

香港科學館 HONG KONG SCIENCE MUSEUM

賽馬會環保廊

JOCKEY CLUB ENVIRONMENTAL CONSERVATION GALLERY



教師指南
Teachers' Guide

簡介

人類賴以為生的地球，擁有豐富的天然資源和物種。在這個千絲萬縷的生態系統裏，各種生物的活動，都影響着系統的平衡。一個平衡的生態系統，能夠讓生物蓬勃發展；相反，系統一旦失去平衡，便可能帶來災難性的後果。設立賽馬會環保廊的目的，在於向市民闡釋保護環境的重要，讓市民加深了解地球整體環境的實況，以及人類與大自然之間微妙的平衡關係。環保廊亦推廣從整全角度促進保育工作的模式，並引用香港作為實例加以闡述，及提倡別具環保效益及可持續的生活方式。

環保廊設計成自然環境的模樣，展出超過 40 件互動展品，涵蓋 10 個主題包括全球、極地、本地和個人的相關議題；污染對空氣、水和土地資源及生物的影響；以及廢物和能源等問題。

賽馬會環保廊由香港賽馬會慈善信託基金捐助。

展出日期： 28.8.2010 開始展出

(逢星期四（公眾假期除外）、農曆年初一及初二休館)

地點：香港科學館地下展覽廳

Introduction

The Earth on which humans rely for survival possesses a wealth of natural resources and wildlife. The activities of various life forms can influence the balance of this intertwined ecosystem. A balanced ecosystem is essential for life to flourish whilst any imbalance may cause disastrous consequences. The Jockey Club Environmental Conservation Gallery aims to illustrate the importance of environmental conservation to the community; promote a better understanding of the global environment and the delicate balance between nature and human. It also fosters a holistic view of environmental conservation using Hong Kong as an example, and advocates an environmental friendly and sustainable lifestyle to the public.

Designed in a natural environment and comprised of more than 40 interactive exhibits, the gallery covers 10 themes, including global, polar, local and personal issues; impacts on air, water and land resources, and life; as well as waste and energy problems.

Jockey Club Environmental Conservation Gallery is funded by The Hong Kong Jockey Club Charities Trust.

Exhibition Period: Starting from 28.8.2010

(Closed on Thursdays (except public holidays) and the first two days of the Lunar New Year)

Exhibition Venue: G/F., Exhibition Hall, Hong Kong Science Museum

學習指引參考活動

環保廊的資料有助幼稚園教師講授「動植物的生長」單元，小學教師亦可將展廳內容作為教授小學常識科「我愛大自然」、「環境與我」等單元的參考資料，而中學教師則可利用環保廊的內容，作為教授初中綜合科學「觀察生物」及「地球的資源」等單元及新高中生物科「應用生態學」及「生物與環境」等課題的補充資料。

Learning Guidance

Environmental Conservation Gallery provides information for kindergarten teachers to prepare for teaching the unit on “Growth of Animals and Plants”. Primary teachers can make reference to the gallery contents for teaching units such as “I love Nature” and “Environment and Me” under General Studies. Secondary teachers can also adopt the contents as supplementary materials for teaching the unit of “Observation of Organisms”, “Materials from the Earth” under the Junior Secondary Curriculum (Integrated Science) as well as topics on “Applied Ecology” and “Biology and Environment” under the New Senior Secondary Curriculum (Biology).

教育資源

為加深學生對環保廊的了解，本館製作了適合幼稚園及中小學程度的趣味習作，中小學學生更可於參觀後與老師及同學們一起討論趣味習作內及本指南內的思考題。

Educational resources

To facilitate better understanding of pupils about the gallery, the Museum has prepared interesting exercises at kindergarten, primary and secondary levels. After the visit, secondary and primary students can discuss the questions and topics from the worksheets and teachers’ guide with classmates and teachers for in-depth exploration.

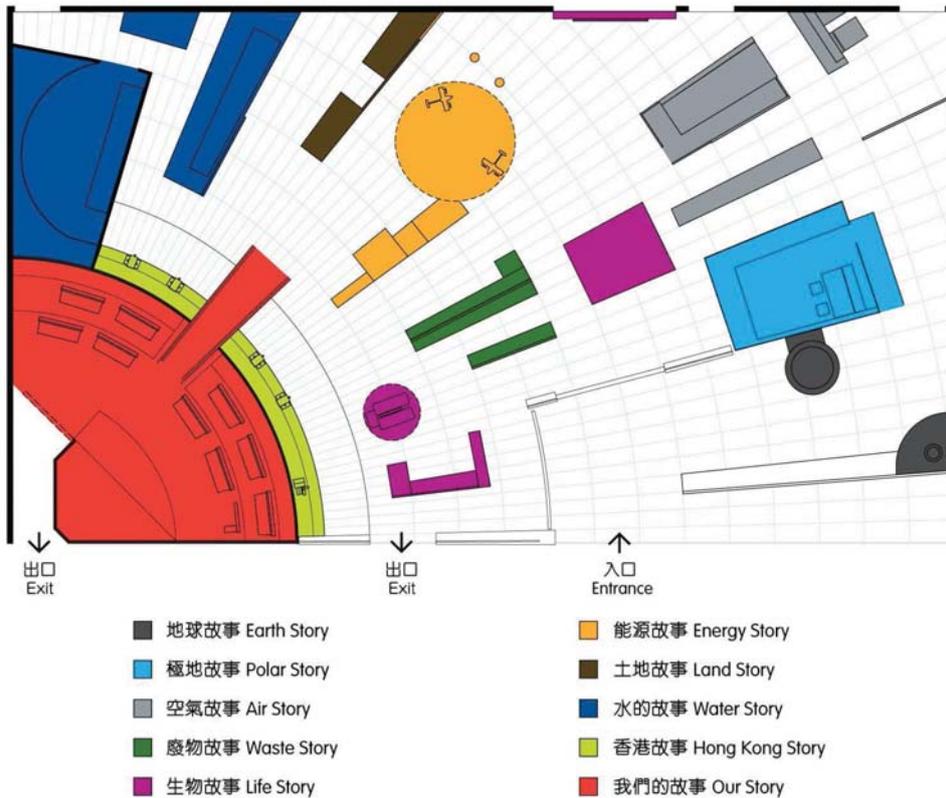
參觀後活動

香港科學館的生命廳中的「植物和動物」展區及能源效益中心內部分展品，可幫助學生加深認識環保廊「生物故事」、「空氣故事」及「能源故事」的內容。本館亦會於九月起在學校參觀時段內就展覽提供免費的導賞服務，及於特定的學校參觀時段內播出適合中小學學生觀賞的電影「環保狗」。

Post-visit activities

Besides this exhibition, the zone “Plants and Animals” in the Life Exhibition Hall and some exhibits in the Energy Efficiency Centre of the Museum may also facilitate the understanding of the “Life Story”, “Air Story” and “Energy Story” of Environmental Conservation Gallery. Free-guided tour will be provided for this exhibition during school visit sessions and a film show “Environmental Dog” will be arranged for primary and secondary students in special sessions during the school visit.

展廳平面圖 Floor Plan



展廳及展品介紹 Introduction to Gallery and Exhibits :

地球故事 Earth Story

氣候變化和環境問題會影響地球上每一個角落的生物，不幸的是，地球現正面臨前所未見的危機。要拯救我們的家園，便要先了解它現時的狀況。

Climate changes and environmental problems are affecting life worldwide. Unfortunately, the Earth is facing unprecedented risks and threats. To save our home, we must first understand the current situation of our planet.

1 宏觀地球 Global View

這個直徑達 1.5 米的大型球幕，讓大家欣賞美麗的地球景緻之餘，更認識地球上各種珍貴的天然資源如太陽能、空氣、水、森林和化石燃料以及明白它們的重要性。

Through the projections on the large globe of 1.5 metres in diameter, you can appreciate the beauty of the Earth as well as having an overview of the precious natural resources such as solar energy, air, water, forest and fossil fuel on our planet and their importance.



