Activity Ideas: Daily and Seasonal Changes

Supplementary Resource for Video 2: Small Steps to a Playful Classroom
This document is a companion guide to the Ontario Science Centre’s video series on Play Based Learning, produced in partnership with the Ontario Ministry of Education.

To see these learning opportunities in action, look for the videos on the Science Centre’s YouTube channel: https://www.youtube.com/user/OntarioScienceCentre

INDEX OF LEARNING OPPORTUNITIES:

Design a Den 3
Test a Nest 6
Tangrams & Nature Math 10
Seasonal Scavenger Hunt 15
Seasonal Playscape 18
Nature Box 20
LEARNING OPPORTUNITY:
DESIGN A DEN

What it’s about:
- Students use materials provided to construct a shelter for a toy animal.
- Students test their shelter by blowing on it (like the Big Bad Wolf). Will it be able to withstand a strong wind?

Connections/Extensions:
- How would the characteristics of the shelter change with the seasons (e.g. shelter from strong sun, waterproof shelter for rain, insulation from cold, etc.)?
- How do animals in Ontario adapt to changing seasons and colder weather (e.g. growing a thicker coat, migration, hibernation, storing food, etc.)?

Try it outside:
- Visit a park, meadow, ravine, or forest, and challenge students to construct shelters from natural materials.
- Before heading outside, discuss respect for living things (e.g. picking dead leaves from the ground instead of living leaves from a tree, etc.).
- Added challenge: incorporate camouflage to help the animal avoid predators.
- The Eden Project gives great instructions for a similar outdoor investigation: http://www.edenproject.com/learn/schools/lesson-plans/den-designers
Materials:

- Placemats to mark workspace
- Plastic animals (give each participant/group 2-3 to choose from)
- Building materials in containers (all from dollar store): rubber bands, feathers, cotton balls, stones, shells, burlap, popsicle sticks

Observations from Prototyping:

- This activity had a calm and relaxing feel to it.
- The original version also used moss, but it was harder to clean up (it would work outdoors though).
- One creative innovation: bundling popsicle sticks and elastic bands into “logs”.
- Students sometimes needed assistance wrapping elastics around other materials.

See next page for sample instructions/prompts (we placed it in a T-stand)
Design a Den

Build a shelter to keep your animal warm in the winter.

**How strong is your shelter?**
Blow on your structure as hard as you can, to see if it will stay together in a strong wind.

**Modify your shelter!**
Modify your shelter for another season. What does your shelter need to protect your animal from strong sun, or from a rainstorm?

**Don’t forget** to put everything away when you’re done!
LEARNING OPPORTUNITY: TEST A NEST

What it’s about:
• Student weave a nest around a wire frame.
• Students can test the nest’s strength by adding marble “eggs”. How many eggs will the nest hold?

Connections/Extensions:
• The book *Nests: Fifty Nests and the Birds That Built Them* (available at the Toronto Public Library) contains beautiful images of nests all over the world, built from a variety of materials.

Try it outside:
• Visit a park, meadow, ravine, or forest, and challenge participants to construct nests from natural materials. Incorporate camouflage to help your animal avoid predators.
• Get messy! Instead of weaving around a frame, use a combination of grasses, twigs, and mud “glue”.
• Challenge participants to look for nests in urban settings (bird and squirrel nests in city trees, wasp and swallow nests on human-made structures). Nests in trees are easy to spot in winter when trees are bare.
• Construct a nest from natural materials, and leave it outside. How long can it withstand the elements? Take a picture of it every day.
Materials:

- Placemats to mark workspace
- Wire nest frames (we used garden wire from the dollar store, frame instructions are on the next page)
- Building materials (strips of fabric or paper, twine, sticks, straws, real or plastic plants) in containers
- Marble “eggs” in containers

Observations from Prototyping:

- It was fairly easy for students to make a sturdy nest with the materials provided. For an extra challenge, use fewer loops in the nest frame, or provide more string-like materials for weaving.
- The popsicle sticks were awkward for nest-making. A collection of small flexible twigs would provide more opportunities for weaving.
- Students enjoyed adding marbles one by one, and counting how many marbles they could add.

