



Into Nature

A Guide to
Teaching in
Nearby Nature



**BACK TO
Nature**
NETWORK





Who are we?

The Back to Nature Network is a multisectoral coalition of organizations and agencies working to connect children and families with nature. The Network has been established with the support of the Ontario Trillium Foundation through a collaborative partnership between Royal Botanical Gardens, Parks and Recreation Ontario and Ontario Nature.



**This guide can be downloaded
in English or French at
www.back2nature.ca.**

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ISBN 978-0-9691759-8-8

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Positioning Statement

A Province of Ontario Network – Back to Nature

A connection to the natural world is fundamental to all aspects of child development and is a key component to building optimal mental, emotional, social and physical health for every child. This critical link also represents a key building block for the future of a sustainable society.

Research shows that when we foster a child's connection with nature, the child flourishes: child obesity decreases, bullying rates decrease, child injury rates decrease, while academic achievement rises, physical activity rates increase, attention spans improve, physical and cultural barriers melt away and environmental stewards of the future emerge.

More work needs to be done by our governments, our educational institutions, our communities, our families and individuals to develop and support the natural spaces and initiatives necessary for our children to thrive and the research to guide us as we make these important changes. Connecting our children to nature needs to be a provincial and national priority.

Over 75 organizations have endorsed the Back to Nature Network and its Positioning Statement; to view the logos of all current Endorsers please visit our website at www.back2nature.ca/network-members.

Supporting Organizations

This guide has been developed by the Back to Nature Network with support from the following:



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Introduction

In 2005, Richard Louv published *Last Child in the Woods: Saving Our Children from Nature-deficit Disorder*. The central idea of the book was that regular experience in nature is a fundamental requirement for healthy human development. Louv pointed to a growing body of evidence-based scientific literature that relates many health and wellness issues with the lack of time children spend outdoors in nature. To characterize the results, Louv coined the term nature-deficit disorder, which "...describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illness." Louv's compelling expression of the human need for nature sparked an international movement to connect children with nature. Today, based on a large and increasing body of scientific research, regular experience in nature is increasingly seen as a foundational element in the positive development of happiness, health, and intellectual capacity in children.

In 2008, Ontario's Royal Botanical Gardens (RBG) convened a meeting of a wide group of interested parties with the objective of establishing a collaborative effort to promote the child and nature movement in Ontario. As a result of the gathering, RBG, Parks and Recreation Ontario (PRO) and Ontario Nature joined together to approach the Ontario Trillium Foundation (OTF) with a proposal to fund a child and nature initiative. The intent was to create a network of organizations that build community capacity to connect children with nature. In April 2011, with the generous support of the OTF, the Back to Nature Network (B2N) began work to accomplish this goal.

The Back to Nature Network is a collaborative of organizations from across Ontario. Sectors represented include education, health, planning, early child development, environmental stewardship, and active healthy living. The inspiration for this effort is envisioning a world where all children have access to nature within walking distance of their homes, and regular opportunities to spend meaningful time in it, and to create this world with on-the-ground actions. The primary function of the network is to support all organizations working to further the connection of children and families with nature by producing useful materials and acting as a hub to advance communication and cross-sectoral collaboration.

One of the priority materials identified was a teachers' resource for elementary teachers from Kindergarten through Grade 8 across Ontario. The goal was to create a guide to instruct and support teachers in using nature as a regular component of teaching. In July 2011 in partnership with Royal Botanical Gardens, Halton District School Board and Ontario EcoSchools, with financial support from TD Friends of the Environment Fund and The North Face Explore Fund, and with contributions from several other important organizations, the Back to Nature Network commenced work on the teachers' guide.



Purpose

The purpose of the Back to Nature Network Teachers' Guide is to enable teachers to teach all curriculum subject matter outdoors in nearby nature on a regular basis. For schools, nearby nature encompasses natural space that is within walking distance of the school: either green space on school property, or neighbourhood natural areas that can be visited readily by a class.

In serving the needs of children, this guide was written by and for teachers. This effort has three main objectives:

- 1) Offer a fresh alternative to teaching that will make teachers' lives easier by providing learning activities that are curriculum-linked, teacher-developed and tested, and readily understandable.
- 2) Offer an opportunity to strengthen the relationships teachers have with their students.
- 3) Provide simple and practical ways to help teachers use the outdoor learning space in combination with the indoor classroom.

From the start, this project has been designed to facilitate these goals; learning activities centre on mutual discovery by teacher and student in an exploratory framework that offers them the opportunity to learn together. Such an approach is crucial to this work. Learning in, through, and about nature is a process of self-discovery in which each individual discovers meaning within a lesson or experience that is personally relevant. This is no different from learning in Language, Mathematics, The Arts or any other subject, and this recognition has formed an important guiding principle in the creation of every part of this guide.

Organization of the Guide

The guide is divided into two sections: Section 1 introduces why and how to use nature as both a teaching environment and a teaching tool; and Section 2 offers a large number of learning experiences for direct use in teaching outside with nature. A dedicated effort has been made to anticipate the needs of teachers who are new to the idea of teaching in nature; this is reflected in the suggestions provided in Section 1, as well as in the *Nature101* series of lessons found in Section 2. It is recommended that first-time users of the guide read Section 1 first, even briefly, to set the stage for using the learning experiences in Section 2. The learning experiences together form the majority of this guide and provide a large number of teaching options that can be used immediately.

Many inspirational people have contributed expansive ideas and highly valuable tools in passionately urging others to teach in the out-of-doors. At the end of this guide is a reference section to honour their work, some by name and others by association. Included on this list are several publications of note that have earned their status as "classics"; acquiring these will enrich any library.



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THE BIG TEN OF OUTDOOR EXPERIENTIAL EDUCATION



1. Improve teaching for the teacher,
and learning for the student
2. Explore, discover and inquire
3. Prepare
4. Be Safe
5. Communicate
6. Gather Support
7. Manage your class effectively
8. Be a facilitator
9. Teach in the outdoors on a regular basis
10. Nurture care for the natural world

1. Improve teaching for the teacher, and learning for the student

- a. Teaching outdoors needs to be an enjoyable and readily achievable undertaking in order to enhance the life of a teacher. A happy, energized teacher serves the learning experiences of students in rich and meaningful ways. Thus, the first objective is for the teacher to find renewable vigour in teaching and relating to students through use of the outdoors and nature.
- b. Regular learning time outdoors improves the lives of all students in multiple ways: it enhances emotional contentment, physical health, and intellectual development. At school, it can contribute to increased focus and higher academic achievement. In addition, the experience of learning outdoors can reach some who are the most reluctant learners inside the classroom, providing the opportunity for expression that is different and more relevant to those learners. For scientific evidence that supports these statements, please see the annotated list of research studies compiled and updated by the Children and Nature Network at the following link: www.childrenandnature.org/documents/C118/.

2. Explore, discover and inquire

The process of teaching with and in nature should centre on exploration. Using a teaching approach that incorporates inquiry-based learning promotes questioning and discovery that arises *from* students through experiences designed by the teacher to inspire curiosity and wonder. An excellent manual that supports this approach is *Natural Curiosity: Building Children's Understanding of the World through Environmental Inquiry* produced by The Laboratory School at the Dr. Eric Jackman Institute of Child Study, which is associated with University of Toronto's Ontario Institute For Studies in Education. The manual is available as a free download at www.naturalcuriosity.ca.

3. Prepare

- a. Cover your bases:
 - i. Complete “Getting Started” in the next section, to figure out where you are now and where you want to be.
 - ii. Review your learning activity.
 - iii. Gather needed materials.
 - iv. Visit the outdoor area you will use before your first visit with the class.
- b. Review the inquiry-based learning approach.
- c. Reflect on what you need to make outdoor teaching a personally enriching experience.

4. Be Safe

(Note: discussing and defining safety with your class is covered in *Nature101: Phase 1 – Co-created Nature Contract*)

Safety is as essential to the outdoor learning experience as it is to teaching indoors, but there are several differences to consider:

- a. Have a do’s and don’ts discussion with your class. Make a list of all things you want to cover and add subjects your students would like to discuss. The list could include:
 - i. Things to avoid and the reasons, for example Poison Ivy can cause itchy, spreadable, fluid-filled blisters on skin.
 - ii. How to interact with things found in nature using our senses: observing, smelling, and touching (but not eating) natural objects.
 - iii. Responsible handling of animals such as insects after confirming with the teacher that it is safe to do so.
- b. Be weather-aware:
 - i. Wearing appropriate clothes and footwear for the conditions.
 - ii. Weather limits for outdoor learning experiences, e.g. need for shade during excessive heat, class procedures in the case of extreme weather such as lightning and high winds.
 - iii. Symptoms of hypothermia and heat stroke.
- c. Discuss how to react if injury occurs:
 - i. Create a step-wise procedure for all to follow if injury occurs.
 - ii. Post the procedure for regular review and print off a reminder sheet for outdoor student kits.
 - iii. Consider inviting a First Aid teacher to visit the class.
- d. Let the office or a teaching partner know every time the class is going outside, and establish a method for communicating with the school at all times while outside (see see next section for specific suggestions).



What’s important is that children have an opportunity to bond with the natural world, to learn to love it and feel comfortable in it, before being asked to heal its wounds... If we want children to flourish, to become truly empowered, let us allow them to love the earth before we ask them to save it.

David Sobel, American education writer



5. Communicate

Before beginning your outdoor teaching:

- a. Discuss your outdoor teaching plans with your school administration and teaching colleagues (see sample letter in this section to communicate with your school administration).
- b. Contact parents and share your outdoor teaching plans to seek support and involvement (see sample letter in this section to send home to parents).

On days you're teaching outdoors:

- c. Let the Office Staff know of your outdoor teaching plans; place a class-created poster on the door and/or write on the chalkboard "Gone Into Nature to Learn!"
- d. Carry a cellphone or two-way radio to communicate with office staff when necessary.
- e. Ensure that a method of communicating is established and well-understood by the entire class, including volunteers; there should be a gathering signal that is used by the teacher (e.g. using a whistle) and a signaling device such as a whistle could also be included in each student kit for safety (students could be taught that three blasts from a whistle is an internationally-recognized distress signal).

6. Gather Support

- a. Administration
 - i. Request direct acknowledgement and approval of your plans from your school administration.
 - ii. Invite school administration (e.g. Principal) to participate in one or more of your outdoor learning experiences.
 - iii. Share results and successes with administration on a regular basis to keep everyone informed on how your outdoor teaching is working.
- b. Teaching Colleagues
 - i. Invite other teachers to observe and participate in your outdoor learning experiences.
 - ii. Partner with another teacher to share learning experiences and join classes e.g. pair an older grade with a younger grade and assign partners to provide mentoring opportunities for students.
 - iii. Share outdoor teaching resources with colleagues.
- c. Community Volunteers
 - i. Invite parents and caregivers to participate in the outdoor learning experiences.
 - ii. Provide clear and explicit guidelines to volunteers for assisting your teaching, including class-developed rules, safety procedures, and facilitating inquiry with students.
 - iii. Share updates and successes in an online update, open house, or letter home.
- d. Open House
 - i. Organize seasonal events to celebrate outside learning and invite the school and community, e.g. celebrate the changing of the seasons with equinox and solstice events, or have a Dandelion Festival when your schoolyard dandelions are in bloom.

7. Manage your class effectively

- a. Establish a meeting place.
- b. Create a call-back signal (e.g., use a blast from a whistle).
- c. Set boundaries.
- d. Make sure of a washroom break before each outing and create a routine to satisfy immediate needs such as a bathroom buddy system, etc.
- e. Establish consequences for misbehaviour and follow through; make sure to offer the opportunity to try again as soon as possible.

8. Be a facilitator

- a. Review the inquiry-based learning approach.
- b. Reflect on your knowledge about nature (also known as natural history knowledge) and what you anticipate your students will expect you to know.
- c. Embrace “not knowing” while demonstrating an open enthusiasm for learning more — “I don’t know — let’s find out together” is often the best answer; being an expert in natural history is not necessary and can often hamper a teacher’s ability to teach through exploration and inquiry.
- d. Teach how to explore in nature — many students will not have experience exploring on their own.
- e. Avoid attempting to define the experience for your students — every student will define his or her own meaning from nature.
- f. Learn/explore alongside your students.

9. Teach in the outdoors on a regular basis

- a. You define “regular”, but you should set a goal before you introduce the routine e.g. once per season, once per month.
- b. Start with a small and manageable goal, even smaller than you think you can achieve, and then modify your goal as you and your class gain experience.
- c. Reflect on the best uses for both indoor and outdoor learning spaces. Herbert Broda, author of *Schoolyard-Enhanced Learning: Using the Outdoors as an Instructional Tool, K-8*, offers the following perspective: “I want to be clear that I am not advocating that all or even most traditional instruction be moved outdoors. There are many concepts and objectives that are best learned in an indoor setting with the equipment and facilities that are readily available there...An overuse of the outdoors can actually diminish the novelty of going to a different venue for learning.”

10. Nurture care for the natural world

- a. It is clear from recent studies that adults who express personal responsibility, care and compassion for the natural world developed rich personal relationships with nature as children.
 - i. Experiences in nature once per week are essential to the development of conservation ethics.
 - ii. Stewardship must be allowed to develop through personal experience and not through compelling students to act responsibly; conservation actions will arise as a consequence of such experience as students advance through the junior grades, and may last a lifetime.



Getting Started

The following questions will help you consider where you are in your practice with respect to teaching outside in nature, where you want to go, and how you're going to get there. Share the completed questions with colleagues and administration to stimulate discussion and demonstrate the preparations

you're making. Keep a copy in a "Teaching Outside" file to document your approach. Discuss the questions on *Your Class* with your students to find out about their thoughts and feelings, to consider appropriate preparation and to develop an anticipation guide to prepare your students.

PART I: Creating Your Vision!

YOU

1. What stage are you at in teaching outdoors?

☐ Beginner ☐ Some experience ☐ Experienced

2. What excites you about teaching outdoors?

What are your concerns?

3. In which seasons can you see yourself teaching out-of-doors?

☐ Fall ☐ Winter ☐ Spring ☐ Summer
☐ All Seasons

4. What is your goal for the regular number of times you would like to teach outside?

☐ Once/season ☐ Once/month
☐ Once/week ☐ Once/day

5. List the subjects you would like to teach outside:

6. How supportive do you anticipate your administration will be for outside teaching?

☐ Very ☐ Somewhat ☐ Indifferent
☐ Not Very ☐ Not At All

7. What benefits do you hope to gain personally from teaching outdoors?

YOUR CLASS

8. How much experience do you think your students have learning in the outdoors?

☐ Lots ☐ Some ☐ None ☐ Don't Know

9. In general, how supportive do you expect parents to be of taking students outside?

☐ Very ☐ Somewhat ☐ Indifferent
☐ Not Very ☐ Not At All

10. What challenges do you anticipate for your students?

Whole Class _____

Individual Student: use a class list to consider each student

11. What benefits do you anticipate for your students?

Whole Class _____

Individual Student: use a class list to consider each student

PART II: Getting Real!

YOU

1. Who do I need to inform of my plans?

When?

2. What forms do I need to prepare and to whom should I send them?

Form _____

Sent to _____

3. What background information do I need (e.g., safety, learning experiences to use)?

4. What materials do I need to gather (e.g., safety kit, lesson supplies)?

5. What outdoor space do I want to use?

When am I going to make my pre-visit?

Date _____

6. What support do I need for the outing (e.g., planning, resources, supervision)?

Who will I approach for support (e.g., teaching partner, principal, parent volunteers)?

7. When am I going to start: what day, what period?

8. What alternate plans do I have for the experience (e.g., indoor plan, alternate date)?

YOUR CLASS

9. How am I going to learn about and address fears (e.g., class discussion, individual conferences)?

10. What am I going to do to inspire an exciting tone?

Sample Letter to Administrator

Dear Administrator,

I have planned an exciting new learning routine for my class this year, and I am eager to share it with you to enlist your support and invite your participation.

To develop new learning experiences that help students understand and connect personally with regular curriculum subjects, I plan to use the outdoors as a regular learning space. This means I will be teaching in and around the schoolyard and/or in local natural areas delivering the same content that is normally taught indoors.

This teaching initiative is based on solid pedagogical principles. There is growing scientific evidence that children who experience regular time outdoors in nature are healthier physically, emotionally and intellectually; as students, they are better learners and achieve higher intellectual standards. Richard Louv, a writer and leading proponent of connecting children and nature, has written that if you want more success for your children “tell them to go outside”.

Other evidence suggests that those who find it hardest to function in the indoor classroom benefit tremendously from spending regular time learning outdoors, including those students who are afflicted with ADHD. In such cases, classmates who experience less disruption during lessons share the advantage.

In light of the evidence, regular connection with nature is essential for full development of our children. Children, however, spend far less time outside today than in the past. Using natural areas in and around the schoolyard as part of our learning space will help deliver on this key need and demonstrate leadership in applying the most current and powerful teaching tools to more fully engage our students.

Besides learning experiences, the plan I have prepared for learning outside includes the crucial considerations of safety, parent involvement and student preparedness. I would like to share these plans with you at your convenience in order to solicit your feedback and approval.

I look forward to presenting my plans to you in person and sharing my excitement for improving the learning of our students by using our outdoor learning space!

Thank you!

Best regards,

Sample Parent Information Letter

Dear Parent,

I have planned an exciting new learning routine for our class this year. I want to share it with you to let you know what it means for you and your child.

Our class will be using the outdoors as a regular learning space to develop new learning experiences that help students understand and connect personally with all curriculum subjects. This means I will be designing lessons based on The Ontario Curriculum to teach in and around the schoolyard and/or in local natural areas.

There is a growing amount of scientific evidence that when we provide children with the chance to spend regular time in nature, they are happier, healthier and better learners. Richard Louv, a writer and leading proponent of giving children opportunities to learn in nature, has written that if you want more success for your children “tell them to go outside”.

Unfortunately, most children spend far less time outside today than in the past, even though we are now finding out that a connection with nature and the outdoors is very important for full development. Using natural areas of the schoolyard as part of our learning space provides this key need at school.

To help your child in feeling comfortable and ready to learn in the outdoors please help him or her to choose clothes and footwear that are appropriate for the weather each day. I can provide a list of items that will help in outfitting your child and will be discussing these needs in class. In addition, we will work as a class on quick and inexpensive solutions for the weather, e.g. rain jackets made of new garbage bags for a light rain.

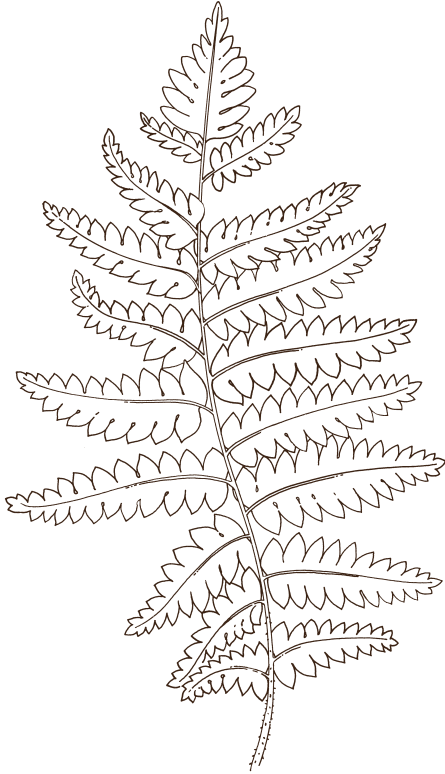
If you have any questions about our outdoor learning or about your child's individual needs please contact me.

Thank you!

Best regards,

Materials

You can teach outside in nature with just your own determination and a detailed plan. It is highly recommended, however, that you create outdoor learning kits for both yourself and your students. Use the following lists just as they are, or modify them to develop your own.



Store kits in a single location inside, and replace after each use.

Teacher Kit (in backpack)

- ☐ Cell phone/two way radio (other given to office before each departure)
- ☐ First aid kit
- ☐ Water bottle
- ☐ Sunscreen
- ☐ Insect repellent
- ☐ Signal (e.g. whistle)
- ☐ Ziploc bags of various sizes
- ☐ Small containers for capturing small creatures and sharing discoveries with class
- ☐ Magnifiers (e.g. inexpensive magnifying glasses, loupes, etc.)
- ☐ Recording book and pencil for observations, notes, sketches
- ☐ Extra pencils and pencil sharpener
- ☐ Camera (optional)
- ☐ Field guides (optional)

Student Kit (in large sealable plastic bag, e.g. Ziploc)

- ☐ Signal (e.g. whistle)
- ☐ Clipboard (e.g. purchase inexpensive versions or make by laminating cardboard and attaching paper with large binder clips) and pencil
- ☐ Folded garbage bag with head-sized slit through bottom to be used as rain gear
- ☐ Instruction sheet of step-by-step procedures in case of injury or other emergency
- ☐ Water bottle
- ☐ Individual magnifier, Ziploc bags, small containers (optional)

Other items might include:

- ☐ Class set of portable seats
(e.g. newspaper covered with plastic bags, pieces of foam)
- ☐ Inexpensive tarp to set up as a cover in the rain
- ☐ Insect nets
- ☐ Larger container for collection of natural items or to use in sharing objects as a class

Quick Readiness Checklist for Outdoor Learning Experience

Date of learning experience: _____

Period: _____

Subject: _____

Title of learning experience: _____

- ☐ Students informed ahead of time
- ☐ Nature Contract reviewed (if necessary)
- ☐ Materials prepared
- ☐ Teacher and student outdoor kits ready
- ☐ Office informed, and given 2-way radio if necessary
- ☐ "We're Into Nature!" sign on classroom door
- ☐ Washroom break provided before going outside

Reflections on the learning experience:

[illegible]

Learning Experiences

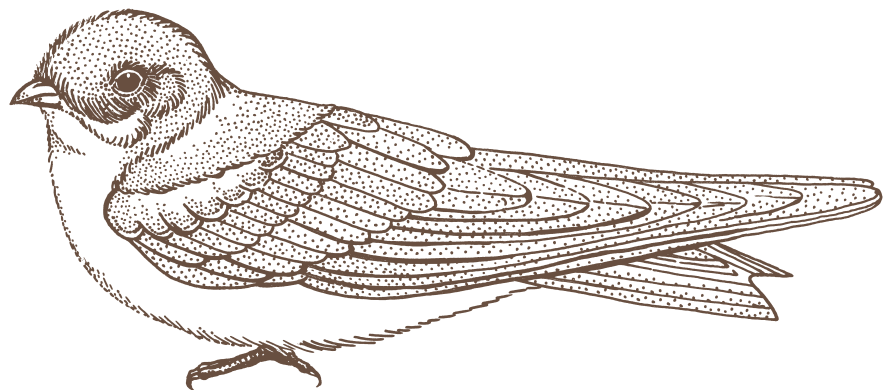
This section consists of three parts and forms the bulk of this teachers' guide.

1 2 3

The first part is **Nature101**, a stepwise series of five phases that is designed to assist the teacher in envisioning the outdoor learning experience with the class, forming guidelines for learning outside, and gradually moving from the indoor classroom to the outdoor learning space. The culminating task after successful completion of the phases is for the class to design its own outdoor learning space.

