Introduction

We are like-minded educators who come from very different backgrounds. Becky has taught at private and international schools in Canada, Asia, and Africa; and she is an expert in the International Baccalaureate Primary Years Program. Laura has taught in various early years environments in England and in Canada. Our experiences overlap with the knowledge that best practices for our young learners centre around curiosity, inquiry, and discovery. We are interested in educating the whole child.

In Ontario, there is a movement toward bringing the inquiry and play-based learning environments currently flourishing in Full Day Kindergarten up through the primary grades and beyond. Whenever there is movement in education however, there is also resistance. The best way to combat that resistance is by showing those who resist just what kinds of incredible things can happen in a carefully and thoughtfully planned inquiry-based environment. Our goal in creating this unit was to demonstrate one example of how a holistic, cross-curricular, inquiry-based unit can lead to incredibly rich learning opportunities for students.

Living Things

A Grade 1 Inquiry

Big Idea/Focus Question: What is our responsibility (as humans) to care for and respect all living things?

Enduring Understandings:

1. Plants and animals, including people, are living things.
2. Living things have some basic common characteristics -they grow, take in food to create energy, make waste, and reproduce
3. Living things have basic needs which are met from the environment (air, water, food, shelter)
4. Living things behave differently and have differing characteristics, traits and needs
5. Humans need to take responsibility to maintain a healthy environment so that all living things get what they need
6. All living things should be treated with care and respect

Key Questions (to drive inquiry):

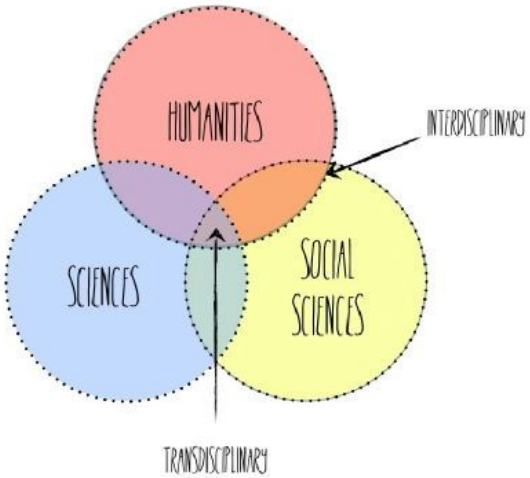
- What does it mean to be living? (key concept: form)
- What are the basic needs of all living things? (key concept: form)
- Characteristics –unique (key concept: causation)
- How does the environment affect living things? (key concepts: connection)
- As people, what is our responsibility towards caring and respecting other living things? (key concept: responsibility)

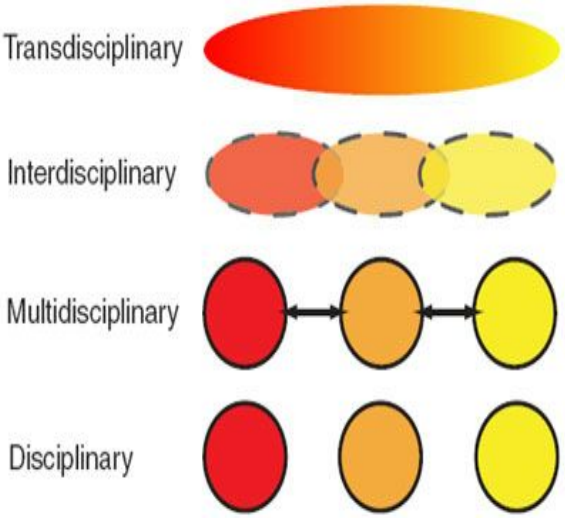
Inquiry-Based Learning

Inquiry-based learning is rooted in the belief that by asking questions, solving problems and making discoveries learners can find deep and meaningful understanding. Inquiry is a complex process that involves a variety of skills such as formulating and asking questions, researching, sorting, synthesizing, evaluating, drawing conclusions, asking further questions, taking action and reflection. The power of inquiry is the potential for deep-rooted engagement, strong commitment and genuine understanding that is born out of curiosity. Inquiry-based learning often offers the learner choice -and personal interest is a powerful tool for learning since it leads to increased levels of involvement and ownership. Inquiry-based learning gives learners a voice. Teachers in an inquiry-based classroom take on the role of a facilitator who supports students in finding answers to their questions and helps them develop the skills to look deeper, make connections and find out more about the world around them. The following images represent two different ways that some people understand inquiry-based learning.