2	<p>地球聚焦 Earth Focus 透過探索在全球出現的種種自然現象，了解我們身處的地球的近況。 Through exploration of various natural phenomena occurred in the world, we may understand the current situation of the Earth where we live.</p>
<p>極地故事 Polar Story 地球兩極儲存了極具研究價值的資料，有助我們了解全球環境過去的變化，從而預測氣候在日後的轉變趨勢。 The poles of the Earth contain invaluable information for scientific research, helping us to understand global environmental changes in the past and predict future climate trend.</p>	
3	<p>與李樂詩會面 Meet Rebecca Lee 李樂詩博士與我們分享她的極地經驗，細訴極地科研的重要。 Dr Rebecca Lee shares her polar experiences with us, enhancing our understanding about the importance of scientific researches being conducted in the polar regions.</p>
4	<p>冰封證據 Cool Evidence 冰芯記錄了地球以往氣候的詳盡資料，查閱這「冰封」的資料庫，便可找出很久以前發生過的重大事故及氣候變化的情況。 Ice cores provide detailed records of the Earth's climate in the past. Access to these icy archives will help identify major incidents and climate changes taken place long time ago.</p>
5	<p>冰原古今 Ice Sheets over Time 比較冰原在不同時期的外形，看看全球氣候暖化怎樣令冰原的面積不斷縮小。 Comparison of the shape of ice sheets at different periods of time will reveal how global warming has been making the area of ice sheets smaller and smaller.</p>
6	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>南極的一天 A Day at the South Pole 跟在南極的中國考察站「長城站」的科學家一起進行環境研究，加深了解研究人員在南極所進行的研究和生活實況。 Conduct environmental researches together with scientists at the Chinese Great Wall Station in Antarctica, and we may understand more about their research and lives there.</p> </div> </div>
7	<p>極地資源 Polar Resources 觀看有關極地的野生動植物、岩石及天然資源的影片。 Watch videos showing wildlife animals and plants, rocks and natural resources in the polar regions.</p>
8	<p>極地奇珍 Treasures from the Poles 欣賞在極地收集得的岩石及動植物標本。 Appreciate specimens of rocks, animals and plants collected in the polar regions.</p>

9	<p>雪龍號 Xue Long Icebreaker</p> <p>觀賞中國第一艘破冰船「雪龍號」的模型和影片，了解它的設施及在當中所進行的科研活動。</p> <p>View the model and video of China's first icebreaker "Xue Long" and learn about the facilities and research activities carried out on the ship.</p>
<p>空氣故事 Air Story</p> <p>空氣是地球上生物賴以生存的其中一種要素。隨着城市的急劇發展，人類排放大量的廢氣到大氣層，造成空氣污染。我們要共同努力，透過各人的行動幫助改善空氣質素。</p> <p>Air is one of the essential elements for life on Earth. With rapid urban development, humans release large volumes of waste gases into the atmosphere, causing the air to be polluted. We must make concerted efforts to help improve air quality through our own, personal actions.</p>	
10	<p>溫室效應 Greenhouse Effect</p> <p>進行模擬溫室效應的實驗，了解全球暖化如何形成。</p> <p>Conduct a simulated experiment of greenhouse effect and understand how it leads to global warming.</p>
11	<p>綠色車船 Green Transport</p> <p>介紹以新科技研發的綠色車船，讓我們可以在使用交通工具的同時，也能保持空氣不受污染。</p> <p>Introduces environmentally-friendly means of transportation adopting new technologies that enable clean travelling without causing air pollution.</p>
12	<p>捕捉廢氣 Culprits in the Air</p> <p>認識空氣污染的源頭，嘗試捕捉有害氣體，讓空氣回復清新。</p> <p>Get to know various sources of air pollution, and try to catch harmful gases for restoration of the fresh air.</p>
13	<p>廢氣禍害 Gaseous Havoc</p> <p>看看當我們在街道上步行時，空氣中的廢氣會如何影響我們的健康。</p> <p>See how harmful emissions will adversely affect our health when we walk and breathe in the streets.</p>
14	<p>臭氧反應 Ozone Reaction</p> <p>了解大氣中的臭氧洞是怎樣形成及它對我們的影響。</p> <p>Understand the formation of holes in the ozone layer of the atmosphere and their impacts on us.</p>

15	<p>交通智選 Ride Smart</p> <p>選擇乘坐不同的交通工具，找出哪一種可同時減少耗用能源和排放廢氣。</p> <p>Through travelling by different modes of transport, we may find out which one can keep energy use and emissions as low as possible.</p>	
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廢物故事 Waste Story

每個人日常生活的各種活動，都難免會產生廢物，我們必須採取行動，避免廢物積聚，並從中節省金錢和能源。

It is inevitable that all activities in everyone's life produce waste. We must take the initiative to avoid waste accumulation which can save both money and energy.

16	<p>廢物分類 Waste Separation</p> <p>嘗試把垃圾分類，放進適當的回收箱內，看看能否做好處理廢物的第一步。</p> <p>Try to sort garbage by placing them in appropriate recycling bins. See if you can handle wastes properly.</p>	
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17	<p>廢物處理劇場 Waste Treatment Theatre</p> <p>透過多套影片，介紹被分類後的廢物將如何處理。</p> <p>The treatment of different separated wastes are introduced in videos.</p>
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生物故事 Life Story

人類的過度開發會破壞大自然，甚至令一些物種滅絕。但大自然是我們生活的一部分，它的可持續發展對人類的生存至為重要。

Human exploitation can destroy nature and even cause species to become extinct. In fact, nature is a part of our lives and its sustainability is important to the survival of all humans.

18	<p>未來世界 Future Scenarios</p> <p>藉着觀看影片，了解人類對環境所做成的破壞，並展望人類能憑着創意和共同努力，建設一個美好的未來世界。</p> <p>Through the video, we can see how human activities has caused destruction to the environment, and can also envision the building of a better future of mankind out of our creativity and concerted efforts.</p>
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19	<p>生態保育區 Conserved Habitats</p> <p>像鳥兒般四處翱翔，瀏覽香港的一些生態保育區，看看當中常見的動植物。</p> <p>Soar like a bird to visit some conserved habitats in Hong Kong and meet the common wildlife there.</p>
20	<p>生命之網 Web of Life</p> <p>了解生態系統如何像一個結構緊密的蜘蛛網，當中的生物怎樣互相依賴維生。</p> <p>Understand how an ecosystem is like an intricately woven spider web in which all species are dependent on each other.</p> 
21	<p>瀕危物種 Endangered Species</p> <p>觀看展出的瀕危物種，想想應如何保護牠們，以免牠們從生態系統中消失。</p> <p>Observe the endangered species on display and think about ways to protect them from being wiped out in the wilds.</p>
22	<p>季節交響曲 Symphony of Seasons</p> <p>欣賞大自然四季的變化和當中的和諧景緻。</p> <p>Appreciate the seasonal changes of the nature and its gracious beauty.</p>
23	<p>蝶舞翩翩 Dance of the Butterflies</p> <p>認識一些香港常見的蝴蝶，看看牠們如何與人類融洽相處。</p> <p>Learn about some common butterflies found in Hong Kong and see how they interact with humans.</p>
<p style="text-align: center;">能源故事 Energy Story</p> <p>我們依賴能源以維持現代社會的正常運作。地球上有多種能源可供使用，但化石燃料的使用，卻對環境造成最嚴重的影響。我們可利用再生能源來取代，以幫助解決這些問題。</p> <p style="text-align: center;">Energy makes our modern world possible. We rely on many energy sources amongst which fossil fuels have the greatest impact on our environment.</p> <p style="text-align: center;">We have to turn to renewable energy as an alternative to provide solutions to our problems.</p>	
24	<p>太陽能飛機 Fly a Solar Plane</p> <p>嘗試令太陽能飛機起動並以穩定的速度飛行。</p> <p>Make a solar plane fly and keep it flying at a steady speed.</p>
25	<p>面向疾風 Face the Wind</p> <p>找出能最有效地發電的風車設計。</p> <p>Identify a windmill design that is most effective in generating power.</p>
26	<p>太陽能電池板 Solar Panels</p> <p>了解太陽能電池板的發電原理，找出科學館的太陽能電池板產生了多少電力。</p> <p>Understand the principle of power generation by solar panels, and find out how much electricity has been generated by the solar panels at the roof of the Museum.</p>

27 **跳出能源 Jump 4 Energy**
可再生能源包括太陽能、風能、潮汐能和生物能等，你可與朋友進行比賽，看看你能否有效地開發這些能源。
Renewable energy includes solar energy, wind energy, tidal energy and biomass energy, etc. You can compete with a friend to See if you can tap these kinds of energy efficiently.



