

Background Information for Teachers

Information on Learning Journeys Organisation

Name of organisation	<ul style="list-style-type: none">• National Parks Board (NParks)
When was the organisation founded?	<ul style="list-style-type: none">• 1990
Learning Objectives stated by the organisation	<ul style="list-style-type: none">• Combining the visual delights and rich biodiversity of our parks, gardens & nature reserves with thoughtfully-planned recreational activities, NParks facilitates visitors' communion with Nature
What is the purpose of the organisation?	<ul style="list-style-type: none">• NParks conserves, creates, sustains and enhances the green infrastructure of our City in a Garden.• Responsible for providing and enhancing the greenery of Singapore.• NParks also monitors and co-ordinates measures to ensure the health of Singapore's biodiversity.
What is the mission and vision of the organisation?	<ul style="list-style-type: none">• Mission: To create the best living environment through excellent greenery and recreation, in partnership with the community.• Vision: Let's make Singapore our Garden.
How is the organisation so important to Singapore?	<ul style="list-style-type: none">• The organisation is important as National Parks Board (NParks) is responsible for providing and enhancing the greenery of the City in a Garden.• Beyond green infrastructure, NParks is committed to enhancing the quality of life through creating memorable recreational experiences and lifestyles.• NParks manages over 300 parks and 4 nature reserves. Adding to this is the extensive streetscape, or roadside greenery, that forms the backbone of our City in a Garden.• An island-wide Park Connector Network is also being developed to link major parks and residential areas.• As Singapore's scientific authority on nature conservation, NParks monitors and coordinates measures to ensure the health of Singapore's biodiversity.• This supports the overall thrust of our urban biodiversity conservation model, which aims to conserve representative eco-systems in land-scarce Singapore for future generations.• NParks is also the lead agency in the efforts to continually upgrade the Landscape Industry in Singapore.• It works closely with industry partners to

promote good work practices and create a thriving, innovative and professional industry that will support Singapore’s aspirations of being a City in the Garden.

What are the NE messages / NE learning journey objectives that can be highlighted through this learning journey?

NE Messages:-

- Cultivate a sense of ownership for the environment where Singapore is our homeland, this is where we belong.
- Cultivate a sense of nationalism and pride in the students where we have confidence in our future.

Learning Objectives:-

- Provide students with relevant knowledge on the diversity of flora and fauna found in Singapore.
- Learn about various plants that are edible and understand the practical uses of these plants in the Kitchen Garden.
- To understand the process of how compost are produced and used in garden
- Instil a sense of how mangroves play an important role in Singapore
- Understanding Singapore: Its constraints, Challenges and Opportunities that with the ever changing landscape, our heritage might disappear if no one spreads word of it

In what ways do you suggest to make the learning journey relevant to students? (related to personal experiences or curriculum matters)

The visit can be tied with:

Site	Subject	Level	Topics
A	Social Studies	Primary 2	My neighbourhood
B		Primary 6	Singapore’s physical environment
A and B			Recreation in Singapore
A and B	Science	Primary 3-6	Diversity of living and non-living things
A			Plant system
B		Primary 6	Interaction within the environment

Site A: Kitchen Garden

Site B: Mangrove Forest at Boardwalk

This learning journey can also be tied in with Values Education and Character Development as well.

Theme:	Learning Journeys
Name of Activity:	Adventures in the Kitchen Garden and Mangrove Forest
Venue/s:	Pasir Ris Park
Duration:	2 – 2.5hrs
Level/s:	Primary 1-6
Pre-requisite/s:	Nil

Introduction:

During the learning journey, students will get to explore the kitchen garden and the mangrove forest at the boardwalk. Through the learning journey, students will gain knowledge of plants in the kitchen garden and their uses and to appreciate the rich flora and fauna found in the mangrove forest. At the same time, they will learn about the importance of conserving our natural heritage in land-scarce Singapore for future generations and develop a sense of commitment and ownership of the parks and greenery.

