

Every Child a Seed

Teachers' Resource Kit

Content

- I. Objectives of Every Child a Seed
- II. What Schools Will Receive
- III. Summary of Activities
- IV. Lesson 1: Plant reproduction and life cycle
- V. Lesson 2: Plant diversity and plant parts
- VI. Lesson 3: Plant needs
- VII. Useful Links

I. Objectives of Every Child a Seed

Every Child a Seed is a programme conceived to enable students nationwide to join in the commemoration of 50 Years of Greening Singapore.

Singapore has embarked on the next phase of its greening journey to create a City in Nature, where homes are surrounded by nature and biodiversity and where greenery is tightly integrated into our living and working environment. We believe the continued involvement of all Singaporeans is vital in shaping this vision.

Every Child a Seed seeks to convey to our students that every Singaporean plays a part in shaping our City in Nature. It also provides an opportunity for students to go through and thereby appreciate the challenges of the planting process. We hope teachers can take the opportunity to highlight to students that our City in Nature is a result of the hard work and careful planning of our predecessors, and that it is the collective responsibility of Singaporeans to take care of our natural environment.

Tailored to complement the Primary Science syllabus on Diversity, students will learn about plant reproduction and their life cycle, plant parts, their functions and what plants need to grow. The lessons will also reinforce the teaching of values such as care and responsibility.

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II. What Schools Will Receive

1) Plant Starter Kits for Primary 3 Students

- Every Primary 3 student will receive a plant starter kit which includes a small pot, a packet of potting mix and a packet of seeds (containing Sunflower, Roselle or Sweet Basil seeds).
- Students will each receive a My Plant Journal that they can use to record and track the growth of their plants and reflect on their plant growing process. In the plant journal, there is also information on the plants that the students will be growing.
- Students are encouraged to send photographs of their full-grown plant and a short reflection of their growing experience to the National Parks Board. These photographs will be uploaded to the NParks website to encourage other students to grow and care for their plants. Access the form here:
<https://form.gov.sg/6699c162f8cd3fc622c2b035>

Teachers who decide to carry out the lessons in later months should take note of the following points on seed storage:

- Seeds should be kept under dark, dry, cool and air-tight conditions. Seal seeds in dark, air-tight bags and place in a cupboard, away from direct sunlight or in a refrigerator at 10°C.
- For the seeds to have a better chance of successful germination, they should ideally be planted within 1-2 months upon receiving the planting kits.
- Consider planting the Roselle (*Hibiscus sabdariffa*) seeds within 1 - 2 weeks after receiving them as their rate of germination tends to decline rapidly with prolonged storage.

2) Online resources

In addition to this document, you can also use the following resources to enhance your lessons and help the students solve problems while gardening:

- NPark's one-stop gardening portal, GardeningSG: www.gardeningsg.nparks.gov.sg
 - How to garden:
 - Tips for planting in containers: <https://gardeningsg.nparks.gov.sg/page-index/horticulture-techniques/planting-in-containers/>
 - Steps for propagating from seed: <https://gardeningsg.nparks.gov.sg/page-index/horticulture-techniques/propagating-by-seed/>
 - Transplanting: <https://gardeningsg.nparks.gov.sg/page-index/horticulture-techniques/transplanting/>
 - Plant information and care:
 - Thai Basil (has similar growing needs to Sweet Basil): <https://gardeningsg.nparks.gov.sg/page-index/edible-plants/thai-basil/>
 - Roselle: <https://gardeningsg.nparks.gov.sg/page-index/edible-plants/roselle/>
 - Sunflower: <https://gardeningsg.nparks.gov.sg/page-index/edible-plants/sunflower/>
- NPark's youtube channel: www.youtube.com/NParksSG
 - Gardening playlist: https://www.youtube.com/playlist?list=PL1_Eb2Fa0jUdX2KO14mL-StIn-EdSUqzF
 - Every Child A Seed video: <https://youtu.be/6x0lZfoz9yo?si=lf7weV5gVkpWgpP>

III. Summary of Activities

S/N	Lesson	Student Learning Outcomes	Lesson Highlights	MOE Core Values	SEL
1	Plant life cycles and reproduction	<ul style="list-style-type: none"> • Appreciate the importance of plants in our City In Nature • Be able to grow plants from seeds • Learn about the life cycle and processes of a plant, including germination and pollination • Appreciate the challenges of the planting process 	<ul style="list-style-type: none"> • Students watch A City In Nature Every Child A Seed Programme • Students plant seeds 	Responsibility Resilience Care	<u>Relationship Management</u> <ul style="list-style-type: none"> • Work cooperatively • Seeking and providing help • Negotiation and management of possible disagreements and conflicts
2	Plant diversity and plant parts	<ul style="list-style-type: none"> • Be able to identify the different plant parts and state their functions 	<ul style="list-style-type: none"> • Students to match the functions to their corresponding plant parts • Students look at different plants to compare how plant parts look different 		<u>Social Awareness</u> <ul style="list-style-type: none"> • Appreciation of diversity (<i>Plants do not look the same and they need space to grow. Similarly, people grow/progress differently</i>) • Respect for others (<i>Listen attentively to peers' views</i>)

