

ROOTS AND SHOOTS

Grades JK - 2

Learning Objectives:

- Students will learn about different parts of the plant and how they function together.
- Students will focus on plant parts that we eat and be able to categorize them into different groups



Materials:

- 🍏 Printed photos or real food examples of different plant parts we eat: roots, shoots, leaves, seeds and fruits. (see Supporting Documents)
- 🍏 Watering can
- 🍏 Rain cloud picture (see Supporting Documents)
- 🍏 Sun picture (see Supporting Documents)
- 🍏 Bee picture (see Supporting Documents)
- 🍏 Plant Part Twister Game Sheets (see Supporting Documents)
- 🍏 Twister board (i.e. "spinner")
- 🍏 Wax crayons or pencil crayons
- 🍏 Tape
- 🍏 4 boxes or bags labelled Roots, Fruits, Leaves, Seeds
- 🍏 Optional: fruit and vegetable toys that cover all the different plant parts (enough for at least one per student)



Workshop updated September 2016

If you require this information in an accessible format, please contact brooke@foodshare.net.

☀️ Equity, Diversity & Social Justice Notes:

- Choose culturally appropriate plant parts to investigate with your group.
- Adapt these physical games to suit the abilities of your group and ensure inclusiveness. For example, the relay can be done on a flat, smooth surface to include those in a wheel or electric chair or the twister game could be done on a miniature scale with plasticine models or with fingers instead of hands and feet (e.g. "Put your right "pointer" on a root!")

Introduction: (10 mins)

"Did you know that we eat plant parts? Who here thinks they ate some plant parts yesterday? Did anyone eat any leaves? Anyone eat any seeds?"

Ask students to name parts of the plant that they know.

"Plants parts are very good for us. They help us to stay healthy by giving us energy to play, and helping our brains, muscles, teeth, bones and bodies to grow."

Show the plant part photos, pass around and discuss the different categories and their role within the plant:

Roots – To anchor plants in the ground and suck up the water and nutrients from the soil.

Shoots/Stems - To transport water and nutrients from the roots to the branches, leaves and fruits.

Fruits - To hold the seeds, and later spread them around when animals eat them!

Leaves - To catch the sun's rays and gather energy for the plant.

Seeds – To grow another plant later!

Sample dialogue:

"Why does a plant have roots?"

"Where would we find the seeds?"

"Why does a plant make fruit?"

Key Terms:

Root

Shoot

Leaf

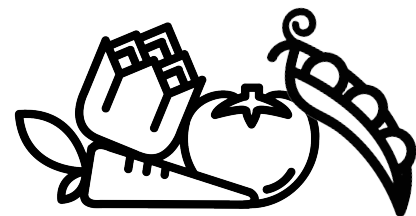
Seed

Fruit

Pollination

Nutrients

Energy





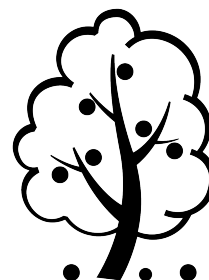
Activity: Plant Part Progression (20 mins)

In this activity, students explore the journey of the apple from seed to fruit through stretching movements. Guide them through each movement by demonstrating first.

Sample dialogue:

"We will be using our body and yoga movements to grow like an apple tree!"

"We will grow from seeds into trees. Please follow my actions and listen to my words. Do a check of your body and make sure you are arms length away from your friends."



Movement 1: Apple Seed

Movement	Squat down and wrap your arms around your legs to be as small as you can
Student Dialogue	"I am waiting to be watered so that I can grow! I'm waaaiittting, I'm waaaiittting..."
Teacher Action	"Water" the seeds by touching them with watering can and making "shhhhh" sounds

Movement 2: Apple Tree Roots

Movement	Plant your hands on the ground for balance and shift legs out in front. Wiggle your hands and legs around and make slurping sounds like the roots are drinking the rain
Student Dialogue	"We are thirsty and our roots are drinking the rain water. Slurrrrrp, slurrrrrp..."
Teacher Action	"Water" the roots by touching them with the rain cloud and making a "pitter patter" rain sound

Movement 3: Apple Tree Stem

Movement	Stand up tall and straight, with feet shoulder-width apart and hands by your side. Stretch your torso up as tall as you can.
Student Dialogue	"My stem is tall and strong! Look how strong I am!"
Teacher Action	Pretend to be the wind by gently pushing on the students shoulders to test how strong their stem is. They shouldn't move! Make "whooshing" wind sounds.