The second part offers 50 short **Nature2Go** activities to enable the teacher to achieve quick curriculum-connected “hits” with the class outside in nature. The activities help teachers to try the out-of-doors as a learning space, reflect on the experience (both personally and with the class), and develop successful outdoor education routines.

The third part consists of five full **Lessons** for each of the elementary divisions, Primary, Junior and Intermediate. Each lesson includes full and detailed instructions to prepare for and deliver the lesson in class.





Nature 101

GRADES K–8

Nature101 is a sequence of lessons created to enable teachers to transition the class from an indoor classroom learning environment to learning outdoors in nature. These lessons are designed for a teacher to move from *Phase 1* through *Phase 5* in a stepwise fashion. Depending on the experience of the teacher and class, however, it may be more appropriate to skip one or more of the initial phases and start at a more advanced phase. On the other hand, it may be beneficial even for a teacher who has initiated outdoor learning experiences to re-visit the early phases in order to establish a consistent framework, particularly at the beginning of the school year.

All phases include Learning Skills and Work Habits, and each phase after *Phase 1* is linked to a *Nature2Go (N2G)* activity to provide curriculum links to specific subjects. The culminating activity for accomplishing the final *Nature101* phase is to design and construct an outdoor learning space to use on a regular basis.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> Understanding of how to co-create a set of expectations to prepare students for learning and working together in the outdoor classroom. 	<ol style="list-style-type: none"> How do you imagine learning outdoors to be different from learning indoors? Will it feel different? Can we make it happen? What does success look like? What do we need to consider? Can we use the same classroom contract both indoors and outdoors?
Curriculum Expectations	
<p>Responsibility</p> <ul style="list-style-type: none"> Fulfills responsibilities and commitments within the learning environment <p>Collaboration</p> <ul style="list-style-type: none"> Accepts various roles and an equitable share of work in a group 	<p>Initiative</p> <ul style="list-style-type: none"> Recognizes and advocates appropriately for the rights of self and others
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Understanding of how to create the co-created in-class contract Skills to participate in class discussions The meaning of a contract: What is included? What happens when a contract is broken? 	<ul style="list-style-type: none"> Whiteboard, interactive surface, or chart paper to record brainstorming Markers
Minds On (Elicit & Engage)	
<p>The Hook</p> <ul style="list-style-type: none"> What is nature? What do we need to think about to be ready for learning outside? <p>Learning Goals (share with class)</p> <ul style="list-style-type: none"> We will discuss and create a class contract together to guide and govern our actions and interactions while we are learning outdoors. <p>Introduction</p> <p>Discuss the question: “Where does learning happen?”</p> <ul style="list-style-type: none"> Learning happens everywhere and all the time—at home, during a walk, at school—everywhere! We just can’t stop our brains from always wanting to find out more about the things in our lives, whether it be music, sports, art, books, or other people. 	<p>Pose the follow-up question: “Where does learning happen at school?”</p> <ul style="list-style-type: none"> At school, most teaching and learning is set up to take place indoors in the classroom and the outdoors is seen as a place “just to play.” Does learning happen on the playground? Are there other outdoor spaces that could be used for learning? Can you imagine what an outdoor classroom would look like? Creating an outdoor classroom for ourselves will mean considering what we need to make it work, recording guidelines for ourselves, and then practicing those things as we move step-by-step from learning in the indoor classroom to creating an outdoor learning space for ourselves to use on a regular basis.
Action! (Explore & Explain)	
<ol style="list-style-type: none"> Brainstorm responses to following question: <ul style="list-style-type: none"> What are the considerations for learning outdoors? Sort responses into following categories <ol style="list-style-type: none"> Safety e.g. being separated from the group Respectful interactions e.g. how, with whom, and with what? Learning tools e.g. materials Preparedness e.g. weather Routines e.g. gathering place, washroom Brainstorm guidelines for creating the Nature Contract. Divide the class into five groups. Each group needs a scribe, a presenter, marker and chart paper. Each group brainstorms guidelines for one of the five categories in the contract for a short period of time. Record on chart paper. 	<ol style="list-style-type: none"> Gather the whole group together. Each group shares the contract guidelines they created for their assigned category. The class decides together which guidelines will become part of the contract. The teacher records the agreed-upon guidelines to create the final Nature Contract on chart paper. Pose the following question to the class: What will it take to make this a success in practice e.g. sticking to guidelines, consequences of breaking the contract? Create a copy for each student, either paper or electronic.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> To discuss our individual needs as learners To consider different learning spaces that could be used in studying school subjects To examine the outdoors as a learning space 	<ol style="list-style-type: none"> Where do you learn best? Why do you think that is? Do you ever find yourself gazing out the classroom window? When? Why? Does it feel better to be in a building with lots of windows or few? Are windows necessary? Why or why not?
Curriculum Expectations	
Independent Work <ul style="list-style-type: none"> Follows instructions with minimal supervision 	Initiative <ul style="list-style-type: none"> Demonstrates curiosity and interest in learning
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Familiarity with Co-created Nature Contract 	<ul style="list-style-type: none"> Frames, which can be as simple as paper cut-outs, for N2G “Framing Nature” activity
Minds On (Elicit & Engage)	
The Hook <ul style="list-style-type: none"> What places can you think of where you are separated from another space by a sheet of glass? What does the glass keep in or keep out? Learning Goals (share with class) <ul style="list-style-type: none"> We will consider the differences between being indoors and outdoors. We will begin to imagine an outdoor learning space for our class and look at the Nature Contract we developed as a class to consider whether it still seems complete. We will take part in an activity to experience nature looking out the window. We will individually reflect on the experience. 	Introduction <ul style="list-style-type: none"> Revisit Nature101 Phase 1 to discuss the idea of learning outside and how the co-created nature contract will assist the goal of learning in the outdoors. Introduce the idea that the outdoors can be used as a learning space to teach all subjects including The Arts, Mathematics, Science and Technology, and Language. Pose the question: How can our class develop an outdoor classroom for learning? Describe how you think the outdoor classroom will differ from the indoor classroom.
Action! (Explore & Explain)	
<ol style="list-style-type: none"> Look around: describe and list the features of the classroom. Turn seats outward: describe the classroom again. What has changed? Gather at the window: describe everything that you see (including the window). Anticipate the differences between seeing the outdoors and standing in the middle of it: how might your senses experience each differently? Envision possible outdoor learning spaces. Anticipate how it might be different from the indoor learning space. Introduce the N2G activity “Nature Through the Window” and carry it out through the window. 	<ol style="list-style-type: none"> Provide time for students to independently record reflections. Discuss the activity: Is there nature in the classroom? What was it like to frame outdoor nature from inside? Consider reading <i>The Salamander Room</i> by Anne Mazer to inspire the idea of using both the indoors and outdoors as a learning space. (This is a good book for younger grades, but can be effectively used with older grades as well.) Review the Nature Contract: does anything need to be added or subtracted?

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> To consider how the events in our lives are experienced through our senses To experience the same outdoor space from different “sense” perspectives (i.e., indoors looking out vs. being out in the space, and discuss the outcome) 	<ol style="list-style-type: none"> 1. What does it mean to experience something—do you “experience” a sporting event when you watch it on television? 2. When you use more than one sense does it change how you experience an event? 3. How is the same activity different when done indoors vs. outdoors?
Curriculum Expectations	
Responsibility <ul style="list-style-type: none"> Takes responsibility for and manages own behaviour Independent Work <ul style="list-style-type: none"> Follows instructions with minimal supervision 	Collaboration <ul style="list-style-type: none"> Shares information, resources, and expertise and promotes critical thinking to solve problems and make decisions
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Familiarity with Co-created Nature Contract 	<ul style="list-style-type: none"> Writing materials
Minds On (Elicit & Engage)	
The Hook <ul style="list-style-type: none"> What would it be like if all schools were closed down and all learning took place at home on the computer? What would you gain? What would you enjoy? What would you miss? Learning Goals (share with class) <ul style="list-style-type: none"> We will examine the impressions we have of an outdoor space when looked at through a window as compared to experiencing it in person. We will explore an outdoor space using as many senses as possible. We will individually reflect on the experience. Introduction <p>Discuss the activity of playing video games:</p> <ul style="list-style-type: none"> We have fun playing video games such as car racing, flight simulators, and adventure games. Think about a video game you have experienced: what was it like for you? What do you think are the similarities and differences compared to participating in the activity in real life? 	<p>Describe a journey that passes through neighbourhoods on the way to a destination:</p> <ul style="list-style-type: none"> Every day, anyone who uses a train, bus, or car drives through neighbourhoods — houses, stores, parks, etc. — and gains the experience of what they are like through a window, but doesn’t experience what it is like to live in there. What do we gain and what do we miss when we view a neighbourhood through a window? <p>Introduce the features of a first-hand experience and how it compares when it is gained in the indoors versus the outdoors:</p> <ul style="list-style-type: none"> In addition to the things we see, we experience and remember the places and events in our lives by smells, sounds, and tastes. Learning outdoors provides opportunities for learning that involve multiple senses.
Action! (Explore & Explain)	
<ol style="list-style-type: none"> 1. Gather at a classroom window, or at another school window with a view of an accessible outdoor space. 2. Instruct students to each stand in one place and choose a spot on the ground outside that can be easily reached when the class goes outside during this phase. 3. Encourage students to write down adjectives to describe what is seen, heard, smelled and felt while concentrating on their outdoor spots. 4. Take the class outside to the area that can be seen from inside at the window. 5. Each student will find the spot found from the window and, standing or sitting in it, record the same information as was recorded inside: sights, sounds, smells, and feelings. 6. Think-Pair-Share: Ask students to each think about how the window and outdoor lists compare, pair students, and instruct pairs to discuss their thoughts on the comparison. 	<ol style="list-style-type: none"> 7. Gather together as a whole class and share thoughts from the Think-Pair-Share. 8. As a class, choose one of the outside spaces as a “meeting place” for the following activity. 9. Introduce the N2G activity “Wake Up Those Senses”. 10. Provide time for students to independently record reflections. 11. Debrief the activity: what do you think the same activity would be like if it were carried out in the indoor classroom? (Option: As a follow-up or addition repeat the N2G activity “Waking Up Those Senses” in the indoor classroom and compare. 12. Briefly re-visit the Nature Contract: are any modifications necessary after experiencing “Out the Door”? 13. Summarize the steps accomplished in the Nature101 series thus far and check in to see what students’ impressions are.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> To examine our perspectives on the use of outdoor space i.e. field or area of grass To consider what we know about a familiar outdoor space To explore a familiar outdoor space to determine what other life forms use it and how 	<ol style="list-style-type: none"> How would you describe a sports field? Is a sports field only useful as an area to play sports? What is contained in an area of grass e.g. lawn, sports field? Can a grassy area be a learning space?
Curriculum Expectations	
Responsibility <ul style="list-style-type: none"> Fulfills responsibilities and commitments within the learning environment Independent Work <ul style="list-style-type: none"> Uses class time appropriately to complete tasks 	Collaboration <ul style="list-style-type: none"> Responds positively to the ideas, opinions, values, and traditions of others Initiative <ul style="list-style-type: none"> Approaches new tasks with a positive attitude
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Familiarity with Co-created Nature Contract 	<ul style="list-style-type: none"> Hula hoops and optional recording sheets for N2G activity “Life Lasso”
Minds On (Elicit & Engage)	
The Hook <ul style="list-style-type: none"> Produce a soccer ball, baseball, or other piece of sports equipment from a field sport and ask students to describe the space needed to play the game: what do you know about it? What else can you imagine there is to learn about it? Learning Goals (share with class) <ul style="list-style-type: none"> We will continue our progression in learning about, experiencing, and creating an outdoor classroom as part of the Nature101 series of lessons. We will explore a familiar outdoor space — a grassy lawn or field — to learn about what occurs in it. We will individually reflect on the experience. 	Introduction <p>Discuss the grassy areas in the local community:</p> <ul style="list-style-type: none"> We often see our grassy areas at school and local parks only as surfaces for playing organized sports. Seen this way, knowing these areas simply as “grass” is all that we need. Most sports fields, however, are used infrequently, so there are lots of opportunities to use such areas for other activities we enjoy such as Frisbee, picnics, walking, reading, enjoying the sun, or meeting friends. Ask students to describe the components of a grassy field or area at the school in detail: <ul style="list-style-type: none"> It seems easy, but in all likelihood none of the students have ever actually explored it. What makes up a grassy place — is it only grass?
Action! (Explore & Explain)	
<ol style="list-style-type: none"> Go outside and gather in the “meeting place” chosen in Nature101 “Out the Door” (or choose a new one if desired). Pose the questions: <ul style="list-style-type: none"> Can the area you’re in be a place of exploration? What do you know about the plants and animals found here? Form small groups. Give each group a copy of a blank KWL (Know, Want to Know, Learned) chart to fill in about the plants and animals that might live in the area. (NOTE: a short lesson on KWL charts will be necessary if these aren’t used regularly by students.) Give groups time to fill in the first two columns i.e. “Know” and “Want to Know.” Introduce the N2G activity “Life Lasso.” 	<ol style="list-style-type: none"> Provide time for students to independently record reflections. Following the activity, give groups time to fill in the third column of the KWL chart (i.e., “Learned”). Discuss the grassy area as a place of exploration: what did you discover that was new to you? As a class, imagine other places with plants and animals that you would like to explore: what nearby places of nature could be explored? Briefly re-visit the Nature Contract: are any modifications necessary after experiencing “Thrill of the Grass?” Summarize the steps accomplished in the Nature101 series thus far and check in to see what students’ impressions are.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> To consider what nature means to each of us To discuss how we recognize nature To reflect on the difference between personal and shared experience in nature 	<ol style="list-style-type: none"> 1. What does nature mean to you? 2. What does nature look like? Can we find nature on our school grounds? 3. What is different about being outdoors on the playground compared to outdoors in nature? 4. What is it like being in nature alone compared to sharing nature with others?
Curriculum Expectations	
<p>Organization (Follow-up Activity)</p> <ul style="list-style-type: none"> Devises and follows a process plan for completing work and tasks <p>Independent Work</p> <ul style="list-style-type: none"> Follows instructions with minimal supervision <p>Collaboration</p> <ul style="list-style-type: none"> Works with others to resolve conflicts and build consensus to achieve group goals 	<p>Initiative</p> <ul style="list-style-type: none"> Demonstrates curiosity and interest in learning Self-regulation Assesses and reflects critically on own strengths, needs, and interests
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Familiarity with Co-created Nature Contract 	<ul style="list-style-type: none"> Blindfolds for Nature2Go activity “My Own Tree”
Minds On (Elicit & Engage)	
<p>The Hook</p> <ul style="list-style-type: none"> Close your eyes and imagine one of your favourite pieces of music — how does it make you feel? <p>Learning Goals (share with class)</p> <ul style="list-style-type: none"> In continuing the Nature101 series of lessons we will move from the open grassy area experienced in Phase 4 to the most natural area we can find on the school grounds. We will consider what nature looks like and means to each of us. We will experience an activity to explore nature first-hand. 	<p>Introduction</p> <p>Discuss the following question: Does everyone enjoy rap music?</p> <ul style="list-style-type: none"> Some do and some don't. Why? Different music means different things to different people, just like school, our choice of friends, and other things in our lives. Experiencing nature, even in the same place, means something different to each of us too. <p>Introduce the topic of spending personal time in nature on a regular basis as an activity that can build skills, improve health, invigorate our lives, and provide a peaceful space in a day.</p> <ul style="list-style-type: none"> Nature time is also enjoyable in a group in which so many different thoughts and perspectives can be shared and add to each person's personal experience.
Action! (Explore & Explain)	
<ol style="list-style-type: none"> 1. Go outside and gather in the “meeting place” chosen in previous Nature101 lessons. 2. Consider where nature is found in the schoolyard. Does it satisfy your picture of what nature is? 3. Discuss what “untouched” or “pristine” nature looks like. Is there a natural space found at school that is “pristine”? 4. Discuss the different view of nature that each of us has. <ul style="list-style-type: none"> No one can define what nature means for anyone else; however, we can share experiences of discovery in nature. Humans share the spirit of exploration in everything we do and we can share that same spirit in nature. 5. Describe how regular experience in nature improves our lives: <ul style="list-style-type: none"> A growing body of evidence strongly suggests that regular activity in nature produces people that are healthier, happier and smarter. 6. Introduce the N2G activity “My Own Tree.” 	<ol style="list-style-type: none"> 7. Provide time for students to independently record reflections. 8. Briefly re-visit the Nature Contract: are any modifications necessary? Finalize the contract. 9. Gain consensus on the outdoor meeting place for learning activities. 10. Summarize the steps accomplished in the Nature101 series: <ul style="list-style-type: none"> Created, practiced and modified the building blocks of the Nature Contract Established an outdoor learning space Accomplished different outdoor learning activities 11. Celebrate the success of the class in completing the lesson cycle (e.g. offer appreciations, have a class lunch outside, hand out nature learning certificates). 12. As a follow-up activity, design and create an outdoor learning space as a class to be used to learn in nature on a regular basis (see section on Designing the Outdoor Learning Space).

Culminating Task: Create Your Own Outdoor Learning Space

Create an outdoor learning space as a class to celebrate the successful completion of all five phases of the *Nature101* series of lessons.

To begin, consult excellent free resources many of which are available online. For example, Evergreen (www.evergreen.ca) has written *Dig it, Plant it, Build it, Paint it!*, a manual on design ideas for the outdoor classroom. Download it free at www.evergreen.ca/en/resources/schools/design-ideas.sn. Ontario EcoSchools (ontarioecoschools.org/) offers another resource that provides thorough information on creating a sheltered (i.e. shaded) space for outdoor learning: *Ontario EcoSchools School Ground Greening: Designing for Shade and Energy Conservation Guide* is offered as a free download at ontarioecoschools.org/program_guides/sgg.html.

Once you have gained an idea of the possibilities for your outdoor learning space, **approach your school board** for information on guidelines in place and additional resources available. **Consult other schools and teachers** that have experience creating the outdoor learning space, and identify other organizations that have expertise and/or resources that you can use.

Now **take a walk in your schoolyard with your class** and envision the best outdoor learning space you can fit into the available areas. **Make a list** of both essential and desirable elements of the space (e.g. gathering space, shade tree, minimal safety concerns, grass to lie on, a favourite rock) and draw a diagram of what it would look like.

As a class, **discuss the elements of the learning space** you have come up with and sort them from most important to least important. Take the top three elements and use these as the action items to work on as a class. Keep the rest of the list and consider the other elements after the first three are in place. As Herb Broda has heard from countless teachers, and strongly recommends in his wonderful book *Schoolyard-Enhanced Learning*: “start small!”

Ask your school board’s facilities department for its feedback on your plan (approaching the facilities department might be a highly valuable project for your students to undertake). As you put in place detailed plans to accomplish the project, **communicate regularly with school administration and custodial staff**. Ask local businesses for donations of needed materials, and seek the active involvement of parent volunteers.

Plan your “construction” day or days in detail; include alternative dates as a backup in case a postponement is necessary. **Mark the completion of the project with a celebration** for everyone who was involved and any others you would like to share in your class’ achievement!

An alternative project to consider as a class is to design and build a school garden. The process is very similar to that described above for designing an outdoor learning space. Again, gather information, consult with your school board and other experts, survey your schoolyard, make a list of the elements you envision as a class, and contract your original list down to a manageable three. A good primer on developing a school food garden program has been put together by Seeds for Change (seedsforchange gardens.org) and can be accessed free on the website at seedsforchange gardens.org/index.php/programs/school.

Finally, as an outward extension of the culminating task, **encourage your students to identify and create their own nature spaces to explore, or grow their own gardens with family and friends at home**. A very positive way to encourage this independent step is to assist students in forming an extracurricular school Nature Club that could gather at lunch or after school.

Nature2Go

Nature2Go activities have been designed to provide quick access to curriculum-based experiences that can be completed in a short period of time. You can accomplish most activities in 30 minutes or less, and they can be extended to become longer lessons if desired. In many cases these activities will serve a broad range of elementary grades and can usually be adapted to serve a grade that is not specifically listed. Altogether, the guide offers 50 *Nature2Go* activities.

Each activity includes: grades best suited to the activity; appropriate seasons to use it; Curriculum Connections to the Ontario Curriculum; materials needed; a detailed description of the steps involved; suggested teacher prompts; and options to modify or extend the activity.



Nature2Go INDEX

ACTIVITY	Page	Grades	Season	Grade Level		Primary						Junior						Intermediate					
				Subject		ST	M	A	L	SS	HPE	ST	M	A	L	SS	HPE	ST	M	A	L	SS	HPE
A Day in the Life	24	2-7	All Seasons			x			x			x				x		x			x		
Big Snake	24	1-5	All Seasons			x					x						x	x					x
Big Wind Blows	25	K-8	All Seasons			x					x	x						x					
Blank Postcards	25	K-8	All Seasons					x						x						x			
Blindfold Walk	26	1-3	All Seasons			x			x														
Bug-Eyed	26	4-6	Fall/Spring									x											
Build a Mini-Space	27	K-8	Fall/Spring/Summer						x						x						x		
Camouflage	27	1-7	All Seasons			x					x	x					x	x					
Changes of Matter	28	1-8	All Seasons			x		x			x	x		x			x	x		x			x
Cloud Watching	28	K-8	All Seasons			x			x		x		x				x			x			x
Decomposition Tag	29	1-8	All Seasons			x					x	x					x	x					x
Deer Ears	29	1-6	All Seasons			x					x	x					x						
Finding and Making Patterns in Nature	30	K-6	All Seasons				x						x										
Framing Nature	30	K-8	All Seasons					x	x					x	x					x	x		
Geography	31	6-7	All Seasons									x					x				x		
Getting to the Roots	31	3-8	Fall/Spring			x		x	x			x		x	x								
Guided Fantasy	32	K-8	All Seasons			x			x		x				x						x		
Interpreting Nature	32	1-8	All Seasons						x						x						x		
Is This a Plant?	33	1-6	All Seasons			x		x	x			x		x	x								
I've Been Here Before	33	K-8	All Seasons					x						x						x			
Just Like Us	34	1-3	All Seasons						x														
Leapfrog	34	1-7	All Seasons								x						x						x
Life Lasso	35	K-8	Fall/Spring			x	x		x			x	x		x			x	x		x		
Mental Vacation	35	1-8	All Seasons								x						x						x
Micro Hike	36	1-8	All Seasons			x		x	x			x		x	x			x		x	x		
More Than Meets the Eye	36	2-7	Fall/Spring			x			x			x			x			x			x		
My Own Tree	37	1-8	All Seasons			x	x	x	x			x	x	x	x			x	x	x	x		
Nature Charades	37	1-8	All Seasons			x		x	x			x		x	x			x		x	x		
Nature Cheers	38	1-6	All Seasons					x	x		x			x	x		x						
Nature Reporters	38	1-6	All Seasons			x			x			x			x								
Nature Sundae	39	K-6	Fall/Spring			x			x			x			x								
Nature Symphony	39	1-4	All Seasons					x						x									
Nature Through the Window	40	3-8	All Seasons			x		x	x					x	x			x		x	x		
Nature's Paintbrush	40	K-3	Fall/Spring					x	x					x	x								
Popcorn	41	1-6	All Seasons			x		x		x		x		x		x							
Rainbow Chips	41	1-8	All Seasons					x	x					x	x					x	x		
Rainstorm	42	K-8	All Seasons					x						x						x			
Rocky Road	42	4-8	Fall/Spring			x		x	x		x	x		x	x		x	x		x	x		x
Scavenger Hunt	43	1-8	All Seasons														x	x					x
Seed Rockets	43	1-8	Fall/Spring			X			x			x			x			x			x		
Singin' in the Rain	44	2-8	All Seasons						x									x	x		x		
Sorting Rules in Nature	44	K-6	Fall/Spring			x	x		x			x			x								
Sound Bingo	45	1-8	Fall/Spring/Summer			x	x					x	x										
Sound Map	45	1-8	All Seasons								x						x						x
Tableaux	46	7-8	All Seasons															x		x			
Texture Rubbings	46	1-8	Fall/Spring			x		x				x		x				x		x			
This is a Stone	47	1-8	All Seasons					x	x					x	x					x	x		
Touchstones	47	1-8	All Seasons			x			x			x			x			x			x		
Wake Up Those Senses	48	K-8	All Seasons			x					x	x					x	x					x
What Colour Is It?	48	K-8	All Seasons					x	x					x	x					x	x		

Subject Legend: **ST**: Science and Technology; **M**: Mathematics; **A**: The Arts; **L**: Language; **SS**: Social Studies; **HPE**: Health and Physical Education

Nature2Go: A Day in the Life



GRADES 2–7

All Seasons

Curriculum Connections:

- *Language: Writing*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Responsibility
- Independent Work

Materials Needed: Journal, pencil, and clipboard for each student

ACTIVITY:

Take students outside and have them select a tree to sit near. Provide five minutes to observe the tree and look at the plants and animals that may be observed in, on, or around the tree. After the observation time, begin a creative writing exercise. Students write a journal entry themed on a day in the life of one of the animals or plants observed.

