



We all the Share the Same Soil

Farmers all across Canada have the goal of creating delicious, nutritious food for Canadians. Soil is important because it helps nourish plants. One helper to soil is worms, and by reading *Alex's First Seed*, students will gain an appreciation and knowledge about what worms do and how they are helping in the growing of food for Canadians!

Students will learn how worms help the soil which grows food for Canadians to eat!

Subject Levels/ Suggested Grade

English Language Arts K-3

Arts Education K-3

Science K-3

Health and Physical Education K-3

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Grade and Subject	Curricular Competencies	Content Connections
English Language Arts K	<p>Comprehend and connect (reading, listening, viewing)</p> <ul style="list-style-type: none"> • Use sources of information and prior knowledge to make meaning • Use developmentally appropriate reading, listening, and viewing strategies to make meaning <p>Create and communicate (writing, speaking, representing)</p> <ul style="list-style-type: none"> • Exchange ideas and perspectives to build shared understanding • Use language to identify, create, and share ideas, feelings, opinions, and preferences 	<p>Story</p> <ul style="list-style-type: none"> • structure of story <p>Strategies and processes</p> <ul style="list-style-type: none"> • reading strategies
English Language Arts 1	<p>Comprehend and connect (reading, listening, viewing)</p> <ul style="list-style-type: none"> • Use developmentally appropriate reading, listening, and viewing strategies to make meaning • Engage actively as listeners, viewers, and readers, as appropriate, to develop understanding of self, identity, and community <p>Create and communicate (writing, speaking, representing)</p> <ul style="list-style-type: none"> • Exchange ideas and perspectives to build shared understanding • Identify, organize, and present ideas in a variety of forms 	<p>Story/text</p> <ul style="list-style-type: none"> • elements of story <p>Strategies and processes</p> <ul style="list-style-type: none"> • reading strategies
English Language Arts 2	<p>Comprehend and connect (reading, listening, viewing)</p> <ul style="list-style-type: none"> • Use sources of information and prior knowledge to make meaning <p>Create and communicate (writing, speaking, representing)</p> <ul style="list-style-type: none"> • Exchange ideas and perspectives to build shared understanding 	<p>Story/text</p> <ul style="list-style-type: none"> • elements of story <p>Strategies and processes</p> <ul style="list-style-type: none"> • reading strategies

Grade and Subject	Curricular Competencies	Content Connections
English Language Arts 3	Create and communicate (writing, speaking, representing) <ul style="list-style-type: none"> • Exchange ideas and perspectives to build shared understanding 	Story/text <ul style="list-style-type: none"> • elements of story Strategies and processes <ul style="list-style-type: none"> • reading strategies
Arts Education K-3	Exploring and creating <ul style="list-style-type: none"> • Explore elements, processes, materials, movements, technologies, tools, and techniques of the arts • Create artistic works collaboratively and as an individual, using ideas inspired by imagination, inquiry, experimentation, and purposeful play Reasoning and reflecting <ul style="list-style-type: none"> • Develop processes and technical skills in a variety of art forms to nurture motivation, development, and imagination Communicating and documenting <ul style="list-style-type: none"> • Express feelings, ideas, stories, observations, and experiences through the arts • Experience, document and share creative works in a variety of ways 	<ul style="list-style-type: none"> • processes, materials, movements, technologies, tools and techniques to support arts activities • personal and collective responsibility associated with creating, experiencing, or sharing in a safe learning environment Grade 1/2/3: <ul style="list-style-type: none"> • visual arts: elements of design: line, shape, texture, colour; principles of design: pattern, repetition
Science K	Questioning and predicting <ul style="list-style-type: none"> • Demonstrate curiosity and a sense of wonder about the world • Observe objects and events in familiar contexts • Ask simple questions about familiar objects and events Planning and conducting <ul style="list-style-type: none"> • Make exploratory observations using their senses Processing and analyzing data and information <ul style="list-style-type: none"> • Experience and interpret the local environment • Discuss observations Communicating <ul style="list-style-type: none"> • Share observations and ideas orally 	<ul style="list-style-type: none"> • Basic needs of plants and animals • Seasonal changes • Living things make changes to accommodate daily and seasonal changes

