GRADE 3 LEARNING EXPERIENCE

Compost Creators

Summary

This lesson goes beyond the classroom and into the schoolyard, as students will build a fully-functional compost pile. This hands-on lesson teaches students about the properties of soil and how composting is important to the environment. It also aligns with **Netukulimk** *(pronounced: ne·du·gu·limk)*—the Mi'kmaw concept of respecting the natural world around us and not taking more than we need.

Objective

To teach students about soil composition and how living things depend on and are affected by soil quality and composition. To learn about Mi'kmaw connection to nature (observe nature for patterns and answers).
Note: *It takes a minimum of six months to transform food waste into compost. To see the best results from your compost pile, the ideal time to start is early fall.*

Pre-Activity

DEFINITIONS

DIRECTIONS

COMPOSTING VS. RECYCLING

Break students into small groups. Half of the groups will discuss/write down what they know about **composting** and the other half will discuss/write down what they know about **recycling**.

COMPOSTING GROUPS / STARTER QUESTIONS:

- What kinds of materials can be composted?
- What are some different ways to make compost?
- Why do we compost?

RECYCLING GROUPS / STARTER QUESTIONS:

- What kinds of materials can be recycled?
- What are some different ways to recycle?
- Why do we recycle?

Have groups of students share what they have written down with each other. Discuss how composting and recycling are similar.

(cont'd)

MATERIALS

Whiteboard and markers

DURATION

15 mins

MAIN LEARNING OUTCOME

GRADE: 3

SUBJECT:

Science

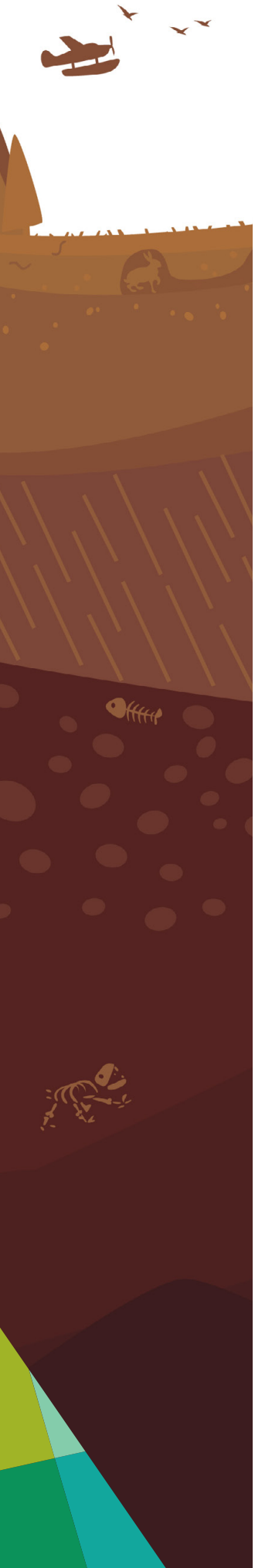
To teach students about soil composition and how living things depend on and are affected by soil quality and composition.

To learn about the Mi'kmaq connection to nature (observe nature for patterns and answers).

CROSS-CURRICULAR LINKS

English Language Arts

Outcome 1
Listening and Speaking
Students will communicate effectively and clearly and respond personally and critically.



DEFINITIONS (cont'd)

BASIC DEFINITIONS

Composting *is a natural process where organic material (e.g. food waste, grass/yard waste) is turned into a soil-like product called compost. Compost is a great fertilizer for plants. Composting is nature's way of recycling!*

Recycling *is when we transform waste materials into new and useful products. For example, a factory can take old glass, plastic and metal, and using extreme heat, they can liquify these materials and reform them as new cans or bottles.*

MI'KMAW PERSPECTIVE

When considering WHY we compost, it is relevant to consider the Mi'kmaw concept of **Netukulimk** (*pronounced: ne·du·gu·limk*)—respecting the world around us and not taking more than we need.