TEACHER PROMPTS:

Task: imagine you are an animal or a plant living in or under the tree. Write a story about a day in your life.

ACTIVITY OPTIONS:

1. Review what living things need in their habitats to survive. Imagine that the grassy or forested area is now black top. What needs would be easy/hard to obtain in the black top environment?
2. Compare and contrast a day in two different seasons.

Nature2Go: Big Snake



GRADES 1–5

All Seasons

Curriculum Connections:

- *Health and Physical Education: Active Living; Movement Competence: Skills, Concepts, Strategies*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

Begin with the Teacher Prompt. Follow up by asking students to imagine themselves as snakes. Students stretch out on stomachs in groups of two, grabbing the ankles of the person in front of them to make a two-person snake. Snakes seek out other snakes and connect to ankles to create larger and larger snakes until you have one big snake! This snake may become coordinated enough to roll over, and curl up and go to sleep!

TEACHER PROMPTS:

Animals move in many ways: birds fly, rabbits and frogs hop. How do snakes move?

ACTIVITY OPTIONS:

1. Look around and observe how animals move. Work together in groups to create one big animal, with each person acting as one part of the animal. Now coordinate your movements and move together as your one animal.
2. Try acting as an animal on your own and then as one part of a larger animal. How are the two experiences different?
3. Find animal tracks in the snow or mud: can you mimic their way of walking?
4. Play "Snake Tag". This can be done as a whole class or in 2-3 groups. Each group gets in a line and holds the waist of the person in front, forming a big snake. The snake is trying to bite its tail – the person at the front has to try to tag the person at the back. If the head (front person) is successful at catching the tail (back person), switch and have the back become the head and the front the tail and repeat the game. NOTE: This is best played on a softer surface such as grass.

Nature2Go: Big Wind Blows



GRADES K–8

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *Health and Physical Education: Active Living*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

Everyone sits in a circle outside with one person in the middle. Person in the middle yells out a nature-related statement such as "The big wind blows for anyone who *walked to school today!*" All people to whom this applies run across the circle to find an open spot or to switch spots with another. Students to whom this statement does not apply stay seated. At this time, the person who was in the middle tries to get one of the empty spots. One student will be left without a spot. That student goes to the middle and calls out a new nature statement: "The big wind blows for anyone who _____."

ACTIVITY OPTIONS:

1. Connect this to your present Science and Technology topic (e.g. ...can identify food for an animal, ...has watched birds, ...enjoys spending time in nature in the winter, ...can see a deciduous tree, ...can name the parts of a plant).
Science and Technology: Understanding Life Systems
2. Use this activity as an opener to the Grade 2 topic related to wind. *Science and Technology: Understanding Earth and Space Systems*

Nature2Go: Blank Postcards



GRADES K–8

All Seasons

Curriculum Connections:

- *The Arts: Visual Arts*

Learning Skills and Work Habits:

- Initiative

Materials Needed: Blank cards, pencil crayons, paints

ACTIVITY:

Take a short walk in a nearby natural area. Gather as a group either outdoors or back in class. Students choose a plant or animal seen outside to draw or paint. Once the pictures are complete, students lie down and reflect on what features attracted them to their chosen plants and animals, and record their thoughts.

TEACHER PROMPTS:

Advise students to focus strongly on observation, and encourage students to pose questions about what was observed.

ACTIVITY OPTIONS:

1. Photograph your plant or animal in addition to/instead of drawing it. *The Arts: Visual Arts*
2. Record questions along with recorded observations.
Language: Writing

Nature2Go: Blindfold Walk



GRADES 1–3

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Language: Oral Communication*

Learning Skills and Work Habits:

- Collaboration
- Responsibility
- Self-regulation

Materials Needed: One long rope; one blindfold per student

ACTIVITY:

Students blindfold each other and then everyone hangs onto a long rope. The teacher takes one end of the rope and one student with-out a blindfold, takes the other end. The teacher SLOWLY leads the participants SILENTLY to a destination in a natural area that will stimulate the senses. Instruct students to imagine that this is their home; take note of how it feels, smells and sounds. In an open space, all students take off blindfolds and discuss their experiences.

TEACHER PROMPTS:

1. Did you feel more or less a part of nature while sitting or standing with the blindfold on?
2. We all did the same walk yet each had a different experience in some way. Discuss how the experience was unique for each person and why.

ACTIVITY OPTIONS:

Ask students to write a poem about how things felt, smelled, and sounded, incorporating their emotions about being in nature.

Language: Writing

Nature2Go: Bug-Eyed



GRADES 4–6

Fall / Spring

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Collaboration
- Responsibility
- Self-regulation
- Initiative

Materials Needed: Containers for collecting insects, gauze or foam pieces to cover or plug the top of the container

ACTIVITY:

Pair students. Go outside into any natural environment (garden, field, forest). Hand out the materials to each student. Students work to capture insects and other small creatures in the container and sort them into different groups. After careful observation, students release their catch and try to capture more. Students should try to find small creatures representing three or more different groups.

TEACHER PROMPTS:

1. If you could choose, what kind of small creature would you want to be e.g. flying, walking, burrowing, stinging, munching, etc.?
2. What does it mean to respect somebody or something?
3. What roles do little creatures like insects play in our world?

ACTIVITY OPTIONS:

1. Make a sorting chart; draw insects and label them with descriptive characters; record observations on insect behavior.
Science and Technology: Understanding Life Systems
2. Design and draw your own insect from categories provided and determine where it would live. *The Arts: Visual Arts; Science and Technology: Understanding Life Systems*

3. Keep an insect log to record what you discovered.

Language: Writing

Nature2Go: Build a Mini-Space



GRADES K–8

Fall / Spring / Summer

Curriculum Connections:

- *Language: Reading*
- *Mathematics: Geometry and Spatial Sense; Measurement*

Learning Skills and Work Habits:

- Collaboration
- Organization
- Initiative

Materials Needed: One long rope; one blindfold per student

ACTIVITY:

Read aloud a book (e.g. *The Magic School Bus*, *Gulliver's Travels*) describing the world from the perspective of someone very small. In small groups create an outdoor museum for a person the size of your thumb using items found within the confines of a geometric shape (e.g. a triangle measured in straw units for Grade 1; a two-metre circumference circle outlined with string for Grade 8) on an out-door natural space.

TEACHER PROMPTS:

What animals are this size? What might the world be like for them?

ACTIVITY OPTIONS:

1. Record the objects in the mini-space (draw or photograph items). *The Arts: Visual Arts*
2. Present a tour of your mini-space, or tell classmates about one or all objects collected. *Language: Oral Communication*
3. Write an advertisement to attract thumb-sized people to your site. *Language: Writing; Media Literacy*
4. Make a list of all the small living things found: what do you know about each one? How does each one connect to the others? *Science and Technology: Understanding Life Systems*

Nature2Go: Camouflage



GRADES 1–7

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Health and Physical Education: Active Living; Movement Competence: Skills, Concepts, Strategies*

Learning Skills and Work Habits:

- Collaboration

Materials Needed: Squares of paper, crayons, etc. for “food break” option to activity.

ACTIVITY:

The teacher chooses one student to be a Great-Horned Owl (predator); the remaining students are Deer Mice (prey). The owl stays on its “perch” (in one spot), closes its eyes, and counts to 20. The mice run and hide within a boundary. Once hidden, students must remain silent in order to avoid detection by the owl. At 20, the owl opens his eyes and yells ‘Camouflage!’. The owl can turn all the way around on the spot, but cannot leave the perch. Using keen eyesight, the owl must spy the mice and call out the name of the student or colour of clothing spotted. As soon as it is spotted, the

mouse is considered to be eaten and turns into an “owl pellet” sitting in a circle around the owl’s perch. The mouse that is the best at surviving is the one who remains uncaught and who is closest to the owl — a master of camouflage!

If the mice are too well camouflaged for the owl to find, introduce a “food break”: mice must visit a food source (e.g. squares of paper, scattered crayons) and then return to hiding while the owl counts to 10 with eyes closed. To shorten the game, place the food close to the owl. Discuss the decisions that a mouse must make to find food while staying safe.

NOTE: this game is best played in long grass or areas with trees where there are lots of places to hide nearby!

ACTIVITY OPTIONS:

1. Blindfold the owl. Mice sneak toward the food encircling the owl: when detected by sound, a mouse becomes a pellet. *Science and Technology: Understanding Life Systems*
2. Move like an animal. Prey can be: mouse (Deer Mouse), rabbit (Eastern Cottontail), fox, domestic cat or dog. *The Arts: Dance; Drama; Health and Physical Education: Movement Competence: Skills, Concepts, Strategies*

Nature2Go: Changes of Matter



GRADES 1–8

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Matter and Energy*
- *The Arts: Drama*
- *Health and Physical Education: Movement Competence: Skills, Concepts, Strategies*

Learning Skills and Work Habits:

- Collaboration
- Responsibility

ACTIVITY:

Each student represents a molecule that makes up a water droplet. Call out prompts e.g. “Energy added!” and have students in small groups move to represent the way molecules of water would react in a given space.

TEACHER PROMPTS:

1. Call out “energy removed” or “energy added.”
2. Call out changes of state.
3. Call out “zero degrees Celsius” and then instruct small groups each to “grow” into a different snowflake shape.

ACTIVITY OPTIONS:

1. In small groups students create a short matter skit. Other students guess what happened to the matter during the skit.
2. As a class, create a water drama that begins with snow in your nearby nature area, cycles through the seasons, and ends when water once again appears as snow.

Nature2Go: Cloud Watching



GRADES K–8

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Earth and Space Systems*

Learning Skills and Work Habits:

- Collaboration
- Initiative

Materials Needed: Cloud chart if desired

ACTIVITY:

On a cloudy day (partial sun and cloud is best), go outside to a space with a clear view of the sky. Everybody lies on their backs or assumes a different comfortable position looking up to the sky. View the clouds. Simply call out what you see e.g. colour, shape, type of cloud while observing the sky, or discuss what you see using the teacher prompts as cloud watching continues or after the conclusion of a defined period of cloud watching time.

TEACHER PROMPTS:

1. Identify the types of clouds you see.
2. What kind of pictures/lines/textures do you see?
3. “This cloud reminds me of ...” story development (similar to constellation legends).
4. Can you predict the weather?

ACTIVITY OPTIONS:

1. Paint what was seen or draw story ideas. *The Arts: Visual Arts*
2. Use sidewalk chalk to draw on the playground the pictures seen. *The Arts: Visual Arts*
3. Read *The Runaway Bunny* by Margaret Wise Brown as an introduction, then create a class book of clouds to share with another class. *Language: Reading; Writing.*

Nature2Go: Decomposition Tag



GRADES 1–8

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Health and Physical Education: Movement Competence: Skills, Concepts, Strategies*

Learning Skills and Work Habits:

- Collaboration
- Responsibility

ACTIVITY:

Discuss decomposition and decomposers (worms, fungi, snails, slugs, insects, bacteria). One student is “Death”, another is a “Decomposer”. All others are living things. Death chases and tags the living things who freeze OR lay down on the ground when tagged. When the Decomposer touches a lifeless body it is returned to the cycle of life as another living thing.

TEACHER PROMPTS:

1. What is a decomposer?
2. What benefits does a decomposer provide?
3. What would our world look like without decomposers?

ACTIVITY OPTIONS:

During the game pull the Decomposer out for a few minutes, explaining that it has been harmed by human activity. For example, the slug ate slug bait in a garden and died, or the fungus died due to soil acidity from acid rain, or the insects died due to pesticides. The living things will all be dead. Discuss as a group how this relates to the circle of life.

Nature2Go: Deer Ears



GRADES 1–6

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Health and Physical Education: Active Living*

Learning Skills and Work Habits:

- Organization

Materials Needed:

Two bandanas

ACTIVITY:

Students stand in a very large circle (areas with long grass or forests are best) and become trees. The teacher picks a Deer, who stands in the middle of the circle, blindfolded and with a bandana tucked into the back of his/her pants to represent a tail. The teacher silently picks a Wolf from the circle of trees, who then tries to silently sneak up on the Deer and steal his/her “tail”. Ears are cupped for the “deer ears” effect and if a sound is heard, the Deer points in the direction of the sound. If the Deer points at the Wolf, the Wolf is caught and has to return to the circle of trees and a new Wolf is chosen. If the Wolf successfully steals the Deer’s tail without

being caught, the Wolf can become the Deer and the game can restart.

NOTE: trees are rooted to the ground quietly!

TEACHER PROMPTS:

1. Do you think that predators are always successful catching their prey?
2. What features serve each the Wolf and Deer in their roles as predator and prey?

ACTIVITY OPTIONS:

Try the activity with other predator/prey pairs, such as owl and mouse, fox and rabbit, snake and frog, etc.

Nature2Go: Finding and Making Patterns in Nature



GRADES K–6

All Seasons

Curriculum Connections:

- *Mathematics: Patterning and Algebra; Geometry and Spatial Sense*

Learning Skills and Work Habits:

- Independent Work
- Initiative

ACTIVITY:

Patterns can be seen everywhere in Nature! Explain to your students that shapes can be found in nature too. Discuss examples. Ask the students to take a two minute quiet walk about your natural area and then re-group and share any patterns they observed (e.g. visual patterns in plant growth on a leaf, sound patterns, branching twigs, milkweed or dandelion fluff, ice crystals).

TEACHER PROMPTS:

1. Were your predictions similar or different from the patterns you found on the walk?
2. What was the most interesting pattern you found? Why?
3. For older grades, challenge students to look beyond simple shapes and patterns to find more complicated relationships to math e.g. inside of sunflower or pine cone seen as a Fibonacci set.

ACTIVITY OPTIONS:

1. Try the activity in a forested area.
2. Change your perspective. Pretend you are an insect on the ground. Lie down on your stomach and use a magnifying glass to get an ant's eye view. Or, lie under the trees and look up into the canopy.
3. Visit the area regularly to observe seasonal changes.
4. Students can do the same activity using shapes and three-dimensional shapes they recognize. Simple materials can be gathered to demonstrate AB type patterns.
5. Collect and press common flowers. Use the pressed plants as examples of different patterns. Create art from the pressed flowers.
6. Dissect a flower to look at shapes and patterns.

Nature2Go: Framing Nature



GRADES K–8

All Seasons

Curriculum Connections:

- *The Arts: Visual Arts*
- *Language: Oral Communication; Reading*

Learning Skills and Work Habits:

- Initiative

Materials Needed: One empty frame per student (e.g. make it out of construction paper, etc., or form a frame with your fingers)

ACTIVITY:

Beginning outdoors in a natural area, each student is given an empty frame. Students will be the artists, looking through their frames from a variety of perspectives until each finds a scene to capture. The frame is left at the spot where the picture has been captured and each student rejoins the group. The whole class goes on a gallery walk, stopping at each frame. Each frame is held by the artist for the class to look through as the picture is described.

TEACHER PROMPTS:

1. Frame a scene that reflects your mood.
2. Frame a place/object that represents to you a character or setting in a short story read in class.
3. Frame a scene that reminds you of an experience in your life.

ACTIVITY OPTIONS:

1. In groups, add characters to the picture and perform a short drama or skit in the scene. *The Arts: Drama*
2. Write about your framed picture based on the teacher prompt. *Language: Writing*
3. Draw your framed picture. *The Arts: Visual Arts*
4. Work in groups or as a class to come up with a theme that connects different framed pictures. *Science and Technology: Understanding Life Systems*
5. Choose a framed picture that is present year-round; return and photograph the same picture in each season. *Science and Technology: Understanding Earth and Space Systems*

GRADES 6–7

All Seasons

Curriculum Connections:

- *Geography*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

With clipboards, walk around the school grounds and/or local neighbourhood. Observe examples of habitats and/or ecosystems that you recognize and record these on your map. Describe the living things that might be found in those habitats/ecosystems. Note your impressions.

TEACHER PROMPTS:

1. What habitats/ecosystems are in our area that support living things?
2. How are these habitats/ecosystems connected to our lives?
3. What actions affect the ecosystems both positively and negatively?
4. What environmental topics are relevant to our local school community?

ACTIVITY OPTIONS:

1. Exchange maps with a classmate and see if you can follow it and find the items recorded.

Nature2Go: Getting to the Roots

GRADES 3–8

Fall / Spring

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Responsibility
- Collaboration

Materials Needed: Plants, garden tools, container with water
FOR INTERMEDIATE: jeweller's loupes, microscopes, magnifying glasses

ACTIVITY:

Go out to any natural area e.g. grass, forest, field. Dig up some different plants (i.e., grass, clover, wild strawberry, dandelion). Carefully wash off the roots and compare. Look at more detailed comparisons using magnifiers.

TEACHER PROMPTS:

1. How are the plants different?
2. Why might the roots differ and how might the differences observed affect the life of the plant?
3. Sort the plants into their different types i.e. classify the plants.

ACTIVITY OPTIONS:

1. Pick one of the plants and draw a detailed sketch using different elements of design e.g. texture, line, etc. *The Arts: Visual Arts*
2. Use magnifiers to make comparisons between plant structures.

Nature2Go: Guided Fantasy



GRADES K–8

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Earth and Space Systems; Understanding Life Systems*
- *Social Studies*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

Ask students to find a place in nature where they can comfortably lie on their backs and close their eyes. First point out each of the senses, and ask the students to concentrate on these things. How does the air feel against your skin? How does your weight feel against the earth? What can you hear? Smell? This will allow students to focus in on the natural surroundings using all senses. At this point, verbally go through each of the major body parts, head to toe, asking students to tense, then relax each body part. If this is going well, you may lead an imaginary journey e.g. imagine you are leaving your body, lifting up slowly like a balloon. You see your body below you, and then you rise higher seeing our entire

group, the entire field, higher and higher, until you start moving forward, realizing that you can fly! Continue this journey using your own ideas and curricular areas! You may journey e.g. over or into forests, water systems, to other countries. To end, slowly move back to your bodies and slowly wake up or squeeze each part. Get up slowly!

ACTIVITY OPTIONS:

1. Paint a story: what did you see? *The Arts: Visual Arts*
2. Write your own guided fantasy and guide the class through it.
Language: Writing; Oral Communication
3. Draw a map of all the places you went on the fantasy.
Social Studies/Geography

Nature2Go: Interpreting Nature



GRADES 1–8

All Seasons

Curriculum Connections:

- *Language: Writing*

Learning Skills and Work Habits:

- Independent Work

Materials Needed: Clipboards, writing/drawing materials

ACTIVITY:

Go outside to a natural area. Ask students, "If you were something out here in nature, what would you be and why?" Write in journals or draw pictures to explain.

TEACHER PROMPTS:

Do you ever imagine being someone or something different from who you are? Why?

ACTIVITY OPTIONS:

1. Students can present or perform their work to classmates individually, in pairs, or in small groups (since the question posed can elicit personal answers, consider allowing students to "pass"). *The Arts: Drama*
2. Create a story from your answer. *Language: Writing*

Nature2Go: Is This a Plant?



GRADES 1–6

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Life Systems*
- *The Arts: Visual Arts*

Learning Skills and Work Habits:

- Responsibility
- Collaboration

ACTIVITY:

Go outside to a natural area. Point to various plant species. Is this a tree or shrub? Is it a wildflower, weed, bulb, or vegetable? How do you know? Why do we care? How does it fit within our world?

TEACHER PROMPTS:

1. What is a plant? What are the characteristics of plants?
2. How are plants different from each other?
3. What would our world be like without plants?

ACTIVITY OPTIONS:

1. In small groups or individually, create a dichotomous key (e.g. branching diagram) using e.g. words, pictures based on the plants you observed. To test if it works, exchange with another group to see if they come up with the correct plant using the key.
2. Press schoolyard plants; use the dried plants to make herbarium specimens, or notecards and book marks. *The Arts: Visual Arts*
3. Use GPS to mark examples of different types of plants. Map them out. *Social Studies: Geography, Grade 7*

Nature2Go: I've Been Here Before



GRADES K–8

All Seasons

Curriculum Connections:

- *The Arts: Visual Art*

Learning Skills and Work Habits:

- Initiative

Materials Needed: Cameras, art materials

ACTIVITY:

Choose a spot outside in a natural area to take a photograph. Return to the exact spot once per month throughout the year and take a photograph of the same spot. Create an art piece with all the photographs near the end of the school year. Reflect on how the area changed throughout the year and how the changes made you feel.

TEACHER PROMPTS:

1. Before (Anticipation): How do you think your scene will change? Make a list.
After (Reflection): What changes did you expect? What changes surprised you?
2. Before (Anticipation): What events e.g. storm, amount of rain, human use, etc. do you expect will cause changes in the landscape?
After (Reflection): Reflect on your expectations.

ACTIVITY OPTIONS:

1. Cut photos in half and use different mediums e.g. paint, pastel, pencil crayons to recreate the missing side of the photo.
2. On a return visit, draw your scene instead of photographing it.
3. For Grades K-2 focus on one tree or a small area of nearby nature.

