



A Visit to the Singapore Botanic Gardens



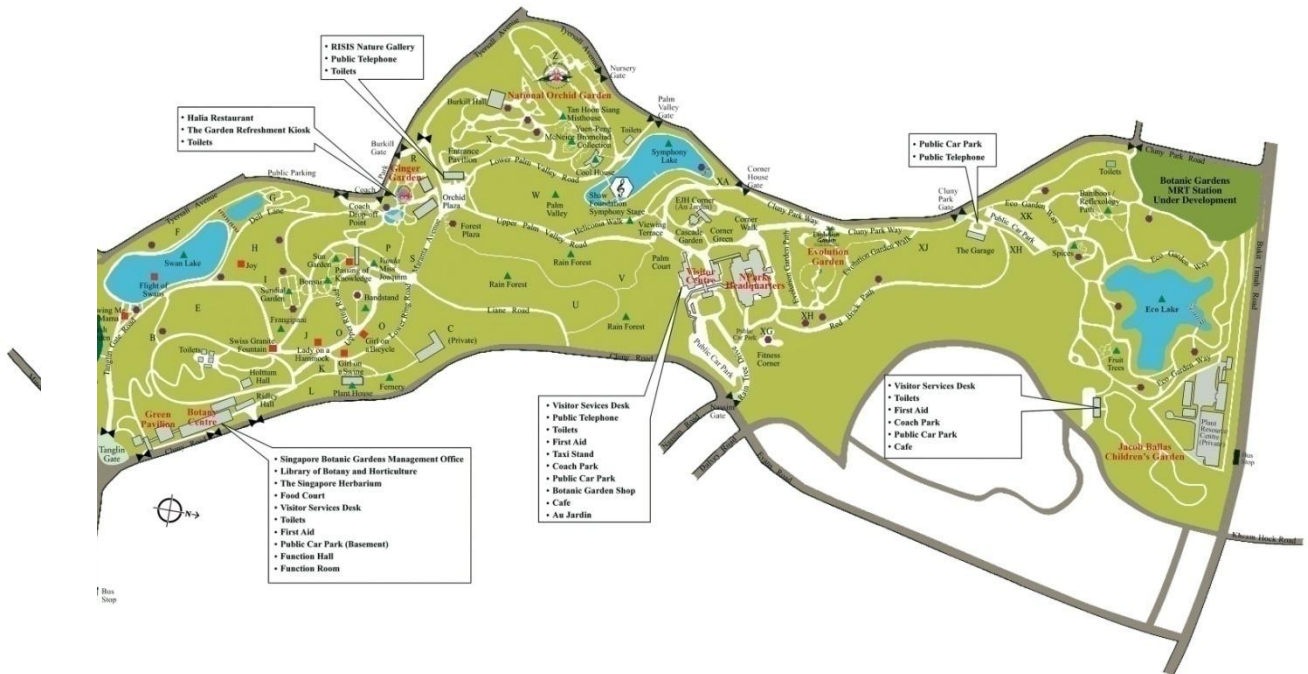
Pre-Learning Journey Worksheet: Singapore Botanic Gardens

Annex 1

Did you know? The Singapore Botanic Gardens was founded in 1859.



A Map of Singapore Botanic Gardens



Research on the features of Singapore Botanic Gardens

Based on our research, make a list of the some features that you can find in Singapore Botanic Gardens.



Before setting off on our learning journey, let's do a research on rainforests around the world.

What is heritage?

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Why is the natural heritage?

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Singapore's first botanical and experimental garden was established by Sir Stamford Raffles (founder of Singapore) on Government Hill (now Fort Canning Hill) in 1822.

At that time, he aimed to introduce the cultivation of economic crops such as cocoa and nutmeg. Since then, the Singapore Botanic Gardens, at its present site since 1859, has evolved into a tropical botanical institution of international renown, a key tourist destination and a flagship park.

It offers tourists and locals a green sanctuary for rest and relaxation, and an excellent environment in which to learn about plants and nature.



Among the lush, verdant grounds of the Gardens, there exist the heritage trees, which are all living legacies of Singapore's green heritage and hosts to a diverse range of other flora and fauna.

