### Planning the inquiry

1. What is our purpose?

1a) To inquire into the following:

- **Transdisciplinary Theme**

  Sharing the planet: An inquiry into rights and responsibilities in the struggle to share finite resources with other people and with other living things; communities and the relationships within and between them; access to equal opportunities; peace and conflict resolution.

- **Central Idea**

  All living things have unique characteristics that help them grow in different locations.

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<thead>
<tr>
<th>Class/grade: 1st grade</th>
<th>Age group: 5-7 year olds</th>
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<tbody>
<tr>
<td>School: Wildwood</td>
<td>School code:</td>
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<tr>
<td>Teacher(s): Kelsey, Kreydick</td>
<td>Date: May June 2016</td>
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<td>Proposed duration: 112 hours over 6 weeks</td>
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1b) Summative assessment task(s):

What are the possible ways of assessing students’ understanding of the central idea? What evidence, including student-initiated actions, will we look for?

Students will plant seeds in cups. Each student will be responsible for the caring of their individual plant.

The students will use a rubric to assess each other’s short skits that show how plants survive in different locations.

Provided with a series of images of the plant cycle, the students will describe what is happening at each stage. They will also need to place images in the correct order from planting the seed to a full-grown plant. Students will also need to describe the plants’ unique characteristics that help plants survive. Students will also describe their responsibility for the care of plants. Students will design their own plants that incorporate the characteristics that help the plants survive in the conditions of their environment and present their plant to the class.

**Differentiation:** For many activities, students will be working with each other. Students that need assistance will get support from their peers in completing activities and during discussions.

During writing activities, students who need support will receive paper modified to their writing ability. If they need extra support, the teacher will work with students individually or in small groups.

For reflections, students will be given extra support on their self-assessment with the teacher dictating their responses when necessary.

2. What do we want to learn?

What are the key concepts (form, function, causation, change, connection, perspective, responsibility, reflection) to be emphasized within this inquiry?

Key concepts: Causation, responsibility

**Causation:** Students will learn that plants grow when certain conditions are met.

**Responsibility:** Students learn that plants are living things that need our care and that we need to be responsible for how we care for them.

**What lines of inquiry will define the scope of the inquiry into the central idea?**

- The conditions plants need to stay healthy
- Our responsibilities towards the plants we choose to grow
- Characteristics of plants

**What teacher questions/provocations will drive these inquiries?**

What makes a plant a plant?
What do you need to grow a plant?
How do seeds grow in the soil?
Can plants grow in water instead of soil?
Why did the plant in the closet turn out yellow?
How does a plant grow?
Why do some seeds grow in cotton?
Why did some of the leaves in our plot turn yellow?
What is a healthy plant?
What are our responsibilities to keep them healthy?
How do seeds become flowers?
How do flowers die?
Why do seeds not grow in water?
### Planning the inquiry

<table>
<thead>
<tr>
<th>3. How might we know what we have learned?</th>
<th>4. How best might we learn?</th>
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</thead>
<tbody>
<tr>
<td><strong>This column should be used in conjunction with “How best might we learn?”</strong></td>
<td>What are the learning experiences suggested by the teacher and/or students to encourage the students to engage with the inquiries and address the driving questions?</td>
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<tr>
<td>What are the possible ways of assessing students’ prior knowledge and skills? What evidence will we look for?</td>
<td>Throughout the unit students will work in small groups.</td>
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<td>Students’ drawings and “KWL” chart will be showing “what do I already know?” (K), “what do I want to know?” (W), “what have I learned?” (L). The students’ drawings and questions can help identify what they know about plants in order for teaching to be modified, thus the whole inquiry will revolve around what they want to know, and what they need to know in order to have a deeper understanding regarding the central idea.</td>
<td>1. KWL chart. Discuss at different stages of unit.</td>
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<td></td>
<td>2. Student drawings (eg, What are the conditions to stay healthy? More How do you plant a seed? How does a plant grow?)</td>
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<td>Students will be divided into small groups. The teacher will set up on a table a range of different artifacts and images. The students then have to decide on the items that they would take out of this pile that would help a plant to grow. The students will reflect individually on why they chose their items.</td>
<td>3. Nature walks around school. Students collect seeds or seed coverings to examine in the classroom.</td>
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<td><strong>What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?</strong></td>
<td>4. Watch documentary and timelapse clips that show how plants and flowers grow.</td>
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<td>Line 1: Draw the conditions a plant needs to stay healthy.</td>
<td>5. Students choose a sequence of a growing plant and represent their understanding through drawing.</td>
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<td>Line 2: The student will reflect in his/her science journal and share his/her findings about various investigations.</td>
<td>6. Observe the inside of a soaked seed with a magnifier and record findings (protection layer, root, baby plant, food).</td>
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<td>Line 3: The Frayer Model is used to assess the knowledge of the students regarding characteristics of plants other living things. This is an ongoing assessment that we return to throughout the inquiry.</td>
<td>7. Put seeds, soil, plants on the tables. The students explore freely. Record comments and discuss as a group.</td>
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<td>Student self-assessment</td>
<td>8. Make books on plants available and let the students research. Record their findings. During reading, read related fiction and nonfiction books; teacher facilitates follow-up discussions and activities in response to students’ interest, eg. dramatise stories.</td>
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<tr>
<td>Taking care of the plant:</td>
<td>9. Observe different types of plants from different environments in order to trigger questions related to the characteristics of the plants. Students’ questions recorded and placed near plant. Students will try to answer their questions through the inquiry.</td>
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<tr>
<td>1. Did I check if the plant needs water?</td>
<td>Art: Georgia O’Keeffe flower painting (see box 9 for more information). Music: Selecting an instrument to represent certain plants. Spanish: Telling a story: “I want to be like a tree”; discussion “what does a plant need in order to grow?”</td>
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</table>
5. What resources need to be gathered?
What people, places, audio-visual materials, related literature, music, art, computer software, etc, will be available?