3	Plant needs	<ul style="list-style-type: none"> • Be able to explain why plants are classified as living things • Know the conditions necessary for plants to grow • Learn how to document plant growth using art, descriptive language, and numbers • Appreciate the challenges of the planting process 	<ul style="list-style-type: none"> • Students discuss the characteristics of plants that make them living things • Students discuss what plants need to grow • Students walk around school identifying suitable environments for plants to grow 	<u>Self-Management</u> <ul style="list-style-type: none"> • Self-motivation and discipline <u>Responsible Decision Making</u> <ul style="list-style-type: none"> • Recognise needs of living things • Personal, moral and ethical responsibility
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Note: The following lesson plans are optional. While we encourage teachers to carry out these lessons, they are merely guides for teachers to adapt however they see fit.

IV. Lesson Plan 1: Plant life cycles and reproduction

LEVEL:	Primary 3
THEME/TOPIC:	Cycles: Cycles in Plants (Life Cycles) Diversity: Diversity of living things (General characteristics)
TITLE OF ACTIVITY:	Plant life cycles and reproduction
DURATION:	50 minutes
STRATEGY:	Direct Instruction/Cooperative Learning
VENUE:	Classroom

BACKGROUND KNOWLEDGE

Students should have basic knowledge of life cycles and plant systems.

LEARNING OUTCOMES

At the end of the lesson, students should be able to

- 1) Understand the conditions necessary for germination to take place,
- 2) Grow plants from seeds, and
- 3) Appreciate the challenges of the planting process and understand that a City in Nature requires much care and nurturing in order to thrive.

TEACHING RESOURCES

- 1) Lesson 1 PowerPoint slides
- 2) My Plant Journal
- 3) Every Child A Seed Plant Starter Kits

MATERIALS

Teacher can prepare some of the following fruits for students to look at different seeds:

- Rambutan
- Mango
- Longan
- Lime
- Dragonfruit
- Avocado
- Passionfruit

Teacher can also prepare the following materials for the students to plant their seeds:

- Newspaper
- Washed disposable spoons
- Watering cans/ a water bottle

S/N	Activities	Duration	Resources
<i>Trigger Activity</i>			
1	<ul style="list-style-type: none"> Teacher to ask students if they have planted seeds before and get them to share what they have grown with their classmates Play A City In Nature Every Child A Seed Programme video Teacher to facilitate class discussion on what makes a City in Nature and why plants are important for animals and people by asking questions based on the video: <ul style="list-style-type: none"> <i>What will happen if there are no plants?</i> <i>Why is it important to have plants in a city?</i> <i>Do you have a favourite neighbourhood park or garden that you like to visit? What do you like about this park/garden?</i> <p><i>[Suggested answers: Plants provide food and shelter for animals Plants make our environment pleasant Plants keep the air fresh]</i></p>	5 min	PowerPoint slides
<i>Introduction</i>			
2	<p><u>Plant life cycle</u></p> <ul style="list-style-type: none"> Teacher to share with the students about the different stages on a plant's life cycle (slide 5) Teacher to share with students the different parts of a seed and its functions (slide 6 & 7) Teacher to cut different kinds of fruits to show how seeds can be different 	15 min	<p>PowerPoint slides</p> <p>Fruits and seeds</p>

S/N	Activities	Duration	Resources
Main Activity			
3	<u>Planting seeds</u> <ul style="list-style-type: none"> • Play the Step-By-Step Planting Guide Every Child A Seed Programme video • Teacher to guide the students in filling up page 1 and 3 of the plant journal to document the planting process (<u>before</u> the students plant their seeds) • Teacher to work with the students to provide materials to the students to prepare for seed planting <ul style="list-style-type: none"> ○ Newspaper can be spread on tables/the floor to clean up stray soil ○ Each student can use a washed disposable spoon to scoop soil/make holes ○ Students can bring a their own used disposable spoon 	15 min	PowerPoint slides Step-By-Step Planting Guide Every Child A Seed Programmed video Plant Starter Kits Newspaper and washed disposable spoons Plant journal
4	<u>Germination</u> <ul style="list-style-type: none"> • Teacher to elaborate on what seeds need to germinate (slide 9) <ul style="list-style-type: none"> ○ <i>Seeds need to be buried in soil and watered before they begin to germinate</i> ○ <i>Pots with seeds can be kept in the shade to prevent the soil from getting too hot/dry</i> ○ <i>Seeds need absorb water to start growing/ for the embryo to emerge from the seed coat</i> ○ <i>Plants that have germinated can be moved to places with sun to start making food with their newly emerged leaves</i> • Teacher to guide students in filling out the self-reflection questions on page 3 	15 min	PowerPoint slides Plant journal
4	<u>Discussing what plants need to grow</u> <ul style="list-style-type: none"> • Teacher to talk about how living things all grow, and react to their environment • Discuss what challenges plants face while growing (slides 10 -12) 	10 mins	PowerPoint slides

V. Lesson Plan 2: Plant diversity and plant parts

LEVEL:	Primary 3
THEME/TOPIC:	Diversity: Diversity of living things (General characteristics) Systems: Plant system (Plant parts and functions)
TITLE OF ACTIVITY:	Plant diversity and plant parts
DURATION:	50 minutes
STRATEGY:	Direct Instruction/Cooperative Learning/Hands-on Learning
VENUE:	Classroom

BACKGROUND KNOWLEDGE

Students should have knowledge of the characteristics of living things and plant systems.