28 **綠色小發明 Green Gadgets**
看看一些使用綠色能源的小發明，嘗試用自己的可再生能量為你的手提電話充電。
Look at some gadgets using green energy, and try to charge your mobile phone with the renewable energy generated by yourself.

土地故事 Land Story

土地為各種生物提供食物、棲身之所和生存空間，但也不能無止境地滿足人類的所有需求。
現在正是時候想一想，如何對大地作出回饋。

Land provides food, habitats and niches for all creatures. Owing to physical limitations, land is not adequate to meet the insatiable wants of mankind. It is high time that we should reciprocate and protect our Earth.

29 **植樹比試 Planting Contest**
了解樹木對生態環境的重要作用，及參加植樹比試以補救日漸縮小的森林。
Understand the important role of trees in the ecology, and participate in a tree planting contest to save the shrinking forests.



30 **生態足印 Ecological Footprint**
計算自己因生活中的各項活動而留下的生態足印。
Calculate your own ecological footprint due to activities taking place in your daily life.

31 **有機耕種 Organic Farming**
看看你能否有效地運用有機耕作的方法，改善你的農田。
See if you can improve your farmland by employing organic farming methods effectively.

水的故事 Water Story

我們與水有着不可分割的關係，而我們身體的健康，亦全繫於這個複雜而脆弱的水循環系統；我們必須保護這系統，確保它正常運作。

Water is indispensable to life, and our health also hinges on the intricacy and delicacy water cycle. We must protect this system to ensure it is working properly.

32	<p>食水處理站 Water Processing Plant 透過參與處理食水的多項程序，從而明白為何要珍惜用水。 Take parts in the process of water treatment, and learn why we should save water.</p>
33	<p>用水基本法 Mind the Tap 估計你每天的用水量，看看可如何節約用水。 Check your daily consumption of water, and see what can be done to save water.</p>
34	<p>污水處理 Wastewater Treatment 觀看有關香港污水處理的影片和了解如何使用薄膜過濾。 Watch a video about sewage treatment in Hong Kong, and understand the operation of membrane filtration.</p>
35	<div data-bbox="204 636 847 1055" data-label="Image"> </div> <div data-bbox="871 636 1420 1010" data-label="Text"> <p>海洋生態之旅 Sustainability Voyage 參與海洋生態之旅，決定如何在人類的需要和魚類生態之間取得平衡，讓魚類得以繼續生存和繁殖。 By embarking on a sustainability voyage, you will decide how to balance human needs with the ecology of fishes so that the species can continue to live and breed.</p> </div>
<p style="text-align: center;">香港故事 Hong Kong Story</p> <p style="text-align: center;">香港位於亞熱帶地區，擁有獨特的山勢和分明的季節，因此棲息了種類繁多的野生生物，其中有些動植物甚至是香港獨有的。 Situated in a subtropical region with mountainous relief and distinct seasons, Hong Kong is home to a wide variety of wildlife. Some of these are endemic to Hong Kong.</p>	
36	<p>濕地遠眺 Eye on Wetlands 認識什麼是濕地，觀察當中的一些植物以及棲息其間的動物的生活和習慣。 Understand what wetlands are, and observe some plants there as well as the life and habits of animals inhabiting among them.</p>
37	<p>米埔遠眺 Eye on Mai Po 了解為何米埔獲列為拉姆薩爾濕地，觀賞置身其中的各種留鳥和候鳥。 Understand why the wetland in Mai Po is listed as a Ramsar site, and watch a variety of resident birds and migratory birds inhabiting there.</p>
38	<p>香港動植物 Local Flora and Fauna 透過觀望鏡觀賞本地多采多姿的生態，如中華白海豚、黑臉琵鷺和盧氏小樹蛙等。 Observe the rich biodiversity of the territory such as Chinese white dolphin, black-faced spoonbill and Romer's tree frog, etc through viewers.</p>

39



香港郊野 Hong Kong Countryside

介紹香港豐富的動植物物種，包括部分瀕危物種的數量。

Introduce Hong Kong's rich species of plants and animals while some of them are endangered species.

40 水之動力 Water Power

觀察這裏的人造河流，以了解水車是如何發電的。

Observe this artificial river and see how a watermill generates power.

我們的故事 Our Story

我們可以選擇環保的生活方式來協助解決環境問題，其實只要大家能為環境設想而改變一些習慣，便能締造更美好的生活環境。參與這互動劇場，評估一下你的生活方式和了解如何實踐綠色生活。

We can tackle environmental problems by being eco-friendly in our lifestyle choices. If we can take the initiative to change some of our habits with due consideration to the environment, we can make the world a better place. Participate at this interactive theatre to assess your lifestyle and learn about green living practices.



我們的故事 Our Story

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Pang, K.C. (2005) *Certificate Biology: Mastering Basic Concept 1*. Oxford University Press. Hong Kong.

網上資源 Online resources

漁農及自然護理署－自然護理

http://www.afcd.gov.hk/tc_chi/conservation/conservation.html

Agricultural, Fisheries and Conservation Department –Conservation

<http://www.afcd.gov.hk/english/conservation/conservation.html>

漁農及自然護理署－香港生物多樣性

http://www.afcd.gov.hk/tc_chi/conservation/hkbiodiversity/hkbiodiversity.html

Agricultural, Fisheries and Conservation Department – Hong Kong Biodiversity

<http://www.afcd.gov.hk/english/conservation/hkbiodiversity/hkbiodiversity.html>

漁農及自然護理署－濕地護理

http://www.afcd.gov.hk/tc_chi/conservation/con_wet/con_wet_abt/con_wet_abt_gen/con_wet_abt_gen.html

Agricultural, Fisheries and Conservation Department –Wetland Conservation

http://www.afcd.gov.hk/english/conservation/con_wet/con_wet_abt/con_wet_abt_gen/con_wet_abt_gen.html