Transdisciplinary Learning

Transdisciplinary learning is concerned with concept-based, rather than content-based learning. Subjects are not compartmentalized and taught in isolation, but rather many disciplines are involved, all centred around a common concept, theme or big idea. Transdisciplinary learning is focused on meaningful experiences, often using real-life context to bring authenticity to the learning. Transdisciplinary learning is a holistic approach to education. The following diagrams are two visual representations of transdisciplinary learning.





Attributes/Attitudes in focus:

- **Caring**: students will learn about and have the opportunity to demonstrate their understanding of what it means to be caring by making choices that positively affect other living things. Through their work on understanding what it means to be caring, students will also explore the ideas of empathy, compassion and respect.
- **Respect**: students will uncover what it means to respect others, themselves and the world around them.

This unit lends itself very well to exploring the concepts of being caring and being respectful. We will also explore the concept of responsibility by asking students to consider what human's responsibility is to care for and respect other living things. A variety of texts will be used to explore the idea of caring for and respecting living things (people, animals and plants) in the world around us. We will uncover the importance of caring for and respecting our environment since a healthy environment provides the basic needs for all living things. Some examples of texts that may be used to explore the idea of being caring, respectful and taking responsibility for the world around us are:
http://omazingkidsllc.com/tag/compendium-live-inspired/
http://www.smartbooksforsmartkids.com/monkey-business/
http://www.scholastic.com/teachers/book/each-living-thing#cart/cleanup

Our Unit's Links to the Ontario Curriculum:

Science & Technology

Overall Expectations: "Understanding Life Systems: Needs and Characteristics of Living Things"

1. assess the role of humans in maintaining a healthy environment
2. investigate needs and characteristics of plants and animals, including humans
3. demonstrate an understanding of the basic needs and characteristics of plants and animals, including humans

Specific Expectations:

1.1 identify personal action that they themselves can take to help maintain a healthy environment for living things, including humans

1.2 describe changes or problems that could result from the loss of some kinds of living things that are part of everyday life (e.g., if we lost all the cows, all the insects, all the bats, all the trees, all the grasses), taking different points of view into consideration

2.2 investigate and compare the basic needs of humans and other living things, including the need for air, water, food, warmth, and space, using a variety of methods and resources

2.7 use a variety of forms (e.g., oral, written, graphic, multimedia) to communicate with different audiences and for a variety of purposes

3.2 identify the physical characteristics (e.g., size, shape, colour, common parts) of a variety of plants and animals

3.4 describe the characteristics of a healthy environment, including clean air and water and nutritious food, and explain why it is important for all living things to have a healthy environment

3.5 describe how showing care and respect for all living things helps to maintain a healthy environment

Language

Overall Expectations: Oral Language

1. listen in order to understand and respond appropriately in a variety of situations for a variety of purposes;
2. use speaking skills and strategies appropriately to communicate with different audiences for a variety of purposes.

Specific Expectations:

1.2 demonstrate an understanding of appropriate listening behaviour by using active listening strategies in a few different situations

1.4 demonstrate an understanding of the information and ideas in oral texts by retelling the story or restating the information, including the main idea

2.2 demonstrate an understanding of appropriate speaking behaviour in a few different situations, including paired sharing and small- and large-group discussions

Overall Expectations: Reading

1. read and demonstrate an understanding of a variety of literary, graphic, and informational texts, using a range of strategies to construct meaning;
2. recognize a variety of text forms, text features, and stylistic elements and demonstrate understanding of how they help communicate meaning

Specific Expectations:

1.2 identify a few different purposes for reading and choose reading materials appropriate for those purposes

1.6 extend understanding of texts by connecting the ideas in them to their own knowledge and experience, to other familiar texts, and to the world around them