Objectives of this Learning Journey:

1. Students will have fun as they walk and appreciate and learn various plants that are edible and understand the practical uses of these plants in the Kitchen Garden.
2. To understand the process of how compost are produced and used in garden
3. To enable students to appreciate the rich biodiversity of the flora and fauna that can be found in Singapore
4. To enable students to learn about the importance of mangroves in Singapore
5. Students will learn about the importance of conserving our natural heritage, develop a sense of commitment and ownership of the parks and green, and to protect our home and rich heritage.

National Education Message:

- Cultivate a sense of ownership for the environment where Singapore is our homeland, this is where we belong.
- Cultivate a sense of nationalism and pride in the students where we have confidence in our future.

Approaches

Programmes/Activities:

- The students will go on a learning journey to Pasir Ris Park.
- Guides assisted by teachers from the school, will lead and direct students in making various observations on the plants in the kitchen garden and the various species of flora and fauna that can be found in the mangroves.
- Teachers are to help remind students not to touch certain species of plants as they may pose a danger to themselves
- This will allow students to learn more about the plants and diversity of flora and fauna to meet the above learning objectives.
- Students will complete worksheets and take primary data (note taking and photographing) of all information which is required for the completion of an assignment or project.

Deployment:

- Guides will do a live commentary on the visit to Pasir Ris Park.
- School teachers are deployed to assist and also to help monitor and discipline students on site.

Assessment and Review:

- Students will complete the worksheets and activities individually or as a group.
- Students will be debriefed after the learning journey.
- As a post-activity, students will complete a reflection on their learning journey.
- Students will complete a feedback form.
- Students will complete an assignment or project based on their learning journey.

	<p>Reflections</p> <ul style="list-style-type: none"> • Get students to share their thoughts on Pasir Ris Park. <p>Suggested Supplementary Activity</p> <ul style="list-style-type: none"> • Teachers can get students to attempt the Pasir Ris Mangrove Quiz. Time allocated for the quiz is 30 mins. <p>OR</p> <ul style="list-style-type: none"> • Students can also conduct interviews with the owners of these 2 park features (bicycle kiosks and Gallop Stable Cafe. • Conduct a survey with the users of the parks on: <ul style="list-style-type: none"> (1) Their level of satisfaction of the park. (2) What can be improved further in the park? (3) Any underlying issues. • Tabulate the results and use it for a group presentation. 	2 periods (60 mins)	Quiz	<ul style="list-style-type: none"> • To further enhance the learning experience of students and to build up on their knowledge of Pasir Ris Park and the Mangrove.
Lesson Structure: Post Learning Journey				
Lesson 3 Introduction	<p>Picture Discussion</p> <p>Use the following guiding questions:</p> <ul style="list-style-type: none"> • Where do you think this is? • What do you see in the picture? • When do you think the photo was taken? • What are the changes that have taken place since then? <p>*Optional: The teacher might want to show the map of Pasir Ris Park in 1997 to show the park has evolved</p> <p>Reflections</p>	15mins	Picture of Pasir Ris Park Annex 5 (Reflection)	<ul style="list-style-type: none"> • To lead students in seeing what NParks has achieved over the years in making the park an ideal recreational place for Singaporeans. • To set students into context for the next stage of learning. • To obtain feedback on students' learning experiences

	<ul style="list-style-type: none"> Students are to complete a reflection and a survey. 		Annex 6 (Survey)	<p>on NParks and Pasir Ris Park.</p> <ul style="list-style-type: none"> To evaluate if the learning objectives and the NE objectives are met. To allow pupils to evaluate how their group works.
Development	<p>Task</p> <ul style="list-style-type: none"> Students will work together in a pair/group to promote Pasir Ris Park and the sites that they have visited and also to share their experiences of their visit in a blog entry Their blog entry will be assessed based on a set of rubrics. Teachers can show a sample of a blog to the students. 	3 periods (90 mins)	PowerPoint Slides Annex 7 (Task) Annex 8 (Rubrics)	<ul style="list-style-type: none"> To consolidate students' learning through the reading one another's blog, students learn about other park features at Pasir Ris Park.
Closure	<p>Class Activity Teachers are to go through the worksheet answers with students.</p> <p>Suggested Supplementary Activity One Step Beyond</p> <ul style="list-style-type: none"> Instead of a blog entry, teachers can ask students to create brochures, worksheets for the site (as CIP), a website or a group presentation within a PBL context. Have a class poll on "My favourite blog." 	10min	Annex 9 http://www.gotoquix.com/pollcreate.html	<ul style="list-style-type: none"> To sum up students' learning. To further enhance the learning experience of students and to build up on their knowledge of the parks.

