Pictou County Forest School - Grade 1 Lesson Plans
Physical Science: Materials, objects, and devices

Activity: Sewage Spill Water Filters (suggested time 60 - 90 minutes)
Overall Curriculum Outcome: Learners will construct a device in response to a problem
Specific Curriculum connections:

- *Properties of materials for device construction*
    - *How can I determine which materials are best suited for various purposes?*
    - *How do the materials I choose for device construction relate to the intended purpose of my device?*
    - *How can I determine which materials I will use to construct my device?*
- *Materials can be recycled for different purposes*
    - *How can I build something new from something older?*
    - *How will I join various materials together?*

Materials:

- Plastic water bottles (for water filter containers)
- Various substrates: sand, gravel, charcoal, clay,
- Various loose parts: cotton balls, glue, elastics, paper etc.

Intro/Activation:
A septic truck has crashed on the bridge on MacBain Road and tipped over into the Big Caribou River!!! The Municipality of Pictou County has dispatched its Rapid Response Disaster Team to Pictou County Forest School to design and build water filters for all homeowners who live in the watershed of the Big Caribou River until the contamination can be contained.

Instructions/Activities:

1. Walk down to the bridge over the Big Caribou River and talk about what kinds of plants and animals would be affected by a sewage spill. How are these living things all connected to each other? Where does the water flow? E.g., if a sewage spill killed all the tadpoles in the river, how would the local food web be impacted?
    a. Kids drop sticks into the water upstream and watch how the sticks flow to the other side of the bridge, illustrating that water is always moving!
2. At base camp, ask students what they know about water filters? How do they work?
3. Have students create water filters (see below)

Guided lesson approach	Inquiry approach
Provide an exemplar of a finished water bottle water filter, showing the different layers and how they interact with, for example, muddy water. Provide students with relevant materials to construct their water filters. Let students test out their water filters with muddy water	Provide students with a wide array of materials (sand of various coarseness, gravel, charcoal, organic matter etc) and allow them the time and space to experiment with building their water filters. Adults are on hand to facilitate and support student learning.

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