Penaga Laut

The Penaga Laut (*Calophyllum inophyllum*) is a coastal evergreen that is slow-growing tree with a large and spreading dense crown. *Calophyllum* means "....." in Greek. The tree's beautiful leathery leaves, with numerous slender veins, are its most recognisable feature. Its rugged, greyish brown bark is fissured and The Penaga Laut is a tree of many uses. The from the seeds is used to heal a multitude of skin ailments. Its leaves and roots can also be used for a variety of medicinal purposes. The tree is not just a tree. Its trunk plays hosts to several ferns, climbers and wildlife. A Climbing Fig bearing bright yellow fruit resembling kumquat can be found on the tree.

Did you know? This Penaga Laut is more than 100 years old.

Rubber Tree (*Hevea brasiliensis*)

Planted in 1923, this tree was grafted from a second generation rubber tree which was planted in the Gardens in 1884. A fast-growing tree that reaches a height of 40m in its native forest habitat, the rubber tree has a straight trunk with greyish-green bark. It has compound leaves with leaflets that are dark green on the surface and lighter green beneath. Its fruits are and split open with an explosive when ripe, scattering seeds a distance from the parent tree.

Kapok Tree or White Silk-cotton Tree (*Ceiba pentandra*)

The Kapok Tree is the national tree of Puerto Rico. It is a fast-growing tree and can reach 50m in height. The massive crown of the Kapok casts a large umbrella of shade. Its broad trunk, horizontal main branches and buttress roots give it a distinctive shape which is recognisable from a distance. The buttress roots are nature's way of providing more support to a very tall tree. The tree's bark is distinctly The cream-coloured flowers emit a smell. When it flowers and fruits, matured seedpods will split to release hundreds of seeds that float on fluffy parachutes of white fibre. This water-resistant fibre, called kapok in Malay, was previously used to stuff pillows, mattresses and life-jackets.

Tembusu (*Fagraea fragrans*)

This 30m tall Tembusu is probably as old as the Gardens. Distinctive to Singapore, and featured on the back of our \$5 note, the Tembusu is a long-living and evergreen tree that can grow up to 30m. It is recognisable by its stately form, deeply fissured bark and shape when young. During flowering, its creamy-white flowers open during and give off a sweet perfume, hence the tree's name fragrans. The lower branches of the Tembusu, when left untrimmed, sag to the ground and turn up at the ends.

Saga or Red-bead Tree (*Adenanthera pavonina*)

This tree is best known for its brilliant seeds often collected by old and young alike for ornamental purposes. A deciduous tree that grows up to 25m, this shady and ornamental tree has a spreading crown made up of fine feathery leaves and a trunk with smooth greyish bark. Its small creamy-yellow, inconspicuous start-shaped flowers give way to dark brown fruit pods, whichthen which then twist and open to expel small and hard scarlet

seeds. Across the Middle East and South East Asia, the seeds were traditionally used as standard weights for measuring out precious metals and jewellery (four seeds make up one gram).

Malayan Terminalia or Jelawi (*Terminalia subspathulata*)

At 47m, this tree is one of the trees in the Gardens. A native of the rain forest in the Gardens, it has been standing here for more than 150 years. The Jelawi Tree can grow up to 50m tall. This tree has large spreading buttress roots and a wide conical and flat-topped crown. Its bark is, ochre-brown and narrowly cracked. Its fruits are small, flattened and doubly winged which help to aid its dispersal by wind.

Did you know? There are currently about 178 listed Heritage Trees of various species in Singapore and 14 of them can be found in the Singapore Botanic Gardens.

Two much-loved structures in the Gardens are the Bandstand and the Swan Lake Gazebo. These are timeless icons which are etched in the memories of millions of visitors to the Gardens over the decades. Together with other memorable structures, scenes and ancient trees, they give our visitors a sense of place and permanence as they make repeat visits to their favourite outdoor space.

The Bandstand

This grand old lady is as sturdy as a rock and was crafted to perfection with tropical hardwoods. Painted a pure white, she has withstood the test of time and most of all, culture. The Bandstand was home to a host of performing bands from, with military bands being the most frequently heard, and one of the Gardens most popular attractions. Playing a month, music from the concerts would carry on the warm air as the subscribers to the Gardens watched on. She has since been able to witness the numerous transitions that have taken place. The Bandstand currently sits under the glow of yellow rain trees (*Samanea saman*) giving a rare autumnal feel in almost seasonless Singapore.