1.8 express personal thoughts and feelings about what has been read

2.1 identify and describe the characteristics of a few simple text forms, with a focus on literary texts, graphic texts, and informational texts

Overall Expectations: Writing

1.generate, gather, and organize ideas and information to write for an intended purpose and audience

Specific Expectations:

1.1 identify the topic, purpose, audience, and form for writing, initially with support and direction

Health & Physical Education

Overall Expectations: Living Skills

1. demonstrate personal and interpersonal skills and the use of critical and creative thinking processes as they acquire knowledge and skills in connection with the expectations in the Active Living, Movement Competence, and Healthy Living strands for this grade.

Specific Expectations:

1.4 apply relationship and social skills as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living to help them interact positively with others, build healthy relationships, and become effective group or team members

The Arts

Overall Expectations: Dance

A1. Creating and Presenting: apply the creative process to the composition of simple dance phrases, using the elements of dance to communicate feelings and ideas

Specific Expectations:

A1.4 use varied and/or contrasting body shapes to communicate different types of messages

Learning Engagements:

A variety of learning engagements have been planned for this unit based on Kath Murdoch's inquiry cycle. Please see Figure 1 for more information about this inquiry cycle. The purpose of using an inquiry cycle when developing the learning engagements for this unit is to take a more purposeful and thoughtful approach to helping students move from what they already to know to acquiring and processing new information. An inquiry cycle supports a constructivist approach in which there is a natural process of building understanding over time.

Stage of Inquiry Cycle	Learning Engagements	Technology to support learning
Tuning In	1. Class Discussion/Brainstorm - 'What does it mean to be living?' -pose this key question and have a class brainstorm –record every answer/idea	1. -record on interactive whiteboard and save so that the discussion can be revisited and ideas can be added (in a different colour) as students knowledge and understanding grows. -interactive whiteboard + software
	2. Living Things Yoga -start with kids yoga video -show some examples of animal posture yoga cards (eg: 'yawn like a lion', 'kneel like a camel', etc…) –from Toronto Zoo teacher pack -ask students to think of a yoga posture that represent a living thing (eg: tree pose, cat pose, etc…)	2. - "Cosmic Kids" Yoga videos on youtube - linked to LCD projector or IWB - "Cosmic Kids" examples: https://www.youtube.com/watch?v=2cNjAj_o0SI https://www.youtube.com/watch?v=hM0-ZYh6KIU
	3. "I Wonder" Discovery Table - set up a table with a variety of living things (e.g. small plant, ant farm, flower, etc.), and non-living things (e.g. pencil, stuffed teddy bear, book, etc.) ready to explore. – to encourage further exploration, use masking tape to map out two separate sorting circles: one labelled "living" and the other labelled "non-living". - observe if students are able to sort all the living and non-living things into the correct sorting circle. - display a few non-fiction texts close to the "I wonder" table with information on various living things for student reference	3. - QR code generator - iPads with QR code scanner - short youtube videos about living things, e.g.: https://www.youtube.com/watch?v=T8nxiro1u78

	- post pictures of various living things on the wall above the “I wonder” table with QR codes beneath them that link to educational videos about that particular living thing. Keep an iPad at the “I wonder” table open to a QR code scanner for student use. Students can scan the various QR codes that are of interest to them and learn more about some of the living things that spark their curiosity.	
	4. Read-Aloud: “Each Living Thing” by Joanne Ryder - book aims to show children the importance of being considerate of all living things – whether that means interacting gently with them or keeping a respectful distance from them - read this book to help provoke student curiosity about what it means to care for living things - class discussion: ask students what they think the “main idea” of the book is	
Finding Out	1. Living Things Search (nature walk) -play BBC Bitesize Science ‘Forest Life Trail’ & discuss OR -play Eduplace ‘Looking At Plants and Animals’ -explain plan to take our own nature walk to find as many living things as possible -students to take photos of the living things they find	1. -websites: http://www.bbc.co.uk/bitesize/ks1/science/living_things/play/ OR http://www.eduplace.com/kids/hmsc/activities/simulations/grk/unita.html -digital cameras or iPads to take photographs
	2. 5 Questions –Is It Living? -brainstorm what living things have in common to generate your classes’ criteria. From that list create 5 question -eg: -Does it grow? -Does it take in food? -Does it need water? -Does it reproduce/make babies? -Does it need air?	2. - use an online graphic organizer tool (e.g. Popplet) and display thinking on IWB or LCD projector https://popplet.com/
	3. Living vs. Non-Living T-Chart - using pictures of living things students collected on their nature walk, as well as pictures of various non-living things, have students categorize living vs.	3. - LCD projector or IWB/SmartBoard