GRADES 1–3

All Seasons

Curriculum Connections:

- *Language: Oral Communication*

Learning Skills and Work Habits:

- Collaboration
- Organization

ACTIVITY:

Students gather in a circle in a natural area outside and stand quietly to look and listen in their surroundings for fifteen to thirty seconds. Students divide into pairs. Students are instructed that they are going to find three interesting objects in three minutes and bring them back to the circle. The objects can be physical objects, or can be a sight, sound, smell, etc. that has been discovered. Have the first pair share or describe what they found. If any other group has found the same object, they step forward into the middle and call out, “Just like us!” and then step back into the circle. The pair of students then returns to their place in the circle. The next pair shares, and so on, until all groups have been given the opportunity to participate.

TEACHER PROMPTS:

1. In sharing, begin by describing the object. The name of the object, if known, can be included, but it isn't necessary.

ACTIVITY OPTIONS:

1. Collect all of the objects and use in the classroom for a patterning activity or as counters. *Mathematics: Patterning and Algebra*
2. Without mentioning stewardship, prompt students to think about what things might affect or be affected by their objects: “What happens to a stick in a forest?” (E.g. becomes part of a bird's nest; picked up by a dog; becomes fungus food and makes new soil.) *Science and Technology: Understanding Life Systems*

Nature2Go: Leapfrog

GRADES 1–7

All Seasons

Curriculum Connections:

- *Health and Physical Education: Movement Competence: Skills, Concepts, Strategies*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Collaboration

Materials Needed: Pylons (optional)

ACTIVITY:

Discuss how frogs move and imitate frog movement. Form teams as small as 4 or as large as you like. Each team crouches down in a straight line with 1.5 metres between each person. The student at the back end of the line leaps over each of his team members until he reaches the front of the line, then yells ‘ribbit!’ and, upon hearing this, the next person goes. Set up start and finish lines with pylons to make this activity a competitive race.

TEACHER PROMPTS:

1. How do you think a frog moves?
2. Why does it move in the way it does?

ACTIVITY OPTIONS:

1. Observe other animals to see how they move; imitate them. Describe how each animal's body is suited to its natural environment. *Science and Technology: Understanding Life Systems; Understanding Structures and Mechanisms*
2. Listen to a recording of frog calls on a CD or from the web. Discuss the sounds: do any of the calls sound like “ribbit”? *The Arts: Music*

GRADES K–8

Fall / Spring

Curriculum Connections:

- *Language: Oral Communication*

Science and Technology: Understanding Life Systems

Learning Skills and Work Habits:

- Responsibility
- Collaboration

Materials Needed: Hula hoops

ACTIVITY:

Students form small groups. Each group throws or drops a hula hoop onto the ground, preferably on grass, to define an area. If no plants can be seen in the defined area, another area is selected using the same method; this is repeated until plants are found in the hula hoop area. Plants and other living things within the created area are explored: describe and compare all living things found, or study one of them e.g. Dandelion, in detail.

TEACHER PROMPTS:

1. What does a grass plant look like? Are there different types of grass plants?
2. How are grasses different from other plants in your space?
3. How many different plants are in your area: is there a lot of diversity?
4. Did you find animals e.g. insects? What were they doing?

ACTIVITY OPTIONS:

1. Move your “lasso” to an edge e.g. forest/grass or grass/blacktop. Is there a difference? If so, what is it and why does it occur?
2. Count the different types and numbers of plants in a 30 cm² area inside your lasso. Extrapolate your findings to a larger area: how much of the area is made up of grass plants?
Mathematics: Measurement; Patterning and Algebra
3. Using a graphing program, represent the data in graph form.
Mathematics: Data Management and Probability

Nature2Go: Mental Vacation

GRADES 1–8

All Seasons

Curriculum Connections:

- *Health and Physical Education: Healthy Living*

Learning Skills and Work Habits:

- Responsibility

ACTIVITY:

Students go outside to a natural space and lie down. Tell the students to imagine their favourite outdoor place. They are to picture being there, seeing the sights, feeling the air, imagining the scents and textures of their favourite place. Tell the students that they are going to have two minutes of silence to visit this special favourite place. Reinforce after this exercise that anyone can take a mental vacation to help create thoughts of relaxation and calm whenever feelings of trouble, anger or stress arise. This practice can improve happiness and health.

TEACHER PROMPTS:

1. Why did you choose the place that you did?
2. How did you feel when you were there?
3. When could this activity benefit you in everyday life?

ACTIVITY OPTIONS:

Students could write about / draw / create a song about / orally describe their favourite place. *Language: Oral Communication; Writing; The Arts: Visual Arts*

Nature2Go: Micro Hike



GRADES 1–8

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Skills*

Learning Skills and Work Habits:

- Independent Work
- Responsibility

Materials Needed: Small (5 cm tall) action figures, magnifying glasses or jeweller's loupes, metal spoons, notebooks, pencils, tooth-picks, string (all materials optional)

ACTIVITY:

This can be done in pairs or individually. Each student must find a location on the school yard in a natural space (e.g. a garden, a puddle,) for the micro-hike. They are given a set amount of time to lay on their bellies and do a hike that is about one-metre long. Encourage students to gently dig around and find as many interesting things, living and non-living, as they can by lifting rocks, scooping soil, etc. List findings in notebooks, or mark points of interest with toothpicks.

Follow up with a quick circle talk on what new and interesting things everyone found. This can be repeated in different locations to compare the life found in grass, dirt, leaves, forests, tarmac, etc. Record the comparison on a chart to show the differences in diversity.

TEACHER PROMPTS:

1. Take care not to injure any living thing found — draw it, photograph it, or describe it in writing if handling is uncomfortable.
2. Replace any overturned rocks, stones, etc. to preserve the places for any creatures present.

ACTIVITY OPTIONS:

1. Sketch findings in Art sketchbooks or Science notebooks; or write a guide to the stops on your micro-trail.
The Arts: Visual Arts; Language: Writing; Media Literacy
2. Take another student on a guided hike on your micro-trail.
Language: Oral Communication

Nature2Go: More Than Meets the Eye



GRADES 2–7

Fall / Spring

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Responsibility
- Self-regulation

Materials Needed: White sheet, shrubs

ACTIVITY:

As a class, lay white sheet below a shrub in a yard, garden, or forested area. Shake the shrub gently. As a group investigate what you find. Sort the animals e.g. insects, spiders, other, into different groups.

TEACHER PROMPTS:

1. Before (Anticipation): What creatures do you think might live on this plant?
2. What landed on the sheet: are they insects or something else? How can you tell?
3. How are the different animals that fell on the sheet using the shrub?

ACTIVITY OPTIONS:

1. Students could break into groups and try the activity using different shrubs.
2. Classify insects found to the best of your ability. What percentage could be identified?
3. Count the number of insects of each type that have landed on the sheet. Record the findings. Prepare a graph to present the information visually. *Mathematics: Data Management and Probability*
4. How could you predict how many of each type of insect would be found in a larger area? Make your prediction. Follow up by shaking more shrubs in different areas and test the results against your prediction. *Mathematics: Data Management and Probability*

Nature2Go: My Own Tree



GRADES 1-8

All Seasons

Curriculum Connections:

- *Language: Oral Communication; Writing*

Learning Skills and Work Habits:

- Collaboration
- Responsibility

Materials Needed: Strips of material for blindfolds (e.g. from old clothes, etc., or pull toques over eyes during cooler weather)

ACTIVITY:

Pair students. One student is blindfolded — the Explorer — and the other is the Guide. Guide leads Explorer to a tree or other natural object nearby with verbal directions or leading by the hand. Explorer gets to know the object presented by using all senses other than sight (feel, smell, etc.) and is then led back to the starting point. The blindfold is removed, and Explorer, accompanied by Guide, tries to find the natural object using sensory memory. If three unsuccessful attempts are made to find the object, Guide will help lead Explorer to the object. Once the object has been found and re-explored with eyes closed and open, the students switch roles.

TEACHER PROMPTS:

1. Does the texture of the object feel different with eyes closed compared to eyes open?
2. Was it easier to be Explorer or Guide? Did you find it hard to trust your Guide?

ACTIVITY OPTIONS:

1. Draw a “senses map” of the object: label places to touch, smell, and listen at with representative symbols.
Mathematics: Geometry and Spatial Sense
2. Discuss visual impairment: challenges and opportunities.
Health and Physical Education: Movement Competence: Skills, Concepts, Strategies; Healthy Living
3. Visit the area regularly to observe seasonal changes of your tree.
Science and Technology: Understanding Life Systems
4. After removing the blindfold, draw your tree from memory, then have your Guide take you to find your tree. *The Arts: Visual Arts*
5. Take photos of your tree and create a photo display, newspaper article, or “Most Wanted” poster. *The Arts: Visual Arts; Language: Media Literacy*
6. Write a journal reflection of your experience. *Language: Writing*
7. Measure your tree in as many ways as you can, or make a 3-D model using shapes studied. *Mathematics: Measurement; Geometry and Spatial Sense*

Nature2Go: Nature Charades



GRADES 1-8

All Seasons

Curriculum Connections:

- *The Arts: Drama*
- *Science and Technology: Understanding Life Systems*
- *Language: Oral Communication*

Learning Skills and Work Habits:

- Collaboration
- Initiative

Materials Needed: White sheet, shrubs

ACTIVITY:

Go outside into a natural area. Form small groups to make up teams. Students brainstorm components of the natural world in their teams e.g. an animal for younger grades; a plant cell, organ system or an environmental concept for older grades. When all teams are ready, one team acts out a nature charade while the students in other teams guess what it is in a specified length of time e.g. one minute to gain points for their team.

All teammates should participate

e.g. an animal could be dramatized with one student being the head, another the legs, etc. Play as many rounds as you like. Adapt the game for the unit of study you are working on.

TEACHER PROMPTS:

Ideas could be prepared ahead of time and placed in a container for selection by all teams.

ACTIVITY OPTIONS:

1. Students copy the actions and movements of the student performing the charade.
2. Ask students from each team submit ideas on slips of paper for members of the other team to choose from. Place the ideas in two containers: the student performing the charade selects an idea from those submitted by the other team.

GRADES 1–6

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *The Arts: Music*
- *Health and Physical Education: Active Living*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

Celebrate nature by having students develop brief group nature cheers. Set a five minute time to develop cheers as often as you would like. Groups can use their cheer when they work together outside, to welcome recess, etc. Groups should share their cheers with the rest of the class each time a new one is created. Cheers can be created for seasons, events, special findings, and celebrations!

TEACHER PROMPTS:

Imagine yourself achieving something in front of the public, e.g. scoring a winning goal in hockey, receiving a special award, performing on-stage. You succeed and the crowds claps and cheers wildly for you. How does it feel?

ACTIVITY OPTIONS:

1. Follow up the cheer with a tableaux. *The Arts: Drama*
2. Videotape the cheers and play them as a slide show accompanied by images of nature. *Language: Media Literacy*

Nature2Go: Nature Reporters

GRADES 1–6

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Collaboration
- Responsibility

Materials Needed: Clipboard, paper, and pencil for each student

ACTIVITY:

Each student has five minutes to make up two questions to ask other students with a nature focus, e.g. "How often do you take a walk with your family in nature? What living things do you see every day?" Split the students into two groups that will each form a circle. One group will form an inner circle, and the second group will form another circle just outside of the first circle. Have each student of the inner circle interview the closest student in the outer circle. Move to the right and interview the next person.

TEACHER PROMPTS:

1. Encourage students to look around and find something interesting in nature to write a question about. Promote open-ended questions that don't suggest a simple answer, e.g. questions beginning with why or how.
2. Use this activity to learn about specific curriculum outdoors by specifying topics for questions, e.g. characteristics of living things.

ACTIVITY OPTIONS:

1. Each student chooses another student for an in-depth follow-up interview and writes a short news story about it. *Language: Writing*
2. Each student devises questions to interview something in nature, e.g. a bird, a blade of grass, a stone, and pairs up with another student who makes up answers to the questions in character. *The Arts: Drama*

Nature2Go: Nature Sundae



GRADES K–6

Fall / Spring

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Life Systems; Understanding Earth and Space Systems*

Learning Skills and Work Habits:

- Collaboration
- Independent Work

Materials Needed: One cup for each student

ACTIVITY:

Give each person a cup and go out to a natural area to make a nature sundae or beverage by collecting nature items from the ground e.g. plants, soil, etc. Each person presents to the whole group. For example, pine needle punch, dead leaf delight. Remind students to leave a responsible trace of their activity i.e. while it is impossible to leave no trace while interacting meaningfully with a natural area, we must demonstrate appropriate care for the things we find in it.

TEACHER PROMPTS:

1. What senses are you using? Why is your sundae desirable?
2. Use various adjectives to entice classmates.

ACTIVITY OPTIONS:

Items gathered can be described, identified, sorted and compared working individually, in pairs, or in small groups. Identification aids can be used, e.g. field guide, internet.

Nature2Go: Nature Symphony



GRADES 1–4

All Seasons

Curriculum Connections:

- *The Arts: Music; Drama*
- *Health and Physical Education: Active Living; Movement Competence: Skills, Concepts, Strategies*

Learning Skills and Work Habits:

- Organization
- Responsibility

ACTIVITY:

Students gather in a circle outside in a natural area. Tell the students they are going to do a short silent walk and to come back when they have heard three nature sounds. When students return, tell them they are going to choose one and go around the circle and recreate the sound they heard and students will try to identify it. After each student has shared, go around the circle again and have each student create an action to go with the sound e.g. wind sound, sweeping arms. All students echo the sound and action around the circle.

TEACHER PROMPTS:

Encourage creative movements that motivate students to challenge themselves physically.

ACTIVITY OPTIONS:

1. In music class, play notes from different instruments and ask students to connect the sound to something experienced in nature, e.g. “The flute reminds me of a moving stream.”
The Arts: Music
2. Create instruments from materials gathered in the natural area, e.g. knock stones together, bang sticks, rub a rock against a piece of bark. As a class, assign each different sound to represent one animal including one to represent humans. Discuss the choices. *The Arts: Music; Drama*

Nature2Go: Nature Through the Window



GRADES 3–8

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *Science and Technology: Understanding Life Systems*
- *The Arts: Visual Arts*

Learning Skills and Work Habits:

- Responsibility
- Initiative
- Independent Work

Materials Needed: One empty frame for each student (e.g. made with construction paper), window, tape

ACTIVITY:

Explain to the students that they will be observing nature through the classroom window and through an empty frame. Students make an empty frame with construction paper. Students take their frame to the window: they will be the artists, looking through their frames, finding landscapes they want to capture. Once a scene has been framed, the frame can be taped to the window. After all

students have found a scene, have everyone gather at the window and share their frames with the class. Students can also share their answers to some of the questions listed under Teacher Prompts below.

TEACHER PROMPTS:

1. What do you see when you look out the window? Inside the frame? (Birds? Trees? Weather? Insects? Flowers?)
2. How does the picture in your frame change as you move to different spots?
3. What are the smells, sounds, feelings you detect? Compare to standing outside

ACTIVITY OPTIONS:

1. Draw a picture of what you see in your frame; can be the entire scene, or just a part. *The Arts: Visual Arts*
2. Take a picture of your framed nature scene. As a group, create an album of “Nature Through the Window” from different perspectives. *The Arts: Visual Arts. Language: Media Literacy*

Nature2Go: Nature's Paintbrush



GRADES K–3

Fall / Spring

Curriculum Connections:

- *The Arts: Visual Arts*
- *Language: Oral Communication*

Learning Skills and Work Habits:

- Collaboration

Materials Needed: One paintbrush and cup of water for each pair of students

ACTIVITY:

Discuss use of texture in the paintings of various artists. Explain the beauty of nature is enhanced by the combination of colours and textures. In pairs, students find interesting textured objects outdoors (e.g. leaves, bark, twigs) and gently paint them using paint brushes and water in order to focus on the texture being explored. Follow up with a class discussion on what was discovered.

TEACHER PROMPTS:

1. What did you notice when you applied the water to the textures?
2. Did anything change as you painted it? Explain.

ACTIVITY OPTIONS:

1. Attempt to replicate the textures found by painting them on paper. Do this outside to be close to the object. *The Arts: Visual Arts*
2. This could be used as an introduction to a “Group of Seven” focused unit. *The Arts: Visual Arts*

GRADES 1–6

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *The Arts: Drama*
- *Social Studies*

Learning Skills and Work Habits:

- Independent Work
- Responsibility

ACTIVITY:

Students gather in a field or open area and make a circle. The teacher opens with the following idea: in the past people in Ontario relied on the corn plant for nourishment. They would eat it fresh, dry it to eat over the cold winters and pound it to make corn flour.

Act out the following scenarios:

1. You are a small kernel of fresh corn.
2. You are drying in the sun and shriveling into a hard kernel.
3. You have been put in a pan and that you are sizzling ... sizzling in a pan, then in a moment, start to POP! ...
4. You are a kernel planted in fresh soil — act out the growth of a seed into an adult plant.

TEACHER PROMPTS:

Today corn is the third most important food crop in the world after wheat and rice.

ACTIVITY OPTIONS:

1. Students (or teacher) suggest other uses for corn and act them out e.g. kernels of corn on a cob; stalks growing in a windy field.
2. Where does corn come from? How was it grown by First Nations in Ontario i.e. three sisters arrangement (corn, beans, squash).
3. Corn is found in a huge variety of the foods we eat each day, from soft drinks, to ketchup and jam. Gather products that contain corn from the grocery store and discuss.

Nature2Go: Rainbow Chips

GRADES 1–8

All Seasons

Curriculum Connections:

- *The Arts: Visual Arts*
- *Language: Oral Communication*

Learning Skills and Work Habits:

- Independent Work
- Responsibility

Materials Needed: Paint chips from local paint store

ACTIVITY:

Collect a selection of paint chips, cut them up, and put them in a bag. Hand each student a chip and instruct each to match their chip as closely as possible with something in nature. Students may need to flip things over or examine objects really closely to find a match! Once a match is found, a student returns to get another paint chip.

TEACHER PROMPTS:

1. What colours are easiest/hardest to match? How do you think this would change with the seasons?
2. While looking for colours, did you notice examples of other elements of design in Nature e.g. line, shape, texture?

ACTIVITY OPTIONS:

1. Using paint chips, mix paints on a palette until they match the colours of the chips, then paint a nature scene.
The Arts: Visual Arts
2. Using the nature scene painted, write a short story using the scene as the setting of the story. *Language: Writing*
3. Present what was found to another student/whole group, noting the colour and one other interesting feature of the object.
Language: Oral Communication
4. Repeat the activity by looking for colour matches only on human-made structures, or indoors. Discuss the results compared to looking for colour matches in nature.

Nature2Go: Rainstorm



GRADES K–8

All Seasons

Curriculum Connections:

- *Music: Reflecting; Responding; Analyzing*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

Everyone sits or stands in a circle in a chosen outdoor area. An appointed leader goes around the circle doing an action that each person copies after being passed by the leader. Each individual continues making the action/noise until the leader passes again with a new action, which is then copied. This way, two actions can be done simultaneously. Each action will become progressively louder as more people copy the action, then become quieter as a new action is introduced and begins to be copied around the circle.

Actions in sequence:

1. rubbing hands together
2. tapping two fingers lightly against your palm
3. snapping
4. tapping all fingers against palm
5. hitting legs

6. stomping feet
7. hitting legs
8. tapping all fingers against palm
9. snapping
10. tapping two fingers lightly against your palm
11. rubbing hands together

TEACHER PROMPTS:

1. When you hear this compilation of sounds what does it make you think of and how do you feel?
2. What other senses are triggered during a rainfall besides hearing, e.g. scent, touch, etc.

ACTIVITY OPTIONS:

1. Use this activity as a hook for the introduction to the water cycle.
Science and Technology: Understanding Earth and Space Systems
2. Act out a rainstorm e.g. somersaults for wind, swaying for trees.
Health and Physical Education: Active Participation; The Arts: Drama; Dance
3. Collect “instruments” from nature e.g. two sticks to rub, two stones to tap, and create a rainstorm symphony.
The Arts: Music

Nature2Go: Rocky Road



GRADES 4–8

Fall / Spring

Curriculum Connections:

- *Science and Technology: Understanding Earth and Space Systems, Rocks and Minerals*
- *Language: Writing*
- *Health and Physical Education: Movement Competence: Skills, Concepts, Strategies*

Learning Skills and Work Habits:

- Responsibility
- Independent Work

Materials Needed: Journal, pencil, clipboard

ACTIVITY:

Gather in a natural area and ask students how we find out about things that make us curious. Take a walk. While walking, each student must find a rock that will be used for the next part of the activity. Once students have found their rocks, the class meets at a starting location. Students disperse individually to a quiet location. Students write stories about the rocks they have found.

TEACHER PROMPTS:

Humans tell stories about things that happen in their lives. How old are some of these stories?

ACTIVITY OPTIONS:

1. Instead of a rock, find any interesting natural object to write about. *Language: Writing*
2. Using a comic creation program e.g. Bitstrips, Comic Life, turn the rock into a character to create a story/comic. *Language: Media Literacy; The Arts: Visual Arts*
3. Create a tableaux of an event in the rock's life. *The Arts: Drama*
4. Imagine you were a tree or a robin: tell a story about yourself. *The Arts: Oral Communication*

Nature2Go: Scavenger Hunt



GRADES 1–8

All Seasons

Curriculum Connections:

- *Science and Technology: Several depending on choice of hunt items*
- *Health and Physical Education: Active Participation*

Learning Skills and Work Habits:

- Collaboration

ACTIVITY:

Create groups of four students. The teacher calls out an item (e.g. “Find something red in nature!”) and determines the point value of the item. All teams search for the item. Once the team has the item they return to the teacher to gain their points. First team back gets more points and is given the second search item. At the end of the scavenger hunt the team with the highest points accumulated wins. Close with reminding students to leave a responsible trace of their activity i.e. while it is impossible to leave no trace while interacting meaningfully with a natural area, we must demonstrate appropriate care for the things we find in it; objects may be returned to nature.

TEACHER PROMPTS:

1. Specify non-living objects so that all objects can be brought back to share with the group.
2. Find a certain colour, shape, size, texture.
3. Find 2 different textures in nature.
4. Find a feather, find a sign of an animal.
5. Find something that doesn't belong in nature.
6. Find something older than the teacher.
7. Find something that depends on something else.

ACTIVITY OPTIONS:

1. Students create their own scavenger hunt lists.
2. Gather objects and create a written story from the objects found.
Language: Writing
3. Conduct a photographic scavenger hunt — students photograph objects. Presentations to the class can follow.
The Arts: Visual Arts

Nature2Go: Seed Rockets



GRADES 1–8

Fall / Spring

Curriculum Connections:

- *Science and Technology: Understanding Life Systems; Earth and Space Systems*
- *Language: Reading*

Learning Skills and Work Habits:

- Collaboration

Materials Needed: Clay, compost or potting soil, Ontario wildflower seeds

ACTIVITY:

Obtain dry red clay. Mix 5 parts clay with 3 parts compost or potting soil and 1–2 parts native wildflower seeds. Dampen with water until moldable (1–2 parts water should do). Take an amount of mixture up to the size of a golf and make a shape of your choice. Put aside until dry. Once dry, students launch their seed rocket (or other shape) into a dry, sunny area e.g. field or garden patch. The clay ball or other object will shatter on impact. Watch seeds sprout and develop in the spring.

