

Wetland Footprints

Learning Activity Resource Package
Education Bureau
Teacher's Guide



Education Bureau



Agriculture, Fisheries and
Conservation Department

VII Activity Plans

A. Life Zone

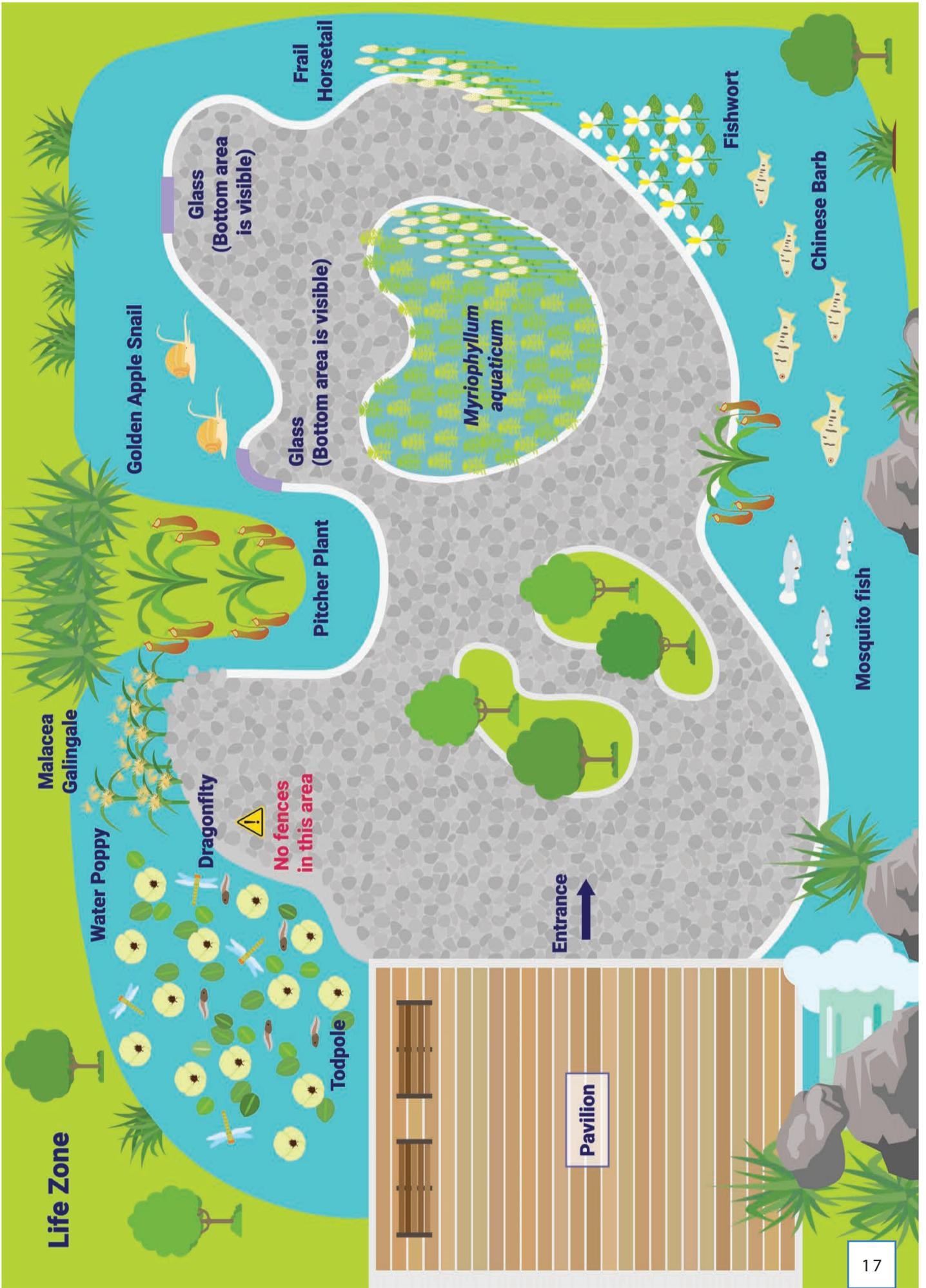
Activities “Who Lives Here” and “Underwater Friends” can be conducted in this area.