See next page for instructions on making the nest frame:
How to Make the Nest Frame:

Step 1: Cut a two metre length of wire, and coil it into a circle with the same diameter as your hand.

Step 2: Take one loose end of the coiled wire, and wrap it tightly around the coil.

Step 3: Separate the coil into two circles, forming a figure eight.

Step 4: Spread the coil into a flat flower shape.

Step 5: Mold the frame into a nest shape by bending it around a curved object (like a bent knee).

See next page for student instructions/prompts
Test a Nest

Use the materials to weave a nest.

**How strong is your nest?**

Ask a friend to hold your nest by the edges, and add some marble eggs, one by one. How many eggs do you think your nest will hold?

**Don’t forget** to put everything away when you’re done!
LEARNING OPPORTUNITY:
TANGRAMS & NATURE MATH

What it’s about:
Tangrams:
• Students arrange the pieces into various shapes (can be representational, or abstract compositions)

Nature math:
• Students sort objects into groups of 1, 2, 3, 5, etc.
• Students compose/decompose numbers into 20
• Students make repeating patterns with objects

Connections/Extensions:
• Translucent tangram pieces look great on an overhead projector (see image below).
• If an overhead is used, could combine tangram pieces with other natural seasonal objects that have interesting silhouettes (dried seeds or twigs in winter, leaves in summer/fall, etc.).
• The math prompts were taken from the Grade 1 mathematics curriculum. They could be adjusted for other grades, or for added challenge.

Try it outside:
• Nature math could be re-imagined as an outdoor scavenger hunt (e.g. find 20 seeds and arrange them in groups of 5, find a stick that is as wide as your hand, find 10 leaves and sort them by a category of your choosing).
• Students could gather the materials for nature math.
Materials:
- Placemats to mark workspace
- Trays to hold materials
- Ice cube trays for nature math sorting
- Seasonal objects for nature math (we used pine needles, pussy willows, pine cone willow galls, pine cones, pebbles, shells, etc.)
- Tangrams (cut from translucent plastic index dividers, from the stationary section of the dollar store)

Observations from Prototyping:
- It would be interesting if students could photograph their results.

See next page for tangram template
Tangram Template:
(cut on black lines and outer grey lines)

See next two pages for student instructions/prompts (we placed them in a T-stand)
Tangrams

Can you make…

Try making something else!
Sort the objects into…

- Groups of 2
- Groups of 3
- Groups of 5

How many ways can you make 20?

Try…

- $19 + 1$
- $15 + 5$
- $10 + 10$

How many other ways can you try?

Patterns

Make a repeating pattern with the objects.
LEARNING OPPORTUNITY:
SEASONAL SCAVENGER HUNT

What it’s about:
• Set materials out near a window. Students look outside for living and non-living things. We added binoculars to give students an opportunity to use a tool.
• Pencil crayons and post-it notes are available for students to record observations.

Connections/Extensions:
• It would be interesting to chart observations of the moon over longer periods (weeks, months) to see patterns. (Each day, look for the moon. If you can see it, draw it.)
• Students could record the location of the sun at the same time each day, and potentially see long term patterns (the sun rises higher in the sky in summer compared to winter). These patterns could also be connected to outdoor exploration of shadows (e.g. how long is my shadow at 10 a.m. in different months, or at different times over the course of a day).
• This could be combined with weather observations over the course of a day/week/month/year.
• Categorize observations (biotic/abiotic, human-made/natural, types of animals observed, etc.) and organize data into a chart/graph.

Try it outside:
• Spend a full morning outdoors once per month or season. Students record observations, or draw/photograph/collect one object that they found interesting (if collecting, co-develop a set of guidelines).
• Observe a bird feeder once a week, and record observations. What birds appear/disappear as the seasons change? Why could this be?
• Students create edible “tree decorations” for birds, hang them outside, and observe. Finding ideas for appropriate bird food is an opportunity for research.
• Look for citizen science opportunities (will require research to find an appropriate project).
Materials:
- Window
- Post-it notes and writing materials to note observations
- Chart paper on wall to post observations
- Binoculars
- Birdseed (optional)

Observations from Prototyping:
- The binoculars were appealing to students.
- We only had time to try this once, and we wanted to make sure there were animals for students to observe. We scattered a bit of black sunflower seed outside, to attract birds and squirrels. (However, if you choose to scatter seed regularly in fall/winter, be aware that birds can become dependent on it, so you must continue to do so throughout the winter.)