TEACHER PROMPTS:

1. Read *The Tiny Seed* by Eric Carle.
2. Discuss the benefits of planting seeds by scattering them: how might it be beneficial? In what different ways do plants reproduce and scatter their seeds?

ACTIVITY OPTIONS:

Draw a picture of how the area looks before the seeds are scattered and a second picture that imagines what it might look like a month later. Return in one month and compare the second picture with what is there. Discuss. *The Arts: Visual Arts*

Nature2Go: Singin' in the Rain



GRADES 2–8

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems; Understanding Earth and Space Systems*
- *Mathematics: Data Management and Probability; Patterning and Algebra*

Learning Skills and Work Habits:

- Organization
- Collaboration

Materials Needed: Rain gauge

ACTIVITY:

Attach a rain gauge outside the classroom, or in another area near the building. Monitor the rainfall per week and/or per month. Graph and compare results over time, for example by season e.g. fall, winter, and spring. Use results in teaching other subject matter in Math, Science, etc.

TEACHER PROMPTS:

Play a song with a rain theme e.g. "Singin' in the Rain," "Here Comes the Rain Again," "Raindrops Keep Fallin' On My Head." Why do we talk about it so often e.g. songs, weather, sayings (e.g. "Into each life some rain must fall")? What do people think about the rain? Why?

ACTIVITY OPTIONS:

1. Write stories: imagine yourself as a raindrop. *Language: Writing*
2. Compare monthly rainfall readings using online data from previous years. Take note of changes and trends over time.
3. Graph the results over a period of weeks and discuss patterns. *Mathematics: Data Management and Probability*
4. Go outside during a light rainfall to enjoy the experience. What do you anticipate? What does it feel like? How many raindrops can you catch with your tongue when standing in one place?

Nature2Go: Sorting Rules in Nature



GRADES K–6

Fall / Spring

Curriculum Connections:

- *Mathematics: Data Management and Probability*
- *Science and Technology: Understanding Life Systems; Understanding Earth and Space Systems*
- *Language: Oral Communication*

Learning Skills and Work Habits:

- Collaboration
- Independent Work

ACTIVITY:

Students go into a natural area in pairs and find objects to create a sorting rule, e.g. sorting by colour, texture, shape. Teacher and other students must guess the sorting rule, e.g. "My guess is that you sorted by texture. These items feel rough, whereas these items are smooth."

TEACHER PROMPTS:

How would the types of objects found change in fall, winter, and spring?

ACTIVITY OPTIONS:

1. Bring out a clipboard, paper and pencil to make a rough bar graph or pictograph of the objects based on the rule e.g. percentage of objects found over sorting character, e.g. colour. *Mathematics: Data Management*
2. Repeat the activity in a different area, e.g. playground, stand of deciduous or coniferous trees, a more rugged/rocky area.
3. Working with a partner, sort the objects using a Venn diagram.
4. Take along clipboards, paper, and pencils to make drawings or rubbings of some of the sorted objects. *The Arts: Visual Arts*

Nature2Go: Sound Bingo



GRADES 1–8

Fall / Spring / Summer

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Mathematics: Data Management and Probability*

Learning Skills and Work Habits:

- Independent Work
- Collaboration

Materials Needed: 3" x 3" square bingo cards, collection of nature objects for bingo markers

ACTIVITY:

Stand quietly as a class for one minute listening for sounds and share these as a group. Break up into teams of four students each. Provide Bingo cards with three columns of three squares each; the columns are labeled "Non-human Lifeforms," "Human" and "Other." Now begin the game. Students in teams write down the source of the sound and put pieces of grass, leaves, stones, etc. on a square when sounds are heard (e.g. bird, insect, dog, rustling leaves for Non-human Lifeforms; car, etc. for Human; wind, etc. for Other). A team shouts "Bingo" when one line, two lines, or the entire card are filled. Share sounds at conclusion.

TEACHER PROMPTS:

1. What is best way to prepare yourself to hear even the slightest sounds?
2. Is it possible to filter out some sounds while listening for others?

ACTIVITY OPTIONS:

1. Record the order that the sounds were heard and graph your findings over time. *Mathematics: Data Management and Probability*
2. Create a skit from the sounds you marked on your cards. *The Arts: Drama*
3. Write the name of expected sounds on squares before beginning the game. Cover each square as the sound written on it is heard.

Nature2Go: Sound Map



GRADES 1–8

All Seasons

Curriculum Connections:

- *Social Studies*
- *Geography*

Learning Skills and Work Habits:

- Collaboration
- Responsibility

Materials Needed: Clipboards, paper, drawing materials, maps of area

ACTIVITY:

Imagine yourself in an area you know really well: what makes it familiar to you? Announce that the class is going to go on a walk to become familiar with an area by mapping only the sounds heard along the way. Go for a walk in nature. Using symbols to represent sounds, record the sounds heard on the map of the area. Create a legend.

TEACHER PROMPTS:

1. What sounds did you hear the most? Why?
2. Before the walk, anticipate what you might hear and make a list. After the walk, revisit the list: were there any surprises? Why or why not?

ACTIVITY OPTIONS:

Compare data. What can these findings tell us? e.g. There is a high bird population in the northwest corner of the area (or corner where Smith St. meets John St.). *Mathematics: Data Management and Probability*

GRADES 7–8

All Seasons

Curriculum Connections:

- *The Arts: Drama*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Collaboration
- Initiative

ACTIVITY:

In a natural area, small groups each create a tableaux to express ideas using nature themes, e.g., exploring new natural areas like a cave, rainforest, desert, etc.; predator/prey relationships; interactions of humans with the environment; interactions of humans with animals such as hunting, keeping pets, animal testing, zoos. Each small group presents a tableaux to the whole class.

TEACHER PROMPTS:

Prepare some ideas on slips of paper for students to select from a hat or bin.

ACTIVITY OPTIONS:

Reverse the perspective and re-create the tableaux e.g. keeping pets from the owner's perspective is reversed and re-created from the pet's perspective.

Nature2Go: Texture Rubbings

GRADES 1–8

Fall / Spring

Curriculum Connections:

- *The Arts: Visual Arts, Elements of Design*
- *Science and Technology: Understanding Life Systems*

Learning Skills and Work Habits:

- Organization
- Independent Work

Materials Needed: Blank paper, crayons, chalk, charcoal, clipboards

ACTIVITY:

Students take out their clipboards with a blank sheet of paper and a preferred medium. Students have 20 minutes to make rubbings of various interesting textures they discover. Students can use leaves, bark, roots, rocks, anything they can find in nature that has texture. Students sort the objects in their rubbings.

TEACHER PROMPTS:

1. What words do we use to describe texture?
2. Ask students to describe textures and differences between them. Why do you think nature has so many different textures?

ACTIVITY OPTIONS:

1. Make a class collage of all rubbings.
2. Use rubbings to make a mosaic, or artwork inspired by art; use illustrations of Eric Carle as an example.
3. Make 3-D casts of the textures found in nature using plasticene or plaster of Paris.

Nature2Go: This is a Stone



GRADES 1–8

All Seasons

Curriculum Connections:

- *Language: Oral Communication*
- *The Arts: Drama*

Learning Skills and Work Habits:

- Responsibility
- Initiative

ACTIVITY:

In a circle outside in nature, the teacher picks up a natural object like a stick or stone. The teacher tells the students that this is a game of imagination, and starts by saying, “This is a not a stone, this is a...beautiful flower.” (Teacher pretends to smell a flower). The stone is passed around the circle so that each student has the opportunity to imagine and share the stone as something different.

TEACHER PROMPTS:

What characteristic(s) of the object inspired your imagination?

ACTIVITY OPTIONS:

1. Do the activity indoors first, and then outdoors in nature.
Prompt: Do you think that being in nature helps you to think more clearly and imaginatively?
2. Teacher can bring in different interesting natural objects, e.g. a shell, and do the same game.
3. Students could guess what the student is doing instead of being told i.e. charades.
4. Use this activity for French (core or immersion).

Nature2Go: Touchstones



GRADES 1–8

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Language: Oral Communication*

Learning Skills and Work Habits:

- Independent Work
- Responsibility

Materials Needed: One stone or pebble for each student (varied in size, texture, shape)

ACTIVITY:

Send students out to collect two stones or pebbles each of various shapes, sizes (smaller than a one-dollar coin), and colours to use for the activity. Collect one stone from each student and mix them all together in a container. Ask students to sit in a circle and close their eyes. Hand out one stone to each student and tell students that they must get to know their rocks without using the sense of sight. After a few minutes, collect the stones and place them in the middle of the circle. Can students identify the stones that belonged

to them? Individual students share how they were able to find their stones, or what made it difficult to do so.

TEACHER PROMPTS:

1. Describe your stone using as many attributes as you can.
2. Discuss how the stones could be a useful resource e.g. as tools
Social Studies; History and Geography

ACTIVITY OPTIONS:

1. Work in pairs. Sit back-to-back. The first student describes a stone to the second. The second student attempts to identify the stone out of a group of stones.
2. Describe the stone using math and science terminology e.g. weight, colour, density, circumference, other geometric properties. *Mathematics: Geometry and Spatial Sense; Science and Technology: Understanding Life Systems*
3. Pick a stone. Use the stone to create a stone creature. Use paint, pipe cleaners, googly eyes, etc. *The Arts: Visual Arts*

Nature2Go: Wake Up Those Senses



GRADES K–8

All Seasons

Curriculum Connections:

- *Science and Technology: Understanding Life Systems*
- *Health and Physical Education: Healthy Living*

Learning Skills and Work Habits:

- Independent Work
- Responsibility

ACTIVITY:

Gather the group and tell students that they will be waking up their senses to explore and observe the environment.

SIGHT: How many colours can you see in ten seconds? Use your clothing and find a match in nature. How easy or difficult is it to find a match?

TOUCH: Rub your hands together quickly until you feel heat energy. Pull them apart slightly to feel your fingers tingle. Notice the way your skin on your face feels. Gently brush a leaf against your skin. What words can describe what you feel?

HEAR: What do you hear with eyes open compared to eyes closed? Make deer ears by cupping hands behind ears: are sounds different?

TASTE: Open your mouth and breathe deeply 5 times then close. Does it taste different? Catch rain or snowflakes if you can!

SMELL: Take a breath through your mouth then two from your nose. Does it smell different when you breathe through your mouth compared with your nose? When you face different directions, do you smell different things?

TEACHER PROMPTS:

Do you have different sense memories that you relate to different times of year e.g. smell of autumn leaves, feel of warm summer sand, sound of spring rain?

ACTIVITY OPTIONS:

1. Put some common plant-based cooking ingredients into opaque containers (e.g. cinnamon, vanilla, basil). Pass around for students to see and smell. Describe the characteristics. *Language: Oral Communication*
2. Try this activity in different seasons or locations: how does it compare?
3. Write a journal reflection about your experiences using your senses. *Language: Writing*
4. Write a poem about your experiences using at least one example for each sense experienced outside. *Language: Writing*
5. Ask each student to draw a picture of herself/himself in the centre of a piece of paper and fill the empty space with drawings of things sensed during the activity. *The Arts: Visual Arts*

Nature2Go: What Colour is it?



GRADES K–8

All Seasons

Curriculum Connections:

- *The Arts: Visual Arts*
- *Language: Oral Communication; Writing*

Learning Skills and Work Habits:

- Initiative
- Organization
- Independent Work

ACTIVITY:

Colours are often described or identified using nature words to label them e.g. forest green, ruby red, sky blue. As a class, create a few new colour shades from things you can think of in nature, e.g. needle green for the shade of pine leaves. Now go out and collect objects in pairs and share them and the newly invented colour shades with your classmates. Create a class list and discuss the diversity of colours in nature.

TEACHER PROMPTS:

1. Do all people see colour in the same way? Why or why not?
2. Are there any colours that couldn't be found in nature?

ACTIVITY OPTIONS:

1. Ask students to group like colours e.g. all greens and see if there are any repeats. *Mathematics: Data Management and Probability*
2. Can you find enough objects to create a colour wheel?

Lessons

Five **lessons** have been created for each elementary division: Primary, Junior and Intermediate. The lessons represent a variety of subjects, including Science and Technology, The Arts, Mathematics, Language, Social Studies, and Geography. Lessons are generally designed for one class period each, although multiple classes might make the lesson easier to manage in some cases. In addition, extensions are included that provide opportunities for the teacher to make greater use of the material.

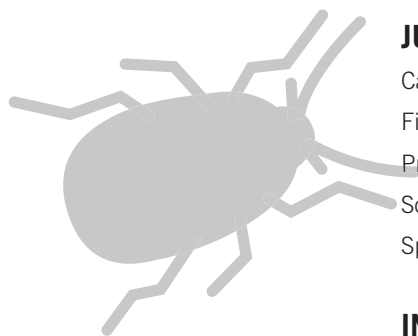
Each lesson includes a detailed description of how to conduct the lesson including big ideas and guiding questions, curriculum connections to the Ontario Curriculum, materials needed, a “Teacher Background Information” box (where needed), step-by-step instructions for lesson delivery, and guidance on assessment and evaluation.



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Assessment and Evaluation

Assessment is the process of gathering information that accurately reflects how well a student is achieving the curriculum expectations in a subject or course. The primary purpose of assessment and evaluation is to improve student learning.

Assessment for improving student learning is seen as both “assessment *for* learning” and “assessment *as* learning”. As part of assessment *for* learning, teachers provide students with descriptive feedback and coaching for improvement. Teachers engage in assessment *as* learning by helping students develop their capacity to be independent, autonomous learners who are able to set individual goals, monitor their own progress, determine next steps, and reflect on thinking and learning¹.

Evaluation refers to the process of judging the quality of student learning based on established performance standards and assigning a value to represent that quality. Evaluation accurately summarizes and communicates to parents, other teachers, employers, institutions of further education, and students themselves what students know and can do with respect to the overall curriculum expectations. Evaluation is based on assessment *of* learning that provides evidence of student achievement at strategic times throughout the grade/course, often at the end of a period of learning².

The type of assessment and/or evaluation (i.e. assessment for, as, or of learning) followed by what is being assessed and how (e.g., observation, conversation, product) **is provided for all lesson delivery sections** (i.e. “Minds On”, “Action”, and “Consolidation”); **it is found in the “Consider...” (Assessing for, as, and/or of learning)” section.**



1. Ontario Ministry of Education. 2010. *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools*. Page 28


2. Ontario Ministry of Education. 2010. *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools*. Page 38

Critical Learning/Big Ideas	Guiding Questions
<p>One of the most interesting stages of the water cycle is when the water is hanging in the air in cloud formations. Observing clouds will expose students to the different forms that a cloud can take and what these forms can mean</p>	<ol style="list-style-type: none"> 1. What happens to water that evaporates from lakes and rivers? 2. Have you ever noticed the different shapes that clouds can have? 3. Why do you think there are different cloud shapes?
Curriculum Expectations	
<p>Science and Technology: Understanding Earth and Space Systems Math: Number Sense and Numeration</p> <ul style="list-style-type: none"> • 2. Investigate the characteristics of air and water and the visible/ invisible effects of and changes to air and/or water in the environment. <p>The Arts—Visual Arts</p> <ul style="list-style-type: none"> • D1. Creating and presenting; apply the creative process to produce a variety of two- and three-dimensional art works, using elements, principles, and techniques of visual arts to communicate feelings, ideas, and understandings (for the specific purpose of recording cloud observations). 	<p>Learning Goals (Unpacked Expectations) <i>At the end of this lesson, students will (be able to):</i></p> <ul style="list-style-type: none"> • Investigate water in the natural environment • Identify clouds as a liquid state of water
Prior Knowledge and Skills	Materials
<p>The water cycle: water circulates from bodies of water to the atmosphere and is held in clouds until it rains.</p>	<p><i>The Cloudspotter's Guide</i> (published by the Cloud Appreciation Society) is a good resource to share with the class.</p>
Consider...(assessing for, as, and/or of learning)	
<p>Minds On—Assessing for Learning</p> <ul style="list-style-type: none"> • Knowledge of what happens to water in the water cycle • Basic knowledge of different types of shapes and forms (as related to cloud formations) <p>Action—Assessing for Learning</p> <ul style="list-style-type: none"> • Identification of shapes and forms found in clouds, including use of scientific terminology <p>Consolidation—Assessing for and of Learning</p> <ul style="list-style-type: none"> • Creative representation of shapes and forms found in clouds 	


Teacher Background Information: Cloud Naming

Apart from neat shapes and forms, clouds are actually named by scientists. Introduce the following four types of clouds:


Cirrus: the highest clouds, made entirely of ice crystals; ID — wispy and look like paintbrush strokes (called fallstreaks).




Cumulus: known as 'fair-weather clouds', they often form on sunny days; ID — flat base with a bumpy, cauliflower-like top.



Stratus: they are the lowest clouds, and include fog and mist; ID — no distinct features.



Cumulonimbus: huge, low storm clouds with an anvil shape at the top; ID — dark undersides, puffy tops and a soft top edge.



Cloudwatchers

Minds On (Elicit & Engage)

The Hook

Does everyone see the same thing when they look at a cloud?

Learning Goals (share with class)

- We will look up at clouds to observe their shapes.
- We will consider how clouds change, and discuss the names of common cloud shapes and their features as described by weather scientists.

Introduction

Review the water cycle with your students and discuss the path that water takes in becoming suspended in the air in the form of clouds, which then rain on us and return the water to bodies of water, the soil, etc..

- When and why do people stare up at the clouds?

Introduce cloudwatching:

- What do you think makes the best cloudwatcher? How can we help each other enjoy our personal experiences?

Action! (Explore & Explain)

1. Take the class outside and find a big, open space where everyone has space to lie down and look up. For the first class, just observe the different types of clouds. Ask students if they can group clouds together according to what they look like.
2. Discuss the nature of clouds as a whole class – what they can look like, how to describe the shapes you can see in them. Use the following questions to get started:
 - Have you ever noticed anything interesting about clouds or their shapes? Each cloud is unique! Why?
 - What are some of the shapes you've seen in clouds?
 - What words would you use to describe clouds?
3. For the second part of one class, or another class, students can spend time individually observing, or sharing with a friend respectfully if that helps them with the experience. Encourage the use of scientific names (e.g., stratus) at the same time as looking for artistic features and shapes in the clouds (e.g., animals, etc.) that are recorded using descriptive words.
4. Summary discussion questions:
 - What did they see?
 - What shapes were in the clouds?
 - What cloud type is in the sky today?

Consolidation (Elaborate, Evaluate, Extend)

Extension

Repeat the cloudwatching exercise with the class by reviewing the traits of a good cloudwatcher and allowing students to return to their spots and observe. On the second visit, take art materials such as paint, paper, brushes, cotton balls, glue and even easels outdoors with you. Students can observe while lying or standing

and record some of their favourite observations through an artistic rendition of what they see. Painting or using cotton balls (stretching, piling, gluing) to represent clouds and the shapes seen in them are effective ways to record these observations and create a class set of clouds for display!

Critical Learning/Big Ideas

Students will use nature as a tool in the organization of data into simple bar graphs.

Guiding Questions

1. How could we use items from nature to tally information?
2. Using two objects, what are some questions you could ask your friends about them?
3. What can we use to create a bar graph outside without paper or pencils?

Curriculum Expectations

Mathematics: Data Management and Probability

- collect and organize categorical or discrete primary data and display the data, using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers...

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Organize primary data using 1-to-1 correspondence in concrete bar graphs

Prior Knowledge and Skills

- Knowledge of how to write a mathematical question
- Experience tallying information
- Awareness of bar graphs. This can serve as an introduction to bar graphing and remove the need for recording on paper.

Materials

- Chalk
- Preselected natural area or school yard area as the outdoor boundary for this activity
- Camera (for teacher)
- Clipboards, paper and pencil (per student or pair)
- Cue cards and pencils
- String (for grades 2-3)

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

- Identifying ways to represent things observed in nature (e.g., tally chart, bar graph)

Action—Assessing for, as and of Learning

- Recording (using tally charts) and organizing observational information using bar graphs
- Teacher and peers examining the tally charts and bar graphs of other students

Consolidation—Assessing for and of Learning

- Accurate representation of observations using an alternative graphic organizer (e.g., circle graph)



Graphing in Nature

Minds On (Elicit & Engage)

The Hook

- If we were planning a walk in nature right now, what things would we want to think about that have mathematics in them before going on our walk? (e.g., how far is the walk, what is the air temperature outside, how long will it take, how many people will be going, etc.). What might we expect to see that we would describe using math? (e.g., number of birds, shapes of leaves, etc.).

Learning Goals (share with class)

- We will consider how to tell other people about things we have discovered by using a bar graph.
- We will make up questions to ask to other people we know and tally the answers that we get.
- We will create bar graph outside to show our results using objects from nature.

Introduction

Discuss how we regularly use mathematics without even noticing when we go into nature:

- If you have ever wondered how tall a tree was, counted the petals on a flower, or tried to figure out if you could move faster than a flying bird, you have explored mathematics in nature.

Introduce the use of mathematics to communicate the results of questions explored about nature:

- With objects found outside in nature, you can create your own questions to ask your friends and use math to make a chart that tells other people what you learned (e.g. “Which do you like better?”) NOTE: For Grade 1 and 2 yes/no graphs or two possible answers may work best.
- Tally charts can be created with columns:
 - Create a title (e.g., “Favourite Flower”).
 - Write a name for each column underneath (e.g., “Rose”, “Sunflower”, etc.).
 - Draw each column so the size represents the number of answers, or by stacking objects that each count for one answer.
 - If we create columns by stacking objects, we can make a graph without using paper and pencils. What objects can you think of from nature that might be used as counters to make our columns?

Action! (Explore & Explain)

1. Students will work individually or in partners.
2. Explain how students will find objects, create questions, survey friends and tally the results. Model an example.
3. Allow students time to complete their tallying.
4. After ample time (approx. 30 min), invite students to join together. Introduce the next part of the lesson: to take the information gathered and present it as a bar graph using objects in nature or chalk. Model this exercise before students are asked to complete it.
5. Students pick spots on the pavement or grass to create their bar graphs. For Grade 1, students write or draw their tally titles e.g. “leaf” on the cue cards, one title per card. They can line up objects such as rocks, or draw with a stick in dirt or chalk on the ground, etc. to represent the number of classmates that preferred each object, lined up underneath each title. For grades 2 and 3, string can be used to make the axes and cue cards can be used to label the axes (i.e. vertical axis labeled as “Number”, horizontal axis labeled as “Object”). As students advance their abilities, they should be more conscious of labeling bars and axes accurately.
6. Completed graphs should each be viewed by the teacher, and can be photographed to keep a record or display in the classroom.
7. Once the teacher has seen each student’s work and taken photographs, give students 5 minutes to visit the creative graphs of their classmates, or conduct a gallery walk as a whole class. Discuss the work using the following prompts:
 - What question did you ask your friends?
 - What objects did you choose as tally counters and why?
 - What did you learn from the bar graph? (e.g., classmates like red flowers more than pink ones because the bar is bigger for red; five more people like the sounds of birds than the sounds of bees)
8. Finally, scrap it: instruct students to wipe away or disperse the objects so there is no evidence of the math lesson!
9. Summary discussion questions:
 - Did you see any interesting ideas you would like to try next time we do this?
 - What did you learn from your graph?
 - What were the challenges in making your graph outside? What was fun?