Swan Lake Gazebo

The Swan Lake Gazebo is a much more recent arrival to the Gardens, and first found her home here in 1969. Made of cast iron with a wooden roof, this shelter with wonderfully detailed etchings on her beams stands proudly at the edge of the lake, guarding it like a centurion. Her Nephrolepis wooden roof gives her an air of warmth, inviting you to spend moments with her as a breeze flows through. The etched details on her rails and sturdy build have withstood much

weathering from the harsh sun and pattering rain. The tranquil pale green of a bank of ferns surrounds her, complimenting her serene nature.

Garden sculptures enhance the beauty and interest of the Gardens. Sculptures nestled in the Gardens include three Sydney Harpley bronzes and Dominic Benhura's *Swing Me Mama*.

Girl on a Swing, Girl on a Bicycle, Lady on a Hammock

These 3 bronze figurative sculptures by the British sculptor Sydney Harpley were gifts to the Gardens by former Singapore's Ambassador to France, Spain and Portugal, Mr David Marshall. These bronze masterpieces symbolise and the fun of living and are dedicated to the of Singapore.

Girl on a Bicycle

The *Girl on a Bicycle* (1987) has the same carefree spirit as the *Girl on a Swing*. With her legs lifted free of the pedals in joyful abandon, she wheels down the path of a spiralling

Lady on a Hammock

The *Lady on a Hammock* (1989), the third of the sculptures commissioned by Mr David Marshall depicts a maiden reclining in a hammock.

Girl on a Swing

For this life-sized cast-bronze *Girl on a Swing* (1984), the sculptor used a local model dressed in the traditional sarong kebaya. The figure is so mounted as to give the impression of swinging out in mid-air over a bed of brightly-coloured

flowering shrubs, creating overall an effect of great and of movement.

Swing Me Mama

Swing Me Mama was sculpted by Dominic Benhura in 1995 using or spring stone . His inspiration for the sculpture sprung when he was swinging his

Joy

In July 2005, "Joy" arrived in the Gardens. It is a sculpture in bronze about 2.1m tall. A stylized nude of a mother holding her child high in the air, "Joy" celebrates, and laughter.

Nurturing

Sculpted by Vanessa Marston, these two sculptures have been donated by a member of the public in memory of her late mother, Doris Thomas, who was a regular visitor to the Gardens. The sculptures symbolises her love of and

Group Discussion Activity

Annex 4

Discuss the following questions with your group members and write down your answers in the spaces provided.

a. What are giants?

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b. How tall are giants?

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c. Name three giants that you saw in the Singapore Botanic Gardens.

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What is one feature that you like most in the Singapore Botanic Gardens? Why?

How do you think the features in Singapore Botanic Gardens have benefited visitors to the park?

What other features would you like to see in the Gardens?

As students, what is one thing you can do to help make the Gardens a better place for the users?

Without NParks, what do you think Singapore will be like?

How do you feel about working in a group? What has your group done well? What can be improved?

Introduction:

We are part of a bigger world and our actions and decisions will affect the environment and upset the balance and well-being of the natural heritage. We need to do our part to minimise the disturbances to the natural heritage by avoiding such activities. In doing so, we are helping to conserve this rich biodiversity, our ecological heritage, for future generations. As members of the school art club, you all have been asked by your teacher-in-charge to come up with a collage. The message here is to encourage students in the school to do their part to protect the natural heritage.

Your Roles Are:

1. To understand and appreciate the need to conserve the natural heritage.
2. To learn about the importance of natural heritage towards this biodiversity of flora and fauna.
3. To generate awareness among the student population that their actions affect the environment and natural heritage.
4. To promote to the school community about the need to protect the natural heritage.

Your Task:

You are to visit the Singapore Botanic Gardens. At the end of your visit, your club members are to come up with a collage to encourage students in the school to do their part to protect the natural heritage.

Some useful questions to guide your members:

1. What is the role and purpose of the natural heritage in Singapore and around the world?
2. Who is the organisation behind the management of the Singapore Botanic Gardens?
3. Why is the Singapore Botanic Gardens important in the history of Singapore as well as today?
4. Why should we visit the Singapore Botanic Gardens?
5. What are some of the possible problems (e.g. Littering, pollution) that are found in the Singapore Botanic Gardens which pose a threat to the biodiversity of flora and fauna found there?
6. What are the areas in Singapore Botanic Gardens that should be further conserved and preserved?
7. What can further be done for the future of the Singapore Botanic Gardens as an important garden in Singapore?

Process:

Assign specific roles for your club members.

E.g.