Area Introduction	<ul style="list-style-type: none">• Pond is a kind of wetlands. Life Zone simulates a pond habitat, with shallow water and the bottom usually covered with soil.• Over 100 species of aquatic plants grow in the Hong Kong Wetland Park. These plants are distributed in different living environments according to their living habits. Several special aquatic plants can be found in the Life Zone such as Frail Horsetail, <i>Myriophyllum aquaticum</i>, Malacea Galingale, Water Poppy, Water Shamrock, and Small Yellow Bladderwort, etc. Ring-shaped ponds are home to many different kinds of small aquatic animals, the most common ones are Golden Apple Snails (invasive alien species), dragonflies, damselflies, Water Skater, tadpoles and different freshwater fish such as Chinese Bard, Mosquito fish, etc. Sunlight can penetrate directly to the bottom of the pond, allowing aquatic plants to conduct photosynthesis to produce nutrients. This provides comfortable habitats and food for small animals living therein.• In addition to aquatic plants, herbs are also planted, such as Fishwort and Pitcher Plant. The unique appearance of these plants can easily arouse children’s interest in learning and curiosity about nature.
Safety Precautions	<ul style="list-style-type: none">• Teachers should remind children to give due regard to safety when approaching the water’s edge without fences.• When doing observation near the water’s edge, let children squat down side by side and remind them to observe order so as to avoid accidents.• Beware of uneven and slippery ground.
Design Rationale	<ul style="list-style-type: none">• Make good use of resources from the Hong Kong Wetland Park and encourage children to freely explore the surrounding environment in the Life Zone. Teachers should make good use of children’s learning characteristics like their curiosity, love of questioning and exploratory spirits as a bridge to arouse their interest in exploring nature through stories, questions and games, and learn to use their senses and tools to explore the surroundings.• In the first activity “Who Lives Here”, children can get to know the wetland plants and their relationship with our daily lives, as well as to learn how to protect the environment through discussions and sharing.• In the second activity “Underwater Friends”, children can observe small aquatic animals from different angles, for example, from the water surface or through the transparent glass at the side of the pond. Children can also have an opportunity to use assisting tools to get a closer look at the underwater environment. Through discussions and sharing, children can get to know the small aquatic animals in wetlands and their relationship with our daily lives, as well as the relationships among small aquatic animals, plants and water, so that children can learn how to treasure water resources.

Teaching Skills

- “Plants” are often encountered in children’s daily lives and commonly used as a theme in the curriculum. Therefore, children have the basic knowledge of plants to certain extent and teachers can arrange the visits as appropriate.
- Prior to the activity, teachers should introduce the Hong Kong Wetland Park and the highlights of Life Zone to children.
- If children discover small aquatic animals during the first activity “Who Lives Here”:
 - Option 1- follow up immediately because the Hong Kong Wetland Park has a lot of scenery and children easily forget what they just saw.
 - Option 2- teacher can flexibly jump to the activity “Underwater Friends” if children are generally more interested in exploring small aquatic animals.
- If “Underwater Friends” is adopted as the first activity, teachers should introduce the Paper Puppet “Dragonfly Dow” before kicking off the activity.
- In the Life Zone, apart from the small aquatic animals to be mainly explored in this activity, children may discover some common wetland insects such as dragonflies, damselflies, butterflies and bees, etc. Teachers may refer to the Teacher’s Supplementary Information Booklet and randomly introduce them. Teachers can also search for related information on the Internet.
- Teachers should allow each group of children to freely decide the quantity of small aquatic animals to be found according to time and progress of activity.
- If various sounds are heard, such as birds singing, cicadas chirping, dragonflies buzzing, etc., teachers can discuss with children about who Dow’s friends are, or conduct discussion and exploration according to children’s interests.
- As a supplementary measure and for reference only, all of the reference questions for teachers do not have “model answers” and can be adapted according to children’s ability.
- Teachers can trim down the activity content according to children’s performance and context.
- According to actual situations and children’s interests, teachers may conduct extended activities at school.





Life Zone

Malacea
Galingale

Water Poppy

Dragonfly

Golden Apple Snail

Glass
(Bottom area
is visible)

Glass
(Bottom area is visible)

Pitcher Plant

No fences
in this area

Frail
Horsetail

Myriophyllum
aquaticum

Fishwort

Chinese Barb

Mosquito fish

Entrance

Pavilion

Activity 1: Who Lives Here

Proposed Class Level	K1
Name of Area	Life Zone
Proposed Number of Participants	6 people in a group
Duration	Around 30 minutes
Teaching Aids/ Materials	Prepared by teachers: <ul style="list-style-type: none">• Paper Puppet “Dragonfly Dow” (Appendix 1)
Children’s Developmental Characteristics 3-4 years old	<ul style="list-style-type: none">• Show curiosity about surroundings, able to learn through various senses, enjoy exploration and hands-on experience• Start developing the ability to distinguish the differences in appearances of objects
Proposed Learning Objectives	<p>[Knowledge] Children are able to briefly know the appearance of plants and the benefits of trees</p> <p>[Skill] Children are able to use various senses to explore different parts of the trees</p> <p>[Attitude] Children are able to care for trees</p>
Focus of Activity	Enable children to observe and explore the appearances of plants through senses, and have initial understanding of the relationship between trees and human beings, so as to nurture their attitude of care for trees.
Proposed Activity Plan (Procedures)	<p>Introduction</p> <p>Teacher uses the Paper Puppet “Dragonfly Dow” to introduce itself, “Hello everyone! I’m Dow and I live in the Hong Kong Wetland Park - Dow’s Home. I have a lot of friends here. Do you want to know them? Let me take you to the Life Zone!”</p>



Process

- After arriving at the pavilion in the Life Zone, Dow asks children questions as lead-in, “My friends would like to play hide-and-seek with you. Can you find my friends together? You can use your eyes to see where they are, use your fingers to touch them and use your nose to smell them. Then tell me who my friends are.”
- Dow reminds children that they can touch its friends gently and get close to smell them but must not hurt them. Then Dow invites children to explore freely in the designated activity area. (Teacher makes proper demonstrations as appropriate)
- Let's look around, which colour do you see the most? (Teacher can give them more hints to find out Dow's friends based on children's prior knowledge, for example, its leaves are round and grown on trees)
- During the exploration, teachers should remind children not to pick leaves and break branches, encourage children to find out green plants in the Life Zone and take the initiative to share their observations and feelings, and raise questions.