Grade and Subject	Curricular Competencies	Content Connections
Science 1	<p>Questioning and predicting</p> <ul style="list-style-type: none"> • Demonstrate curiosity and a sense of wonder about the world • Observe objects and events in familiar contexts • Ask simple questions about familiar objects and events <p>Planning and conducting</p> <ul style="list-style-type: none"> • Make and record observations <p>Processing and analyzing data and information</p> <ul style="list-style-type: none"> • Experience and interpret the local environment • Compare observations with predictions through discussion <p>Communicating</p> <ul style="list-style-type: none"> • Communicate observations and ideas using oral or written language, drawing, or role-play 	<ul style="list-style-type: none"> • Classification of living and non-living things • Names of local plants and animals • Behavioural adaptations of animals in the local environment
Science 2	<p>Questioning and predicting</p> <ul style="list-style-type: none"> • Demonstrate curiosity and a sense of wonder about the world • Observe objects and events in familiar contexts • Ask simple questions about familiar objects and events <p>Planning and conducting</p> <ul style="list-style-type: none"> • Make and record observations <p>Processing and analyzing data and information</p> <ul style="list-style-type: none"> • Experience and interpret the local environment • Compare observations with predictions through discussion <p>Evaluating</p> <ul style="list-style-type: none"> • Compare observations with those of others <p>Communicating</p> <ul style="list-style-type: none"> • Communicate observations and ideas using oral or written language, drawing, or role-play 	<ul style="list-style-type: none"> • physical ways of changing materials

Grade and Subject	Curricular Competencies	Content Connections
Science 3	Questioning and predicting <ul style="list-style-type: none"> • Demonstrate curiosity about the natural world • Observe objects and events in familiar contexts • Identify questions about familiar objects and events that can be investigated scientifically • Make predictions based on prior knowledge Planning and conducting <ul style="list-style-type: none"> • Make observations about living and non-living things in the local environment Processing and analyzing data and information <ul style="list-style-type: none"> • Experience and interpret the local environment 	<ul style="list-style-type: none"> • biodiversity in the local environment
Physical Health and Education K-3	Physical literacy <ul style="list-style-type: none"> • Develop and demonstrate a variety of fundamental movement skills in a variety of physical activities and environments 	<ul style="list-style-type: none"> • proper technique for fundamental movement skills, including non-locomotor, locomotor, and manipulative skills • how to participate in different types of physical activities, including individual and dual activities, rhythmic activities, and games

Teacher Background

Students will have the opportunity to gain knowledge of worms and make observations before reading *Alex's First Seed*. During reading, students will make connections to growing, soil, plants and worms. After reading, students can take part in art, physical education and science lessons to further extend their knowledge.

Materials

- *Alex's First Seed* Book (accessed online [here](#))
- Live worm(s)
- Box with low sides
- Magnifying glass
- *Alex's First Seed Vocabulary*
- Arts Education Materials:
 - Large white craft paper/bulletin board paper

- Paint (all colours)
- Paint brushes and sponges (varying sizes)
- Pink and white construction paper
- Black sharpies
- Index cards
- Science Materials:
 - Large Mason Jar (quart size)
 - Mason jar lid with holes poked in top
 - Handful of gravel
 - Dirt (potting soil works well)
 - Light coloured sand
 - Spray bottle
 - Fruit/vegetable scraps cut up into small pieces
 - 2-3 Worms
 - Black construction paper
 - Tape
 - *Worms at Work Observations*
- Physical Health and Education Materials:
 - Cones
 - Hula hoops/benches
 - Parachute
 - 4-6 Skipping ropes
 - 4 colours of yarn
 - Scissors
- Student handouts:
 - *All About Worms KWL Chart*

Procedure

Hook:

1. Talk to students about making observations (looking at something carefully in order to gain information). Explain to them how scientists do this and that they will be making observations about worms. Set up some behaviour/management expectations for a successful observation time.
2. Have students gather around a table/carpet that has a box (with low sides) containing one or two worms.
3. Make observations about the worm, and ask questions as students observe.
 - a. How can you tell which end is the head?
 - b. Can you tell how many ring-like segments it has?
 - c. Did you know that earthworms have setae (little bristles) on each segment of their bodies to help them move?
 - Wash off a worm, put on a piece of paper, and see if you can hear the setae rubbing.
 - Can you see the setae with a magnifying glass?
4. After making observations complete the K and W sections of the *All About Worms KWL Chart*. This can be completed as a whole class activity, or older students can fill it out on their own or in partners.

