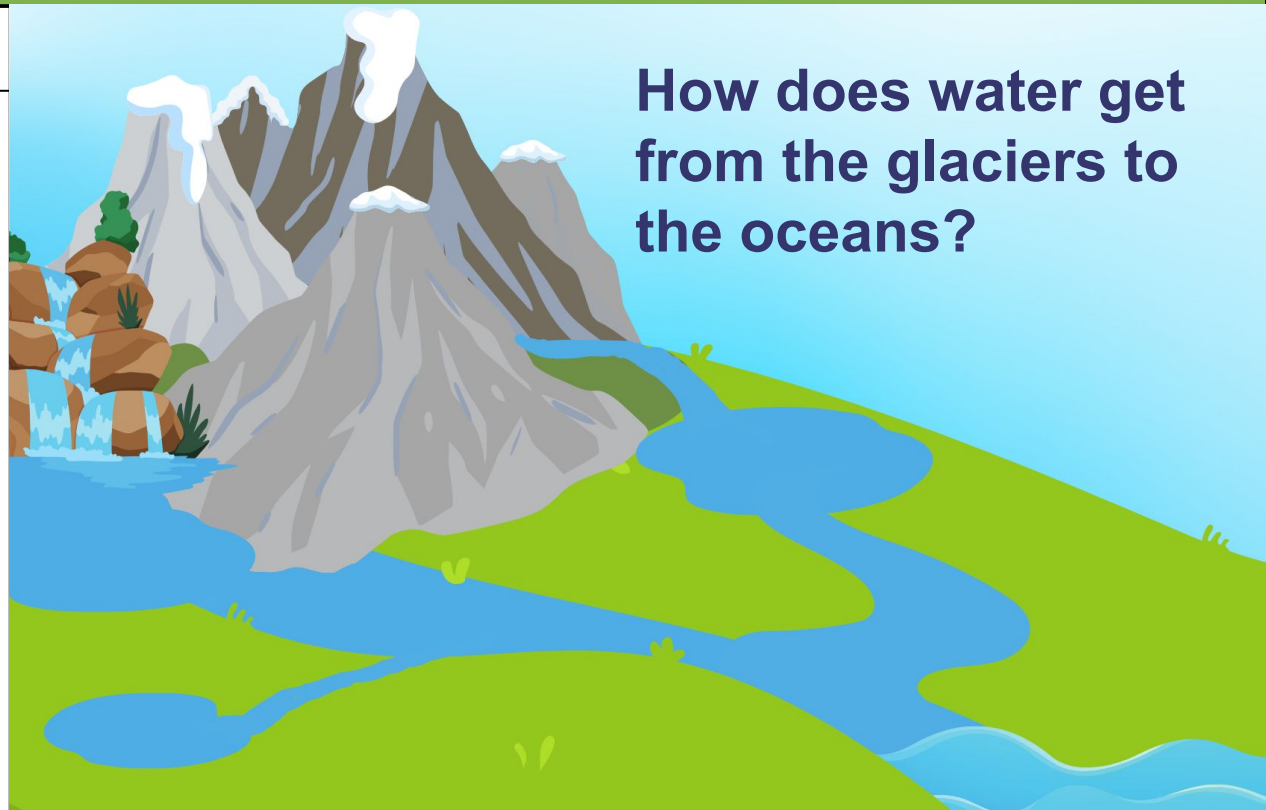

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Skills & Procedures

Relate human activities to changes in Earth's surface.

Relate activities of plants and animals to changes in Earth's surface.

Discuss the interconnectedness between human activities and responsibilities for maintaining Earth.

Investigate how changing Earth's surface by farming and growing crops contributes to daily life in Alberta.

How have we improved practices through tech?

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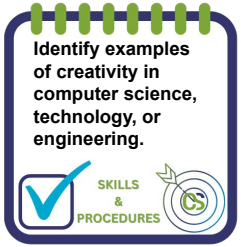
Skills & Procedures

Examine how layers of Earth's surface hold information about the past.

Explain how paleontologists know that dinosaurs lived on Earth millions of years ago.

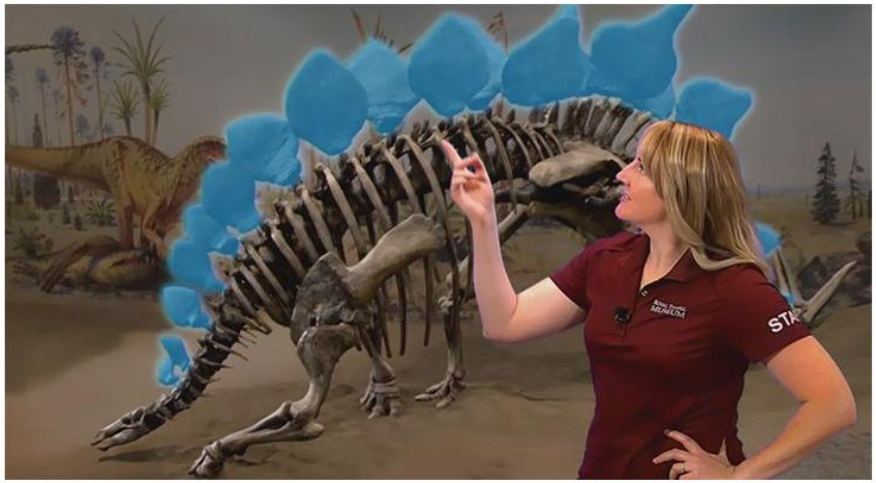
Investigate fossilized dinosaur bones that have been found in Alberta and the dinosaurs they belong to.

Identify and discuss where fossilized dinosaur bones have been found or are on display in Alberta.



Virtual Visit

ROYAL TYRRELL MUSEUM



All Grades | $135 per program | 45 minutes | Maximum 35 participants

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Skills & Procedures

Examine soil and its components in the local community.

Identify local habitats provided by soil.

Describe how soil is changed by plants and animals.