Proposed Activity on Sunny Days

- After searching for a while, teacher leads children to stand in the shade of trees and guide them to express their feelings freely:
 1. How did you feel when you were looking for Dow's friends with the Sun shining on us?
 2. Now we are standing under a leafy tree, how do you feel?
 3. Why do we feel cool under a leafy tree? Why don't we feel hot?
- Tree leaves can block the sun's heat! (Teacher can further encourage children to think about the other benefits of trees, such as providing food and shelter to small animals; trees can provide timber for building houses and fruit trees can provide fruits.) What would happen to small animals and us if there were no trees? (Teacher guides children to care for trees!)

Conclusion (Sharing)

- Teacher leads children to the pavilion and let them share how they discovered the plants.
- Teacher invites them to share how they protected the plants during their exploration. For example,
 - ▶ Touch the plants gently
 - ▶ Do not pick the plants
 - ▶ Do not contaminate the plants' habitat
- Teacher praises them for having observed the codes and protected the trees.

Possible Adjustments

Some children may be scared of touching plants. Teachers can encourage them to try but not to force them. Teachers can guide them to observe and explore using different senses like sight, hearing, smell and touch.

Reference Questions for Teachers

(Select questions according to circumstances and in line with the proposed learning objectives)

According to children's prior knowledge and skills on the activity, teacher guides them in thinking and questioning gradually and progressively.

Before the Activity

- Have you ever seen plants?
- Where did you see them?
- What colours were they?

During the Activity

- Would you please find out whom Dow's friend is? How does it look like?
- Where are Dow's friends hiding? Let's find them out. (After finding the leaves, teacher can let children observe the shape and characteristics of the leaves, and praise the performance of children.)
- What are the green things that you see? Are they leaves?
- Where did you see these plants?

After the Activity

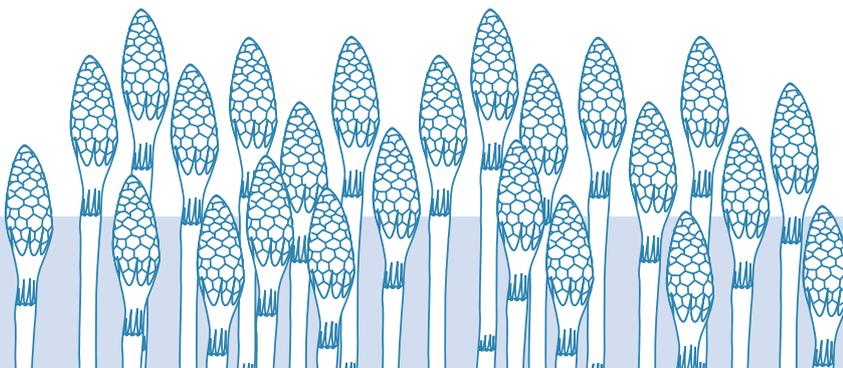
- Did you find Dow's friends?
- How did you find them?
- Would you care for those plants/small animals?
- How would you care for them?

Extended Activities

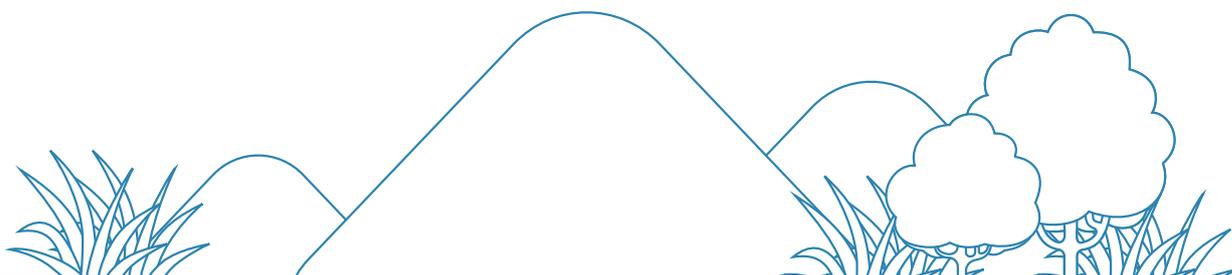
Based on the rationale of this activity, teachers may develop other extended activities to fit into the themes of the school-based curriculum, for example:

Planting at School to Beautify the Campus

After appreciating the plants at the Hong Kong Wetland Park, teachers can plant some easy-to-grow plants in the campus, e.g. beans. Children can take turns to take care of those plants to beautify the campus. Apart from planting, teachers can use books, photographs, etc. for review.