香港濕地公園

<http://www.wetlandpark.com/tc/index.asp>

Hong Kong Wetland Park

<http://www.wetlandpark.com/en/index.asp>

水務署－珍惜水資源

http://www.wsd.gov.hk/tc/education/water_conservation/index.html

Water Services Department - Water Conservation

http://www.wsd.gov.hk/en/education/water_conservation/index.html

香港天文台－香港高空氣象觀測

<http://www.hko.gov.hk/wservice/tsheet/uametc.htm>

Hong Kong Observatory – Upper-Air Weather Measurements in Hong Kong

<http://www.hko.gov.hk/wservice/tsheet/uamet.htm>

機電工程署－能源資訊園地

<http://www.emsd.gov.hk/emsd/chi/pee/el.shtml>

Electrical and Mechanical Services Department – EnergyLand

<http://www.emsd.gov.hk/emsd/eng/pee/el.shtml>

嘉道理農場暨植物園－保育

<http://www.kfbg.org.hk/kfb/introduction.xml?fid=165&lang=tw>

Kadoorie Farm and Botanical Garden – Conservation

<http://www.kfbg.org.hk/kfb/introduction.xml?fid=165&lang=en>

世界自然基金會（香港分會）－保育

<http://www.wwf.org.hk/whatwedo/conservation/>

World Wild Fund (Hong Kong) Conservation – Conservation

<http://www.wwf.org.hk/en/whatwedo/conservation/>

世界自然基金會－生態足印

<http://www.wwf.org.hk/whatwedo/footprint/>

World Wild Fund (Hong Kong) Conservation – Ecological Footprint

<http://www.wwf.org.hk/en/whatwedo/footprint/>

綠田園基金－有機耕作

http://www.producegreen.org.hk/agronomy_01.htm

Produce Green Foundation – Organic Farming

http://www.producegreen.org.hk/eng/agronomy_e.htm

香港海豚保育協會－中華白海豚

http://www.hkdcs.org/QnA/HKdolp_cwd.htm

Hong Kong Dolphin Conservation Society – Chinese White Dolphin

http://www.hkdcs.org/QnA/HKdolp_cwd_en.htm

能源效益網站

http://www.hk-phy.org/energy/index_c.html

Energy Efficiency Website

http://www.hk-phy.org/energy/index_e.html

明報通識新聞網

<http://life.mingpao.com/cfm/main.cfm>

Global Footprint Network

<http://www.footprintnetwork.org/en/index.php/GFN/>

The Ramsar Convention on Wetlands

<http://www.ramsar.org/>

台灣經濟部能源局－再生能源兒童網站

<http://www.re.org.tw:8081/smart.jsp>

台灣經濟部水利署－珍惜水資源

http://www.wra.gov.tw/subject/index_2.asp?subject_mainid=3

美國國家環境保護局

<http://www.epa.gov/chinese/>

United States Environmental Protection Agency

<http://www.epa.gov/>

延伸活動 Extended activities

試帶領學生進行以下活動及引導他們思考下列問題，然後一起討論及分享意見。

Try to lead the pupils to participate in the following activities and guide them to answer the questions. Then discuss the answers and share the ideas with the pupils.

極地故事 Polar Story

1. 這是一個高空探測儀器，你知道它是甚麼嗎？

It is an upper-air sounding system. Did you know what it is?

2. 氣球內的氣體是甚麼？

What gas does the balloon contain?

3. 它是利用甚麼訊號來傳送資料的？

What kind of signal does it use to transmit data?

4. 它能探測哪些資料？

What kinds of data can it measure?

5. 試猜猜這個儀器的一般高度限制是多少？

Would you guess the normal height restriction of such kind of balloon?

6. 氣球若升過了這一高度，你認為會有甚麼情況發生？為甚麼？

If it stays at an altitude higher than that, then what will happen? Why?



生物故事 Life Story

以下是兩種於香港常見的動植物，你對牠們的認識有多少呢？試到郊外觀察及進行資料搜集（如剪報、互聯網、書籍等），並為這兩種動植物設計生物資料咭吧！

The following are two kinds of animal and plant commonly seen in Hong Kong. How much do you know about them? Observe them in the countryside and conduct data collection (e.g. from newspaper cutting, the Internet and books, etc.) and design a biological data card for them.



資料咭內容：名字、暱稱、生長環境、食物、外貌特徵、生活習性及其他有趣資料

Content of the data card: Name, nickname, living habitats, food, physical characteristics, living habits and other interesting information

(Image credit: Agricultural, Fisheries and Conservation Department)



資料咭內容：名字、暱稱、生長環境、外貌特徵、用處、氣味及其他有趣資料

Content of the data card: name, nickname, living habitat, physical characteristics, uses, scent and other interesting information

廢物故事 Waste Story

研習題目 Research topic

1. 【明報專訊】政府估計現時位於將軍澳的新界東南堆填區，將於 2010 年代中期填滿，因此環保署 2 年前曾建議借用清水灣郊野公園 5 公頃的土地擴建。事隔兩年，昨日有區議員表示，發現原來擴建面積不止 5 公頃，附近一幅預留工業用地，亦要劃出 15.6 公頃興建堆填區，他們不排除提出司法覆核，力阻堆填區擴建……

(明報)2010 年 5 月 22 日 星期六 05:10

(Ming Pao News) As estimated by the Government, the South East New Territories landfill at Tseung Kwan O will reach its maximum capacity in mid-2010s. Therefore the Environmental Protection Department (EPD) put forward a solution two years ago, proposing to temporarily change the use of a piece of land of 5 hectares inside the Clear Water Bay Country Park to landfill use. Two years later, a district council member said that the actual extension would cover an area of more than 5 hectares. Besides, an area of 15.6 hectares from a piece of land originally reserved for industrial use in the vicinity is designated to build the landfill for waste. Such being the case, they might seek a judicial review to stop the project of landfill extension”

(Ming Pao) 22.05.2010 Saturday 05:10

- i. 試進行角色扮演，根據每個角色的立場，表達你對擴建堆填區的意見。
Conduct a role-play exercise. Express the views on landfill extension according to different roles.

建議角色包括 The proposed roles include:

- (a) 環保署的官員 an EPD official
- (b) 普羅市民 a member of the general public
- (c) 地產商 a real estate developer
- (d) 將軍澳區議會議員 a Tseung Kwan O District Council member
- (e) 環保團體成員 a representative of an environmental protection body

- ii. 你認為擴建堆填區能否解決都市的廢物處理問題？

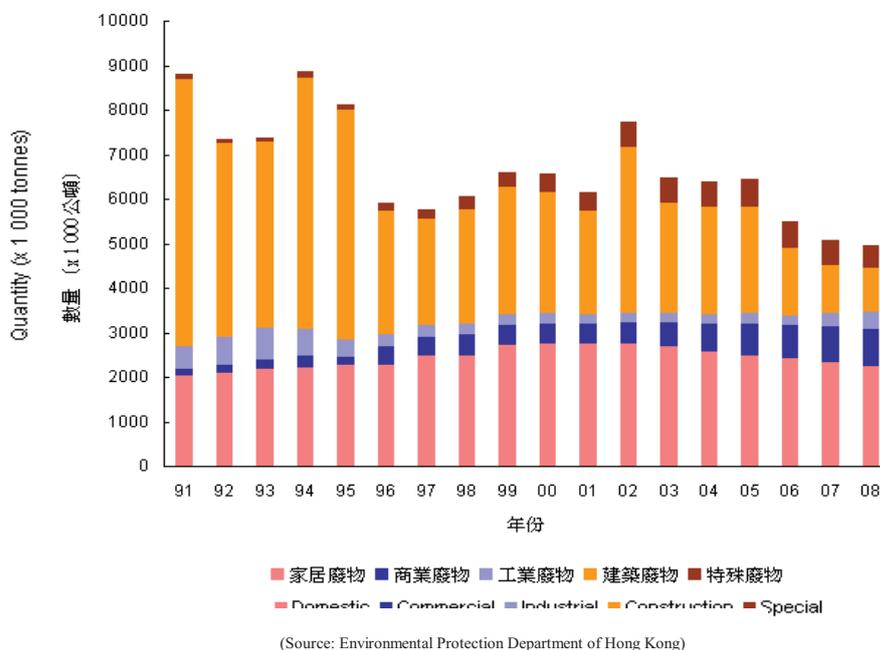
Do you think landfill extension can solve the problem of municipal waste?

- iii. 除擴建堆填區，你認為還有甚麼可行方法可紓緩都市廢物處置問題或減少現時龐大的廢物量？

What else other than landfill extension do you think are possible ways to mitigate the waste disposal problem or reduce the large volume of wastes produce?

2. 試瀏覽香港環境保護署的資料，並根據下圖回答以下題目：

Read the information provided by the Hong Kong Environmental Protection Department (EPD, HK), and answer the following questions in accordance with the data provided in the diagram below:



i. 甚麼是都市固體廢物？它包含了哪幾種廢物？

What is municipal solid waste (MSW)? What kinds of solid waste does it include?

ii. 在 2008 年，哪種廢物在總廢物量中佔最多數？約佔多少？

Which waste ranks first in quantity out of all kinds of wastes in 2008? What is the approximate percentage it occupies?

iii. 香港的廢物量呈現甚麼趨勢？ What is the trend of waste quantity in Hong Kong?

iv. 哪一種廢物量的跌幅最大？為甚麼？

Which kind of waste has the largest decrease in quantity? Why?

v. 試進行資料搜集，並預期本港未來的建築廢料量會增加還是減少？為甚麼？

Conduct data collection of your own. Do you expect an increasing or decreasing trend for the quantity of construction waste in future? Why?