<table>
<tr>
<td></td>
<td>non-living pictures on a t-chart:

<table><tr><td>Living Things</td><td>Non-Living Things</td></tr><tr><td></td><td></td></tr></table>
- this can be done using regular paper chart paper, OR it can be done using an LCD screen or SmartBoard,</td>
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<td></td>
<td>4. <u>Class Book</u>
- using an iPad or other tablet device, meet with each student individually and show them a picture of a “living thing” that was taken during our nature walk.
- ask the student to look at the picture and talk about what they see
- annotate the student’s description right on the picture using the “skitch” app.
- if student gives minimal one-word answers, prompt more detailed description with questions such as “Why should we take care of trees?” or “How do you show respect for geese?”
- annotated skitch pictures can be printed out and put into a class book for the classroom library
- annotated skitch pictures can also be uploaded to a class blog or class website as a “virtual class book” using iMovie or PowerPoint</td>
<td>4.
- iPad with “Skitch” app
- iMovie or PowerPoint
- Class blog or website for sharing virtual class book</td>
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<tr>
<td>Sorting Out</td>
<td><u>1. Free Journal Writing</u>
Keep student journals out and easily accessible. Post a few prompting questions and sentence frames near the journals to help motivate students to write a response during their exploration time:
“My favourite animal is….”
“Should we be nice to spiders?”</td>
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	"Are trees special?"	
	2. Key Question Interviews Have iPads or laptops available for students to interview each other. The interviewer will ask the interviewee 1 question from the list of 5 key questions (posted in the classroom and also on cue cards with the iPads/laptops. The interviewer will record the interviewee's answer to the question. These can be shared with the class, posted on the class blog, used for eportfolios, or complied in a class ebook.	2. -iPad video function or voicethread (laptops) to record answers
Going Further	1. Class Bear Adoption - The WWF (World Wildlife Foundation) has a "classroom adoption kit" program available for classes to "adopt" either a polar bear or a panda bear stuffed toy for students to care for. All proceeds from the purchase of an adoption kit go toward WWF's continuing conservation efforts. - introduce the two types of bears (polar and panda) via youtube videos, and students can choose as a group which type of bear they would like to adopt. - once the furry friend arrives, acknowledge the fact that the stuffed bear is not actually a living thing, but that the class will care for the bear as if it is a living thing. - learning can be extended through WWF online resources at http://schools.wwf.ca/Classroom -once the furry friend arrives the class can use Pebble Go (the emergent reader research solution) to research this animal's characteristics and needs.	1. http://www.eduplace.com/kids/hmsc/activities/simulations/gr3/unita.html (good example of comparing 2 living things –looking for common characteristics) http://schools.wwf.ca/Classroom Panda Video: https://www.youtube.com/watch?v=wO9PjteuUuM Polar Bear Video: https://www.youtube.com/watch?v=F4xylP62Wcc www.pebblego.com

