英語授課用語

國小自然科學領域

雙語教學資源手冊

Natural Sciences
3rd Grade

教育部師資培育及藝術教育司
國立臺北教育大學雙語教學研究中心

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3rd grade 1st semester

3rd grade 2nd semester

Unit 1
Plants
認識植物

Lesson Overview
課程簡介

Plants are living things. Most plants have different parts, like roots, stems, leaves, flowers, fruits, and seeds. Each part has a special job. Roots hold plants in the soil. Stems keep plants upright. Leaves use sunlight to make nutrients. Flowers attract insects for pollination. Fruits carry and protect seeds. Seeds grow into new plants.

植物是有生命的東西，大多數植物都具有根、莖、葉、花、果實和種子等構造。這些構造都有它特定的功能，根負責將植物固定在土壤裡，莖為植物提供支撐，葉子利用陽光製造養分，花吸引昆蟲授粉，果實傳播並保護種子，而種子可以幫助植物繁殖 。

Plants
認識植物

Features 特徵

- lants are living things. 植物是有生命的東西。
- Plants need sunlight, air, water and soil to grow. 植物生長需要陽光、空氣、水和土壤。

Main parts 主要構造

Root 根

- Taproots 軸根
- Fibrous roots 鬚根

Stem 莖

- Woody stems 木本莖
- Soft green stems 草本莖
- Vine stems 藤本莖

Leaf 葉

- Alternate leaves 互生葉
- Opposite leaves 對生葉
- Whorled leaves 輪生葉

Flower 花

- Calyx 花萼
- Petal 花瓣
- Stamen 雄蕊
- Pistil 雌蕊

Fruit 果實

Seed 種子

Functions 功能

Growth 生長

- Roots hold the plant in the soil. 根把植物固定在土壤裡。
- Stems hold the plant upright. 莖支撐著植物。
- Leaves use sunlight to make nutrients. 葉子利用陽光來製造養分。

Reproduction 繁殖

- Flowers attract insects for pollination. 花吸引昆蟲授粉。
- Fruits carry and protect seeds. 果實幫助種子傳播並保護種子。
- Seeds grow into new plants. 種子幫助植物繁殖。

Words and Phrases
單字與片語

1-1 What are plants? 植物是什麼

living thing	生物	non-living thing	非生物
plant	植物	root	根
stem	莖	leaf	葉子(單數)
leaves	葉子(複數)	flower	花
fruit	果實	seed	種子

1-2 How do plants get sunlight and water? 植物如何獲取陽光和水

leaf shape	葉形	leaf margin	葉緣
vein	葉脈	petiole	葉柄
leaf arrangement	葉序	node	節
alternate	互生	opposite	對生
whorled	輪生	woody stem	木本莖
soft green stem	草本莖	vine stem	藤本莖
taproot	軸根	fibrous root	鬚根
sunlight	陽光	air	空氣
water	水	nutrient	養分
fix	固定	support	支撐
absorb	吸收		

1-3 What are the functions of flowers, fruits, and seeds?
花、果實和種子有什麼功能

petal	花瓣	calyx	花萼
stamen	雄蕊	pistil	雌蕊
food	食	rice	米飯
clothing	衣	cotton clothes	棉質衣服
housing	住	cabin	小木屋
transportation	行	wooden bridge	木橋
education	育	botanical garden	植物園
entertainment	樂	flower clock	花鐘

Key Concepts
課程焦點

1-1 What are plants? 植物是什麼

(1) Plants are living things.
植物是生物。
(2) Most plants have different parts, like roots, stems, leaves, flowers, fruits, and seeds.
大多數植物都具有根、莖、葉、花、果實和種子等構造。

1-2 How do plants get sunlight and water? 植物如何獲取陽光和水

(1) Plants use roots to absorb water from the soil.
植物利用根從土壤中吸收水分。
(2) Plants use leaves to take in sunlight and make nutrients.
植物透過葉子獲取陽光和製造養分。

1-3 What are the functions of flowers, fruits, and seeds? 花、果實和種子有什麼功能

(1) Flowers attract insects with sweet food, and insects help with pollination.
花吸引昆蟲覓食，昆蟲協助花授粉。
(2) Fruits carry and protect seeds.
果實保護種子並幫助它們傳播。
(3) Seeds grow into new plants.
種子可以生長成新植物，幫助植物繁殖。
(4) There is a close relation between plants and human lives.
植物和人們的生活關係密切。

Science Videos
教學參考資源

1-1 Parts of a Plant

1-1 Plant Structures

1-1 Grow Your Own Plants

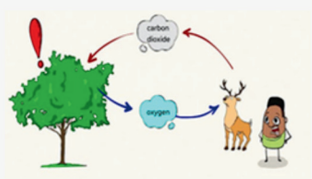
1-1 The Needs of a Plant

1-2 Plant Parts and Functions for Kids

1-2 Parts of a Plant: Definitions and Functions

1-3 How Do Plant Seeds Travel?

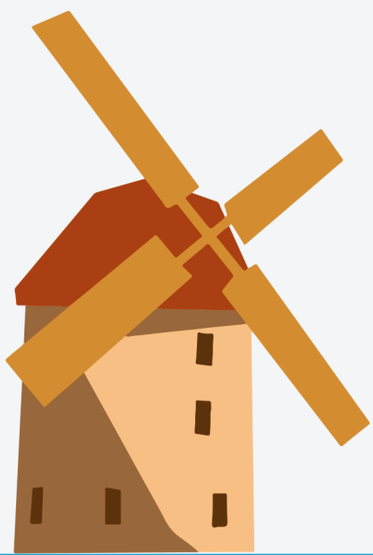
1-3 Why Plants and Sunlight Are So Important to Humans and Animals?



