



Pictou County Forest School Climate Change Post-Visit Lesson Plans

Activity: Milk Jug Greenhouse & Butterfly Garden

Curriculum Outcomes: Elementary/Middle School

Materials: Empty 4L milk or water jugs cut in half horizontally, strong tape, seed starting mix/potting soil, seeds for native wildflowers, south-facing planting space in the schoolyard

Resources: [Wildflower Mix \(RainbowSeeds Company\)](#) ; [Wildflower Mix \(Halifax Seed Company\)](#) ; [Wildflower Seeds \(Hope for Wildlife\)](#) ; [Winter Sowing Milk Jug Guide](#) ; [NS school garden resource guide](#) ; [Schoolyard butterfly garden](#) ; [Sucseed Grants](#) if you'd like to do a larger garden project

Before the Lesson:

1. Make an exemplar "[winter sowing jug](#)" to pass around to the students
2. Order some *native* wildflower seeds from the resources list
3. Pre-cut some milk/water jugs with work gloves and a box cutter
4. Decide on how you will secure your milk jug greenhouses from wind

Students must have heard of the "[greenhouse effect](#)" or you can use this as an introduction to the concept. [Here is a good experiment](#) to do with thermometers. Make sure the kids understand that we need the greenhouse effect to keep the earth warm enough for us to live on it!

Intro/Minds On:

Pass the winter sowing jug around to the students. Tell them to guess what they think it is, inside their head and hold their guess until everyone in the class has examined the item. They can use their senses: look, touch, smell, listen (but no tasting please). After everyone takes a turn guessing what it is, you can reveal that it is a greenhouse!

Discuss: How does a greenhouse work/what is its purpose?

Why do we talk about the "Greenhouse Effect" when it comes to climate change?

Why is carbon dioxide called a "Greenhouse Gas"? What are the other greenhouse gases?

Action:

- In groups, students can make milk jug planters, following the "[winter sowing milk jug guide](#)" above (or any winter sowing guide online)
- Plant them with wildflower seeds that are native to your area
 - Discuss what is a native plant, why planting native plants is important
 - You can do as much or as little research on the plants you'll be growing as your students wish
 - Talk about why we are planting the seeds inside the milk jug and how it will help the seeds germinate (the water vapour trapped inside the milk jug is a greenhouse gas, which will keep the jug warmer than the outside temperature)



- Make a plan with the students for where you will keep the milk jugs outside, how you will secure them from winds, and how you will identify them as not being garbage so nobody throws them out or messes with them
 - Make a plan for how often you will check on your greenhouses to watch for germination - have groups guess when they think the first leaves will poke out of the soil and have them justify their guess
- **Make sure the milk jugs get put outside right away** as the seeds will germinate more rapidly in indoor temperatures, and then the seedlings will die when the milk jugs are put outside into freezing temperatures
- Make a plan for where you will establish your butterfly/bee friendly habitat with these plants you're starting! A south-facing part of the schoolyard is ideal, or anywhere that isn't heavily shaded

Consolidation and Next Steps:

- Bring the students out to visit the milk jug greenhouses on nice days
 - Have them observe the temperature inside the milk jugs vs. outside, by sticking their fingers into the hole.
 - Remind them to ask themselves why the inside of the greenhouse is warmer (water vapour is a greenhouse gas).
 - Monitor weekly for germination and add snow or water if the soil ever looks very dry.
- Once the plants are growing well, the tops can be taken off the greenhouses.
 - If it is a particularly cold spring, you may have to protect them from frost by putting the lids back on or covering them with frost cloth (Dollarama usually has some lightweight frost cloth available in spring or you can use an old sheet, making sure not to crush the plants.)
- Flowers can be transplanted into your butterfly and pollinator garden space at the end of May or early June! Make sure they are well watered and mulched to keep the soil moist! Straw makes a great mulch or un-dyed woodchips, or deciduous leaves
- Students can make presentations and/or photo essays about their project in their groups, do reflections for ELA, etc.
- [Certify your schoolyard](#) as a wildlife habitat with the Canadian Wildlife Federation! You will have to add a water source like a bird bath if your school doesn't have a pond or stream nearby. [Here is a free lesson plan for a cheap DIY bird/bee bath from upcycled materials!](#)