	2. <u>Student Info Videos using Aurasma</u> - have students draw pictures of living things, and post the drawings up around the room at student eye level. - have students make a short video describing what's in their picture (e.g. "I made a tree because trees give us shade and oxygen, and I like trees") - link student videos to their pictures using the "Aurasma" app. - keep a few iPads available open to the Aurasma app for student use. - when students hold the iPad up to the different pictures, the Aurasma app will automatically recognize the picture "trigger" and play the child's descriptive video.	2. iPads with "Aurasma" app downloaded and with student videos linked to student drawings
	3. <u>Wonder Wall</u> Encourage students to post questions on the Wonder Wall using a prompt such as, 'What questions has this inquiry about living things made you wonder about?' OR 'Now that we have started to learn about living things and our responsibility for them, what else would you like to find out about?'.	
Making Conclusions	1. <u>Think/Pair/Share</u> Once the class has had ample time to explore living things through various provocations and activities over several days, the teacher will gather students together on the large gathering carpet. The teacher will ask students to partner up for a "think/pair/share" and ask them to talk about our big guiding question: Is it our responsibility (as humans) to respect and care for all living things? After each child has had a chance to share their thoughts with their partner, students can make a circle and share their thoughts and reflections with their classmates. As always, students have a "right to pass" and can choose to share their thoughts with their teacher privately later on instead.	1. The teacher can record anecdotal observations of student thinking for ongoing assessment purposes using an app such as "Teacher Notes" or "Evernote" on a tablet device.
	2. <u>Imaginary Creatures</u> Students will create their own imaginary creature. They will describe its characteristics. They will also list and explain what the creature needs to survive.	2. Teachers may choose to give students the option to complete this task using the Monki Animal Builder app (iPad) rather than drawing their own imaginary

	Monki Animal Builder iPad app: http://topbestappsforkids.com/monki-animal-builder-app-review-11456/	creature. This app is sure to inspire imagination and creativity. Also, it provides students with a wide variety of features to choose from (some of which they may not think of themselves) to spark discussion around characteristics and needs.
Taking Action	1. Student-Initiated Action Teachers will look for and celebrate any student-initiated action. A survey will go home near the end of the unit and will ask parents a variety of questions including this action-focused question; In what ways has this inquiry into *our responsibility (as humans) to care for and respect all living things* motivated your child to take action? This creates an opportunity to celebrate the action that students have taken at home (showing a greater level of care for pets, plants, etc… at home, choosing books to learn more about caring for the environment, etc…)	1. Action Wall (class blog) 'Look who's been caught taking action!' -as one way to celebrate student-initiated action teachers highlight students' action on the Action Wall on their class blog
	2. Community Clean-up Students may be interested in participating in a whole class action project such as a community clean-up in order to show care & respect for the environment. Details for the event can be decided by the class so that there is an element of student-initiated action and ownership.	

Home Learning Tasks:

For learning to be truly authentic and meaningful to young learners it is important that learning takes place at home, with family and outside of the