A range of fiction and nonfiction books about plants of all kinds. Video of how a plant grows, eg YouTube clips. Images of different plants and garden types, especially for time lapse clips. Artifacts (eg watering can, compost bins, garden tools). Materials for experiments and garden planting (including seeds, containers, soil, sand, stones, etc)

Media:- oil pastel, tempera paint, watercolour paint.

Links:
http://www.okeeffemuseum.org/index1.html
http://www.ellensplace.net/okeeffe1.html

How will the classroom environment, local environment, and/or the community be used to facilitate the inquiry?

The classroom will house the plants for students to study.
Fieldtrip to a greenhouse will also teach students how controlled environments promote plant growth.
The neighborhood gardener will visit and support garden project providing an opportunity for the students to ask questions.
A walk through our park area will enrich the unit as students will actively collect, observe and sort seeds.
A walk through our park area.
Parent of first grader works at the Park District and her duties are to take care of the plants at the conservatory. She will be our expert speaker on "How taking care of Plants help in sharing our World."

Reflecting on the inquiry
6. To what extent did we achieve our purpose?

Assess the outcome of the inquiry by providing evidence of students’ understanding of the central idea. The reflections of all teachers involved in the planning and teaching of the inquiry should be included.

Payne- Students reflected on the unit using our Know, Wonder, Learned form. The students learned that the plants needed oxygen, carbon dioxide, water and sun to survive by observing plants outdoors weekly. After each observation, the students drew pictures and wrote about what the changes in the plants. Students understood human responsibilities toward the plants that we choose to grow and why we chose to grow them. Such as, tomato plants help our bodies stay healthy, and trees provide oxygen for breathing. We watched videos on types of trees determined the stages the trees in our atrium and at our class window through compare and contrast. Students observed different types of plants from different environments.

One of the parents is employed by the park district and is responsible for the caring of plants. We planted individual seeds that she brought in for each student. The students had to monitor growth and conditions and determine length of time the plant took to grow.

Kreydick:

Kreydick:

We began the unit with students writing what they know and what they wonder about plants. Then we watched some videos that talked about the different parts of a plant and the needs of plants. Students were wondering why plants are green so we found some kid videos that explained that the process of photosynthesis and how chlorophyll gives plants their green color. Students work in small groups and discuss their role in making sure that plants in and around their home are healthy to stay alive and grow. Then students got into small groups and discussed how plants in nature survive without the help from people. Students came up with reasons to compare and contrast. We discussed what happens when weather conditions change (ie a drought) or when you forget about caring for you plants.

How you could improve on the assessment task(s) so that you would have a more accurate picture of each student’s understanding of the central idea.