Movement 4: Apple Tree Branches and Leaves

Movement	Bend one knee and touch heel to ankle, keeping toes on the ground. Reach branches up to the sky and stretch fingers wide.
Student Dialogue	"Our branches are holding lots of leaves. We're reaching for the sun!"
Teacher Action	Slowly walk around to each student, holding the sun picture up just higher than their relaxed reach. Have students stretch and reach up as high as they can to touch the sun, without lifting their feet off the ground.

Movement 5: Flowers, Apple Blossoms

Movement	Still standing, cross your outstretched arms at the elbow and hold the base of your palms together, with fingers out for petals. Twinkle fingers to attract the bees.
Student Dialogue	"Here buzzy bee, heeere buzzy beeeee"
Teacher Action	Using your bee picture, go around to each student to "pollinate" their apple blossom before they can move onto the next movement.

Movement 6: Fruit, Apples!

Movement	Interlace fingers and curl hands under chin to turn into an apple.
Student Dialogue	"Our flowers have been pollinated and are now yummy apples! Mmmmm, yummmmy"
Teacher Action	Suddenly turn into a hungry animal and pretend to eat all the apples. (Disclaimer: the children with run screaming and laughing)

Now that you have a basic grasp of the flow and sequence of the movements, try running through them all smoothly, a few times in a row.



Modifications:

- Your group might choose to become a fruit other than apples
- Discuss different kinds of animals that also pollinate our fruiting trees and use them in your movement sequence, for example wasps, flies, butterflies and moths.



Activity: Sing the Plant Part Song! (5 mins)

Use the “call and repeat” method to sing this funny song about plant parts and don’t forget to do the actions too!

You know that trees have branches, (arms up like branches)
to show the sun their leaves, (fingers waving like leaves)
You know that trees have flowers, (palms together, fingers out like a flower)
‘cause they attract the bees, (flapping wings)
But did you know the reason, (arms in an “I don’t know” pose)
that seeds are insides fruits... (pointer and thumb together, then wrap in other hand)
Is so that hungry an-i-maaals, (rub stomach)
will plant them in their poop! (thumbs down, blow a raspberry to end)

Song Credit: James Hetmanek





Activity: Do-It-Yourself Plant Part Twister (60 mins)

Make Your Game Pieces:

Assign each student a root, fruit, leaf or seed to colour using the colouring sheets provided separately from this lesson plan ("Game Sheets"). Each different plant part has a coloured border to distinguish them from each other - this will be useful if plant parts are coloured using unrealistic colours, such as a green and pink striped potato.

Ensure there are roughly equal numbers of each plant part being coloured (e.g. 4 students colouring roots, 4 colouring leaves, 4 colouring fruits and 4 colouring seeds). Some students may need to colour more than one sheet if needed. Equal numbers aren't essential for the game, just ideal.

Make your Twister Board, or "spinner". Make sure the arrow is moveable so that it can be flicked after each turn. Instead of just colours, label each plant part (e.g. for the bottom right diagram, green = leaves, red = root, yellow = fruit, blue = seed).

Create Your Game Board:

When they have completed their colouring, line up all of the coloured roots on the ground, followed by a line of fruits, leaves and then seeds. Make sure they're close enough together that students would be able to reach from one side to the other. You can use the tape to hold each in place on the ground if needed. You should, ideally have a big grid by the end.

Play the Game!

Have students start a game of twister - instead of calling out colours, use plant parts to guide the game e.g. "Put your LEFT hand on a ROOT vegetable!" (Although, each plant part category will have a coloured border as a backup).

Modifications:

You could create a whole art project with your students, making your own game pieces independently of our templates. Just make sure it's easy to distinguish each plant part!

Ask students who may not be comfortable playing the game to be the "callers". Their role is to direct the game using the "spinner".





Activity: Plant Part Relay (20 mins)

Gathering:

You can use either pictures of produce (e.g. from the introduction), fruit and vegetable toys, or real-life examples of plant parts.

Sorting:

As a group, begin by sorting all of the produce items for the game into four categories (this can be done verbally after holding up each fruit or vegetable).

Roots – Grow underground and act like an anchor for the plant, holding it in place

Fruits – Home for the seeds, can also be eaten by animals

Leaves – Catch the sun's rays to change into food for the plant

Seeds – For replanting itself somewhere else

Set the Game Up:

Split the group into two teams and highlight that they will not be competing against each other. They'll be using the same bins to sort their plant parts.

Divide the produce items randomly between the two teams and place in a pile at the front of the team's line. Set up the four boxes as "Plant Part Drop Off Centres" at a distance.

Run! Skip! Jump!

Each individual runner has to sort the produce item they pick-up into the correct "Plant Part Drop Off Centre" before coming back and tagging the next person in line.

