



Growing Up Organic operates on traditional and unceded territory of the Algonquins: now known to many as Ottawa, and now home to many from across Turtle Island and beyond.

Grades 3-4

Planning the Garden

Mindfulness minute: If it speaks to you, take two minutes with your students before this workshop to slow down and root down with this mindfulness minute.

LESSON FOCUS AND GOALS

As a class, come up with a garden plan: choose plants, draw garden layout with spacing/measurements, plan for the harvest, and make a calendar to schedule planting.

LEARNING OBJECTIVES

Grade 3

Science and Technology: Understanding Life Systems- Growth and Changes in Plants

OVERALL EXPECTATIONS:

1. *Assess ways in which plants have an impact on society and the environment, and ways in which human activity has an impact on plants and plant habitats*
2. *Investigate similarities and differences in the characteristics of various plants, and ways in which the characteristics of plants relate to the environment in which they grow*
3. *Demonstrate an understanding that plants grow and change and have distinct characteristics*

SPECIFIC EXPECTATIONS:

- 1.2 - Assess the impact of different human activities on plants, and list personal actions they can engage in to minimize harmful effects and enhance good effects
- 3.1 - Describe the basic needs of plants, including air, water, light, warmth, and space
- 3.7 - Describe the different ways in which plants are grown for food (e.g., on farms, in orchards, greenhouses, home gardens), and explain the advantages and disadvantages of locally grown and organically produced food, including environmental benefits



Mathematics: Number Sense

OVERALL EXPECTATIONS:

B1- Demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life

SPECIFIC EXPECTATIONS:

B1.7-Represent and solve fair-share problems that focus on determining and using equivalent fractions, including problems that involve halves, fourths, and eighths; thirds and sixths; and fifths and tenths

Mathematics: Measurement and Geometric and Spatial Reasoning

OVERALL EXPECTATIONS:

E1-Describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them

E2- Compare, estimate, and determine measurements in various contexts

SPECIFIC EXPECTATIONS:

E2.2- Explain the relationships between millimetres, centimetres, metres, and kilometres as metric units of length, and use benchmarks for these units to estimate lengths

E2.3 - Use non-standard units appropriately to estimate, measure, and compare capacity, and explain the effect that overfilling or underfilling, and gaps between units, have on accuracy

E2.7- Use appropriate non-standard units to measure area, and explain the effect that gaps and overlaps have on accuracy

Grade 4

Science and Technology: Understanding Life Systems- Habitats and Communities

OVERALL EXPECTATIONS:

1 - Analyze the effects of human activities on habitats and communities

2 - Investigate the interdependence of plants and animals within specific habitats and communities

3- Demonstrate an understanding of habitats and communities and the relationships among plants and animals that live in them



SPECIFIC EXPECTATIONS:

- 3.3 - Identify factors (e.g., availability of water or food, amount of light, type of weather) that affect the ability of plants and animals to survive in a specific habitat;*
- 3.4 - Demonstrate an understanding of a community as a group of interacting species sharing a common habitat (e.g., the life in a meadow or in a patch of forest)*
- 3.7- Describe structural adaptations that allow plants and animals to survive in specific habitats (e.g., the thick stem of a cactus stores water for the plant; a duck's webbed feet allow it to move quickly and efficiently in water)*

Mathematics: Number Sense

SPECIFIC EXPECTATIONS:

- B1.4 -Represent fractions from halves to tenths using drawings, tools, and standard fractional notation, and explain the meanings of the denominator and the numerator*
- B1.5 -Use drawings and models to represent, compare, and order fractions representing the individual portions that result from two different fair-share scenarios involving any combination of 2, 3, 4, 5, 6, 8, and 10 sharers*

Mathematics: Geometric and Spatial Reasoning and Measurement

OVERALL EXPECTATIONS:

- E1.1 - Identify geometric properties of rectangles, including the number of right angles, parallel and perpendicular sides, and lines of symmetry*
- E1.3 -Describe and perform translations and reflections on a grid, and predict the results of these transformations*
- E2.2 -Use metric prefixes to describe the relative size of different metric units, and choose appropriate units and tools to measure length, mass, and capacity*
- E2.3 -Solve problems involving elapsed time by applying the relationships between different units of time*
- E2.5 -Use the row and column structure of an array to measure the areas of rectangles and to show that the area of any rectangle can be found by multiplying its side lengths*

MATERIALS NEEDED

GUO Garden Planning Cards
Blank paper to cut into 30 cm squares (approximately)
Tape
Colouring pencils, crayons or markers
Rulers
GUO Garden Planning Calendar

STRUCTURE / ACTIVITY

Part 1: Building your garden

Before starting to plan the garden, take some time to discuss with the students and reflect about why we're planting a school garden.

Discussion points:

- What is the value of growing our own vegetable gardens at the school?
- What do we mean when we say our garden is organic?
- Why do you think it might not be a good idea to use pesticides? Where could they end up?

To make sure that our garden does well and we get a big harvest in the spring and the fall, let's think about what our plants and garden will need. Discussion points:

- What are some of the things our plants need to grow?
- Make a list of the answers students come up with.

Small activity: Have the students pretend to be the tiny seed of their favorite vegetable. Bring them together to sit very close and then explain that you will be "adding" the things the students identified as necessary to healthy growth so that they may grow to their full potential. As you "add" these things (Now the sun is coming out.....and now the clouds are coming in to rain...) let them stretch out their legs as their roots grow and then stretch out their arms as their leaves grow. When they grow up and stretch their arms, ask them "What else do plants need?" - SPACE!

Remind students that plants need different amounts of space.

- What kinds of vegetables might take a lot of room?
- Which ones take very little room?

Have the students pick a vegetable they want to plant in the garden and come get a garden planning card. Let them know that these cards will tell them how much space their particular vegetable will need. Each student follows the instructions on the cards to divide their 30 cm square paper into appropriate smaller squares (either by folding or measuring). In the middle of each smaller square, students should draw their vegetable (be creative and use colour!). At the end, have students identify what their vegetable is somewhere on the paper, and put their names on the back.

After the students are done drawing their vegetable square, have them come up to fill in the calendar with information on when to plant and harvest the vegetable.

Part 2: Companion Planting

Something else that plants do for each other is act as companions.

Discussion:

What do we think that means?

Think of what a friend does for you. How could plants do this for each other?

(see below: Background Information)

Ask the students to use their garden planning cards to find out what the companions for their vegetables are and to find someone in the class whose vegetable is one of their "companions." Once they have found their companion, invite them to lay out the squares on the ground in the shape of the bed outside (typically: 3 squares by 8 squares), making sure to place companions next to each other. Tape them together to form a map of the garden.

Background Information: Companion Planting

There are different ways plants can be each other's companion:

Attractors: Some plants (like flowers) attract pollinators (like bees), bringing them close to the garden where they help other plants reproduce. Some plants (like nasturtium or parsley) attract predators (like bugs) so that they stay away from your vegetables.

Confusers: These are the masked bewilders and tricksters! These plants confuse pests away from other vegetables. Parsley for example has the same wispy tops as carrots and so confuses white flies away from carrots.

Enchanters: These are the good neighbour plants, they help other vegetables grow, and improve their flavor and size. Basil improves the taste and size of tomatoes.

Protectors: These plants are the guardians of the garden and protect others from nature's havoc, like too much wind or sun. For example, peas and beans climbing up poles and nets provide shade for vegetables like lettuce that don't like the heat.