延伸活動參考答案 Suggested Answers For Extended activities

極地故事 Polar Story

1. 探空氣球或無線電探空儀 Weather balloon or radio upper-air sounding system (radiosonde).
2. 氫氣 Hydrogen
3. 無線電訊號 Radio signals
4. 高空溫度、濕度、氣壓、風速和風向

Atmospheric temperature, humidity, air pressure, wind force and direction

5. b. 30 公里. 30 km

6. 探空氣球會爆裂並墜下，因為高空的氣壓過低。

The observation balloon will burst and fall down because the air pressure is too low at upper air.

廢物故事 Waste Story

1. 都市固體廢物包括來自住宅及工商業活動所產生的固體廢物

Municipal solid waste includes domestic and trade solid wastes.

2. 家居廢物佔 40-50 % Domestic waste occupies 40-50 %

3. 下降 Decreasing

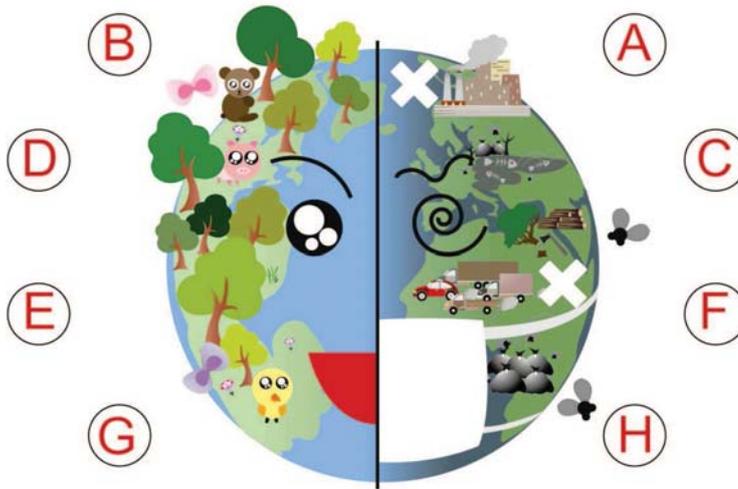
4. 建築廢料。因為廢物處理技術的改良、有效建築規劃、經濟轉差、工程減少等或任何合理答案。

Construction waste. It is because of the improved technologies of waste handling, enhanced effectiveness in architectural planning, economic downturn, reduction in number of projects, or any reasonable answers.

趣味習作參考答案 Activity Sheet

地球故事、我們的故事 Earth Story, Our Story

1.



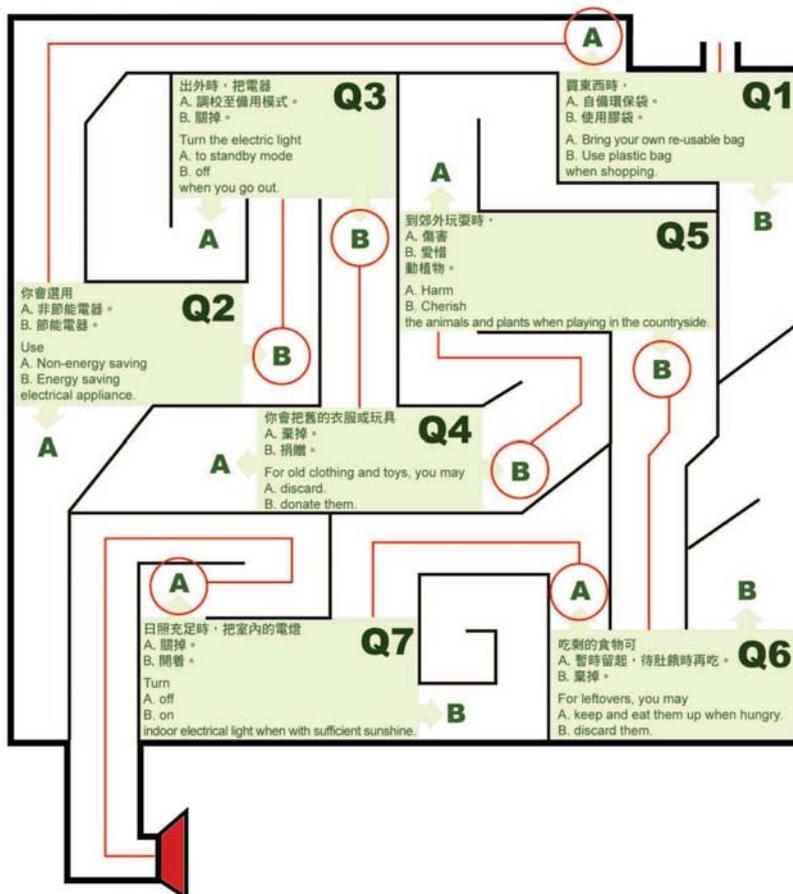
你認為甚麼因素會威脅地球的健康？

What factors do you think will threaten the health of the Earth?

人口增長、經濟發展、消費行為、氣候變化、自然災害、山火或任何合理答案

Population growth, economic development, climate change, consumption behaviour, natural disasters, hill fire or other reasonable answers

2. A > B > B > B > B > A > A



極地故事 Polar Story

1. 我是北極熊。
我住在北極。
我喜愛/~~不喜愛~~與同類生活，是獨居/~~群體~~的動物。
我喜愛吃海豹、魚、鳥和鯨。
我的特徵／習性：1. 精於游泳
2. 耳朵及尾巴細小以減少熱量散失（或任何合理答案）。

I am polar bear.

I live in the North Pole.

I like/~~do not like~~ living with my species.

I am a solitary animal.

I like eating seals, fish, birds and whales.

Two of my characteristics / habitual behaviour: (1) being a good swimmer, and (2) having small ears and tail to avoid heat loss (or any other reasonable answers).

- 我是企鵝。
我住在南極。
我喜愛/~~不喜愛~~與同類生活，是獨居/~~群體~~的動物。
我喜愛吃磷蝦、魚和魷魚。
我的特徵／習性：1. 不會飛行但卻是游泳能手
2. 有厚厚的皮下脂肪及密布的羽毛以助保溫和儲存熱量（或任何合理答案）。

I am penguin.

I live in the South Pole.

I like/~~do not like~~ living with my species.

I am a social animal.

I like eating krill, fish and squids.

Two of my characteristics / habitual behaviour: (1) being a good swimmer without flying skill, and (2) having a very thick layer of subcutaneous fat and densely-covered feather to keep warm and store heat (or any other reasonable answers)

2.



4. 除了循環再用及物盡其用外，試想想在日常生活中，你還可以用甚麼方法減少廢物量呢？
 In addition to recycling and reusing, can you think of any other methods to reduce wastes in our daily life?

減少使用（或任何合理答案） / Reduce (or any other reasonable answers)

生物故事 Life Story

1.



