## 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**

  Plants have specific needs in order to grow and stay healthy.

  *Plants have unique characteristics which enable them to survive in their particular locations.*

### Class/grade: 1st grade  
**Age group:** 6-7 year olds

**School:** Wildwood  
**School code:**

**Teacher(s):** Tammy Ruta-Kreydick, Anna Bafia

**Date:**

**Proposed duration:** 112 hours over 9 weeks
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 the brassica seeds and self-assess on whether they are being responsible about caring for the plant.

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.

During the parent/student conference (towards the end of the unit) the student will share his/her understanding of the central idea and lines of inquiry. The student has to self-assess using a continuum, and the parents will reflect on the evidence of learning in writing.

Provided with a series of images of the plant cycle the students describe what is happening at each stage. They also need to place images in the correct order from planting the seed to a full-grown plant.

Students design their own plants that incorporate the characteristics that to 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 in 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

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 do you need to grow a plant?
- How do plants grow?
- What is a healthy plant?
- What are our responsibilities to keep them healthy?
- What makes a plant 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
3. How might we know what we have learned?

This column should be used in conjunction with “How best might we learn?”

What are the possible ways of assessing students' prior knowledge and skills? What evidence will we look for?

In their home-school communications, activities will be suggested by classroom teachers and Art/Music/Spanish teachers that reinforce the central idea. Parents can then contribute to discussions in the parent/student conference about learning beyond school. Students' drawings and “KWL” chart 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 us identify what they know about plants in order for us to modify our teaching, 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.

What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?

Line 1: Draw the conditions a plant needs to stay healthy.
Line 2: The student will reflect in his/her science journal and share his/her findings about various investigations.
Line 3: The Frayer Model is used to assess the knowledge of the students regarding characteristics of plants. This is an ongoing assessment that we return to throughout the inquiry.

Student self-assessment
Taking care of the plant:
1. Did I check if the plant needs water?
2. Did I make sure the plant has sunlight?
3. Did I tidy up my area after doing my observation on the growth of the plant?

4. How best might we learn?

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?

Frontloading activities:
1. KWL chart. Discuss at different stages of unit. Student drawings (eg, What are the conditions to stay healthy? How do you plant a seed? How does a plant grow?)
3. Watch documentary and timelapse clips that show how plants and flowers grow. Students choose a sequence of a growing plant and represent their understanding through drawing.
4. Observe the inside of a soaked seed with a magnifier and record findings (protection layer, root, baby plant, food).
5. Put seeds, soil, plants on the tables. The students explore freely. Record comments and discuss as a group.
6. Make books on plants available and let the students research. Record their findings. In library time, read related fiction and non-fiction books; teacher-librarian facilitates follow-up discussions and activities in response to students' interest, eg dramatise stories.
7. Observe different plants 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.

The conditions plants need to stay healthy:
8. 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.
9. 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.
10. Students create and perform a narrative pantomime: A tree grows.

Our responsibilities towards the plants we choose to grow:
11. 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 plant would like to grow first. Talk about how best to care for the plants given what we know.
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.

Students were engaged and motivated throughout the unit. Their involvement was obvious and this facilitated the learning and teaching. Students were able to come up with the central idea and state it using their own words.

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.

The presentations were organized with individual inputs from the students. We would improve on the summative assessment list by adding a new assessment activity (for the third line of inquiry): Students will draw a plant with a missing part, and then explain the importance of this part.

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

Students were aware that they can show respect for the plants by taking care of them. They learned about the needs of plants by brainstorming the understanding of “sharing the planet”, by having a debate on the importance of plants and explaining why they agree/disagree (based on the story Uno’s Garden).

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?”
- demonstrate the learning and application of particular transdisciplinary skills?
- develop particular attributes of the learner profile and/or attitudes?

In each case, explain your selection.

Concepts

Responsibility: Students were given the responsibility of planting, taking care of their plant and recording data in their science journal. This extended to action-taking by the students as they wanted to plant more than one type of seed.

Causation: We developed the concept of causation with the students throughout the unit. It was interesting to see how the students became interested in the results of the various plant experiments, and we believe that this helped students to understand the needs of plants by depriving them of their needs (no soil, no air, no water, no sun).

Transdisciplinary skills

Research, thinking: Students were recording (writing) in their journals. They applied their acquisition of knowledge about plants and their needs when they decided on which plants could be planted in a garden. They observed on a daily basis the growth of the plants, and they recorded growth data in their science journals.

Learner profile and PYP attitudes

They were caring about the plants and appreciated their beauty - the various arts integration supported this aspect. They inquired about their needs to help them grow and keep them healthy and communicated their findings.
Reflecting on the inquiry
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.

What the students said:
“My Nonni has hundreds of different plants.”
“The different leaves are beautiful.”
“I went to a garden and I saw a flower that was not growing; I watered it.”
“I watered a plant for my mom. It grew too much and 3 flowers grew.”

9. Teacher notes

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 complimentary 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.

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

**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.

**Links:**
- [http://www.okeeffemuseum.org/index1.html](http://www.okeeffemuseum.org/index1.html)
- [http://www.ellensplace.net/okeeffe1.html](http://www.ellensplace.net/okeeffe1.html)