1. Group Leader (Lead and co-ordinate, conceptualise idea)
2. Scribe (Record information, preparing the resources and editing)
3. Photographer (To take and edit photos)
4. Researcher (Search for information on the history, flora and fauna and what to look out for at the gardens etc.)
5. Designer (To conceptualise and come up with the photo collage)

Websites:

1. http://www.nparks.gov.sg/cms/index.php?option=com_visitorsguide&task=parks&id=33&Itemid=73

2. <http://www.sbg.org.sg/>
3. <http://www.wildsingapore.com/places/sbg.htm>
4. <http://www.sbg.org.sg/attractions/heritagetrees.asp>

Project Rubrics

Annex 7

Group Members:

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CATEGORY	4	3	2	1
Quality of Construction	The collage shows considerable attention to construction. The items are neatly trimmed. All items are carefully and securely attached to the backing. There are no stray marks, smudges or glue stains. Nothing is hanging over the edges.	The collage shows attention to construction. The items are neatly trimmed. All items are carefully and securely attached to the backing. A few barely noticeable stray marks, smudges or glue stains are present. Nothing is hanging over the edges.	The collage shows some attention to construction. Most items are neatly trimmed. All items are securely attached to the backing. A few barely noticeable stray marks, smudges or glue stains are present. Nothing is hanging over the edges.	The collage was put together sloppily. Items appear to be just \"slapped on\". Pieces may be loose or hanging over the edges. Smudges, stains, rips, uneven edges, and/or stray marks are evident.
Understanding of Media	The student can define the term \"collage\" and tell how it differs from two other media. S(he) can also name at least 5 things that make a collage more powerful or attractive.	The student can define the term \"collage\" and tell how it differs from two other media. S(he) can also name at 3-4 things that make a collage more powerful or attractive.	The student can define the term \"collage\" and tell how it differs from two other media. S(he) can also name at least 1-2 things that make a collage more powerful or attractive.	The student has trouble defining the term \"collage\" and describing how it differs from other media AND/OR the student cannot describe how to make a collage more powerful or attractive.
Creativity	Several of the graphics or objects used in the collage reflect an exceptional degree of student creativity in their creation and/or display	One or two of the graphics or objects used in the collage reflect student creativity in their creation and/or display.	One or two graphics or objects were made or customized by the student, but the ideas were typical rather than creative (.e.g, apply the emboss filter to a drawing in Photoshop).	The student did not make or customize any of the items on the collage.

Design	Graphics are trimmed to an appropriate size and interesting shape and are arranged well, some in front and some behind. Care has been taken to balance the pictures across the canvas.	Graphics are trimmed to an appropriate size and interesting shape and are arranged with some items in front and others behind. The canvas, however does not appear balanced.	Graphics have been trimmed to an appropriate size and shape, but the arrangement of items is not very attractive. It appears there was not a lot of planning of the item placement.	Graphics are untrimmed OR of inappropriate size and/or shape. It appears little attention was given to designing the collage.
Attention to Theme	The student gives a reasonable explanation of how every item in the collage is related to the assigned theme. For most items, the relationship is clear without explanation.	The student gives a reasonable explanation of how most items in the collage are related to the assigned theme. For many of the items, the relationship is clear without explanation.	The student gives a fairly reasonable explanation of how most items in the collage are related to the assigned theme.	The student's explanations are weak and illustrate difficulty understanding how to relate items to the assigned theme.
Number of Items	The collage includes 15 or more items, each different.	The collage includes 10-14 different items.	The collage includes 9 different items.	The collage contains fewer than 9 different items.
Time and Effort	Class time was used wisely. Much time and effort went into the planning and design of the collage. It is clear the student worked at home as well as at school.	Class time was used wisely. Student could have put in more time and effort at home.	Class time was not always used wisely, but student did do some additional work at home.	Class time was not used wisely and the student put in no additional effort.
Titles and Text	Titles and text were written clearly and were easy to read from a distance. Text varied in color, size and/or style for different text elements.	Titles and text were written clearly and were easy to read close-up. Text varied in color, size and/or style for different text elements.	Titles and text were written clearly and were easy to read close-up. There was little variation in the appearance of text.	Titles and/or text are hard to read, even when the reader is close.

Copyright Acknowledgement

- Information is taken from <http://www.sbg.org.sg>
- Cliparts and graphics found in the worksheet are taken from <http://office.microsoft.com/en-us/images/>
- All other information, resources, pictures and photographs are adapted from the National Parks Board and NParks Flora and Fauna websites.
- Rubrics found in Annex 7 is adapted from rubistar.4teachers.org

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