中華白海豚
Chinese White Dolphin



綠海龜
Green Sea Turtle

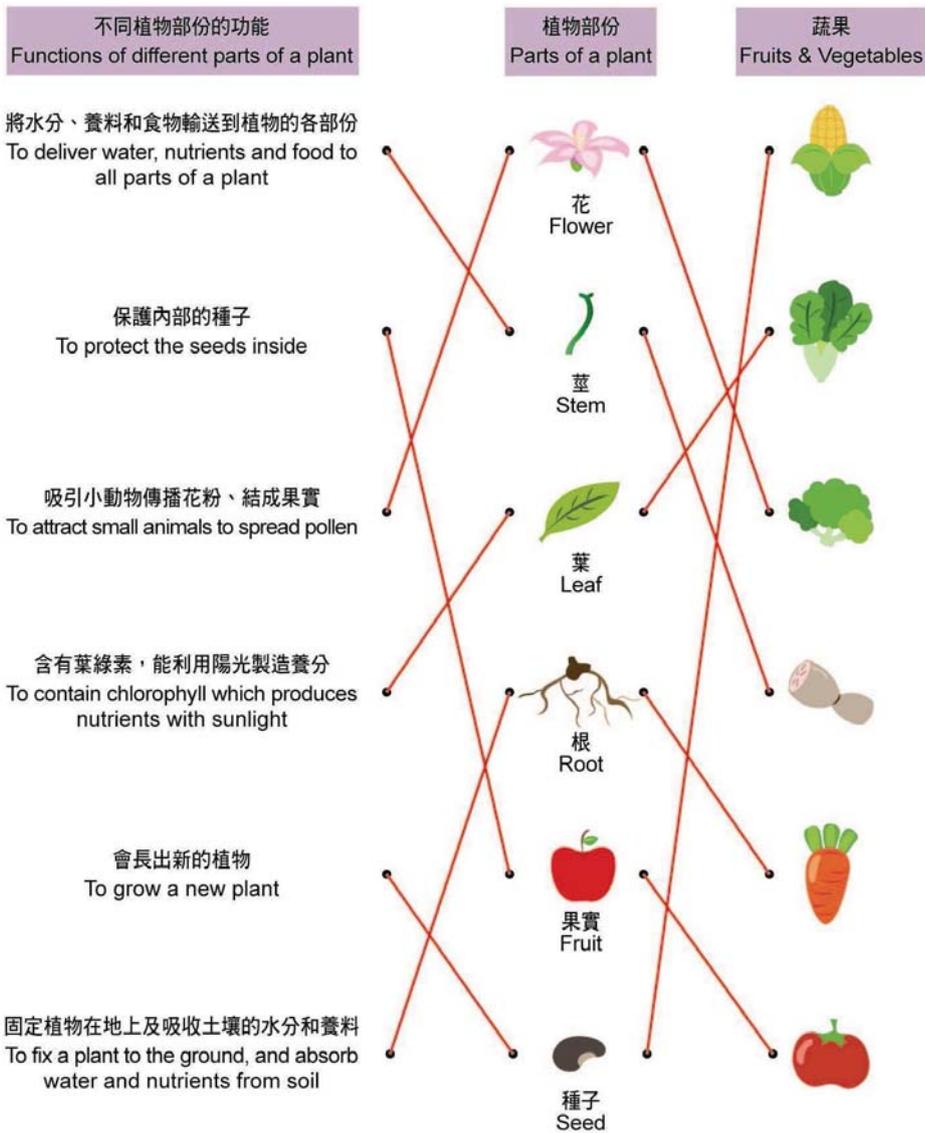


盧氏小樹蛙
Romer's Tree Frog

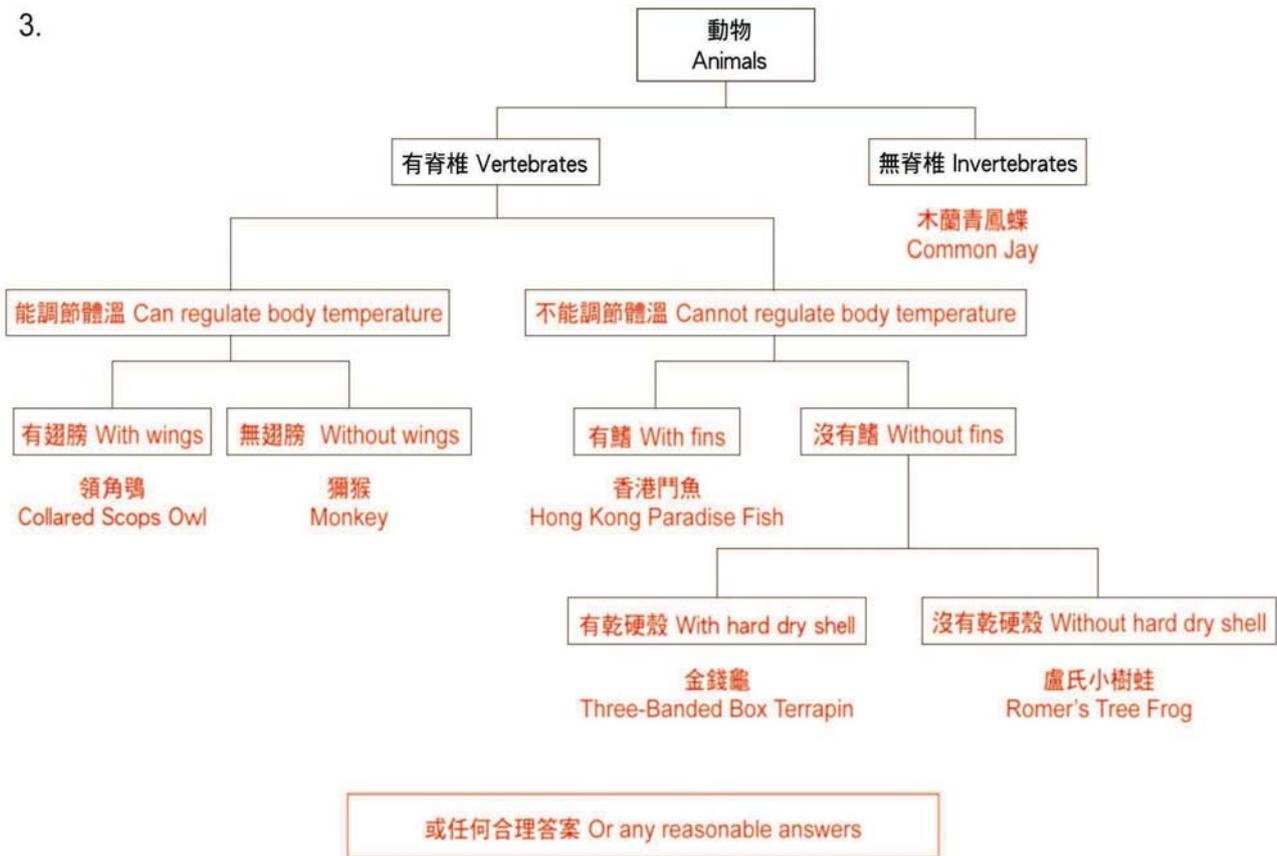


黑臉琵鷺
Black-faced Spoonbill

2.

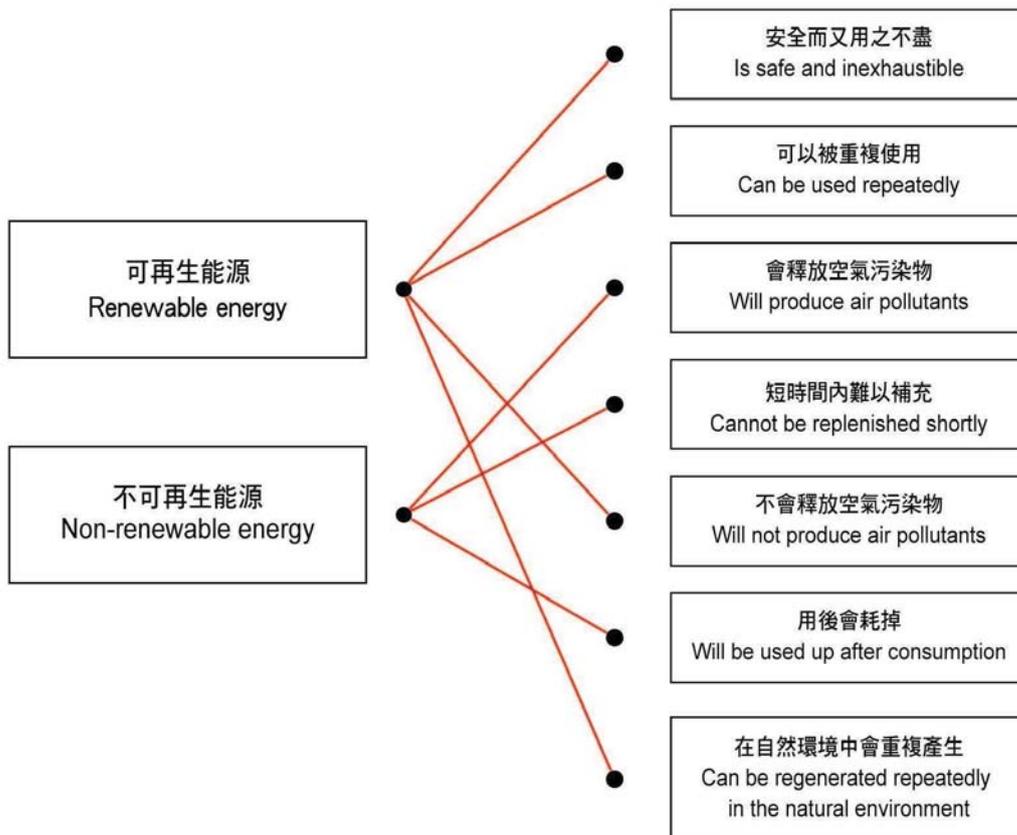


3.