See next page for sample instructions/prompts (we placed it in a T-stand)
Spring Scavenger Hunt

What can you see outside?
Use the binoculars for a closer look!

Can you find…

✓ A puddle
✓ Wind in the trees
✓ Three trees that still have leaves
✓ A bird
✓ A nest
✓ Clouds in the sky
✓ The moon in the daytime
✓ Damp soil

Draw or write what you see!

Did you know?
Squirrels build nests.
Can you find a nest outside that looks like this?
LEARNING OPPORTUNITY: SEASONAL PLAYSCAPE

What it’s about:
• An opportunity for open-ended fantasy play with simple materials.
• We were inspired by expensive playscapes available on Etsy, and made our own from inexpensive and recycled materials.
• We used a green mat and white felt so that the scene could be switched from “summer” to “winter”.

Connections/Extensions:
• We made “shelters” from empty yogurt containers, fabric, and glue. Students could create and decorate their own.
• There is also the option of having students plan/create their own playscapes over a longer term, starting with a large piece of felt and building materials (e.g. start by drawing your plan on paper, determine what features you would like and how you will create them from the materials available, etc.).

Try it outside:
• Students create a habitat for their play animals using natural materials found outdoors.
• Students photograph a variety of scenes in an outdoor play scenario, and create a story afterward from the photos.
Materials:
- Green floor mat (purchased at dollar store, a large piece of felt would also work)
- Plastic “grass” (purchased from dollar store)
- Baskets with building materials (we purchased pebbles and seashells from the dollar store)
- White felt for “snow” (we tried quilt batting but it may not last over the long term)
- Plastic animals (we chose a collection of forest animals made by Wild Republic)
- Shelters constructed from yogurt containers with fabric glued on
- Blue and white felt, to represent water and ice

Observations from Prototyping:
- We were delighted that students enjoyed this simple activity. Some students spent a long time playing with it.
- It was originally conceived as a complement to the quiet reading corner of a classroom. It would likely work well in this context.
LEARNING OPPORTUNITY: NATURE BOX

What it’s about:
• A tackle box is filled with a variety of seasonally available materials. Students are provided with magnifying glasses for close examination.

Connections/Extensions:
• Students can help gather material for the boxes. In an average classroom, if each person brings one object, it should fill most/all of the spots in the box.
• In a variation of this activity, we added acrylic-preserved insects to the box.

Try it outside:
• Bring magnifying glasses (or for older participants, a botanist’s hand lens) outside to observe nature up close.
• On an outdoor excursion, students could gather materials (discuss guidelines beforehand) to populate the box. It would be interesting to see if different types of habitats (e.g. park vs schoolyard vs meadow) produce different varieties of materials.
Materials:
• Tackle box (we purchased ours from a local hardware store)
• Magnifying glasses and black felt cloth to place and observe specimens
• Interesting materials gathered from outdoors (e.g. in spring, we found goldenrod galls, evergreen needles and cones, a variety of twigs with buds, rose hips, burrs, pussywillows, milkweed husks, black locust seed pods, fuzzy sumac twigs, alder cones, a wasp nest, etc.)

Observations from Prototyping:
• It was surprisingly easy to find enough specimens to populate the box. All of the materials were gathered on a short walk through the Don Valley, and the variety of colour and texture was attractive.
• Burrs tended to stick to the black felt, making it challenging to re-use.
• Fluffy seeds can easily travel throughout the classroom. We enclosed ours in small containers, found in the craft section of the dollar store.

See next page for sample instructions/prompts (we placed it in a T-stand)
Nature Box

Use the magnifying glass to study the objects.

Can you find…

✓ A seed that travels in the wind
✓ A seed that an animal might eat
✓ Something prickly
✓ Something fuzzy
✓ A bud from a tree
✓ A home for an insect
✓ A leaf that stays green in the winter
✓ 3 types of seeds
✓ 2 types of leaves
✓ Something that reminds you of springtime

Don’t forget to put everything away when you’re done!