"We view the world and all that is in it as having spirit. We consider all life equal to our own and treat it with respect. We developed an intimate understanding of the relationships between the living and non-living so that each plant, animal, constellation, full moon, or red sky tells a story that guides our people so they can survive. These beliefs affect the manner in which we treat the natural world for sustenance and survival. Animals and plants are not taken if they are not needed. All spirits are acknowledged and respected as relatives and are offered tobacco, prayer, or ceremony (or combination) when taken. No part of an animal is wasted. All parts that cannot be used are returned to the Creator. The consciousness is described by the word, Netukulimk."

Source: Mi'kmaw Ecological Knowledge: Moose in Unama'ki (Page 4)
Download PDF at www.uinr.ca/wp-content/uploads/2014/05/Moose-MEK-web-1.pdf

Activity
BUILD YOUR OWN COMPOST PILE

DIRECTIONS

Before starting your compost pile, get permission from school administration. See **Plan of Operation form (Appendix 1)**.

MATERIALS

Appendix 1
Plan of Operation form

PART 1

DURATION
5 min

Once your students have an understanding of compost, it is time to build your own compost pile, and monitor its progress! **OPTION:** Have each student monitor a particular piece of food waste each week, noting decomposition.

PART 2: CREATE YOUR COMPOST PILE

DURATION
60 min

MATERIALS
See items next to each step

1. CHOOSE A COMPOSTER

While a container is optional, it can help keep the compost pile tidy. A composter will prevent organic material from blowing around and keep it from getting too wet from rain, which could cause it to smell. You can purchase a ready-made container, or find instructions online to make your own. The Divert NS website is a great place to start:

Backyard Composting (Information and PDF Booklet)
divertns.ca/recycling/what-goes-where/composting/backyard-composting

2. PICK A LOCATION

Choose a spot in the schoolyard with a fair amount of shade, such as under a tree or at the edge of a wooded area. This will prevent the compost from getting either too wet or drying out in the sun. The composter should be easy to access in all seasons.

BUILD YOUR OWN COMPOST PILE (cont'd)

DIRECTIONS

MATERIALS

3. BUILD THE PILE

A successful compost pile is made from alternating layers of browns (e.g. leaves / paper) and greens (e.g. kitchen waste / grass clippings). Start with browns, then switch between layers, ending with brown on top. Breaking large materials into pieces will help them decompose faster.

Supply of dry leaves and/or paper, and green organic material

4. ADD MATERIAL TO THE PILE

Greens, like food waste, add nitrogen and moisture to the pile while browns, like leaves or paper, help air circulate and also add carbon. Keeping greens sandwiched between browns helps everything break down faster. Keep browns close to the pile so they can be added on top of any greens.

5. MAINTAIN THE PILE

The pile should always be damp but not too wet, like a squeezed sponge. If the pile is too damp, add browns to help absorb moisture; if it is too dry, add more greens. Every two to three weeks turn the compost using a pitchfork or shovel to help air circulate. Oxygen is key to great compost.

Rake, shovel or pitchfork

TIPS FOR SUCCESS

- *Never put meat, fish, bones, fat, dairy, or pet waste in your backyard compost pile. These items take a long time to decompose, can attract rodents and create odours.*
- *Troubleshooting* www.planetnatural.com/composting-101/making/problems/

Post-Activity

COMPOST OBSERVATION

DIRECTIONS

MATERIALS

MONITORING THE COMPOST

Take your students outside to monitor the compost each week during class.

Appendix 2 Compost Pile Observation Sheet

Thermometer

OPTION Have the students work individually or in groups to fill in the **Observation Sheet (Appendix 2)**

OPTION Take photos of the pile each week to record progress.

DURATION
15–20 min

Every second or third week, turn the compost pile to mix the inner and outer layers. More frequent turning will speed up decomposition.

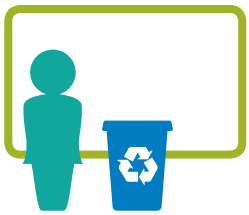
NOTE: A steady decrease in the temperature at the center of the pile will signal the end of the composting process. When the compost is finished, it will have a dark color and a crumbly soil-like texture.