能源故事 Energy Story

1.



三種可再生能源的例子 Three examples of renewable energy :

生物質能、潮汐能、風能、太陽能 (或任何合理答案)

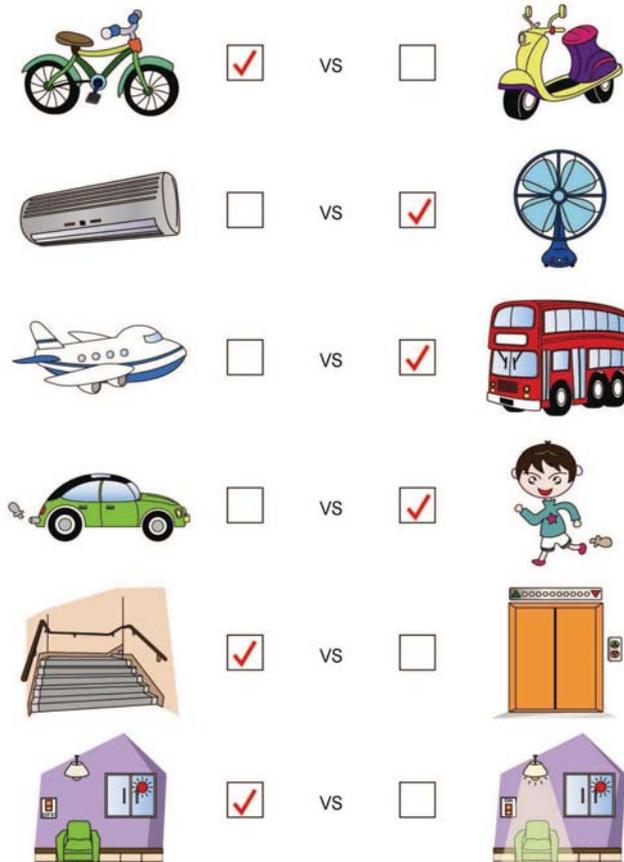
Biomass energy, tidal energy, wind energy, solar energy (or any other reasonable answers)

三種不可再生能源的例子 Three examples of non-renewable energy :

煤、石油、天然氣、核能 (或任何合理答案)

Coal, petroleum, natural gas, nuclear energy (or any other reasonable answers)

2.



土地故事 Land Story

有機耕種 Organic Farming

1.

1. 在同一幅土地上，同時種植超過一種的農作物。 It is the practice of growing more than one kind of crop simultaneously on the same land.	間種 Intercropping
2. 在適當的氣候（季節）種植適當的植物，令植物更健康及減少蟲害。 To plant seasonal crops during appropriate climate (season) will grow more healthy plants with less threats from pest and disease.	適時種植 Planting of seasonal crop
3. 在不同季節將不同的農作物輪流種植在同一幅土地上。 It is the practice of growing a series of different kinds of crops on the same land in different seasons.	輪種 Crop Rotation

<p>4. 利用一些生長迅速，容易腐爛的植物，如豆科植物作肥料。 To use some plants easy to grow and decompose like legumes as fertiliser.</p>	<p>綠肥 Green Manure</p>
<p>5. 利用可被生物降解的有機物製成的天然土壤改良劑。 To use biodegradable organic matters for making natural soil conditioner.</p>	<p>有機堆肥 Organic Compost</p>

2.



生態足印 Ecological Footprint

1. 生態足印的單位 The unit for ecological footprint: : 公頃 Hectare

2. 生態足印的主要來源 The major contributor to Hong Kong’s ecological footprint: : 發電及用電 generation and consumption of electricity



4. & 5. 自由作答 Students' own answers

6. 以下哪項會增加生態足印？

Which of the following activities will enlarge the ecological footprint?

1. 排放污染物及溫室氣體 Emission of pollutants and greenhouse gases
2. 過度砍伐及捕撈 Over-logging and excessive fishing
3. 人口增加 Increase in population

水的故事 Water Story

1. 兩個可回收廢水再用的例子 Two examples of reusing wastewater:

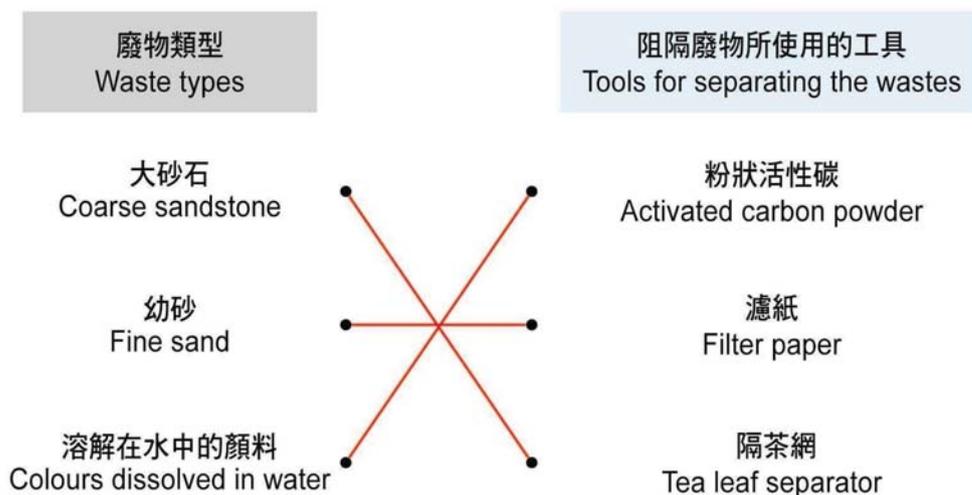
i. 洗米用的水可用來沖廁

To flush toilet with water used to clean rice

ii. 洗菜用的水可用來灌溉盆栽 (或任何合理答案)

To water domestic plants with water used to clean vegetables (or any other reasonable answers)

2.



為甚麼這三種工具可阻隔以上的廢物呢？

Why can these three tools separate the above wastes?

活性炭表面有很多肉眼看不見的小孔，可以吸附顏料中的微細粒子。而濾紙上則有很多小孔供液體粒子通過，但體積較大的固體粒子如幼砂則不能通過。隔茶網的過濾原理跟濾紙一樣，都是用來分隔混合在一起的液態及固態物質，但因為它們的小孔較大，故只能阻隔如大砂石般體積較大的固體物質。

There are many invisible holes on the surface of activated charcoal / carbon which can adsorb very small pigment particles. Filter paper contains numerous small holes through which liquid particles can pass but not larger solid particles such as fine sand. The filtration principle for tea leaf separator are more or less the same in separating liquid from solid of a mixture. As their small holes are larger, they can only separate solid with larger size such as coarse sandstone.

