



Passiflora Ltd, Andromeda Botanic Gardens, Bathsheba, St Joseph 246-433-9384

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Mission Andromeda: Challenger

Teacher's Guide with Discussion Questions and Activities suggested for ages *10-14

Learning Objectives:

1. pupils will observe and identify plants and animals
2. pupils will use a leaf classification system to describe foliage
3. pupils will utilise features of plants to identify and describe those plants
4. pupils will explore basic botanical terminology
5. pupils will use estimation, addition and subtraction
6. pupils will explore and apply cardinal directions
7. pupils will compare and contrast species of plants
8. pupils will hypothesize, problem solve, and apply knowledge
9. pupils will discuss pollination, and plant reproduction
10. pupils will draw a flower and label its parts

Before your Visit:

Possible **discussion questions, writing, or drawing** prompts:

What is a botanic garden?

How do botanic gardens differ from show gardens?

What do you expect to see in the garden?

In what ways are plants important to humans?

In what ways are plants important to the earth?

How do plants get their food?

How do plants reproduce?

Go over **Andromeda Botanic Gardens Rules** with your pupils, as well as your own expectations of their behaviour during the visit. Perhaps, assign each student a partner for the experience.

The Visit:

Upon your arrival, gather as a group in the area in front of the entrance, and review with your pupils the **Andromeda Botanic Gardens Rules** and your expectations.

Andromeda Botanic Gardens Rules:

Stay with the group.

Do not touch the plants. Show respect to the garden and its plants and wildlife.

Some plants of the plants in the garden are **poisonous or have sharp edges. Touching plants may damage them.*

Passiflora Ltd Registered Address Newcastle New Road, Newcastle, St John



Behave respectfully and responsibly.

Follow the guidance of your teacher/minder.

Do not run.

Enjoy your visit.

Other visitors will be in the garden. Please allow them space to enjoy the garden also.

As you lead pupils through each **Mission Andromeda: Challenger** item, it is suggested to gather pupils in the area of the garden indicated for that item on the *Mission* and read the item together as a group. Then, have pupils work individually, or with their partner, to answer the question or complete the required task. Teaching suggestions and discussion questions are provided below for each item on the Mission, where the teacher may wish for a closer dialogue with the pupils.

Feel free to modify or omit items, discussion questions, or activities to fit the needs and interests of your pupils as well as your time in the garden.

****Before you begin – go over the *Animals in Andromeda Gardens* guide with your pupils. At the end of the mission, pupils will list all the animals you observed in the garden.**

1. Have pupils share their knowledge of breadfruit. **Q. In what ways is breadfruit used and prepared as a food item? Name five other types of fruit we eat.**
2. Have pupils share their knowledge of baskets and basket weaving. **Q. In what ways do we use baskets?**
3. Have pupils share knowledge and facts about succulents. **Q: In what ways is this species of pandanus species similar to the first species of pandanus used for basket weaving?** Both have a waxy coating on their leaves. Both have prickles along the edges of their living leaves. **In what ways is it different?** The first pandanus is tall, this one is short; the first pandanus has much longer leaves and the leaves are variegated (different colours).
4. Have pupils propose methods to estimate the size of the tree.
5. **Q. What do trees use underground roots for?** To get water and minerals from the soil; to store food and to anchor the tree. Have pupils share their personal knowledge or experiences with the bearded fig tree.
6. Have pupils attempt to use the Leaf Guide and work in pairs to solve this problem with minimal teacher intervention. Check pupils' understanding after completion.
7. Have pupils to propose a plan for solving this question, and once the group agrees on the plan, allow them to organize themselves and work together as a whole group to work out the solution to this question.
8. Have pupils share characteristics and facts they know about fruit.
9. Have pupils work to solve this item in pairs with the use of their Leaf Classification Guide. Have pupils share characteristics and facts they know about palms. (One reason why palms are not trees is that they belong to one family – the palm family *Arecaceae* (pronounced a-ree-kay-see). Trees belong to hundreds of other different plant families).



10. Take groups of 4 pupils at a time into the gazebo to view and identify the cardinal directions on the floor, and to determine the direction of their homes. On the lawn adjacent to the gazebo, have pupils gather and sit in a large circle. When all the pupils have gone through the gazebo, and everyone is present in the circle, have pupils determine and name the student who is sitting in the direction of *north*; *south*; *east*; and *west*. Older pupils may attempt to identify the pupils sitting in *NE*, *NW*, *SE*, and *SW* points as well.
11. Have pupils share traditional healing plant remedies with which they are familiar.
12. **Q. What are other fruit and vegetables that are high in vitamin C?** Oranges and five fingers, for example.
13. Ask older pupils to propose strategies for estimating a large number of objects or animals.
14. Have pupils share knowledge of the banana plant.
Q. In what different ways do we eat and prepare bananas as a food?
15. In the Hummingbird Zone, ask pupils to identify and name animals that pollinate. Discuss how insects and birds pollinate, and how plants reproduce.

Look at the ***Parts of a flower Guide*** – **Which parts carry the pollen that gets on the insects’ legs when they come to the flower?** Stamen (comprised on filament and anther) **On which part does the insect land to drink nectar?** Carpel or pistil **Which parts protect the flower bud before it opens?** Sepals **Which parts attract the insects?** Petals

Other questions **Which parts make food for the plant?** Leaves. **Which part conducts (moves) water and food up and down the plant?** Stem. **What do the roots do?** get water/minerals, and store food
16. Have pupils find a flower to observe and have them make a botanical drawing of it on the back of their record sheet. Have pupils identify the parts of the flower they are drawing, using the ***Parts of a flower guide*** to help them. Ask them to label the parts of the flower on their drawing.

General Questions

17. Hummingbirds love heliconia flowers. Have pupils share facts they know about hummingbirds.
18. Find a space in the garden. Ask the pupils to name all the animals they observed in the garden on their answer sheet. Go through the Andromeda animal guide and name each animal. Have pupils raise their hands if they saw the animal during the visit. Count the number of hands raised for each animal, and record the number for each animal.

Q. Which animals were seen by the most pupils?

Q. Which animals were seen by only a few pupils?

Q. Which animals were not seen at all?

Have pupils propose reasons why animals were seen frequently, infrequently, or not at all.

Thank you for visiting Andromeda Botanic Gardens!

