Lesson Plan: Landfill Mining – Blackstock Landfill, Grade 12 The Environmental and Resource Management (CGR4M)

Introduction

Historically the Region of Durham relied on local landfill sites for the final disposal of garbage which, even after closure, need to be managed to ensure the environmental integrity of these sites. Students will put into practice their knowledge by creating their own waste management strategy or building on an existing strategy to increase waste diversion efforts in the Region of Durham.

Learning Objectives

1. Define historic landfills and landfill mining
2. Investigate how waste management has evolved in Durham Region
3. Analyze challenges involved in reducing pollution from human activities, and assess the effectiveness of various methods of pollution reduction
4. Assess a variety of strategies for resolving environmental and natural resource management issues
5. Analyze the role of governments in protecting the environment

Resources Provided (located in the resource folder)

- Durham Owned Landfills map
- Student Report Template

Questions

1. How is landfill mining typically been used and how is the Blackstock mining project unique?
2. What are the potential environmental benefits of landfill mining?
3. Can you think of any additional benefits to landfill mining that extend beyond the environment? (Examples include cost savings with decreased or eliminated sampling, alternate use options for the land, public perception of the land…)
4. Can you identify any concerns residents might have regarding a landfill mining project? (Examples include cost, odour, noise, increased truck traffic…)

Activity

In the past, waste was often disposed of in a landfill with little to no separation. Today, disposal is the least preferred option to manage waste. Durham Region has several diversion programs to help divert materials away from the ‘black bag’ but would like to continue to increase diversion.

1. Students will create and present a strategy to increase diversion from the residential waste stream. Residential waste (or household waste) is garbage, recyclables and compostable materials generated by residential homes, multi-residential building, and small local businesses. Students may create a new program or expand on an existing program with new ideas and concepts that are not already part of Durham’s waste programs.

The Regional Municipality of Durham - Waste Management Services
If this document is required in an accessible format, please contact schoolprograms@durham.ca

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The strategy/presentation is required to answer the following questions:

a. What problems does this strategy address?
b. What strategies does it apply to solve the problems?
c. What stakeholders need to be involved?
d. What behaviours will people need to adopt or modify to make your strategy work?
e. Will the strategy be voluntary or enforced? (This must include an explanation)
f. How will the strategy be promoted?
g. How will residents be educated about the strategy?
h. What results are expected to be achieved?

2. Students will present their strategies to the class and answer at least three questions from their classmates/teacher in relation to their proposed strategy.
3. The teacher will list the proposed strategies on a whiteboard, chalk board, or SmartScreen.
4. Once all presentations have been completed, each student will place a mark next to two strategies they would like to see implemented.
5. Conclude with a final look at the top strategies selected by the class.

Summary

Waste does not just disappear once it leaves your house. It needs to be managed responsibly to protect the environment and human health. How we choose to manage waste today impacts the future.

Expanded Curriculum Connections

The Ontario Curriculum, Grade 11 and 12: Canadian and World Studies, 2015 (revised)

The Environment and Resource Management, Grade 12 (CGR4M)

A. Geographic Inquiry and Skill Development

- A1. Geographic Inquiry: use the geographic inquiry process and the concepts of geographic thinking when investigating issues related to the environment and the management of natural resources
- A2. Developing Transferable Skills: apply in everyday contexts skills, including spatial skills, developed through geographical investigation, and identify careers in which a background in geography might be an asset

C. Sustainability and Stewardship of Natural Resources

- C1. Policies and Strategies: analyse the roles and contributions of individuals, governments, and organizations with respect to the sustainable management of the world's natural resources
- C2. Development of Natural Resources: analyse impacts of resource development on the natural and human environment, and assess ways of managing resource development sustainably

D. Ecological Systems: Interconnections and Interdependence

- D1. Reducing Pollution: analyse challenges involved in reducing pollution from human activities, and assess the effectiveness of various methods of pollution reduction

- D2. Impacts of Pollution: evaluate impacts of various types of pollution on the natural environment and on human health
- D3. Ecological Processes: describe key ecological and biological processes, and explain how they are affected by human activities

E. Community Action

- E1. Developing Solutions: assess a variety of strategies for resolving environmental and natural resource management issues, locally, nationally, and/or globally
- E2. Community Land Use and Infrastructure: assess impacts of community land use and infrastructure on humans and the natural environment, and assess ways of reducing these impacts
- E3. Ecological Footprints: analyse impacts of various human behaviours on the natural environment, and assess the role of behaviour, ethics, and technology in reducing these impacts