MI'KMAW PERSPECTIVE:

During your visits to observe the progress, consider "oneness with nature" espoused by the Mi'kmaq. Students reflect on how we can be observant with nature to find answers we need.

RESOURCES: **Kekina'muek Muek: Learning about the Mi'kmaq of NS** *(Ch 8: Oneness with Nature)* Available at Nova Scotia school libraries, or PDF download at: cmmns.com/wp-content/uploads/2014/01/Kekinamuek-Manual.pdf

NS Office of Aboriginal Affairs: Links for Teachers and Students
novascotia.ca/abor/education/other-resources/



WASTE REDUCTION EDUCATORS

Divert NS provides funding to municipalities to deliver waste reduction education to schools across the province. Your local waste reduction educator(s) provides the following services, and more, free of charge!

- classroom presentations
- green team set up
- advice on bins and signage
- tours of local waste facilities
- school waste audits

To find out more, visit divertns.ca

BUILD YOUR OWN COMPOST PILE (cont'd)

DIRECTIONS

USING THE COMPOST

Use finished compost as a mulch or top dressing around plants shrubs and trees. The compost will provide soil nutrients, retain moisture, and inhibit weed growth.

Look for uses for compost around the school grounds.

OPTION Prepare a report that will describe the composting project. Present the report to the school principal.

OPTION Consider publicizing the project in the school and community newspaper.

MATERIALS

½ inch screen or sifter

If available: garden tools, such as shovel, tarp or wheelbarrow, bucket

DURATION

15 min

MI'KMAW PERSPECTIVE RESOURCE LINKS

Students may have more questions about the Mi'kmaw perspective. To dive deeper, watch video on **Netukulimk**.

VIDEO youtu.be/0mYfx5Plo_4
(02:39 / Source: Unama'ki Institute of Natural Resources)

For more classroom resources, visit the Mi'kmawey Debert website:
LINK www.mikmaweydebert.ca/home/sharing-our-stories/education-and-outreach/

Assessment

FORMATIVE Throughout the group discussion and compost pile construction and monitoring, observe and evaluate student behaviour/level of effort and engagement.

SUMMATIVE (OPTIONAL) Collect and evaluate the Compost Pile Observation Sheet.

TRY A SIMILAR ACTIVITY **Egg Carton Garden** (Grade 3)

ABOUT DIVERT NS

Divert NS is a not-for-profit organization championing recycling in Nova Scotia. For over 20 years we've helped build a culture of recycling through environmental stewardship, education, and innovation. Divert NS operates the **Beverage Container Deposit–Refund Program** and the **Used Tire Management Program**. In addition, we work in collaboration with government, industry, and academia to divert waste-resources from landfill. Divert NS, in partnership with municipalities, delivers education and awareness programs to schools, businesses, and community groups. Divert NS also works to develop stewardship agreements and funds innovative research and development initiatives.

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divert NS
Nothing Wasted

APPENDIX 1

COMPOST CREATORS

DATE: _____

Compost Pile Plan of Operation

Teacher's Name: _____

School: _____

Grade: _____ Class/Subject: _____

PROJECT OVERVIEW AND PURPOSE:

_____

_____

Compost pile location: _____

COMPOST PILE PLAN OF OPERATION:

Who will maintain the pile? _____

How often will it be checked on? _____

What is the plan for when the class is finished with the pile? _____

_____

MATERIALS AND COSTS:

What materials are needed to construct and maintain the compost pile?

_____

_____

Are any materials being requested from the school administration?
If so, what is the total cost?

_____

_____

APPENDIX 2

COMPOST CREATORS

Compost Pile Observation Sheet

For students to complete weekly

Date:	Student Name(s):
Outside Temperature:	
Compost Pile Temperature:	Was there a change in the overall look of the compost pile? If so, please describe.
Was there a change in the color of the compost since last week? If yes, please describe.	
Which materials have started to break down? Which have not?	
Other observations	