Proposed Class Level	K2
Name of Area	Life Zone
Proposed Number of Participants	6-8 people in a group
Duration	Around 30 minutes
Teaching Aids/ Materials	<p>Free loan from Hong Kong Wetland Park through advance registration:</p> <ul style="list-style-type: none"> • A magnifying glass per group <p>Free collection from Hong Kong Wetland Park through advance registration:</p> <ul style="list-style-type: none"> • Children Activity Booklets <p>Prepared by teachers:</p> <ul style="list-style-type: none"> • Paper Puppet “Dragonfly Dow” (Appendix 1) • Pictures of Aquatic Plants (Appendix 2)
Children’s Developmental Characteristics 4-5 years old	<ul style="list-style-type: none"> • Able to ask questions and express their views when they encounter interesting things during exploration • Able to use simple words and phrases to express opinions
Proposed Learning Objectives	<p>[Knowledge] Children are able to know the characteristics of different plants and leafy trees can block the sun's heat</p> <p>[Skill] Children are able to use simple language to express ideas about finding the surrounding plants and exploration results</p> <p>[Attitude] Children are able to care for plants</p>
Focus of Activity	Enable children to observe and explore through senses, able to explore and understand the surrounding plants through observation and comparison, understand the relationship between plants and human beings, so as to nurture the attitude of care for plants.



Proposed Activity **Introduction****Plan**

(Procedures)

Teacher uses the Paper Puppet “Dragonfly Dow” to introduce itself, “Hello everyone! I’m Dow and I live in the Hong Kong Wetland Park - Dow’s Home. I have a lot of friends here. Do you want to know them? Let me take you to the Life Zone!”

Process

- After arriving at the pavilion in the Life Zone, Dow asks children questions as lead-in, “Oh, where are my friends? They really love to play the game hide-and-seek with me in the Life Zone. Some of them live nearby but some far away. Now let me show you what they look like (Dow chooses suitable pictures from Appendix 2 (only one part of the plants is shown in the pictures)). Do you know plants? Where do they grow? Now I would like to give you a small task, try to find out my friends shown in the pictures. But each picture only shows a part of my friend, please find them out. After finding them, you can borrow a magnifying glass from the teacher to observe them clearly. What are their living environments? What do they need to grow healthily?”
- Dow gives hints to children: “Apart from using a magnifying glass to observe my friends, you can also touch my friends gently with your fingers (Teacher demonstrates how to touch gently) as my friends have very special appearances. You may also get closer to smell them as some of them release special smells. Can you guess if they smell good or bad? I’m not going to tell you. Please remember not to hurt them!” (Teacher invites children to freely explore interesting plants in the area and let them raise questions and express opinions freely.)
- Based on the children’s responses, teacher can make use of the “Reference Questions for Teachers” in this activity to encourage children to find out interesting plants in the Life Zone and let them ask questions and express opinions freely.

Get to Know the Benefits of Nature through a Science Experiment

- After searching for a while, teacher invites children to place their “Children Activity Booklet” on the ground in the sun for 1-2 minutes and then touch it gently and share how it feels.
- Afterwards, ask children to place the booklet in the shade of trees for 1-2 minutes, then touch it gently and share how it feels again.
- Invite children to stand in the sun for 1 minute, then get back into the shade of trees.
- Teacher guides children to talk about the difference between standing in the sun and in the shade of trees, and bring out the benefits of trees to human beings that trees can block the sunlight to provide shades and cooling effects for objects/humans.

Conclusion (Discussion and Sharing)

- Teacher leads children to the pavilion and let them share what they have observed.
 - Dow says, “Some of my plant friends are injured! Their leaves are broken, why?” (It would be better if teacher can find a broken leaf in the area as an example) Teacher can guide children to discuss why the plants are injured and randomly point out feasible ways to protect plants in the area (encourage children to express their interesting ideas), so children can know how to protect the nature when being in the nature.
 - Teacher can supplement with the following points if applicable:
 - ▶ Respect the nature and do not take anything away, e.g. leaves, soil and pebbles, etc.
Reason: Without soil and pebbles, plants cannot grow and small animals have no habitats.
 - ▶ Do not litter in the park
Reason: Plants and small animals need a clean living environment, especially clean water source.
 - ▶ Do not disturb any animals while appreciating the plants
Reason: Plants are one of the animals’ habitats and any disturbance would scare the animals away.
 - ▶ Do not tear off leaves or damage plants
Reason: That will cause the death of plants, so they cannot reproduce new plants.
 - Teacher’s conclusion: From today’s experiment, we experienced the benefits of trees to us. Thus, we must care for the plants in proper ways.
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Possible Adjustments

Teachers may guide children to observe the noticeable characteristics of plants, foster their curiosity and exploratory spirits, and help them grasp the ways of pursuing knowledge.