LEARNING OUTCOMES

At the end of the lesson, students should be able to

- 1) appreciate that living things respond to the environment as they grow, and
- 2) identify the different plant parts and state their functions.

TEACHING RESOURCES

- Lesson 2 PowerPoint slides
- My Plant Journal

S/N	Activities	Duration	Resources
Trigger Activity			
1	<ul style="list-style-type: none"> Teacher to ask students what their favourite plants are, and why. <p><i>[e.g., Sunflowers have pretty flowers. The seeds are also nice to eat. Rain Tree leaves provide cooling shade.]</i></p>	5 min	
Introduction			
2	<p>Plant diversity</p> <ul style="list-style-type: none"> Teacher to share with students about flowering and non-flowering plants (Slides 4 & 5) <ul style="list-style-type: none"> Discuss: Why are flowers important for seeds? You can relate this back to the life cycle in lesson 1. Teacher to share about where plants live (Slide 6-9) Discuss with the students how even though plants can look different and live in different places, many of them have the same plant parts (slide 10) 	5 min	PowerPoint slides
Main Activity			
3	<p>Plant parts</p> <ul style="list-style-type: none"> Teacher to call on students to label the parts of the plant shown (slides 11-20) Teacher to bring the students around the school garden to look at different plants and point out different plant parts Teacher can allow students to use mobile devices to take photos of the plants that they see in the garden and extend their learning by finding out the names of these plants and learning more about their uses and characteristics Teacher to prompt students to share what they have learnt with their classmates 	30 min	PowerPoint slides

4	Plant part functions <ul style="list-style-type: none"> Teacher to share about plant part functions Teacher to flash drawings of the seeds plants grow into (slide 25) for students to draw in their plant journal (page 5) and link the plants parts and how they use resources from the environment (page 6) 	10 min	PowerPoint slides My Plant Journal
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VI. Lesson Plan 3: Plant needs

LEVEL:	Primary 3
THEME/TOPIC:	Diversity: Diversity of living things (General characteristics) Systems: Plant system (Plant parts and functions)
TITLE OF ACTIVITY:	Plant needs
DURATION:	25 minutes
STRATEGY:	Direct Instruction/Cooperative Learning/Hands-on Learning
VENUE:	Classroom

BACKGROUND KNOWLEDGE

Students should have basic knowledge of life cycles and plant systems. This lesson can run around 2 weeks after the first lesson in which the students plant their seeds.

LEARNING OUTCOMES

At the end of the lesson, students should be able to

- 1) Understand that plants are living things, and
- 2) that living things grow and respond to their environment

TEACHING RESOURCES

- Powerpoint slides
- My Plant Journal
- A photo of the student's plant showing all the leaves
- Pots of various sizes, with the largest pot being 15cm wide and 15cm deep
- Rulers/ measuring tape

S/N	Activities	Duration	Resources
Trigger Activity			
1	<ul style="list-style-type: none"> Teacher to ask students if their seeds have sprouted and grown, and to share their feelings about it 	5 min	
Introduction			
2	Living and non-living things <ul style="list-style-type: none"> Teacher to share and discuss with students about the differences between living and non-living things (slides 4-9) <ul style="list-style-type: none"> <i>Living things need food, air and water to survive</i> <i>Living things grow and die</i> <i>Living things reproduce</i> <i>Living things respond to changes in their surroundings</i> 	5 min	PowerPoint slides
Main Activity			
3	Plant needs <ul style="list-style-type: none"> Teacher to share with students about what plants need specifically, and how they are used to grow (slides 10-23) <ul style="list-style-type: none"> Optional activity: Teacher to walk around school with students to look for direct and indirect light Teacher to prompt students to share photos of their plants and to count the leaves, and to prompt students to replant their seedling into a bigger pot if it has 4 or more leaves (slide 24) <ul style="list-style-type: none"> Optional activity: Have students measure the diameter and depth of different pots to determine how big of a pot their adult plant needs 	10 min	PowerPoint slides

4	<u>Documenting plant growth</u> <ul style="list-style-type: none"> Teacher to prompt students to fill out their plant journal (pages 3 & 4) with growth milestones 	5 min	PowerPoint slides My Plant Journal
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VII. Additional online resources

1. NParks website and Education page (<https://www.nparks.gov.sg/> and <https://www.nparks.gov.sg/learning>)
2. Every Child a Seed web page (www.nparks.gov.sg/everychildaseed)
3. GardeningSG (www.gardeningsg.nparks.gov.sg)
4. Flora & Fauna Web (<https://florafaunaweb.nparks.gov.sg/>)
5. NParks YouTube channel (www.youtube.com/NParksSG)