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Annex 1a

No.	Animal I Spotted	Type of animal (e.g. insect, molluscan, amphibian, reptile, bird, fish etc.)	Tick below:	
			Beneficial To Plants	Harmful To Plants
1.	e.g. Earthworm	worm	✓	
2.	Butterfly	insect	✓	
3.	Snail	molluscan		✓
4.	Bird	bird	✓	
5.	Millipede	worm	✓	
6.	Caterpillar	insect		✓
7.	Fish	fish	✓	
8.				
9.				
10.				

Annex 1c

The organisation that manages parks in Singapore

- National Parks Board

List of features in Pasir Ris Park:

- Mangrove
- Kitchen Garden
- Playground
- Maze Garden
- Gallop Stable Cafe
- Bicycle Kiosk
- Eco Garden
- Park Connectors

The two park features are:

- Mangrove and Kitchen Garden

Annex 3

Five culinary herbs or spices in the Kitchen Garden:

- Citronella (used to produce citronella oil which repels insects)
- Basil (commonly known as “King of Herbs” due to its numerous uses in cooking)
- Lemon grass (for culinary use in dishes such as Assam Pedas)
- Curry leaf (highly valued as seasoning in South Indian and Sri Lankan cooking)
- Pandan leaf (added to nasi lemak and chicken rice for fragrance)
- Pepper
- Coriander
- Curry leaves

Two TCM herbs in the Kitchen Garden and its uses:

- *Andrographis paniculata* - Common Andrographis Herb: is used to treat: influenza, headaches, sore throats, ulcerative gingivitis, acute tonsillitis
- *Alternanthera sessilis* - Red Star-sky Alternanthera: is used to treat: edema, dysentery, “heaty” coughs, eczema
- *Vitex trifolia* - Chaste Tree: is used to treat: influenza, dizziness, headaches, sore eyes (conjunctivitis), night blindness, sprains
- *Hibiscus sabdariffa* – Roselle: Is used to treat: urinary tract infection, hypertension, coughs, traumatic injuries
- Thyme: is made into a herbal tea with honey and used as a remedy for sore throats scratchy coughs.
- Basil Leaves: is made into a herbal tea and helps with indigestion.

Describe and draw one plant



Conditions for plants to grow well

- Sufficient Sunlight (So that the plant can produce energy and food for itself through photosynthesis)
- A place with suitable temperature
- Good Soil
- Protection (from bugs, pests, pets, etc.)
- Water (to keep the soil moist)

Compost Tumbler:

- Uses: Helps transform the garden waste into a valuable and nutrient rich food for the garden and is used in gardens, landscaping, horticulture, and agriculture. The compost is used as a soil conditioner, a fertilizer and as a natural pesticide for soil. In ecosystems, compost is useful for erosion control, land and stream reclamation, wetland construction and as landfill cover.
- Materials needed: Plastic, rubber or wood

Four Vegetable plants found in the Kitchen Garden:

- Chilli
- Sweet potato
- Lady's finger
- Tapioca

Annex 4

Mangrove Swamp

Four interesting fauna species in mangrove:

- Giant mudskipper
- Mud-lobster
- Telescopium snail
- Tree-climbing crabs

Distance of mangrove:

- 2 km

Describe 1 plant species:

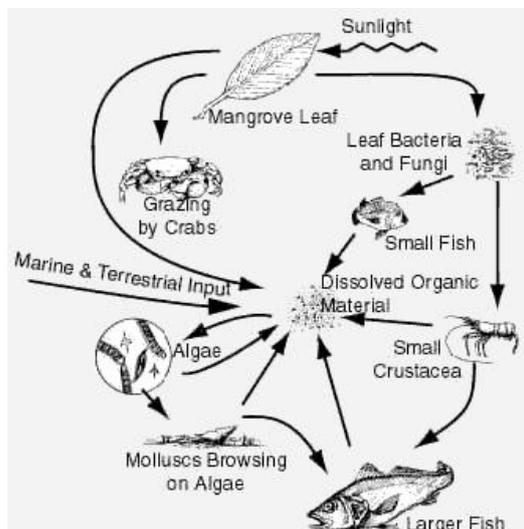
Nipah Palm

- Palm-shaped leaves are very long
- Flowers appear on a long stalk
Fruits are chestnut brown, in cluster forming a globular shape
- Each fruit bears one seed
- Stem of this palm is mostly horizontal and even underground
- Prop roots which arch out from the tree into the soil

Adaptation of an organism (animal, fungus, plant, micro-organism)

- Special "breathing roots" sticking out of the mud.
- At high tide, the roots of mangrove plants are fully immersed in seawater, while at low tide they are exposed to the sun.
- The soil is fine-grained and rich in organic matter, but lacks oxygen below the surface. These roots help the mangrove plants breathe in the oxygen-poor soil.

Possible food web in mangrove

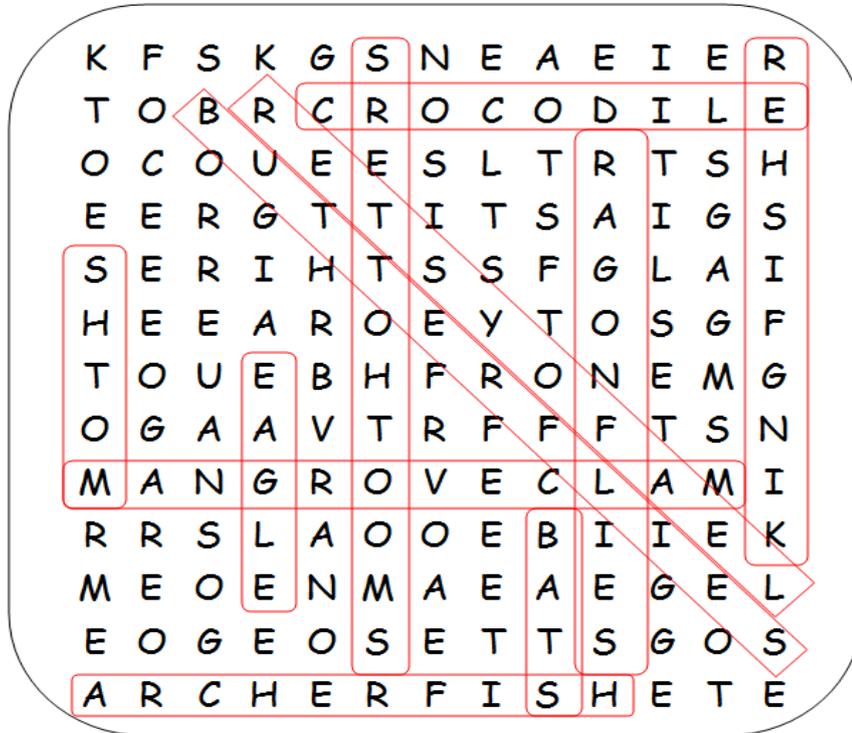


Taken from <http://www.tumbybay.com/attractmangrove.htm>

One problem that may lead to the destruction of the Mangrove Forest

- Human activities such as reclamation and pollution

Word Search



Annex 4a

1. Name the following animals.

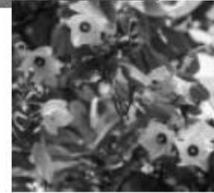
Mudskipper	Tree Climbing Crab	Spider
Monitor Lizard	Paradise Tree Snake	Smooth Otter