香港故事 Hong Kong Story

1. 香港面積約1,104平方公里，當中約40%的土地面積被闢作郊野公園，並受《郊野公園條例》所管理及保護。當中棲息了種類繁多的野生生物，有些動物甚至是香港獨有的，如香港鬥魚（或任何合理答案）。除了郊野公園，香港還有一些怡人的沼澤、魚塘、紅樹林及泥灘等，這些地方統稱為濕地。為保育極具生態價值的濕地，各國政府於1971年共同簽訂一條名為《拉姆薩爾濕地公約》的國際公約，透過國際間的合作及行動保護這些地方。香港的米埔及內后海灣已於1995年被劃為拉姆薩爾濕地。

Hong Kong has an approximate area of 1,104 km². About 40 % of the land area designated as country parks is under proper management and protection by the “Country Parks Ordinance”. Despite its small size, Hong Kong is rich in wildlife species. Some kinds of animals are endemic to our territory such as Hong Kong Paradise Fish (*Macropodus hongkongensis*) (or any other reasonable answers). Apart from country parks, Hong Kong has many lovely marshes, fishponds, mangroves and mudflats generally called wetlands. To provide a framework for international efforts and cooperation for wetland conservation, an international convention known as “Convention on Wetlands / Ramsar Convention” was signed by many countries in 1971. In 1995, Mai Po and Inner Deep Bay in Hong Kong were listed as Ramsar Sites in China.

2. 香港的濕地主要位於 c.本港各處。

Wetlands in Hong Kong are mainly located c. throughout the territory.

濕地佔地球表面土地約 a. 6%。

Wetlands account for roughly a. 6% of the Earth's land surface.

在濕地內 a. 能 孕育生命。 Wetlands a.can support propagation of life forms.

濕地是 c. 兩者（人工建成或天然造成）皆可。

Wetlands are c. formed by both ways (constructed artificially or formed naturally).

濕地內的水體是 c. 兩者（流動或靜止）皆可。

Water in wetland is c. can be in both ways (moving or stationary).

濕地內的水體是 c. 兩者（鹹淡）皆可。

Wetlands are of c. can be in both ways (salty water or freshwater).

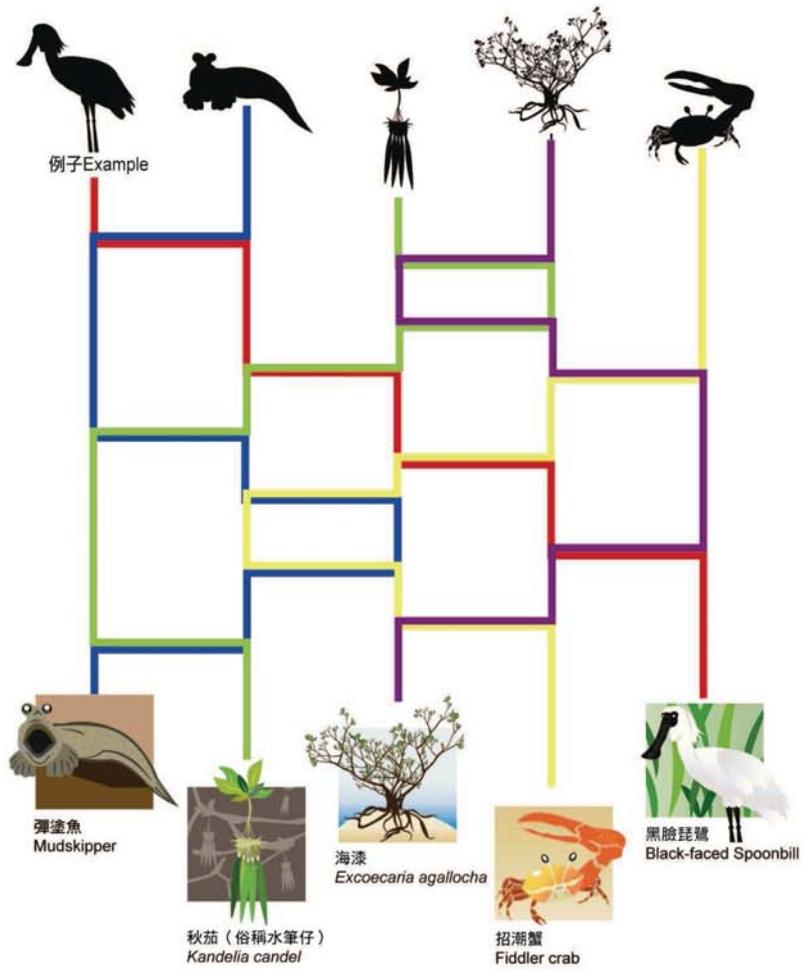
濕地退潮時水深 a. 不超過 6 米。

During low tide, the water depth in wetland is a. less than 6 m.

3.



4.



小企鵝活動習作參考答案 Suggested answers for Little Penguins' Activity Sheet

地球故事、我們的故事 Earth Story, Our Story

1.



極地故事 Polar Story

2.



空氣故事 Air Story

1.

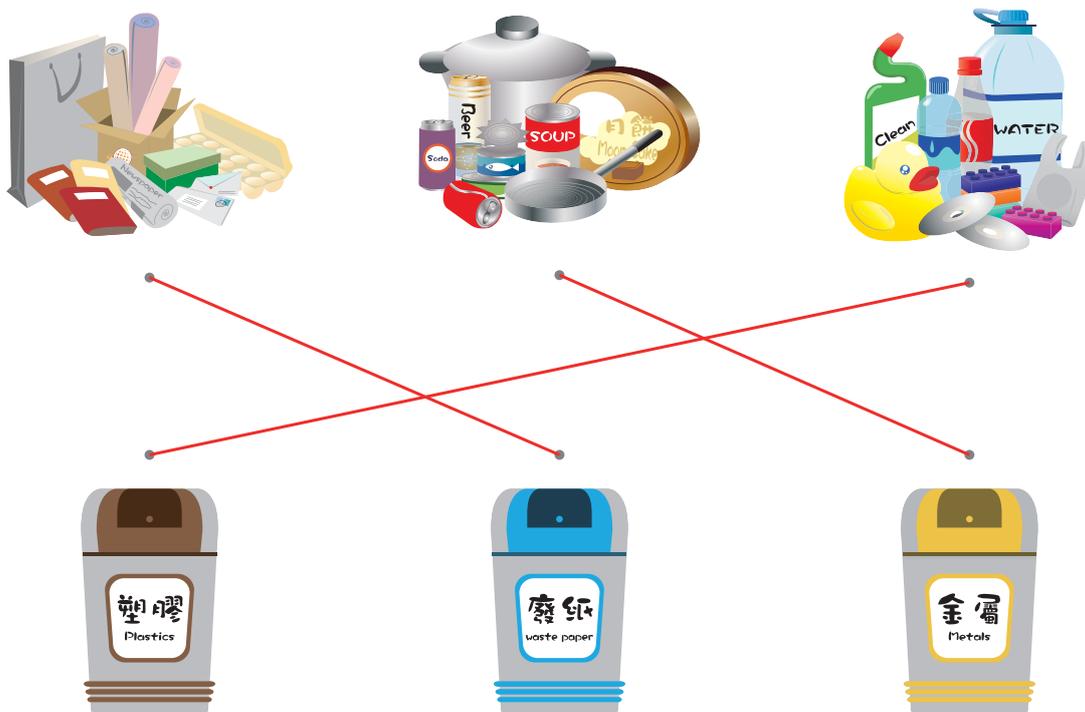


2.



廢物故事 Waste Story

1.



能源故事 Energy Story

1.



1.



2.

	幼蟲 Larva	卵 Egg	蝴蝶(成蟲) Butterfly	蛹 Pupa
蝴蝶 Butterfly	<u>2</u>	<u>1</u>	<u>4</u>	<u>3</u>
青蛙 Frog	<u>4</u>	<u>1</u>	<u>3</u>	<u>2</u>

水的故事 Water Story

1. 這個海洋世界共有 9 種動植物。
(以實線繪畫的動植物計算, 包括海龜、鯊魚、烏賊、海馬、魚、龍蝦、蟹、海蛇、海草)

This ocean world has nine marine animals and plants in total. (By counting the marine animals and plants which are drawn by solid lines, they are sea turtle, shark, squid, sea horse, fish, lobster, crab, sea snake and seaweed)

2.