Body:

1. Display MANURE, CASTINGS, ORGANIC MATTER and their definitions by copying information from *Alex's First Seed Vocabulary Document* or printing *Alex's First Seed Vocabulary Document*.
 - a. Use cardstock to make them more reusable and ask students to help choose/draw pictures to enhance the definitions.
2. Show students the cover of *Alex's First Seed*.
3. Ask students what they think the book is about. Take several answers.
4. Ask: What do you think worms have to do with our food?
5. Begin reading:
 - a. Stop at page 3, and read the dedication. Ask if anyone knows a farmer. Ask students to share their favourite locally grown fruit or vegetable with a partner.
 - b. Stop at page 5 and ask students if they remember what manure is.
 - c. Stop at page 11 and ask: Can you think of different plants that worms might eat? Use the picture to look for clues. The organic matter they eat helps keep them healthy.
 - d. Stop at page 19 and discuss castings. What are castings? What do they do for plants?
6. After reading:
 - a. Discuss some or all of the following questions in partners or as a whole class.
 - i. If you could tend to (take care of) a seed like Alex, which one would you choose?
 - ii. How do worms help farmers?
 - iii. How do the tunnels that worms dig help plants?
 - iv. What did you learn about farming from the story?
7. Read, The Fun Facts about Worms page, at the end of the story and use this information, and the other information from the story to complete the *All About Worms KWL Chart*.

Closing:

Choose one, two or all three of these activities to enhance student's learning about worms.

Visual Arts- Worm World Mural:

1. Tape large pieces of white craft/bulletin board paper to the wall. Students can be split into groups, and can each complete part of the mural, or can all work together on the different parts.
2. Have students paint the white paper brown to represent soil. Can use brushes, sponges, and vary the shade of brown throughout the "soil" by adding drops of black paint to the brown.
3. Have students paint grass, flowers or the tops of plants (use the books *Up in the Soil and Down in the Dirt* by Kate Messner and *Tops and Bottoms* by Janet Stevens for great visuals) on white construction paper, and then cut out and glue/tape to the top of the "soil".
4. Have students use black paint and thick paintbrushes to make worm tunnels in the "soil".
5. Have students use pink construction paper to make worms, adding segments with black sharpie. They can then cut them out and glue them in the tunnels.
6. Have students write facts and what they have learned about worms on index cards and then glue the facts around the outside of the mural.

7. Invite other classes to come and view the mural, and to learn all about how worms help farmers grow food for us to eat.

Science: Worm Observation Jar

1. Tell class that you will be making an observation jar to see what worms do!
2. Place a small handful of gravel at the bottom on a large mason jar (quart size).
3. Create alternate layers of sand and soil. Try and use light colored sand for contrast. Stop about 10 cm. from the top and add some fruit or vegetable scraps (cut into small pieces). Spray dirt and scraps with water so it is just damp, not saturated.
4. Add 2-3 worms, and place jar lid (with holes) on top.
5. Wrap jar with a piece of black construction paper, and tape it so the worms have dark to work. Unwrap the paper the next day and make observations on *Worms at Work Observations* page.
6. Spray the soil daily, if it needs to be moistened, and make observations every day for about a week.
7. Once you have completed your observations release worms back into the garden.

Health and Physical Education- Worm Games:

1. Worm Obstacle Course Relay
 - a. Break class into 4 equal groups.
 - b. Set up 4 cones, and have each group stand behind one.
 - c. Have each group go through the obstacle course that is set up in front of their cone (over a bench, around a hula hoop, between the cones, etc.) on their bellies.
 - d. The first group to have their whole group complete the course, wins.
2. Wiggle the Worms off the Parachute
 - a. Place the parachute in the middle of a large open area. Have students each grab the parachute with two hands and stand with it at waist height. Make sure the students are spread out evenly around the parachute.
 - b. Place 6 skipping ropes on the parachute, and have the students wiggle the worms off.
 - i. Try timing the students to see how fast they can wiggle the worms off.
 - ii. Students can try wiggling with just one hand, or backwards.
 - iii. Have students try wiggling up and down or left to right.
3. The Longest Worm

The tying might be hard for younger grades, so play this with an older buddy class or enlist an adult to help each group.