Consolidation (Elaborate, Evaluate, Extend)

Extension

Create a circle graph (i.e., pie chart) using the same information. Use a string to represent each question. Mark off equal segments along its length to represent each student responding to the question. Now remark the string with different colours to represent the number of students that responded with the same

answer. Join the two ends of the string and form a circle with it. Starting in the middle of the circle, form each slice of the circle/pie (each slice represents each answer) by filling in the space with objects such as rocks, leaves, etc., or colour in with chalk or mud.

Memory Sticks: Map-making in Nature

SUBJECT: Social Studies

LEVEL: Grades 1–3

Critical Learning/Big Ideas

Students will investigate a local natural area through exploration and non-standard mapping techniques.

Guiding Questions

1. What do all maps have?
2. What are some things you might include on a map if you walk through a forest?
3. How can we all walk the same route but have different maps?

Curriculum Expectations

Social Studies

- collect and organize categorical or discrete primary data and display the data, using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers...

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Organize primary data using 1-to-1 correspondence in concrete bar graphs

Prior Knowledge and Skills

- Elements of standard maps
- Safety (what to touch and what to leave)

Materials

- 1 stick (about 0.5 metres long and 1-2 centimetres wide) per student (pre-collected by teacher or students)
- Yarn/string, tape, and scissors (1 per adult)
- Pre-determined nature route to walk
- Scrap paper and crayons
- OPTIONAL – cameras and laptops for students who need them or for all students

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

- Elements of a map (e.g., title, scale, symbols, legend, and/or cardinal directions); personal experiences following directions using a map

Action—Assessing for and as Learning

- Effectiveness (including clarity, logical sequence, comprehensiveness) of map to show route and key features of route; things that would improve the map

Consolidation—Assessing as and of Learning

- Inclusion and use of key elements of a map, including accuracy of transfer of route from stick to paper



Memory Sticks: Map-making in Nature

Minds On (Elicit & Engage)

The Hook

- What is the best trip you have ever taken? What details do you remember about it? Did you save anything from it? How?

Learning Goals (share with class)

- We will go on a walk in nature.
- We will create maps of our hike using things we discover along the way.

Introduction

Discuss mapping and the activity of making a map:

- If you were asked to make a map of our school, your home, or your bedroom, how would you do it? What needs to be included on a map?
- If each of us were to make our own map of the same area, we might end up with completely different maps. That's because our experiences give each of us a different picture of the same place.
- The map-maker decides what the most important details are to include on the map.

Action! (Explore & Explain)

1. Designate yourself as the hike leader:
 - Ask students to picture what is needed to be comfortable and safe while outside in nature. Pair up students.
 - NOTE: An adult:student ratio of 1:5 is desirable, although not required.
2. Head outside to the starting place for your walk.
3. Instruct each student to find a stick or provide them at the beginning of the hike.
 - Everyone should be on the lookout for items that are of interest or wonder; when items are found, students attach them to their memory sticks to remind them of the steps on the hike.
4. Introduce the following questions:
 - What are some of the things we need to consider on our mapping hike?
 - What is safe to pick up and what should be left alone?
 - How far can you stray from the group and your buddy?
 - What are some things we might find that can be added to our sticks?
5. Signal students when the hike begins. Move slowly and stop frequently so that places can be explored and discoveries made. Encourage students to explore and provide help where needed to attach objects to the sticks or to examine items that are unknown.

6. Promote independent exploration among students, while adults explore alongside to assist and provide mentorship. Give as little direction as possible while students search for meaningful objects.

NOTES:

- Some students may need additional equipment, such as a camera and/or laptop to record and manipulate objects they see on their journey. Photos can be taken on the way and then uploaded to a laptop to create a digital map.
 - Some objects, like trees, are not movable. Offer paper and crayons to do bark rubbings on such objects.
7. At the end of the hike gather the whole group and ask students to share items they found and explain why they chose those items (in partners, small groups, or as a whole class).
 8. Summary discussion questions:
 - How are these sticks a map of our journey?
 - How are they all different but still accurate?
 - How could we draw a map showing the route using our memory sticks?

Consolidation (Elaborate, Evaluate, Extend)

Extension

- To extend this activity, use another class period to allow students to transfer the information from their memory sticks to a map drawn on paper.
- Imagine the memory stick is bending into the route you took. Draw the route on a piece of paper and then use symbols to indicate where the interesting objects were found along the way. Don't forget the key elements of all good maps e.g. legend, scale, etc.!
- Once maps are complete, students pair up and review each other's map using smiley faces for a job well done, and suggestions for improvement.

Critical Learning/Big Ideas

The life under a rock or log is diverse. Many discoveries can be made while exploring over a distance of 50 centimetres.

Guiding Questions

1. What are some ways that animals are similar and different from each other?
2. What kind of things could we find living under rocks and logs on the school yard?
3. As giants in the world of small creatures, what do we need to think about when exploring the world of tiny animals and plants?

Curriculum Expectations

Science and Technology: Understanding Life Systems Needs and Characteristics of Living Things (Grade 1)

- Investigate needs of plants and animals, including humans

Growth and Changes in Animals (Grade 2)

- Investigate similarities and differences in the characteristics of various animals

Language: Oral Communication

- Use speaking skills and strategies appropriately to communicate with different audiences and for a variety of purposes

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Identify needs, characteristics, similarities and differences between the creatures that reside under objects in the school yard.

Prior Knowledge and Skills

Survival needs of animals and plants: similarities and differences

Materials

- **IMPORTANT:** students must bring in a prop the day before this lesson. Everyone needs a 'mini person' to do this activity: it can be as simple as a figure made of toothpicks. It should be a small person that the student can talk to, preferably no larger than a finger. Bring in extras just in case someone forgets.
- Magnifying glasses
- Clipboards
- Pencils
- GOOS (Good On One Side) paper

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

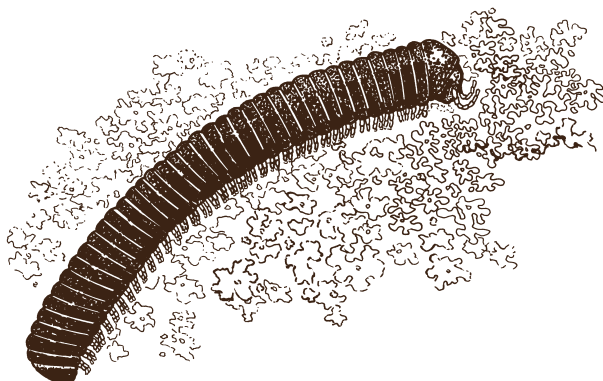
- Basic needs of plants and animals including shelter, food/nutrients, water, and air

Action—Assessing for and as Learning

- Characteristics of plants and animals including appearance and behaviour
- Observation skills including accurate recording of information and respectful treatment of the area and plants and animals

Consolidation—Assessing for Learning

- Similarities and differences between observed plants and animals



Micro-hiking

Minds On (Elicit & Engage)

The Hook

- What do we need to take when going on a hike? (e.g., water, appropriate clothes and shoes, backpack, etc.)
- Set out today's hiking equipment for everyone to see: magnifying glass, mini person, clipboard and pencil. We're going to explore an entire habitat with just the items shown. Where could we possibly be going?

Learning Goals (share with class)

- We will each use a magnifying glass to explore a very small habitat under a rock or log and imagine what it would be like to see it through the eyes of our mini-people.
- We will investigate what the habitat is like and observe the creatures that live there.
- We will consider what it would be like to be a small creature living in its habitat.

Introduction

Describe the benefits of hiking:

- Hiking provides a great opportunity for discovery of new places and things.
- Define what is meant by a "micro-hike":
- Micro means very small or microscopic, so micro-hikes are tiny hikes. A one-metre hike would be almost unnoticeable to us, but for a tiny person it could seem like a long journey.
- What might a tiny person experience over the distance of a one-metre hike?
- Discuss what might be seen on a "micro-hike":
- What living things might be seen? What might they be doing? What helps them survive?

Action! (Explore & Explain)

Going on a Micro-hike

1. Divide class into partners, each group with clipboards, pencils, paper, mini people and with magnifying glasses ready.
2. We will each pick a spot to lead our mini-people on a micro-hike that is only as far as the length from your shoulder to your fingertips!
3. Ask everyone to find their micro hike location and lay next to it, waiting for further instructions.
4. Students will be on their bellies alongside a rock, log, or other object that can be flipped over and where there is life living underneath. Along with their mini people, they will observe the life that is found under the log, mostly insects, spiders, slugs, etc. The mini people are the ones doing the observations; the students record for them using clipboards, writing or drawing the information.

5. Observations students might make include:

- What are all the different kinds of living things you can find under your object?
 - What do they do?
 - How do you think they get the things they need under there?
 - Is there anything you have never seen before?
6. After ample time for observations and recording, ask the students to carefully return the object to the exact location it was when we arrived so that the animals can return to the homes.
 7. Share observations as a class.
 8. Reflect on what it might be like to be a small creature living in a very small habitat.

Consolidation (Elaborate, Evaluate, Extend)

Extension

Interview each student about his/her mini person.

- Give students time to finish recording and to practice how they are going to tell you about their mini person's observations.
- The mini person can be the one to do the talking, or the student can speak for the mini-person, and report the findings from under the log to the teacher.
- Students should report on what different creatures they saw, how they were similar and different, and what interesting findings they made.
- While you are meeting with each student, pairs can be sharing their observations and practicing how they will present them to you.

Critical Learning/Big Ideas

Patterns can be discovered and explored in nature.

Guiding Questions

1. What is an example of a pattern you can see in the classroom?
2. Do you think patterns happen in nature too?
3. Can you think of any examples of patterns in nature before we head outside?

Curriculum Expectations

Mathematics: Patterning and Algebra

- identify, describe, extend, and create repeating patterns (Grade 1)
- identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns (Grade 2)
- describe, extend, and create a variety of numeric patterns and geometric patterns (Grade 3)

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Identify repeating, growing, and shrinking patterns found outdoors in nature.

Prior Knowledge and Skills

- Basic knowledge of what a pattern is
- How to treat the outdoors as a classroom and to work through activities safely

Materials

- Blocks or cubes for groups of students
- Pencils, crayons, paper, cameras (at least one for the teacher)
- Poster board and glue for the class pattern collage
- Clipboards (class set)
- Pictures/examples of patterns in nature e.g. veins in a leaf, pattern in a snail shell, etc.

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

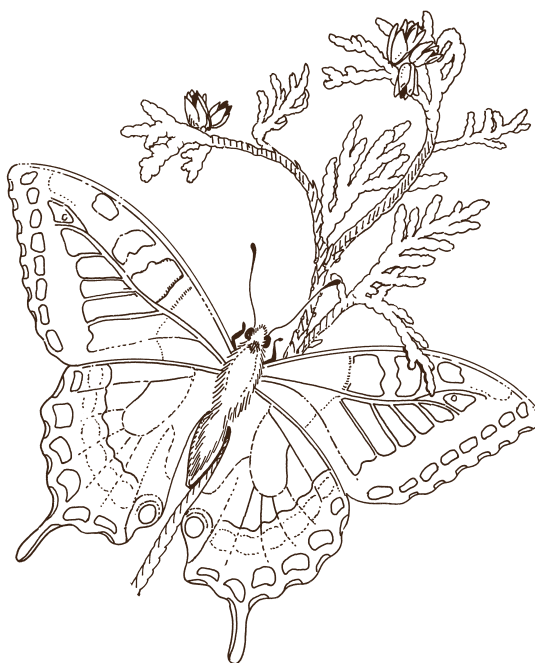
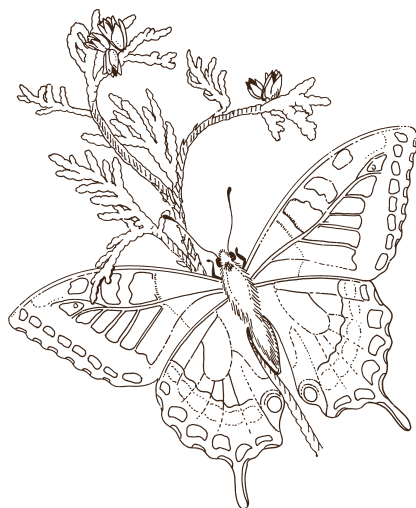
- Identifying repeating patterns involving one or more attributes (e.g., size, shape, colour, orientation, or number)

Action—Assessing for and as Learning

- Representing/creating repeating, growing, shrinking, or geometric patterns

Consolidation—Assessing of Learning

- Identifying the created patterns including the type of pattern and pattern rule



Natural Patterns

Minds On (Elicit & Engage)

The Hook

We create patterns everywhere in our lives: on our clothes, in our music, in the paths that we each take every day to get here to school. Patterns can also be found everywhere in nature. What patterns in nature can you think of? What is your favourite pattern in nature and why?

Learning Goals (share with class)

- We will discuss patterns, how they are relevant in our lives, and where they appear in nature.
- We will go outside into nature to observe and identify patterns in the natural world.

Introduction

Conduct an activity to review and introduce this lesson on patterns:

- Ask each group of students to create a simple pattern using the blocks on their desks. When complete, do a quick check to ensure that everyone is on the right track.
- Ask one or two groups to explain their patterns to the rest of the class.

Discuss the places where you can find patterns while on a walk:

- Do you think that patterns happen in nature?
- Where can we look to find nature's patterns?
- Do you think you can see patterns outside that are caused by people (e.g., buildings)?

Introduce the lesson activity:

- The outdoor task is to look for patterns in nature or on man-made structures outdoors and to record them. Students can write, explain, draw, or take photos to show their patterns.

Action! (Explore & Explain)

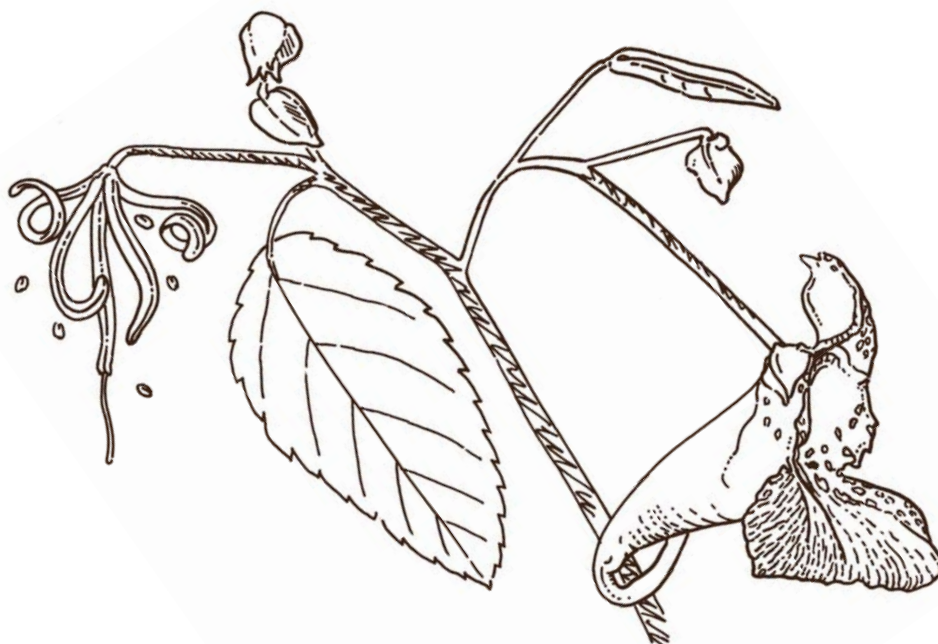
1. Equip each student with a clipboard, pencil, and a few crayons.
2. Discuss boundaries (on the school yard, on a walk, etc.) and agree on (or review) a 'call back' signal so students know when to return.
3. Head outside: allow students to explore within the boundaries and look for patterns. Provide helpful hints such as:
 - Leaf arrangement, animal stripes (e.g., caterpillars), houses and buildings, fence arrangements, flower parts, gardens, colours, honey combs; and sound patterns such as bird song, traffic sounds, etc.
4. Students record patterns they find in pencil — colour can be added in the classroom — and show the teacher one or more to be photographed for the creation of a class pattern collage. A sound pattern can be recorded as a hum, or by writing a mnemonic (a memory aid to describe a sound pattern with words e.g., American Robin: cheer-up; cheer-a-lee; cheer-e-o, whinny).
5. Call the class in with the 'call back signal'.
6. Sitting outside, ask the students to share some of the interesting patterns they found on their searches.
7. Summary discussion questions:
 - Was it difficult to find patterns outside?
 - Where did you find your patterns?
 - Did you find any animals with patterns? Plants?

Consolidation (Elaborate, Evaluate, Extend)

Extension

- To complete this activity, print off photos of the students' patterns and hand them out. Allow each student to attach his or her photo to the poster board with glue, creating a "Natural Patterns" class collage. Have each student describe their pattern, and explain the pattern rule.
- The Fibonacci Sequence (and Rule): This is a natural phenomenon that for the most part is a more advanced concept than will be taught at this grade level. However, for the teacher's own back-ground, search the web for an explanation of what the Fibonacci Sequence is and how it is recognized in nature. Introduce it to the class if/when appropriate.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> Flight occurs when the design of living things or created structures take advantage of properties of air. Air has many properties that can be used for flight and for other purposes. 	<ol style="list-style-type: none"> How do living things use properties of air? Transportation (e.g. planes, birds, insects), pollination, dispersal, etc. What are the properties of air that allow flight to occur? What are the characteristics of various structures that allow them to take advantage of the properties of air? What forces can air exert?
Curriculum Expectations	
Science and Technology: Understanding Structures and Mechanisms 2. investigate ways in which flying devices make use of properties of air 2.4 use technological problem-solving skills to design, build, and test a flying device 3. explain ways in which properties of air can be applied to the principles of flight and flying devices	Learning Goals (Unpacked Expectations) <i>At the end of this lesson, students will (be able to):</i> <ul style="list-style-type: none"> Understand how nature manipulates the forces of flight to allow plants to spread their seeds Design or create a device that will allow a plant to disperse its seeds
Prior Knowledge and Skills	Materials
Basic properties of air e.g. hot air rises, air takes up space	<ul style="list-style-type: none"> Variety of construction materials Various seed pods
Consider...(assessing for, as, and/or of learning)	
Minds On—Assessing for Learning <ul style="list-style-type: none"> Identifying what makes flight possible using examples from nature Action—Assessing for and as Learning <ul style="list-style-type: none"> Investigating the forces of flight used in seed dispersal Designing, building and testing a flying device that mimics seed dispersal Consolidation—Assessing for Learning <ul style="list-style-type: none"> Explaining how the design of a flying device uses the forces of flight 	



Can Plants Fly?

Minds On (Elicit & Engage)

The Hook

One of humanity's greatest technological achievements is the invention of machines that allow us to fly. Since the first human flight, we have invented all kinds of things to help us stay up in the air e.g. plane, helicopter, hang-glider, parachute, rocket. Which flying machine do you like best and why?

Learning Goals (share with class)

- We will explore the design elements that enable things to fly.
- We will investigate the features of seeds that fly through the air.
- We will design, build and test a flying machine, consider how it uses the forces of flight, and reflect on the successes and challenges of the project.

Introduction

Using examples gathered from a natural area, school garden, or schoolyard, explore how seeds are dispersed by wind (e.g., milkweed, maple keys, ash keys, pine cone, dandelion, thistle, etc.).

- In inventing flying devices humans have learned lessons from things that fly in nature. Some of the most common and best fliers are made by plants to disperse their seeds.
- Can students make a model of a wind-dispersed seed?

Action! (Explore & Explain)

1. Go into nature and observe all things that fly: seeds, birds, insects, butterflies, planes flying overhead, etc. What is it about things that allow them to fly? (e.g., observe: wings, surface area, specific design, weight)
2. Demonstrate specific examples of seeds that use flight to disperse. What can be observed (e.g., size and weight of seed, structure, etc.)?
3. Why do seeds have to leave their parents? (e.g., Maple keys need to find space to grow and an opening in the forest where there is light in order to germinate.)
4. How are the four forces of flight acting on the maple key. (e.g., the main force acting on the maple key is gravity but with the spinning of the key it is able to create enough lift and resistance to allow the key to fly short distances away from the tree.)
5. What is the method of flight for a dandelion seed? (Wind propels the seed as a result of its light weight and design. The seed is able to travel greater distances.)
6. Make and test a flying device that mimics a wind-dispersed seed (e.g., kite, paper airplane, paper helicopter, parachute).
7. How does your device use the forces of flight? What were some challenges? How could it be improved? How do you think it compares to a real seed?
8. How has the study of natural flying devices impacted human-made technology?

Consolidation (Elaborate, Evaluate, Extend)

Extension

Explore how the first human flying machines were built and tested.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> Awareness of the natural environment is gained using all five senses. Various forms of descriptive writing can be utilized to communicate effectively with the reader. 	<ol style="list-style-type: none"> How do we describe nature? Do the words we use to describe nature communicate the experiences we have through all of our senses in a satisfying way? How does a poem use descriptive words to communicate an experience or describe an object in nature?
Curriculum Expectations	
<p>Language: Writing</p> <ol style="list-style-type: none"> generate, gather, and organize ideas and information to write for an intended purpose and audience use some vivid and/or figurative language and innovative expressions to enhance interest reflect on and identify their strengths as writers, areas for improvement, and the strategies they found most helpful at different stages in the writing process 	<p>Learning Goals (Unpacked Expectations)</p> <p><i>At the end of this lesson, students will (be able to):</i></p> <ul style="list-style-type: none"> Develop ideas for writing using five senses Choose appropriate word choice to help develop vividness of idea
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Understand the writing process (brainstorm, rough draft, self-edit, peer edit, final draft) Understand different forms of poetry Understand a nature contract 	<ul style="list-style-type: none"> Clipboard, paper and pencil Various poems about nature (e.g. Robert Frost)
Consider...(assessing for, as, and/or of learning)	
<p>Minds On—Assessing for Learning</p> <ul style="list-style-type: none"> Recognizing how words are used to describe living and non-living things <p>Action—Assessing of Learning</p> <ul style="list-style-type: none"> Creating a written representation of an experience in nature in order to describe and share the personal meaning of the experience <p>Consolidation—Assessing for Learning</p> <ul style="list-style-type: none"> Reflecting on the impact of a piece of writing 	

“ *There was a child went forth every day,
And the first object he look'd upon, that object he became,
And that object became part of him for the day or a certain part of the day,
Or for many years, or stretching cycles of years.*

Walt Whitman

Five Senses Writing

Minds On (Elicit & Engage)

The Hook

Can you be described in five words?

Learning Goals (share with class)

- We will consider the uses, usefulness and accuracy of using single words to describe our thoughts and feelings about a person, object, or event that we experience through different senses.
- We will explore how a poet uses descriptive words effectively to communicate thoughts and feelings about nature.
- We will each choose a natural object and use descriptive words to communicate how we experience it through different senses, and then create a poem using those descriptive words.