They should have a good idea as they were sorted as a group earlier – but if not, their team can prompt them.

Students need to be careful not to bump into others when running during their turn (if this is a problem, create a rule that students have to return to the start if they bump into another player). To make things trickier after the first round, have students hop, skip or jump instead of run!

Example Discussion Questions:

How do you know that a beet is a root?

Why do you think plants have roots?

Why are seeds so small?

What role do the leaves play in the growth of plant?

Why do you think fruits taste so good?

Is a tomato a fruit or vegetable?



Assessment & Consolidation:

Plant Part Progression:

Now that you *really* know all the plant part moves, try playing a game of Simon Says to finish off to test the students' knowledge of the different stages of the apple tree (or other fruiting tree's) lifecycle.

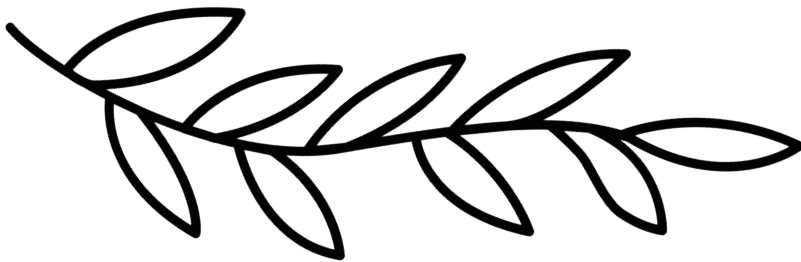


Plant Part Twister:

Teachers will be able to see the level of student comprehension when observing the game in action. Can students recognize the different plant parts in time to make their move and keep in flow with the game? You might speed up the game to make it more challenging (but beware of twisted injuries if students try to go too fast!)

Plant Part Relay:

Facilitators can check through the four boxes after the relay to see how the students did. This way, students won't be singled out for any wrong guesses and it's a good opportunity to try again!



The Take Home Messages:

Plants are made up of different parts that each play a role in it's growth and survival.

We can eat many different types of plant parts, they're tasty and are good for us!

Follow On Activities, Suggested Workshops and Additional Resources:

Look in your fridge, on counters, in cupboards, in yards or at the local community garden (with permission) for a root, shoot, leaf, seed, fruit or flower that you can eat. Take a photo or bring it into class for show and tell!

Discover some delicious plant-based recipes online that you might be able to try at home or in class. Searching “vegan” or “vegetarian” recipes will help narrow down your search.

Try making a smoothie with your students using different parts of the plant or do a blindfolded taste testing session using mystery plant parts.

Now that you’re plant part experts, try FoodShare’s Pollination Patrol, Herbalicious, Signature Salads or Stone Soup next! Visit www.foodshare.net to download them for free.

Making Space: Teaching for Diversity and Social Justice throughout the K-12 Curriculum, BC Ministry of Education 2008: https://www.bced.gov.bc.ca/irp/pdfs/making_space/mkg_spc_intr.pdf

With funding support from:



Possibility grows here.

Ontario Curriculum Connections:

Grade	Subject Area	Connections
JK/SK		Communicate with others in a variety of ways, for a variety of purposes, and in a variety of contexts
		Demonstrate an awareness of their own health and well-being
		Participate actively and regularly in a variety of activities that require the application of movement concepts
		Demonstrate an understanding of the natural world and the need to care for and respect the environment
Gr 1	Language Arts	Listen in order to understand and respond appropriately in a variety of situations for a variety of purposes
	Science & Technology	Assess the role of humans in maintaining a healthy environment
		Investigate needs and characteristics of plants and animals including humans
		Investigate and compare the physical characteristics of a variety of plants and animals, including humans
		Investigate the physical characteristics of plants and explain how they help the plant meet its basic needs using a variety of methods and resources
	Physical Education & Health	Participate actively and regularly in a wide variety of physical activities and identify how regular physical activity can be incorporated into their daily lives
		Demonstrate responsibility for their own safety and the safety of others as they participate in physical activities
		Describe how the food groups in Canada's Food Guide can be used to make healthy food choices
Gr 2	Science & Technology	Describe an adaption as a characteristic body part, shape or behaviour that helps a plant or animal survive its environment
		Demonstrate an understanding of the ways in which air and water are used by living things to help them meet their basic needs.
		Describe ways in which living things, including humans, depend on air and water
	Physical Education & Health	Communicate effectively, using verbal and non-verbal means, as appropriate, and interpret information accurately as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living
		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 team members
		Use Canada's Food Guide to assess the nutritional value of meals, and identify food and beverage choices that enhance healthy growth and development