 - a. Cut 4 pieces of yarn (in 4 different colours) into one meter lengths.
 - b. Then cut each piece of yarn into 5 pieces.
 - c. Hide all the pieces around the gym or field or playground.
 - d. Divide class into 4 groups, and have them appoint one person for their team to be the "captain", who will sit on one place and tie the yarn pieces together when their team members bring them.
 - e. Assign each team a colour of yarn.
 - f. Each team must hold hands and remain in a worm formation while they are looking for their 5 pieces of yarn. When they find a piece, they must bring it back to the "captain" who will tie it to the next piece. The first team to tie all their pieces together into a worm, wins!

- g. Alternative: Can also let all teams tie their worms together and measure for the longest worm (they will have to be careful tying the pieces of yarn together).

Extension Activities

- [The Best Worm Books for Tots](#)
- [Alex's First Seed Guided Reading Lesson](#)
- [Alex's First Seed Read Aloud](#)
- [Alex's First Seed Activity Book](#)
- Explore how First Nations people honour that everything in nature is connected, through [The Learning Circle: Classroom Activities on First Nations in Canada](#).
- Watch and discuss [time lapse video on vermicomposting](#).

Credit

<https://inspirationlaboratories.com/backyard-earthworm-experiments/>

<https://www.holliegriffith.com/worm-week/>

<http://mrsmyerskindergarten.blogspot.com/search?q=worms>

Alex's First Seed Book:

<https://bcaitc.ca/sites/default/files/resources/Alex%27s%20First%20Seed%20Reduced.pdf>

The Best Worm Books for Tots:

<https://rainydaymum.co.uk/the-best-worm-books-for-tots/>

Alex's First Seed Guided Reading Lesson: <https://aitc-canada.ca/Portals/0/AITC/Resources/ClassResources/Alex's%20First%20Seed%20-%20Guided%20Reading.2dQXJX.pdf>

Alex's First Seed Read Aloud:

<https://www.youtube.com/watch?v=8GB1XgIPNUQ>

Alex's First Seed Activity Book:

<https://aitc-canada.ca/Portals/0/360/alexs-first-seed/index.html#/lessons/QDSO-L5f3dTWdTqHB4jmFwz07Bq8rXVN>

The Learning Circle: Classroom Activities on First Nations in Canada- Ages 8-11. Unit 6: First Nations and the Environment. Nature (worms) as a recycler. <https://www.rcaanc-cirnac.gc.ca/eng/1316530294102/1535458624988#un6>

Pumpkin versus Red Wigglers (62 day) time lapse video:

<https://www.youtube.com/watch?v=3NY-DTD7obE>

Alex's First Seed Vocabulary

MANURE	A fertilizer made from animal waste that is used to help plants grow healthy and strong.
CASTINGS	The waste produced by worms as they eat and digest compost and organic matter. Also known as Vermicast.
ORGANIC MATERIAL	The remains of dead plants and animals that are decomposing and breaking down.