Introduction

Discuss human communication:

- Before we learn language we use sounds to communicate how we feel and what we need (e.g., a baby cries when hungry, tired, in need of attention, etc.).
- Once we learn to use language we choose words to represent the things we experience using our different senses (e.g., beautiful, stinky, warm, loud, soft).
- Single words sometimes satisfy our feelings by accurately communicating our experiences, and are important in sharing thoughts and stories in longer writing such as poetry.

Action! (Explore & Explain)

1. Take students outside to a designated outdoor classroom.
2. Number off students into pairs. Ask students to describe their partners in five separate words. Partners will read the words aloud in pairs, and the person described can comment on the description. Is it accurate? Is it complete?
3. Discuss the previous exercise as a whole group.
4. Read aloud a poem that uses nature as a central theme (e.g., Robert Frost's *Road Not Taken* or *Birches*).
5. Ask the students the following questions:
 - Is there any language in the poem that you don't know? (Be prepared to offer definitions of unfamiliar language.)
 - What do you think the poem is about?
 - What specific words did the poet use effectively to describe the environment?
 - When the poet was creating the poem, what senses do you think he/she engaged in preparing to write?
6. Ask students to use all five senses in brainstorming words that describe the area they are in.
7. Have each student choose an object within the natural environment and brainstorm independently using all five senses.
8. Write a poem about the object – students can use any form of poetry (e.g., free verse, rhyming, acrostic).
9. Peer edit in pairs, with the following guiding questions:
 - What do I like about my partner's work?
 - What suggestions can I make that might improve my partner's work?
10. Summary discussion questions:
 - Use the questions from Step 5 to consider your partner's work and have your partner respond to your suggestions: is that what was meant?
 - What did I like about my work?

Consolidation (Elaborate, Evaluate, Extend)

Extension

Each person takes the written work of a classmate and creates a graphic representation (e.g., painting, drawing, sculpture, dramatization).

Reflect on the experience of representing the written work of another and how you felt about the way your writing was represented?

Critical Learning/Big Ideas

- Using the five senses go on an animal walk (promenade des animaux) around the schoolyard to explore “les animaux”
- Practice using French vocabulary to describe animals

Guiding Questions

1. Pre-walk: What do you expect to see, hear?
2. Mid-walk: What do you see, hear, smell etc?
3. Post walk: Did your observations match your expectations?

Curriculum Expectations

French as a Second Language

- Listen and respond to a variety of short, simple spoken texts and media works;
- Express ideas, feelings, and opinions on familiar topics, using correct pronunciation and appropriate intonation;
- Produce short pieces of writing in a variety of forms;

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Recognize and name animals heard or seen
- Use animal vocabulary
- Discuss experiences

Prior Knowledge and Skills

- Animal vocabulary
- Use of the outdoor classroom

Materials

- Chart paper
- Markers
- Journal to record observations / reflections

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

- Making predictions about what will be found on a nature walk using French language

Action—Assessing for and as Learning

- Recording animals observed using French vocabulary and reflecting on the experience anticipated and gained during a nature walk using French language

Consolidation—Assessing of Learning

- Creating a piece of writing in French



Promenade des Animaux

Minds On (Elicit & Engage)

The Hook

Do we always find what we expect in nature?

Learning Goals (share with class)

- We will anticipate a walk in nature and make predictions in French about what we might discover.
- We will explore a natural area to observe what is there using as many senses as we can.
- We will list our observations in French and compare them with our predictions.

Introduction

Discuss how we make predictions in our everyday lives:

- We anticipate almost everything we do in life — our trip to school, our food at lunch, a movie we're about to see.
- We do the same thing before a walk in nature, both to prepare ourselves for the trip, and to feel excitement over what we might find.
- How accurate are our predictions?

Action! (Explore & Explain)

1. Read a book or sing a song in French about going on a nature walk.
2. Review animal flashcards in French.
3. Make predictions as a class and post them on chart paper. Ask students in French, "What do you expect to see, hear, and touch?"
4. Go over some common French expressions that will be useful during the walk for students to express their observations:
 - Qu'est-ce que c'est? C'est un...
 - Je vois un .../Je regarde...
 - Je sens un....
 - J'entends un.../J'écoute un....
5. Model the questions on the walk.
6. Go to different areas of the schoolyard (black top, forest, field, ravine, sky-cloud).
7. Stop along the way to turn over a rock, branch, leaf, etc. to see what's there.
8. Make a list in French of the animals observed. Did your observations match your expectations?
9. Reflect on the exercise using French vocabulary in a journal and/or as a class.
 - What was the experience like?
 - Did anything surprise you?
 - What were some of your observations?
10. As a class, compare the predictions with the actual observations and discuss the results.

Consolidation (Elaborate, Evaluate, Extend)

Extension

Write a French language short story or poem about the nature walk itself or an object observed on it.

Critical Learning/Big Ideas

- Recognizing different components within any system is a beginning point for understanding the interrelationships among the components.
- Human activities that enhance our well-being also affect biodiversity.

Guiding Questions

1. Human activities can both increase and decrease biodiversity?
2. Imagine an area closely managed by humans e.g. soccer field: what do the plants look like?
3. Imagine a natural area: what do the plants look like?

Curriculum Expectations

Science and Technology: Understanding Life Systems—Biodiversity

1. assess human impacts on biodiversity, and identify ways of preserving biodiversity
2. investigate the characteristics of living things and classify diverse organisms according to specific characteristics
3. demonstrate an understanding of biodiversity, its contributions to the stability of natural systems, and its benefits to humans

Mathematics: Data Management

- read, interpret, and draw conclusions from primary data (e.g., survey results, measurements, observations)

Mathematics: Measurement

- estimate, measure and record quantities using the metric measurement system

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Recognize differences between plants
- Identify and classify different plant groups within the school community
- Estimate percent of an area
- Extrapolate data over a school yard using ratios
- Use area and perimeter to measure a school yard
- Understand differences in plant diversity between natural areas and human-managed areas, and consider the implications

Prior Knowledge and Skills

- Area
- Estimating percent
- Using a field guide

Materials

- Metre stick
- Measuring wheel
- Skewers to mark out quadrant
- Various field guides to common plants including grasses

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

- Identifying how humans affect plant biodiversity both positively and negatively

Action—Assessing for Learning

- Estimating, measuring and recording information related to a survey of plant biodiversity
- Investigating, comparing and sorting different types of plants

Consolidation—Assessing of Learning

- Explaining how biodiversity is influenced at a local level



Schoolyard Biodiversity

Minds On (Elicit & Engage)

The Hook

What do you guess are the five most important food crops in the world? (rice, wheat, maize (i.e. corn), potatoes and soybeans provide the majority of calories consumed by humans)

Learning Goals (share with class)

- We will consider the positive and negative effects of human activity on biodiversity.
- We will conduct a survey of plants on the school grounds using quadrants.
- We will learn how to use a field guide to identify a plant.
- We will discuss human management of plant diversity.

Introduction

Discuss human plant management:

- Management of plants around the world is critical to human well-being: our current food supply depends on global plant production. Improved yields and global transportation systems provide many with the food they need to survive.
- There are consequences to crop production and other human purposes (e.g., lawns, sports fields, etc.).
- When we compare the plants in an area managed by humans with the plants in a natural area we can evaluate the differences in plant diversity and biodiversity.

Action! (Explore & Explain)

1. Take class outside and create a quadrant together using the metre stick.
2. Demonstrate how to evaluate the quadrant:
 - How many species of plants are present?
Collect a sample of each.
 - Estimate the percent of the surface of the quadrant covered by each species of plant.
 - Record data.
3. Students repeat process in small groups beginning with the creation of a quadrant by each group.
4. Assign the groups to different habitats within the area (natural area, managed area, edge area between natural and managed).
5. Students collect an example of each type of plant found
NOTE: Poison Ivy can leave an uncomfortable rash if handled. Make sure that students can identify Poison Ivy in order to avoid sampling it. Several lookalikes exist — photographing uncertain plants (“leaflets three let them be”) would ensure students avoid contact with Poison Ivy.
6. Students group plants into two groups: plants that came from 1) managed area; and 2) natural area.
7. Students group plants into look-alikes (same species).
8. Have each group take one type of plant and try to identify it using field guides. Share any information discovered as a group (e.g., name, defining features, habitat, uses, etc.)
9. As a group discuss how plants compare between the different areas sampled.
10. Reflect on the benefits and consequences of human activities that affect plant diversity.

Consolidation (Elaborate, Evaluate, Extend)

Extension

- Investigate different methods of food production (e.g., family farm, factory farm, organic farm) and compare to determine how each affects biodiversity.
- As a class pull information together to create a sample field guide to the different species that live on the school grounds.
- Discuss actions that could be taken to increase the biodiversity on the school grounds. Pick the top three and form plans to carry them out.

Survey green space on entire school grounds:

- A. Give each group a map or photo (e.g., print from Google Maps) of the outdoor school grounds with perimeter dimensions included.
- B. Each group draws its quadrant on the map to scale.
- C. From the map, each group estimates what percentage of the school grounds is similar to their quadrant in plant make-up.
- D. Compile, compare and discuss results as a class. What plants dominate the school grounds?
- E. Further Extension: Ask each group to draw a quadrant on the map at least 5 metres away from their own that they predict will contain the same plants. Trade maps with another group. Each group takes the partner group's map and plant list from the first quadrant outside to survey the second quadrant. Partner groups share results.

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> Marking the distance between planets Understanding the size of our solar system 	<ol style="list-style-type: none"> How big is our planet? How close is Earth's nearest neighbour planet? How is the distance between planets measured? How big is our (Earth's) solar system?
Curriculum Expectations	
<p>Science and Technology: Understanding Earth and Space Systems—Space</p> <ol style="list-style-type: none"> assess the impact of space exploration on society and the environment. investigate characteristics of the systems of which the earth is a part and the relationship between the earth, the sun and the moon. demonstrate an understanding of components of the systems which the earth is a part, and explain the phenomena that result from the movement of different bodies in space. <p>Mathematics: Number Sense and Numeration</p> <ul style="list-style-type: none"> represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation <p>Mathematics: Data Management and Probability</p> <ul style="list-style-type: none"> read, interpret, and draw conclusions from primary data 	<p>Learning Goals (Unpacked Expectations) <i>At the end of this lesson, students will (be able to):</i></p> <ul style="list-style-type: none"> Visualize the size of the solar system Know the distance between planets Be able to estimate percent of an area Be able to extrapolate data over a schoolyard using ratios Use area and perimeter to measure the school yard
Prior Knowledge and Skills	Materials
<ul style="list-style-type: none"> Planets Distance Ratios Estimating percent 	<ul style="list-style-type: none"> Metre stick Measuring wheel Nature objects to represent planets Large outdoor area e.g. field
Consider...(assessing for, as, and/or of learning)	
<p>Minds On—Assessing for Learning</p> <ul style="list-style-type: none"> Discussing the components and size of the solar system <p>Action—Assessing for and of Learning</p> <ul style="list-style-type: none"> Making a model to represent the solar system using ratios and measurement data <p>Consolidation—Assessing for Learning</p> <ul style="list-style-type: none"> Evaluating the effect of using different ratios on the representation of the solar system Discussing the impacts of space exploration 	

Teacher Background Information

- The Titius-Bode Law relates the mean distances of the planets from the sun to a simple mathematic progression of numbers.
- The law is a rough rule that predicts the spacing of the planets in the Solar System. The relationship was first pointed out by Johann Titius in 1766 and was formulated as a mathematical expression by J.E. Bode in 1778.
- It led Bode to predict the existence of another planet between Mars and Jupiter in what we now recognize as the asteroid belt.

To find the mean distances of the planets, begin with the following simple sequence of numbers:
0, 3, 6, 12, 24, 48, 96, 192, 384*
(With the exception of the first two, the others are simply twice the value of the preceding number.)
Add 4 to each number:
4, 7, 10, 16, 28, 52, 100, 196, 388*
Then divide by 10:
.4, .7, 1, 1.6, 2.8, 5.2, 10.0, 19.6, 38.8*

* Starred numbers represent Pluto, no longer formally recognized as a planet

The resulting sequence is very close to the distribution of mean distances of the planets from the Sun. The distances are measured in astronomical units (A.U.); one A.U. is equal to approximately 150,000 kilometres, which is the distance between the Earth and Sun.

Space Walk

Minds On (Elicit & Engage)

The Hook

- “Space: the final frontier”: what might this mean?
- Do you think humans will ever travel in space beyond the Moon?

Learning Goals (share with class)

We will work toward a better understanding of our solar system and its size through participating in an activity to construct it outside.

Introduction

Discuss the size and components of the solar system:

- Planet Earth is tremendously large, so large that it is almost impossible for us to really comprehend its size. Even so, it belongs to a group of planets, the solar system, arranged around a star — the Sun — that covers such a large distance that the Earth seems tiny when viewed in the context of its neighbouring planets.
- To attempt to create a better picture in our minds of the size and scale of our solar system and the planets in it we will create a model of the solar system outside.

Action! (Explore & Explain)

1. We are going to make a model of the solar system.
Make a prediction: “How much space do we need to make it?”
 - Ask students to determine where they will make the model and predict how big the solar system is.
 - Challenge students to try out their ideas (e.g., on a table top)
 - As a group reflect on the efforts.
2. Discuss how to make the distance between planets tangible.
3. Introduce ratios and scale to the students.
4. Under “Sun”, list the planets in order based on distance from the sun (i.e., Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune), including “asteroid belt” between Mars and Jupiter on the list. NOTE: Pluto can be included, but is no longer considered a planet by the International Astronomical Union (IAU) based on the most recent definition of a planet.
5. Introduce the Titius-Bode Law and relate student predictions to Bode’s predictions. Perform the calculations. One really important point to emphasize is the predictive aspect of Bode’s work.
6. Explain that the real distances will be converted to metres (m); Earth is 1.0 m from the Sun. Thus, the ratio being used is 1 m:150,000 kilometres (km).
7. Provide a list of the relative sizes of the Sun and planets compared to the Earth (i.e., Earth = 1). Beginning with the sun and following the same order above, the sizes are:
 - 108, .39, .95, 1, .53, (no asteroid belt), 11.1, 9.41, 4.0, 3.89, and .18 (including Pluto). (The moon is .27.)
8. For the outdoor model, use the above conversion ratio of 1 m:150,000 km to calculate the sizes of the sun and planets: the width of the earth is converted to 8.5 centimetres; thus all other sizes are calculated by multiplying the numbers from Step 7 by 8.5 cm (i.e., the size of the sun = $108 \times 8.5 \text{ cm} = 910 \text{ cm} = 9.1 \text{ m}$).
9. Tell students that the first task will be to visit a natural area to gather objects that are representative of the planets made of rock and metal (i.e., Mercury, Venus, Earth and Mars). Decide as a class how to represent the gas planets (i.e., all other planets.).
10. Gather objects (e.g., rock, acorn, chunk of wood, bag of leaves, different-sized snowballs in winter), and decide which object should represent each planet.
11. Find a spot with plenty of space to construct the solar system.
12. Place the Sun at the start and demonstrate how to measure the distance to the next planet. This can be done using metre sticks, a specific length of string, or by measuring a pace of one metre and counting out paces as you go.
13. Begin walking from the spot for the sun as a whole class and stop briefly to drop off each pair or small group with their planet at the appropriate place; remaining students continue until all the groups are placed with their planets. (Option: include Earth’s moon.)
14. As you mark the planets note distances between planets. Also note sizes (e.g., can you still see Mercury from the spot where Mars is placed?).
15. Take pictures.
16. Summary discussion questions:
 - How was the space walk different from your predictions or first attempts?
 - What were your impressions related to the sizes of and distances between the planets?

Consolidation (Elaborate, Evaluate, Extend)

Extension

- Retry the activity using different ratios to fit it into a smaller or larger space. How do the results compare?

	Actual	Converted (1 cm = 10,000 km)
Earth’s width	12,875 km	1.3 cm
Sun’s width	1,287,500 km	130 cm = 1.3 m
Sun–Earth distance	149,730,000 km	150 m

The Moon is 380,000 km from the Earth, which is represented as 38 cm using this scale.

- After building the solar system, discuss the positive impacts of space exploration on society and the environment. Conduct a quick garbage-collecting walk in the schoolyard and spread all of the garbage around the perimeter of the “Earth”. Introduce the topic of the negative impacts of human space travel. Contrast negative impacts with positive contributions. Brainstorm solutions to the negative impacts. Discuss the future: where might space exploration lead human society?
- Once created outdoors, consider using the solar system model to learn about other phenomena e.g., earth’s day and night cycle, Halley’s Comet, planetary orbits, etc.

Critical Learning/Big Ideas	Guiding Questions
<p>To apply knowledge of the five themes of geographic inquiry — place/location, region, movement, interaction, and environment — to help deepen understanding of the themes, while exploring the local neighbourhood</p>	<ol style="list-style-type: none"> 1. What is Geography? 2. How does Geography look in our local neighbourhood? 3. Can we find evidence of the five themes of Geography in our local neighbourhood? 4. Which themes are most prevalent? 5. Can something fit under more than one theme of Geography? 6. What is the importance of a natural area within a neighbourhood?
Curriculum Expectations	
<p>Geography The Themes of Geographic Inquiry (Grade 7)</p> <ul style="list-style-type: none"> • identify and explain the themes of geographic inquiry: location/place, environment, region, interaction, and movement • analyse current environmental issues or events from the perspective of one or more of the themes of geographic inquiry <p>Patterns in Human Geography (Grade 8)</p> <ul style="list-style-type: none"> • identify the main patterns of human settlement and identify the factors that influence population distribution and land use 	<p>Learning Goals (Unpacked Expectations) <i>At the end of this lesson, students will (be able to):</i></p> <ul style="list-style-type: none"> • Recognize that the themes of geographic inquiry are all around (i.e., relate observations to themes)
Prior Knowledge and Skills	Materials
<p>Familiarity with the five themes of geographic inquiry</p>	<ul style="list-style-type: none"> • Clipboards, pencils, and paper or journal to record observation • A handout with the five themes listed
Consider...(assessing for, as, and/or of learning)	
<p>Minds On—Assessing for Learning</p> <ul style="list-style-type: none"> • Discussing characteristics of a local neighbourhood to better understand it based on the five themes of geographic inquiry <p>Action—Assessing for and of Learning</p> <ul style="list-style-type: none"> • Examining and recording the different features of a local neighbourhood based on the five themes of geographic inquiry • Analyzing the observations to determine the importance of specific neighbourhood features <p>Consolidation—Assessment for and of Learning</p> <ul style="list-style-type: none"> • Using the five themes of geographic inquiry to analyze different local areas 	



*In every outthrust headland, in every curving beach,
in every grain of sand there is the story of the earth.*

Rachel Carson

Five Themes Walkabout

Minds On (Elicit & Engage)

The Hook

- How well do you know your own neighbourhood?
- Close your eyes and envision a familiar neighbourhood.
What does it feel like? What features of the area give you a sense of comfort? Why?

Learning Goals (share with class)

Grade 7:

- We will discuss the five themes of geographic inquiry: location/place, environment, region, interaction, and movement.
- We will apply these themes to a real-life example — our local neighbourhood — to investigate what meaning they have in our everyday lives.

Grade 8:

- We will discuss the features of a modern human settlement i.e. neighbourhood.
- We will explore our local neighbourhood to discover what features are present and use the information we gather in investigating why people locate where they do in a neighbourhood.

Introduction

Introduce the five themes of geographic inquiry: location/place, environment, region, interaction, and movement:

- Are the five themes of geographic inquiry relevant to your everyday lives?
- Could consideration of the five themes in your own neighbourhood help you develop a better understanding or attachment to it?
- How do natural areas fit under the five themes within a neighbourhood?

Examine a map that details local features:

- Looking at a geographic area on a map tells us about the location and some of the features such as roads and nearby places.
- Really understanding an area, however, such as a neighbourhood, involves much more including how people move and interact and what kinds of different places they use (e.g., stores, parks, schools, etc.)
- Geographic inquiry based on the five themes provides a method of discovering this information and building a complete picture of the places in which we live.

Action! (Explore & Explain)

1. Ask students what types of things they might see (and/or record) on their walk that align with one of the five themes e.g. trees for “environment,” bike path for “movement,” someone watering their flowers for “interaction.”
2. Distribute clipboards, pencils and a chart with the five themes as headings to record observations.
3. Begin your neighbourhood walk. Include a natural area.
4. Summary discussion questions:
 - Which themes/features are most prevalent?
 - Can something fit under more than one theme of Geography? (Grade 7)
 - What is the importance of a natural area within a neighbourhood?
 - Record the location of the different features of the neighbourhood e.g. homes, stores, parks, libraries.
 - Discuss why people live where they do in relation to the other features of the neighbourhood (Grade 8).
 - After this activity, reflect again on how well you know your own neighbourhood.

Consolidation (Elaborate, Evaluate, Extend)

Extension

- Divide the lesson in two parts: A) schoolyard; and B) local park, woodlot, or creek. Conduct a walkabout of each area recording observations on the five themes of geographic inquiry. Compare the results.
- Write a descriptive paragraph based on the five themes of geographic inquiry with the theme, “What I Know About My Neighbourhood.”

Critical Learning/Big Ideas	Guiding Questions
<ul style="list-style-type: none"> Human activities can alter our environment by transporting life forms to areas where they aren't naturally found Some human introductions have been highly beneficial, while others have caused harm to natural ecosystems Understanding the impacts of human introductions and assessing the outcomes is important to understanding changes in the natural environment that result from human action 	<ol style="list-style-type: none"> What is an introduced species? How can an introduced species be beneficial/harmful? What conditions allow an introduced species to spread? What human actions contribute to the spread? When is an introduced species considered to be invasive? What difficulties can be faced when invasive species become established?
Curriculum Expectations	
<p>Science and Technology: Understanding Life Systems—Interactions in the Environment</p> <ol style="list-style-type: none"> Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts 3.8 Describe ways in which human actions alter the balance and interactions in the environment <p>Mathematics: Data Management and Probability</p> <ul style="list-style-type: none"> collect and organize categorical, discrete, or continuous primary data and secondary data and display the data using charts and graphs... Specific Expectation: Select an appropriate type of graph to represent a set of data, graph the data... 	<p>Learning Goals (Unpacked Expectations)</p> <p><i>At the end of this lesson, students will (be able to):</i></p> <ul style="list-style-type: none"> List several introduced species, discuss benefits and harm of the introductions, demonstrate an understanding of what can cause an introduced species to become invasive, and explain what the impact of invasive species has been on land or water using actual examples.
Prior Knowledge and Skills	Materials
<p>Knowledge of the terms "Introduced Species" and "Invasive Species"</p>	<ul style="list-style-type: none"> Hula Hoops (random sampling devices) Lawn
Consider...(assessing for, as, and/or of learning)	
<p>Minds On—Assessing for Learning</p> <ul style="list-style-type: none"> Discussing how human introductions of species have been beneficial or harmful <p>Action—Assessing for and of Learning</p> <ul style="list-style-type: none"> Investigating the extent and impact of human-introduced species Collecting, organizing and drawing conclusions from the data to determine the prevalence of an invasive species <p>Consolidation—Assessing for and of Learning</p> <ul style="list-style-type: none"> Determining possible human actions to understand and manage invasive species 	

Teacher Background Information

- Dandelion was introduced to North America in the mid-1600s by European settlers who brought and planted it in their gardens for food and medicine (because of its high Vitamin C content it is valuable in guarding against scurvy, a disease that results from Vitamin C deficiency). Today Dandelion is regularly battled on urban lawns for aesthetic reasons.
- The name for the genus *Taraxacum* comes from an Arabic name for the plant that was translated to Greek as a combination of "Taraxos" meaning "disorder" and "akos" meaning "remedy" to describe the role of the plant as a cure for a variety of ailments. Dandelion is a modification of the French "Dent de Lion", which means "teeth of a lion," referring to the teeth found on the edges of the leaves.
- Alternatively, discuss the introduction of English Plantain from Europe to North America. Plantain seeds tend to spread when stuck to the mud on the soles of people's shoes; members of First Nations referred to English Plantain as "White Man's Footprint" because they appeared where Europeans walked after being deposited by their shoes.