Reference Questions for Teachers

(Select questions according to circumstances and in line with the proposed learning objectives)

According to children's prior knowledge and skills on the activity, teacher guides them in thinking and questioning gradually and progressively.

Before the Activity

- What are plants?
- Where do plants grow?
- How do plants look like?

During the Activity

- What are the interesting plants here?
- What colour is it?
- What do their patterns look like?
- Where did you see this plant?
- Does it have leaves? Where are the leaves?
- Where does it grow? Can you describe it?
- How did you feel about the texture of leaves when you were touching the leaves? Can you describe it?
- Can you compare and contrast different leaves? Are the shapes of all leaves the same?
- Can you guess who grows those plants?

After the Activity

- Why were some plants broken?
 - How can we protect plants?
 - What would happen to animals if there were no such plants?
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Extended Activities

Based on the rationale of this activity, teachers may develop other extended activities to fit into the themes of the school-based curriculum, for example:

Planting at school: Compare and Contrast the Growth of Plants in Water and Soil

Teachers can encourage children to grow plants in water and in soil to beautify the campus and avoid damaging the plants due to their different attributes.



Proposed Class Level	K3
Name of Area	Life Zone
Proposed Number of Participants	8 people in a group
Duration	Around 30 minutes
Teaching Aids/ Materials	Free loan from Hong Kong Wetland Park through advance registration: <ul style="list-style-type: none"> • A magnifying glass per group Prepared by teachers: <ul style="list-style-type: none"> • Paper Puppet “Dragonfly Dow” (Appendix 1) • Pictures of Aquatic Plants (Appendix 2) • Pictures of Signs (Appendix 3)
Children’s Developmental Characteristics 5-6 years old	<ul style="list-style-type: none"> • Able to use different adjectives to describe the characteristics of objects • Enjoy cooperative play • Able to recite what happened in a systematic manner
Proposed Learning Objectives	<p>[Knowledge] Children are able to understand the habitats and required conditions of different plants</p> <p>[Skill] Children are able to explore through different senses, and compare and contrast different kinds of plants</p> <p>[Attitude] Children are able to care for and appreciate nature</p>
Focus of Activity	Enable children to explore through various senses, compare and contrast the similarities and differences of the habitats and living conditions of plants, so as to distinguish aquatic plants from herbs and nurture the attitude of care for the environment.
Proposed Activity Plan (Procedures)	<p>Introduction</p> <p>Teacher uses the Paper Puppet “Dragonfly Dow” to introduce itself, “Hello everyone! I’m Dow and I live in the Hong Kong Wetland Park - Dow’s Home. I have a lot of friends here. Do you want to know them? Let me take you to the Life Zone!”</p> <p>Process</p> <ul style="list-style-type: none"> • After arriving at the pavilion in the Life Zone, teacher shows children the pictures of signs (Appendix 3) and asks them what they are and what they mean. Teacher and Dow invite children to sit down, read the signs and discuss about the message of these signs. (Visitor Codes).

**Proposed
Activity Plan**
(Procedures)

6 Regulations:



Keep quiet,
do not shout or run



Do not litter. Put litter into
bins or take it away with
you



Do not have picnics in
the park or leave food
in outdoor areas



Do not pick or damage
plants



Do not disturb or
capture animals



Do not touch the wild
animals, bird feathers or
their droppings. Wash hands
right after the activities

- Teacher wraps up this part to help children understand that we can care for the nature if we follow suit.
- Before exploration, Dow asks children questions as lead-in: “Children, I would like to give you a small task. The appearances of friends in the Life Zone are very interesting. Can you guess where they are? I will describe the features and then you need to work in groups of two to find them out.” (Dow chooses suitable pictures from Appendix 2 as hints, e.g., heart-shaped leaves or pen-like leaves, etc.)
- Dow continues, “Some of my friends live nearby but some live far away. If you would like to see their features and various parts clearly, you can use some tools. Do you know what we can use (like a magnifying glass)? Yes, you can borrow it from your teacher!”
- Dow prompts the children, “Apart from using a magnifying glass to observe my friends, you can also touch my friends gently with your fingers as they have very special appearances. You may also get closer to smell them as some of them release special smells. Please remember not to hurt them!” (Teacher demonstrates how to touch gently). Dow invites children to explore freely in the area.
- Based on the children’s responses, teacher can make use of the “Reference Questions for Teachers” in this activity as hints to encourage them to find out, observe and explore other interesting plants in the Life Zone from different angles and let them ask questions and express opinions freely.

Get to Know the Benefits of Nature through a Science Experiment

After searching for a while, teacher leads children to stand in the shade of a tree and asks them to guess the temperature of which place is lower, under a tree or in the sun, and share their observations and feelings.