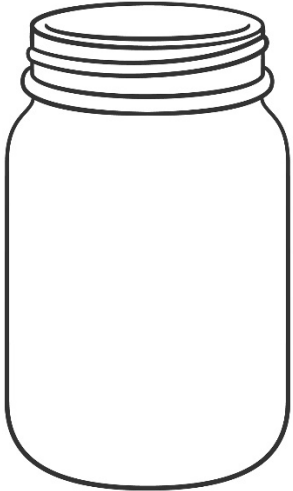
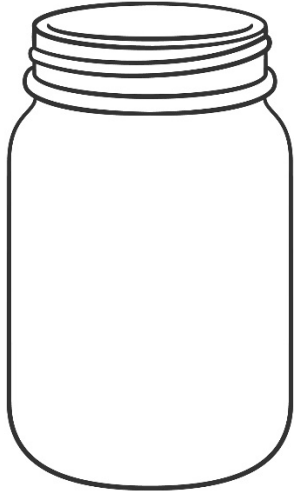
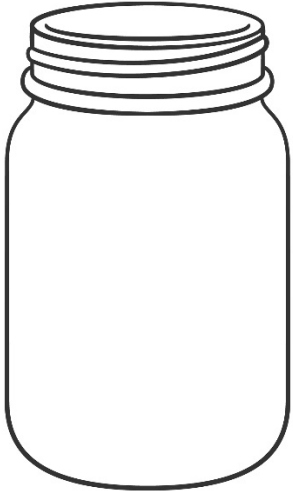
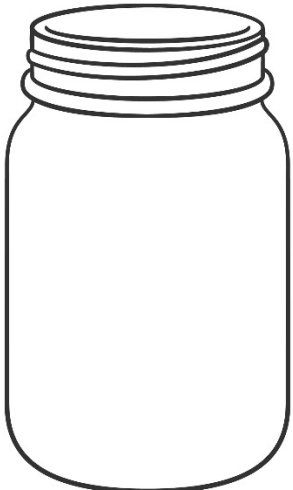
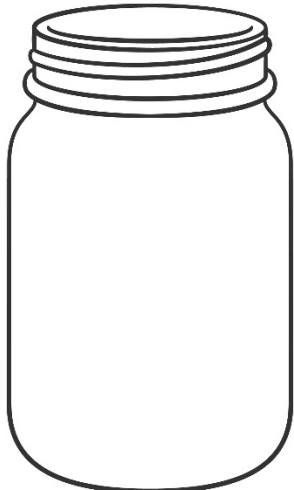
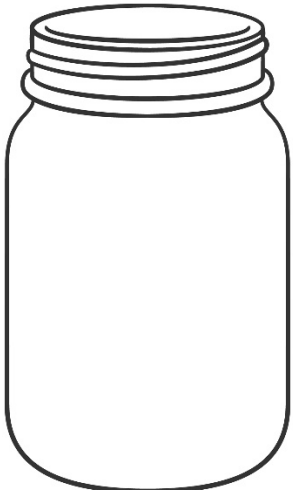
All About Worms KWL Chart

Name: _____

Date: _____

K	W	L

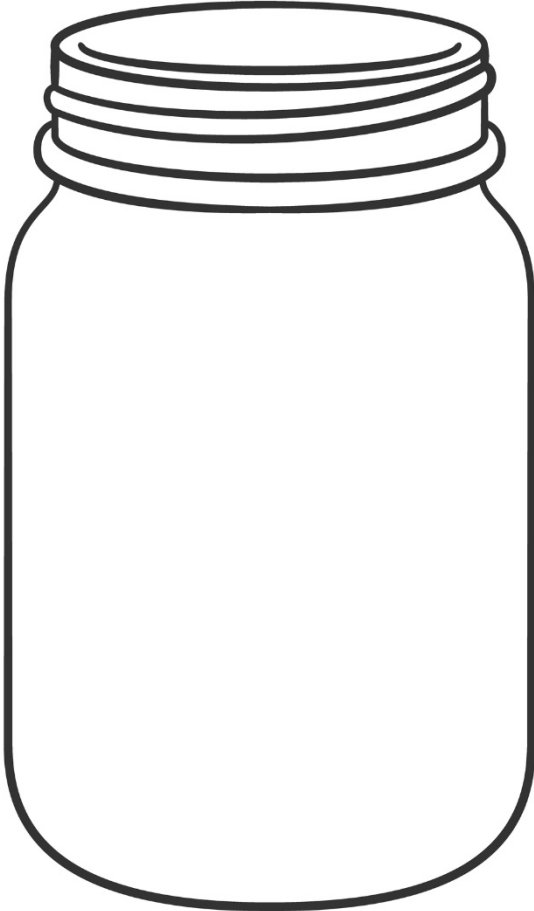
Worms at Work Observations

<p>Day ____</p>  <hr/> <hr/> <hr/>	<p>Day ____</p>  <hr/> <hr/> <hr/>	<p>Day ____</p>  <hr/> <hr/> <hr/>
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Worms at Work Observations

Name: _____

Day ____



Day ____