Invasive Species

Minds On (Elicit & Engage)

The Hook

Imagine moving to a new place far away.

- How would you travel? What would you take with you? Would you take any living creatures with you e.g. pets, plants, seeds to grow?

Learning Goals (share with class)

- We will consider how species of plants and animals become introduced by humans into new areas, how such species can become invasive, and what the consequences are of the introduction of invasive species.
- We will create and examine study plots outdoors to look for invasive species.
- We will record the presence of invasive species by counting numbers of plants and presenting our findings in graphs to answer questions about patterns and trends of where invasive species occur (e.g., students may see an increase in the number of invasive plants closer to the trail or path).

Introduction

Discuss how highly mobile humans are today with the ease of transportation over great distances e.g. airplane, ship, car.

- When humans travel, we move things to new areas, sometimes on purpose, and sometimes unintentionally. Examples include: plants and animals smuggled across borders; insects transported in imported wood (e.g., crates); and aquatic creatures carried in the ballast water of ships.

Discuss how some human introductions have been highly beneficial e.g. corn crops provide food for millions of people, while others have caused problems (e.g., Zebra Mussel has caused harm to native mussel populations and changed aquatic ecosystems).

- Understanding the impacts of human introductions and assessing the factors that cause such introductions to become invasive is important to understanding changes in the natural environment that result from human action.

Action! (Explore & Explain)

1. Review the term “introduced species” and discuss the positive and negative impacts of introducing a species to an area where it isn’t naturally found (e.g., food crops such as corn, potatoes and tomatoes, garden plants, Zebra Mussel, diseases such as Avian Influenza H5N1, Swine Flu).
2. Discuss the factors that lead to an introduced species becoming invasive. Provide the definition of an invasive species.
3. Discuss the introduction of Dandelion as an example of an invasive species. Introduce a specimen and discuss the features of Dandelion so students can identify the plant. Discuss the scientific name and what it means as well as the common name “Dandelion” (see Teacher Background Information).
4. Set the scene. Designate the school lawn as a natural community and the grass as a native species (point out that the grass is likely to be an introduced plant such as Kentucky Bluegrass).
5. Define the study area (e.g., an area of lawn with paths or sidewalks around or through it).
6. Start by finding and pointing out an example of Dandelion or another invasive species.
7. Explore the study area as a class for Dandelion plants.
8. In pairs, instruct students to select a section within two metres from the trail or path, and another four metres from the trail or path OR collect data from two different areas (i.e., forest vs field).
9. Choose sample area by randomly tossing the hula hoop onto the ground a few feet away. Students count and record the number of Dandelion plants found in each plot.
10. As a class, graph the results e.g. scatterplot of number of plants vs. distance from trail or habitat type (field and forest).
11. Discuss trends and patterns that emerge from the data.

Consolidation (Elaborate, Evaluate, Extend)

Extension

- Report on the Dandelion as an invasive species: background on the plant, history of introduction, present status, recommendations. Should we manage school grounds to get rid of Dandelions?
- Repeat the activity in another area with another invasive species as the target.
- Choose one local invasive species individually or in pairs to further study and present to the class. Set up an outside theatre for the presentations.

Critical Learning/Big Ideas

- Language is the basis for thinking, communicating and learning. Poetry is a rich method of organizing and communicating language.
- Engaging in the writing process offers the opportunity to understand that meaningful connections can be made between ourselves, written text, and the world.
- Language can be used to interact and connect with others, for personal growth.
- Ideas can be expressed in different and creative ways.

Guiding Questions

1. What do you see, feel, hear, and smell?
What tastes can you imagine?
2. What descriptive words and phrases can you use to communicate your sense experiences?
3. What different ways can you communicate the same feelings and information?

Curriculum Expectations**Language: Writing**

1. Generate, gather, and organize ideas and information to write for an intended purpose and audience
2. Draft and revise their writing using a variety of informational, literary, and graphic forms and stylistic elements appropriate for the purpose and audience

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Describe experiences gained through different senses using descriptive words and phrases, and communicate those experiences to others
- Complete a Sense Poem

Prior Knowledge and Skills

Knowledge of different forms of poetry writing

Materials

- Paper/ sketchbook/ journal + pencil and eraser

Consider...(assessing for, as, and/or of learning)**Minds On—Assessing for Learning**

- Discussing how language is used to communicate the experiences we gain through the use of our senses

Action—Assessing for and of Learning

- Writing a poem that uses descriptive words to convey sensory experiences in nature

Consolidation—Assessing for and of Learning

- Communicating ideas and information that represents a sensory experience in nature



Sense Poem

Minds On (Elicit & Engage)

The Hook

How many words can you think of to describe a smell (e.g., the scent of a rose)? How about words that describe a sight (e.g., consider a rose again)?

Learning Goals (share with class)

- We will consider how words are used to describe the experiences we gain through different senses.
- We will gain personal experience describing what we feel through our senses outside in nature.
- We will communicate our sense experiences to others using various forms of poetry

Introduction

Discuss the use of language to describe the events in our lives, to ask questions, and to communicate our thoughts and feelings to those around us.

- Communicating these same things through writing can seem different because we are usually restricted in the number of words we can use to describe whatever it is we are trying to convey. This is a challenge for poets: to communicate experiences using a limited number of descriptive words that are powerful enough to communicate the things they are feeling.
- Becoming assured that your writing captures your experiences in a satisfying way often takes a great deal of practice, trying one word, then another, and another, until you are convinced that the right word or expression has been created.

Action! (Explore & Explain)

1. Take students outside.
2. Share an example of a Haiku poem, an acrostic, or a couple of descriptive lines from a longer poem.
3. As a class, describe the feeling of the air on your skin using single words or short phrases. Does one word capture the feeling for everyone? Is everyone satisfied that the right words have been offered?
4. Present the following sentences to the students one-at-a-time:
 - I feel... (can be physical or emotional)
 - I smell...
 - I hear...
 - I taste (imagine only)...
5. Students are given time to complete each sentence before the next one is introduced.
6. Encourage students to use effective adjectives and adverbs.
7. Upon completion of the sentence starters, instruct students to remove the words given by teacher (e.g., I see, I feel, etc.). Students will now have a Sense Poem.
8. Ask for volunteers to read their work out loud. Offer appreciation.
9. Read aloud Robert Frost's poem *The Road Not Taken*. Frost grew up in a city, but is known for poetry that regularly includes descriptions of places and things in nature. Is it still possible for someone who lives in a city to become a "nature poet"?

Consolidation (Elaborate, Evaluate, Extend)

Extension

- Try writing a Sense Poem in different weather conditions (e.g., calm, windy, rainy, snowy), or different environments (e.g., many students in the playground, heavy traffic nearby).
- Read poems to younger students. Post poems around school, on class web page, or in the school newsletter.

Critical Learning/Big Ideas

- An object or scene can be creatively explored from a variety of perspectives.
- The same object or scene can be expressed in different ways.
- Different expressions of the same object or scene can elicit different responses and evoke different feelings

Guiding Questions

1. Look around — ahead, up in the sky, on the ground: what really captures your interest?
2. Explore different perspectives — from below, from the side, with one eye closed. Does the object or scene look very similar from all perspectives, or does it change dramatically?
3. If you could record just one perspective, which would it be and why?

Curriculum Expectations

The Arts: Visual Arts

D1. Creating and Presenting: apply the creative process to produce art works in a variety of traditional two- and three-dimensional forms, as well as multimedia art works, that communicate feelings, ideas, and understandings using elements, principles, and techniques of visual arts as well as current media technologies

D2. Reflecting, Responding, and Analyzing: apply the critical analysis process to communicate feelings, ideas, and understandings in response to a variety of art works and art experiences

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Offer different perspectives on one object or scene by manipulating photographic properties.
- Consider how offering different artistic perspectives on one object or scene influences the feelings and responses elicited by it.

Prior Knowledge and Skills

- Elements of Design
- Principles of Design:
 - unity and harmony (Grade 7)
 - movement (Grade 8)

Materials

- Digital cameras (e.g., students' cameras/cellphones, school cameras)
- Computers / Printers
- Large paper, one per student
- Coloured sketching pencils

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

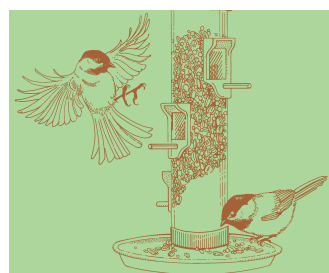
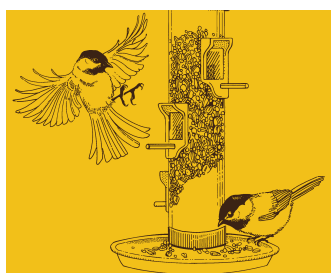
- Discussing personal reactions to and perspectives on human-created art and experiences we have in nature

Action—Assessing for, as, and of Learning

- Creating art works that communicate feelings and ideas using the elements and principles of design

Consolidation—Assessing for and as Learning

- Identifying feelings, ideas and understandings generated by an art work



Snapshots of Nature

Minds On (Elicit & Engage)

The Hook

- Andy Warhol was an iconic pop artist most famous for painting a series of Campbell's Soup cans, and for painting a Marilyn Monroe portrait, which he presented in several different colour versions. The "Turquoise Marilyn" sold in 2010 for \$80 million.
- Show an image of the multiple versions of Warhol's Marilyn painting. If you had \$80 million, which would you buy? Why?

Learning Goals (share with class)

- We will explore how different design choices we make when we create art influence the feelings and reactions elicited by the art.
- We will choose an object or scene in nature and consider it from a variety of perspectives.
- We will each take a single photograph of our object or scene and manipulate it with photo software to observe how people react to different creative expressions of the same object or scene.

Introduction

Discuss the phrase, "Beauty is in the eye of the beholder." What does it mean to you?

Explore our own reactions to things that we see:

- Although the job of art critics is to comment on which elements of a piece of art are well-created and which aren't, we each judge a piece of art immediately by the way it makes us feel when we first see it.
- Nature is like that too — we each experience different thoughts and feelings when we are out in nature, and we each feel and think differently every time we re-visit the same place in nature.
- Combining art and nature, then, should provide the opportunity for expressing very individual perspectives.

Introduce photography as an art form that often represents nature:

- Yousuf Karsh is a celebrated Canadian who was famous for his portrait photos. American Ansel Adams is remembered for his tremendously beautiful landscape photos. These photographers are renowned because of the personal perspectives each communicated through their photographs.
- In creating a uniquely individual photo, the artist must first consider a variety of perspectives before choosing a single representation of the subject.

Action! (Explore & Explain)

1. Gather outdoors in nature.
2. Instruct students to individually explore an area and select a spot that is of personal interest.
3. Encourage students to select objects or small scenes that they find intriguing. Emphasize that people are an important part of nature, but for this activity students will be the creators, not the subjects, of the photos.
4. Ask students to consider their chosen subject from different perspectives. Encourage a variety of body positions (e.g., standing, sitting, lying down). If each student does not have a camera, then use frames made of construction paper or simply form a box with fingers to use as the frame.
5. Each student photographs his/her chosen subject.
6. In class, or on a laptop outside, students download their photos.
7. Students print photos in black and white or colour.
8. Students create photographic art work that communicates their ideas and feelings about the object or scene chosen and that incorporate elements and principles of design. Use the following procedure:
 - Divide a large piece of paper into 4 sections.
 - Glue the original photo in the first section,
 - Copy the photo and change the style, such as an Andy Warhol style, using a computer program.
 - Print and glue the copy into the second section.
(Option: print all in black and white and draw different styles using sketching pencils.)
 - Repeat process, choosing another artist's style for the third section.
 - Repeat process again, drawing own interpretation for the fourth section.
9. Conduct a gallery walk of the photographic art works. As each work of art is viewed, ask the artist which version of the photograph is preferred and why.

Consolidation (Elaborate, Evaluate, Extend)

Extension

- As an art critic, write a review of your own photos or the photos of another student. Compare the different versions including the use of the elements and principles of design and how your thoughts and feelings change when considering each one.
- Produce an exhibit for other classes, or for the school community.
- Create cards from the photos to sell to raise money for other class projects.

Critical Learning/Big Ideas

- Humans have created systems and structures that allow our modern society to function.
- Our current systems of food production, distribution and consumption impact our human and environmental health both positively and negatively.

Guiding Questions

1. How do we get our food?
2. How do we interact with the food production system?
3. What are the pros and cons of different food options
e.g. organic vs. non-organic, local vs. imported food?
4. What are the implications of our food supply system to human health and the natural environment?
5. Can we feed ourselves from items found in local nature?

Curriculum Expectations

Geography: The Themes of Geographic Inquiry

- Analyse current environmental issues or events from the perspective of one or more of the themes of geographic inquiry

Mathematics: Data Management and Probability

- Collect data by conducting a survey or an experiment to do with... their environment
- Select an appropriate type of graph to represent a set of data, graph the data...and justify the choice of graph

Learning Goals (Unpacked Expectations)

At the end of this lesson, students will (be able to):

- Explore produce in the local supermarket to consider factors involved in its production such as: growing methods including scale (e.g. factory farm, family farm) and process (e.g. hydroponic, organic); inputs (e.g. fertilizers, pesticides); labour involved (e.g. how much and by whom); and distribution (e.g. the distance travelled to reach the store and how the food was transported).
- Discuss the implications of production factors on energy use, environmental health, and human well-being.
- Consider edible food items that grow in local natural areas.

Prior Knowledge and Skills

- Basic understanding of vocabulary associated with food production
- Some prior exploration of the different methods of food production (e.g. organic, non-organic, local, imported)
- Recognition of the occurrence of edible food items in nature

Materials

- Clipboards
- Pencils
- Tally sheet to record produce observed (organic/non-organic, local/imported)

Consider...(assessing for, as, and/or of learning)

Minds On—Assessing for Learning

- Discussing the importance of food, how we gain access to it, and the implications of our food supply system

Action—Assessing for and of Learning

- Investigating the positive and negative aspects of how we acquire food
- Collecting and organizing data to represent information on food items available to us

Consolidation—Assessing for and of Learning

- Providing information and conducting further exploration on food-related issues



Supermarket Sweep

Minds On (Elicit & Engage)

The Hook

- Riddle: It is greater than your mightiest dreams and worse than your darkest nightmares. Poor people have it, but rich people need it, and if you eat it you will die. What is it?

ANSWER: Nothing

- Is there anything more important to our lives than the food that we eat?
- How important is the supermarket to modern society?

Learning Goals (share with class)

- We will discuss our modern system of producing and distributing food.
- We will visit our local supermarket to explore food: what is available, how was it produced, and where did it come from?
- We will consider the implications of food production both positive and negative.
- We will investigate edible food items that grow in local nature.

Introduction

Discuss the central role of food stores (e.g., grocery store, local market, farmer's market) within our communities.

- Food stores provide access to the food supply for those of us who don't produce all of our own food, which is almost everyone today. Examine how the food we eat is produced and distributed, and what the results are, both positive and negative, of our modern food supply system.
- Consider how First Nations peoples gathered their food from nature. What if our food supply system collapsed — could local nature support our food needs?

Action! (Explore & Explain)

Part 1

1. Bring a couple of fresh food items to class.
2. Instigate a class discussion with the following teacher prompts:
 - Where did this item come from?
 - Who produced it?
 - What are the costs of producing this item, both in terms of inputs (e.g., fertilizer, water, etc.) and bigger picture costs (e.g., labour force, environmental)?
 - Who benefits from the production of this item?
3. As a class, in preparation for the supermarket trip, construct a list of what you are going to tally. (Suggested headings: number of different fresh food items available; country of origin for each food item; percent of organic food available; and cost of each item).
4. Generate a tally chart to be used on the trip.
5. Review guidelines for the trip.
6. Lead the walking trip to a nearby supermarket.
7. Post-trip, provide time in-class to finalize work.
8. Discuss results as a class.

Part 2

9. Discuss what food is available to us "in the wild": how much knowledge do we have about food available to us in nature?
10. Introduce examples of food that can be obtained from nature (e.g., maple syrup, raspberries, hemlock tea from hemlock needles).
11. Go on a walk in a local natural area and record how many food sources can be recognized using the same headings created in Step 3. (NOTE: Other than the number of food items, all headings will give the same answer for all food sources recognized.)
12. Compare the information gathered from Part 1 and Part 2 and discuss the positive and negative aspects of both food supplies.
13. Summary discussion questions:
 - What are the alternatives to our current food production system?
 - Could we return to producing our own food, both individually, as a community, or even as a province? Would we want to?

Consolidation (Elaborate, Evaluate, Extend)

Extension

- Share results of the information gathered at the supermarket with the school community to increase public awareness of food-related issues.
- Follow up by having small groups research and present information on one edible item that occurs in local nature.
- Ask students to conduct another survey in their choice of supermarket with their family.

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Guide contributors – July 2011

Contributors

In July 2011, work on this guide began in earnest: Ron Ballentine from the Halton District School Board (HDSB) skilfully assembled a group of HDSB teachers with a remarkable passion for teaching outdoors. Additional educators with vast and diverse experience from other settings were added to complement the group. The efforts of this exceptional team defined this work, and the following contributors are owed a great debt of thanks:

HDSB: Ron Ballentine, Kathy Bocsi, Laureen Hardman, Valerie Healey, Kira Ife, Lisa Orvidas, Lori Tsotsos, Bert VandenNoort and Erin Walsh; Downsview Park: Colin Love; Elephant Thoughts: Jeremy Rhodes; Hillfield Strathallan College: John Hannah; Ontario EcoSchools: Elanor Waslander; Royal Botanical Gardens (RBG): Karin Davidson-Taylor, Ian Hendry, Kristen Janke and Barb McKean; The Laboratory School at the Dr. Eric Jackman Institute of Child Studies, Ontario Institute of Studies in Education: Lorraine Chiarotto; and Toronto and Region Conservation Authority (TRCA): Vicky An and Lindsay Bunce.

Subsequent to the original work, smaller groups worked on the learning experiences. Special thanks are owed to: Kristen Janke and Lisa Orvidas (Primary); Karin Davidson-Taylor and Valerie Healey (Junior); and Kathy Bocsi (Intermediate).

Piloting guide materials took place through teacher workshops presented in partnership with HDSB. Ron Ballentine was instrumental in organizing the workshops, and the following teachers served the role of expert presenters: Kathy Bocsi, Karin Davidson-Taylor, Laureen Hardman, Val Healey, Kira Ife, Kristen Janke and Lisa Orvidas.

Kira Ife and Darryl Sault generously field-tested several of the Primary lessons as the focus of a Teaching-Learning Critical Pathway (TLCP) cycle.

Elanor Waslander was integral in providing her patience, support and guidance in the important role of accomplishing the French translation of the entirety of this guide.

Irene Feddema of IF design Inc. applied her skilful graphics eye to the task of turning words on a page into an attractive and enjoyable reading experience.

Writing, re-writing and editing all materials in this guide relied on the skill and generosity of a small number of people over several months, and their contributions simply cannot be sufficiently acknowledged, but an attempt will be made nonetheless.

The contributions of Ron Ballentine cannot be overstated: no one has been more important to the realization of this project. Ron has been involved at every stage, and provided his immense abilities, tremendous support and wealth of experience with positive energy and extreme generosity at all times.

Karin Davidson-Taylor and Kristen Janke provided endless support, and offered helpful ideas and thoughtful advice on innumerable occasions. Their good humour, particularly at the most trying times, made all the difference. The suggestions made by Karin and Kristen have improved this guide in countless ways.

Drawing on her extensive experience in outdoor education, Barb McKean provided editing assistance and feedback, and generously supplied crucial support in freeing up RBG education staff to contribute as needed.

Jennifer Kilburn provided constant editing assistance and feedback, which improved the final product in a noticeable way. In addition, Jennifer generously endured many last-minute scheduling challenges, as did Ben and Finn Kilburn, to support the cause of seeing this guide through to its completion.

Finally, while no material in this guide was copied from an existing resource, some of the themes will undoubtedly seem familiar in tone or content to some readers. Unquestionably, the teachers who contributed to this guide have benefitted tremendously from the ideas of highly regarded colleagues and resources during their careers. To those who have generously shared your ideas, passion, and work with others: your efforts have made this guide possible. Thank you!

Bill Kilburn, Project Manager
Back to Nature Network
September 2012



"In 20 years of evaluating outdoor learning materials, I've never seen a guide so sensitive to the needs of adults willing and wanting to take kids outside, but who have not yet done so. This extraordinary collection of lessons and activities invite teachers and youth educators to open the door to authentic learning in the outdoors.

I was pleased to see so many thoughtful inclusions, such as drafts of letters that could be sent to parents and administrators to seek support for outdoor learning.

The schools we need are those where real learning happens outside the walls of the school as much as in, and where young learners develop a sense of wonder and curiosity about the natural world. This guide provides a road map to help get there."

Tim Grant, Editor,
Green Teacher magazine

"Into Nature is a professionally crafted and user-friendly resource. Busy teachers need materials that are well organized, rich in descriptive detail, and carefully crafted for maximum impact.

The three major sections of the guide (preparing to move instruction outdoors, short activities, and full lessons), make it easy to find relevant content. The use of suggested grade level designations as well as suggestions for different seasons add to the functionality of the resource.

The professional look and attractive layout rival many commercial materials. Ontario teachers are very fortunate to have access to this significant contribution to the outdoor learning movement."

Herb Broda, Professor of Education,
Author of *Schoolyard-Enhanced Learning* and *Moving the Classroom Outdoors*

"We owe The Back to Nature Network deep gratitude for producing one of the most readable, practical, imaginative guidebooks for all natural teachers — those educators who understand that it's essential to teach students about nature, but also to teach them in nature.

There's not an ounce of fat (or jargon) in this fine toolkit. It's a ready-to-go resource, applicable to every discipline. Students and teachers will find their imaginations ignited, their sense of awe — of nature and of learning — returned. And beyond the school, too, this is a tool for the whole family."

Richard Louv, Author of *The Nature Principle* and *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, and Co-founder and Chairman Emeritus, Children & Nature Network



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