- Reason of temperature variation:
 - ▶ Trees can block the sunlight to provide shade which can keep objects/humans cool.
- Extended discussion on the other benefits of trees:
 - ▶ Greenery, making furniture, providing food

Conclusion (Discussion and Sharing)

- Teacher leads children to the pavilion and let them share about the plants they have found in the area. Teachers and children can get to know and make comparisons of the appearances, features, structures, habitats and living conditions of plants and discuss their relationship with our daily lives. For example:
 - ▶ Using Malacea Galingale to wrap rice dumplings
 - ▶ Wrapping rice with leaves of Indian Lotus
 - ▶ Putting *Myriophyllum aquaticum* in the fish tank at home
- Teacher invites children to discuss: Who is responsible for protecting nature? What would happen if we didn't protect the plants and natural environment? (Children discuss freely) What are other ways of protecting plants? (Children discuss freely and teacher can help children understand ways of protecting the nature according to children's ability)
- Teacher can supplement with the following points if applicable:
 - ▶ Respect the nature and do not take anything away, e.g. leaves, soil and pebbles, etc.
Reason: Without soil and pebbles, plants cannot grow and small animals have no habitats.
 - ▶ Do not litter in the park
Reason: Plants and small animals need a clean living environment, especially clean water source.
 - ▶ Do not disturb any animals while appreciating the plants
Reason: Plants are one of the animals' habitats and any disturbance would scare the animals away.
 - ▶ Do not tear off leaves or damage plants
Reason: That will cause the death of plants, so they cannot reproduce new plants.
- Teacher makes a conclusion that environmental protection begins with each of us:
 - ▶ Environmental Perspective
Trees can absorb the pollutants in the air, produce fresh air and provide beautiful scenery for our appreciation.
 - ▶ Ecological Perspective
If plants were damaged, small animals would lose suitable habitats and food. If their homes were filled with rubbish, the water source would be polluted and they would eat some bad food.
 - ▶ Everyday Life Perspective
Without trees, there would be less greenery and wooden furniture, and no food for us.

Possible Adjustments

Children may not know how to use the magnifying glass properly. Teachers should demonstrate how to use the tool for observation to individual child.

Reference Questions for Teachers

(Select questions according to circumstances and in line with the proposed learning objectives)

According to children's prior knowledge and skills on the activity, teacher guides them in thinking and questioning gradually and progressively.

Before the Activity

- Do you know what plants are?
- What plants have you seen? Do they have scents?
- What parts do plants have?

During the Activity

- What does it look like?
- What can you smell from the plants? What is it like?
- Where did you see this plant?
- Does it have leaves? Where are the leaves?
- Where does it grow? Can you describe it?
- What are the differences between their habitats? Please elaborate with comparisons.
- How did you feel when you touched it?
- How can you smell the leaves?
- Do all the plants have the same appearances? Can you describe their differences?
- How would you protect it?
- Can you take the plants home? Why?
- Do plants need to be taken care of by human beings? Why?

After the Activity

- Who can protect these plants and how?
- Apart from the Visitor Codes, what are the other suggestions for protecting plants?
- Do you know the relationship between these plants and our daily lives?
- Do you know the relationship between these plants and small animals?