2016

7. To what extent did we include the elements of the PYP?

What were the learning experiences that enabled students to:

- develop an understanding of the concepts identified in “What do we want to learn?” The learning experiences that enable students to develop a deep understanding of plant growth and care was the activity whereby students and teachers worked together to complete a chart (based on the Frayer Model) about plants with reference to characteristics, examples, non-examples, and a definition of plants. Another activity that worked well was the opportunity to make plant drawings (e.g., draw in sequence the different parts of plant, label its parts).

- demonstrate the learning and application of particular transdisciplinary skills? Drawing the different steps of planting a seed (at beginning of the unit, and then towards the end for evidence of learning) allowed students to apply what they learned.

- develop particular attributes of the learner profile and/or attitudes? In each case, explain your selection.

Open-mindedness: Because students will work in small groups, they will have to exercise their sense of being open-minded and have a collaborative attitude towards other students.
Payne and Kreydick - I like the work students used this year working in small groups that showed their understanding of the central idea. I think next year I would like them each to do a video recording explaining the central idea. They can use pictures, props, their writing or just record themselves talking.

What was the evidence that connections were made between the central idea and the transdisciplinary theme?

2016

Kreydick - In our whole group and small group discussion, I was able to hear students making connections between the central idea and the transdisciplinary theme. They were able to connect our role in taking care of plants and how we have to share our resources with plants in order for them to survive in our care.
8. What student-initiated inquiries arose from the learning?

Record a range of student-initiated inquiries and student questions and highlight any that were incorporated into the teaching and learning.

*How do seeds grow in the soil?*
*Can plants grow in water instead of soil?*
*Why did the plant in the closet turn out yellow?*
*How does a plant grow?*
*Why do some seeds grow in cotton?*
*Why did some of the leaves in our plot turn yellow?*
*What is a healthy plant?*
*What are our responsibilities to keep them healthy?*
*How do seeds become flowers?*
*How do flowers die?*
*Why do seeds not grow in water?*

At this point teachers should go back to box 2 “What do we want to learn?” and highlight the teacher questions/provocations that were most effective in driving the inquiries.

What student-initiated actions arose from the learning?

Record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act.

9. Teacher notes

Use the following notes to guide this inquiry.

**The conditions plants need to stay healthy:**
1. Plant seeds in 4 different containers. Deprive each container of one condition (water, light, oxygen, all). Students observe, compare and record findings on a weekly chart that is included in science journal.
2. Plant lentils in a closed box. Open one side to let the light come in. After predicting the outcome students observe in which direction the plant will grow and reflect on this.
3. Students create and perform a narrative pantomime: A tree grows..

**Our responsibilities towards the plants we choose to grow:**
1. See student questions section for initial provocation: Students will be exposed to different gardens, such as vegetable, fruit, flower, trees. Decide on the type of garden the children would like to grow first. Talk about how best to care for the plants given what we know about the central idea. What is our responsibility? Ongoing self-assessment of responsibilities in science journals.
2. Draw the different steps of planting a seed (at beginning of the unit, and then towards the end for evidence of learning).
3. Make an individual science journal of the various activities covered throughout the theme.
4. Create a story mentioning the conditions and responsibilities towards plants. Act it out.

**Characteristics of plants:**
1. Students and teacher complete together a chart (based on the Frayer Model) about plants with reference to characteristics, examples, non-examples, and a definition of plants. This could be done at different stages of the unit to see evidence of developing understanding.
2. Student drawings (e.g., draw in sequence the different parts of plant, label its parts).
3. Plant a seed in a transparent container. Students carry out a detailed observation of the roots and stem. Draw the direction of the growth of the root and stem.
4. Based on the nature walk, observe common characteristics of plants and draw them.
5. Total Physical Response activity: In groups, students use their bodies to represent different parts of a plant. In groups, students use their bodies to represent how a seed might travel.

Art: Georgia O'Keeffe flower painting (see box 9 for more information). Music: Selecting an instrument to represent certain plants. Spanish: Telling a story: “I want to be like a tree”; discussion “what does a plant need in order to grow?”
Visual arts
Concepts to be developed:

- **scale** - creating an image much larger than real life;
- **colour** - limited palette, blending similar colours, creating new colours, using complementary colour (pink) to keep eye moving;
- **value** - use colour to create shadows and depth;
- **line** - creating with different colour fields;
- **composition** - crop images by having the image touch the edge of the paper.

Project ideas:
- Provide real life flowers and plants. Ask students to choose one small part. Paint image using limited colours and compose so that the image is cropped.
- Use Georgia O'Keefe work as stimulus for discussion about concepts.