		
Mudskipper	Smooth Otter	Monitor Lizard
		
Spider	Tree Climbing Crab	Paradise Tree Snake

2. What is the colour of the Sea Hibiscus flower?



- Blue
- Yellow
- Red



3. Fill in the blanks to find out what the creatures are saying?

- i) GATES CLIMB CRAWL EYES
LAND WATER MUDSKIPPER SKIN



I am a Mudskipper. I live in both land and water. My two eyes rest on top of my head. I take in oxygen through my skin. I can crawl through the mud and even climb up the roots of a tree.

- ii) LEAVES KINGFISHER WATER TREE
WATER MONITOR LIZARD SIX TREE CLIMBING CRAB



Hi, I am the tree climbing lizard. I eat mainly leaves. During high tide, I climb up tree to avoid being eaten by fishes. I must stand outside the water or I will be eaten by birds such as mudskipper and the Malayan monitor lizard. I can climb trees of up to six metres.

iii) FISH BITE WATER TREES
MALAYAN WATER MONITOR LIZARD TAIL



Hello, I am the the Malayan water monitor lizard I love to hunt for fish and am also an expert in climbing trees Do not try to catch me because I will try to bite or lash out with my powerful tail When startled, I will dive into the water to escape.

4. Put the following in the correct boxes.

BIRDS	FISHES	PLANTS	MAMMALS
Kingsfisher	Mullet	Simpoh Air	Bats
Woodpecker	Halfbeak	Sea Hibiscus	Otter
Heron	Mudskipper	Cattail	Squirrel
Piegon	Archerfish	Fern	Wildboard

KINGFISHER

HALFBEAK

OTTER

WILDBOAR

CATTAIL

MULLET

BAT

MUDSKIPPER

HERON

FERN

SQUIRREL

ARCHERFISH

WOODPECKER

PIEGON

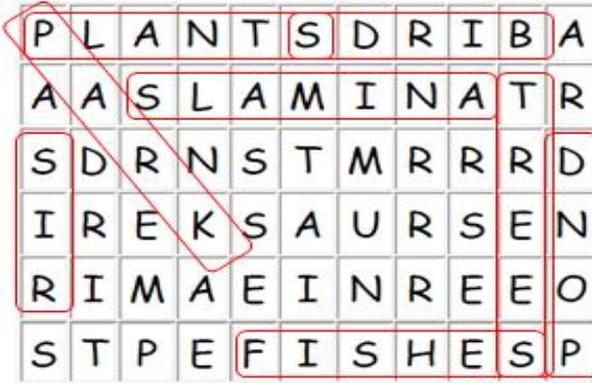
SIMPOH AIR

SEA HIBISCUS

5. Word Search

Find 10 words related to Pasir Ris Park.

- PASIR RIS PARK POND BIRDS
 NATURE FISHES PLANTS ANIMALS TREES



6. Match the following pictures to what they eat.

PREDATOR

PREY



Water Monitor Lizard

Fruits of Indian Cherry Tree



Lesser Dog Faced Bat

Tree Climbing Crab



Smooth Otter

Changeable Lizard



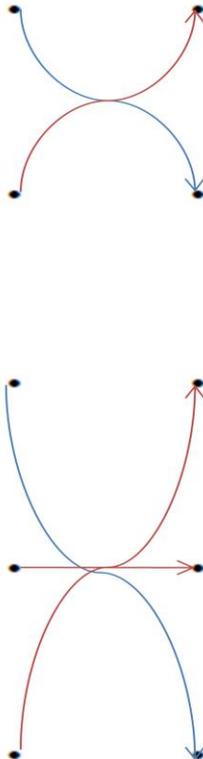
Creeper Shell

Algae



Paradise Tree Snake

Green Chromide



7. Match the following correctly by joining the dots.