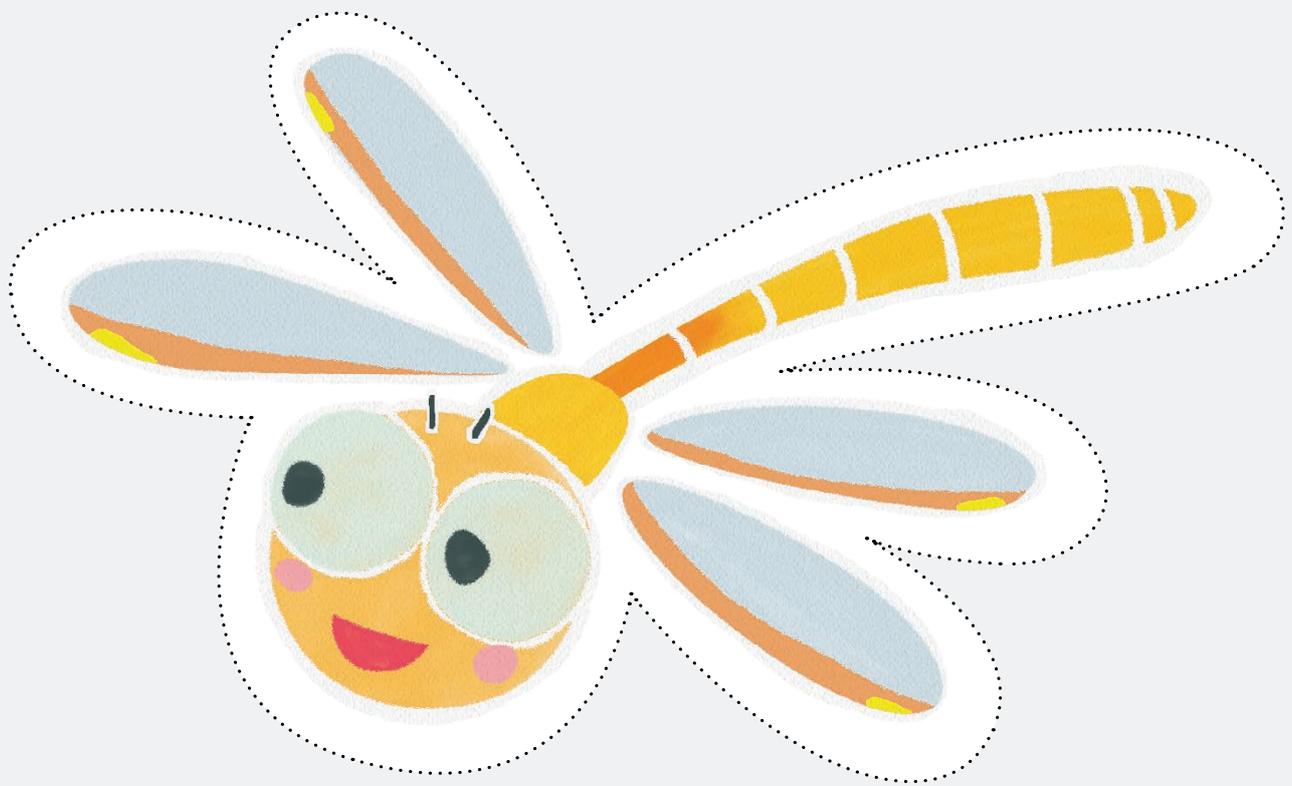
Extended Activities

Based on the rationale of this activity, teachers may develop other extended activities to fit into the themes of the school based-curriculum, for example:

Wrapping of Rice Dumplings

- What kind of food is wrapped in plant leaves? (For example, rice dumplings of various styles)
- To explore with children about what kind of leaves are used for wrapping rice dumplings?
- What are the differences between dried and fresh Malacea Galingale from observation?
- Invite parents to organise an activity "Wrapping Rice Dumplings" together so as to help children experience the relationship between plants and our daily lives.

Appendix 1: Paper Puppet “Dragonfly Dow”

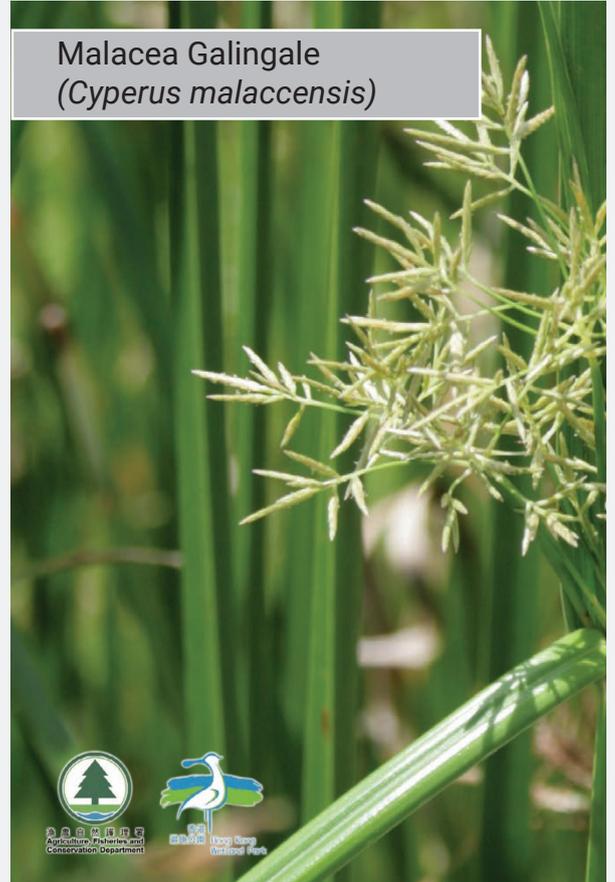


Appendix 2: Pictures of Aquatic Plants

Frail Horsetail (*Equisetum debile*)



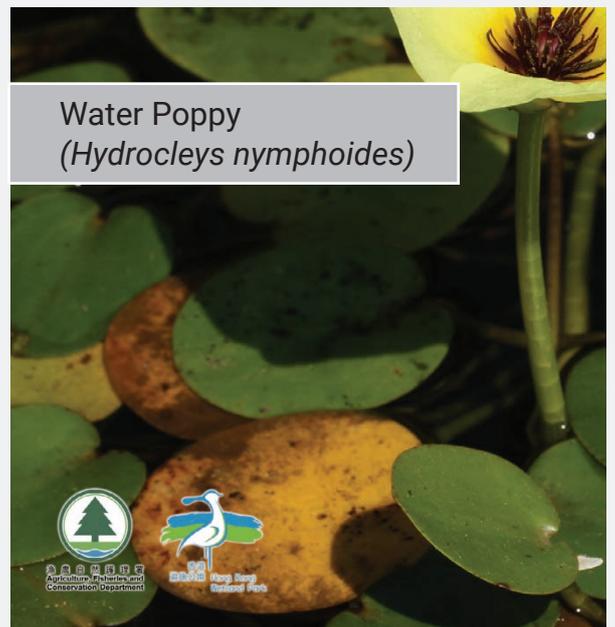
Malacea Galingale (*Cyperus malaccensis*)