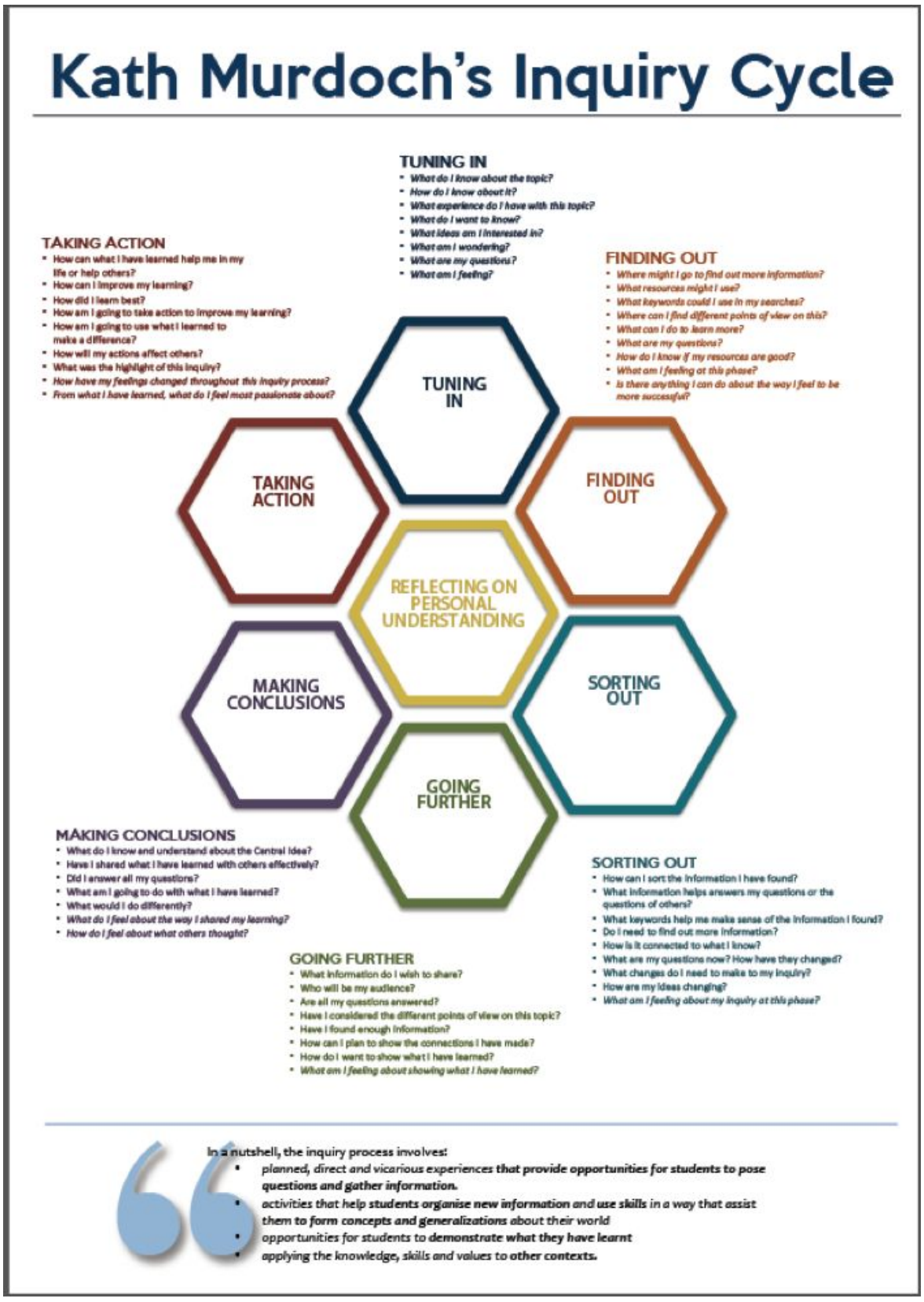
classroom walls. Home learning creates an opportunity for students to communicate with their families about their experiences at school, what they're engaged in in the classroom and what they are interested in finding out more about. Here are some ideas that we will encourage parents to participate in during their child's learning journey throughout this unit of inquiry:

- **Go on a Nature walk together** - Take a walk around your neighbourhood and ask your child to point out all the living things you see along the way. After having done the same activity around the school with his/her classmates, your child will be an expert!
- **Clean up your street** - As an extension of our class community clean-up, get some gloves and garbage bags, and head outside to clean up your street together. Talk to your child about how important it is to keep our community and parks litter-free. Explain that animals might try to eat garbage thinking that it's food, and that can make them very sick. Explain that garbage can take a long time to decompose and that this hurts the plants that are trying to grow and thrive in our community.
- **Read** -Read books about living things, the environment and the importance of taking care/respecting the world around us. The local library is a good source for finding books on this topic and there are also many useful resources online.
- **Write a list** -keep a list somewhere handy (maybe on the fridge) and write down every time someone in your family cares for or respects another living thing. See how long you can make the list in 1 day, a weekend or an entire week!
- **Plant something** -whether it's a veggie garden, a potted plant, some herbs for the kitchen or a tree for the yard -plant something and watch it grow. Take the time to write down all the things that that seed/seedling/plant needs to grow and flourish and also record who will be responsible for making sure the plant is cared for. Many children find it incredibly rewarding to see a plant, they are directly responsible for, thrive under their care.

