Section One: Project/Lesson Overview

Grade: 10

Subject: Science

Lesson Title: ***New Brunswick: Too Cool!***

Lesson Description: Collect and analyze resources from New Brunswick's geological past to enhance understanding of current climate change and the sustainability of ecosystems in the 21st century.

Time Required: 1 x 60 minute classes

Curriculum Outcomes:

- propose a course of action on social issues related to science and technology, taking into account human and environmental needs.
- explain various ways in which natural populations are kept in equilibrium, and relate this equilibrium to the resource limits of an ecosystem
- explain how biodiversity of an ecosystem contributes to its sustainability
- analyze the impact of external factors on an ecosystem
- plan changes to, predict the effects of, and analyze the impact of external factors on an ecosystem
- select, compile, and display evidence and information from various sources, in different formats, to support a given view in a presentation about the ecosystem change
- communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others in preparing a report about ecosystem change
- propose and defend a course of action on a multi-perspective social issue.
- gain a greater appreciation and understanding of New Brunswick geological history

Section Two: Project/Lesson Implementation

Equipment/Materials Required: Access to *Magnificent Rocks* Learning Object content: Neogene Geological Period, two bananas

Lesson Procedures/ Teaching Strategies:

1. Introduce subject by exploring the web site, *Magnificent Rocks* (url below)
2. Have students examine the *Neogene* period content. Discuss the people, discoveries, fossils, animals, landscapes and make the connections between the fossils and the geological and contemporary ecosystem.
3. Discuss the characteristics of the Mastodon
    a. Do you know what this creature was?
    b. What type of climate do you think these big hair-covered creatures would have preferred?
    c. What do you think the Mastodon would have eaten?
    d. How would a paleontologist know this? Pass around and compare with image of dung ball
4. Discuss the characteristics of the Beaver
    a. Do you know what this other creature was?
    b. Pass around the bananas and compare with the image of beaver tooth
5. Discuss the characteristics of the Neogene Period
    a. What is another name for Neogene? What is the popular name used to refer to the last "cooling" of the earth? Glacial, Ice Age
    b. Did you know that many times over the earth's history the climate has cooled?

    c. How do we know ice ages have taken place?
6. Discuss the characteristics of climate change
    a. How does the earth's atmosphere work?
    b. What is the biggest concern about climate change in the 21st century?
7. Discuss the impact of climate change on contemporary eco-systems
    a. What does our geological past predict about the future of eco-systems?
    b. What can we do to sustain our eco-systems?
    c. What if we do nothing?
8. Activity: Using geological materials as evidence, debate the existence of climate change, the impact of human activity on climate change and the impact of climate change on eco-systems.

Suggested Assessment Strategies:

The students will be assessed based on their research, and presentation.

Section Three: Project/Lesson Resources

Supplementary Resources:
www.nbm-mnb.ca/magnificentrocks

Disclaimer: The recommended web-resources included here have been scrutinized for their grade and age appropriateness; however, contents on links on the Internet change continuously. It is advisable that teachers preview all links before recommending them to students.

Extensions: The teacher can generate this to several projects

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Section Four: Additional Information

Credits
New Brunswick Museum, Saint John, New Brunswick