Myriophyllum aquaticum

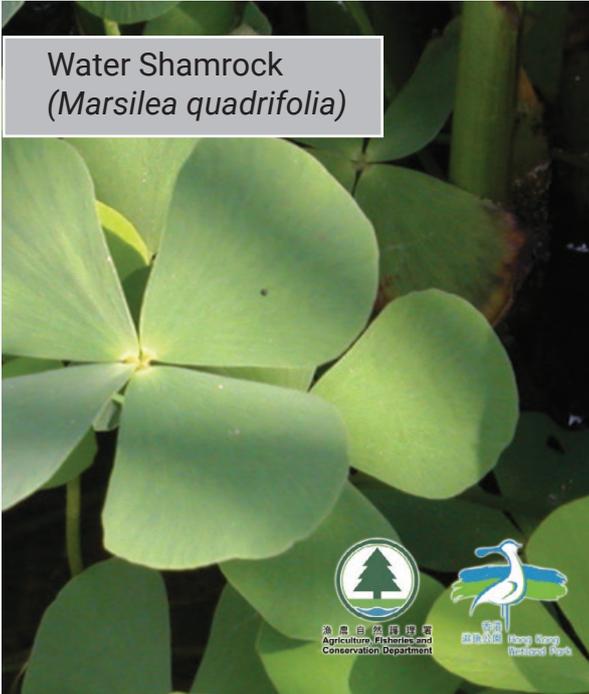


Water Poppy (*Hydrocleys nymphoides*)



Appendix 2: Pictures of Aquatic Plants

Water Shamrock
(*Marsilea quadrifolia*)



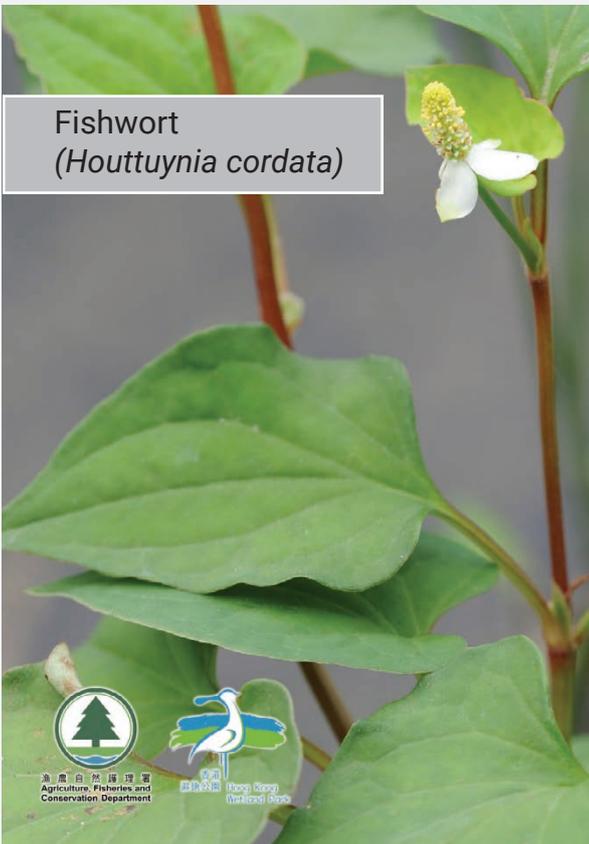
Small Yellow Bladderwort
(*Utricularia bifida*)



Pitcher Plant
(*Nepenthes mirabilis*)



Fishwort
(*Houttuynia cordata*)



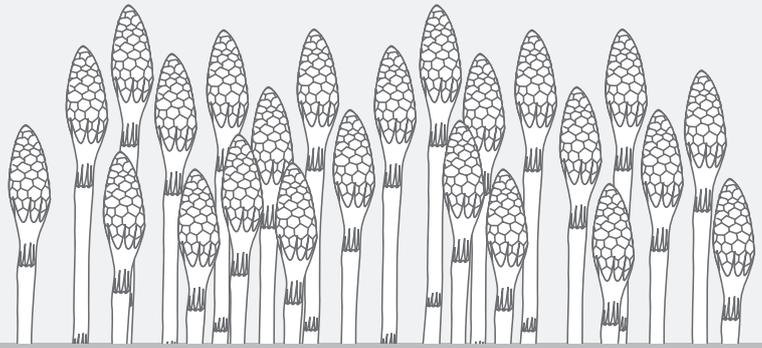
Appendix 2: Pictures of Aquatic Plants

Indian Lotus
(*Nelumbo nucifera*)



Water Lily
(*Nymphaea* spp.)





Appendix 3: Pictures of Signs



Keep quiet, do not shout or run



Do not litter. Put litter into bins or take it away with you



Do not have picnics in the park or leave food in outdoor areas



Do not pick or damage plants



Do not disturb or capture animals



Do not touch the wild animals, bird feathers or their droppings. Wash hands right after the activities