We are looking for student-initiated action! If this inquiry motivates your child to independently make choices that benefit other living things or that furthers his/her learning please let us know. We'd like to celebrate this action at school! Some example of ways that students might take action during this unit are;

-finding books to share with the class about our big ideas
-taking greater care & responsibility for a pet or plants
-implementing a new rule at home that shows greater awareness and consideration for the environment (eg: starting a compost)

Figure 1


Kath Murdoch's Inquiry Cycle
TUNING IN
What do I know about the topic?
How do I know about it?
What experience do I have with this topic?
What do I want to know?
What ideas am I interested in?
What am I wondering?
What are my questions?
What am I feeling?
TAKING ACTION
How can what I have learned help me in my life or help others?
How can I improve my learning?
How did I learn best?
How am I going to take action to improve my learning?
How am I going to use what I learned to make a difference?
How will my actions affect others?
What was the highlight of this inquiry?
How have my feelings changed throughout this inquiry process?
From what I have learned, what do I feel most passionate about?
FINDING OUT
Where might I go to find out more information?
What resources might I use?
What keywords could I use in my searches?
Where can I find different points of view on this?
What can I do to learn more?
What are my questions?
How do I know if my resources are good?
What am I feeling at this phase?
Is there anything I can do about the way I feel to be more successful?
TUNING IN
TAKING ACTION
FINDING OUT
REFLECTING ON PERSONAL UNDERSTANDING
MAKING CONCLUSIONS
SORTING OUT
GOING FURTHER
MAKING CONCLUSIONS
What do I know and understand about the Central Idea?
Have I shared what I have learned with others effectively?
Did I answer all my questions?
What am I going to do with what I have learned?
What would I do differently?
What do I feel about the way I shared my learning?
How do I feel about what others thought?
SORTING OUT
How can I sort the information I have found?
What information helps answers my questions or the questions of others?
What keywords help me make sense of the information I found?
Do I need to find out more information?
How is it connected to what I know?
What are my questions now? How have they changed?
What changes do I need to make to my inquiry?
How are my ideas changing?
What am I feeling about my inquiry at this phase?
GOING FURTHER
What information do I wish to share?
Who will be my audience?
Are all my questions answered?
Have I considered the different points of view on this topic?
Have I found enough information?
How can I plan to show the connections I have made?
How do I want to show what I have learned?
What am I feeling about showing what I have learned?
In a nutshell, the inquiry process involves:
planned, direct and vicarious experiences that provide opportunities for students to pose questions and gather information.
activities that help students organise new information and use skills in a way that assist them to form concepts and generalizations about their world
opportunities for students to demonstrate what they have learnt
applying the knowledge, skills and values to other contexts.

Summary

We both found this reading and the assignment to be very useful to reinforce many important elements of what we believe to be 'best practice'. The reminder about Dewey and Vygotsky's work on constructivism was useful, as was the discussion and examples of blended learning. We enjoyed applying what we took from the reading to completing a practical and useful task. First of all, we learned that Selia is very skilled at partnering! We worked extremely well together -what a perfect pairing based on our interests, philosophies and approach to teaching and learning. Once we started the assignment we enjoyed working through the process of designing our unit through a 'backwards-by-design' approach, looking first at the big ideas and intended outcomes. Secondly we explored what skills the students would require to reach these outcomes. Finally we created learning engagements that would help students succeed. We decided to develop our learning engagements using Kath Murdoch's inquiry cycle because, as inquiry-based educators, we both believe that this is an excellent way for students to construct knowledge and develop strong conceptual understandings. We had many ideas for the use of technology in this unit, but having a well-designed plan helped us to identify the tools and strategies that would truly support student learning. It is easy to find an exciting online game for our students that has a topical link (Grade 1 online science games are fun!), but this assignment really highlighted the point that it is important to first identify the intended learning outcome and then decide if a technological tool is the best way for students to reach that learning goal. Sometimes we found that no technology was needed at all and we feel that we created a unit that has a great balance of tech and non-tech tools to support learning. The unit is blended and balanced and we are very happy with our result. The true test will be next academic year when Laura's grade 1 class tries out the unit of inquiry! One of the big 'take-aways' for both of us is the idea that 'best practice' is universal -it is not limited by age, stage of schooling or geographical location. Best practice focuses on what's best for student learning.