Unit 2
Amazing Air
奇妙的空氣

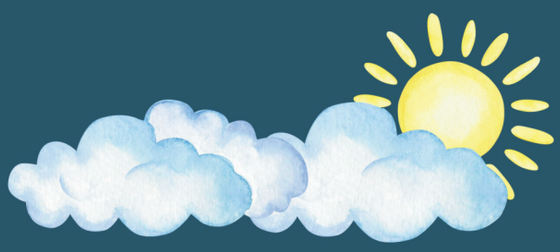
Lesson Overview
課程簡介

Air is everywhere. We can't see it, but it's all around us. It's like a big invisible blanket. Air can move and push things. When it moves a lot, we call it "wind." Wind can be strong and make things go faster. Air is important. It helps plants spread their seeds, makes boats move, and gives us power. We need clean air to stay healthy. So, we should do things that keep the air clean, like taking care of the Earth.



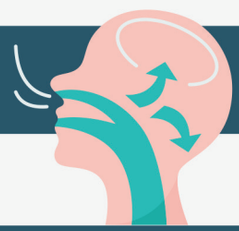
空氣無所不在，它佔有空間，具有重量。空氣沒有固定的形狀，它會流動，而且可以被擠壓。空氣流動時，會形成風。空氣流動得越快，風就越大。空氣有許多用途，它可以幫忙傳播植物的種子，為帆船提供動力，和提供風能。乾淨清新的空氣能使我們保持健康，所以我們應該要愛護環境，維持空氣的乾淨品質。

Amazing Air
奇妙的空氣



Properties
特性

- Air is everywhere.
  空氣無所不在。
- Air takes up space and has weight.
  空氣佔有空間，具有重量。
- Air does not have a specific shape.
  空氣和水沒有固定的形狀。
- Air can flow.
  空氣會流動。
- Air can be compressed.
  空氣可以被擠壓。

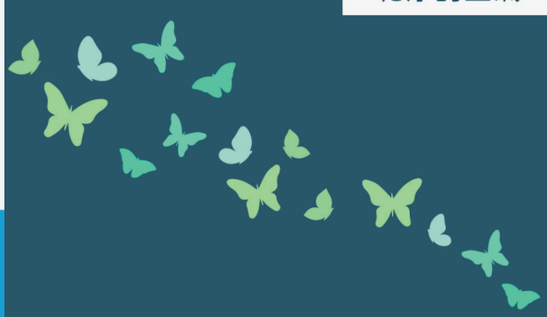


Uses
用途

- We breathe air.
  我們呼吸空氣。
- Air helps spread seeds around.
  空氣傳播植物的種子。
- Air powers a sailboat.
  空氣為帆船提供動力。
- Air provides wind energy.
  空氣提供風能。

Clean air
乾淨的空氣

- Clean and fresh air keeps us healthy.
  乾淨清新的空氣能使我們保持健康。
- We should go green to keep the air clean.
  我們要愛護環境，維持空氣乾淨的品質。



Words and Phrases
單字與片語

2-1 Where is air? 空氣在哪裡

air	空氣	rock	石頭
water	水	space	空間
weight	重量	shape	形狀
plastic bag	塑膠袋	glass	玻璃杯
paper ball	紙團	balloon	氣球
swim ring	游泳圈	basketball	籃球

2-2 Properties of air 空氣的特性

wind	風	hair	頭髮
flag	旗子	windmill	風車
pinwheel	紙風車	compress / squeeze	擠壓

2-3 Is clean air important? 乾淨空氣重要嗎

air pollution	空氣污染	air quality	空氣品質

Key Concepts
課程焦點

2-1 Where is air? 空氣在哪裡

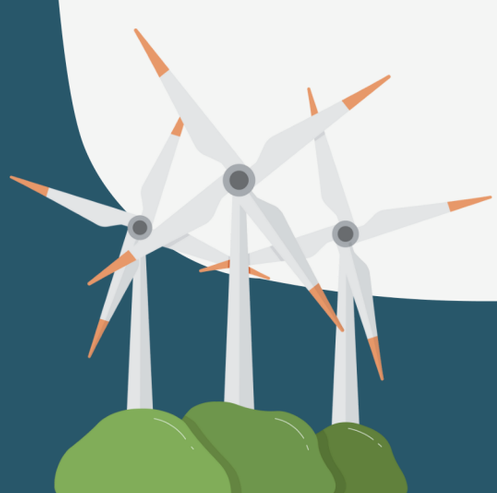
(1) Air is everywhere.
空氣無處不在。
(2) Air takes up space and has weight.
空氣佔有空間，具有重量。
(3) Air does not have a specific shape.
空氣沒有固定的形狀。

2-2 Properties of air 空氣還有什麼特性

(1) Air can move and be compressed.
空氣會流動，而且可以被擠壓。
(2) Wind is moving air.
風是流動的空氣。
(3) When air moves faster, wind gets stronger.
空氣流動得越快，風就越大。

2-3 Is clean air important? 乾淨空氣重要嗎

(1) Clean and fresh air keeps us healthy.
乾淨清新的空氣能使我們保持健康。
(2) We should go green to keep air clean.
我們應該要愛護環境，維持空氣的乾淨品質。



Science Videos
教學參考資源

2-1 What is Air?

2-1 Air around Us

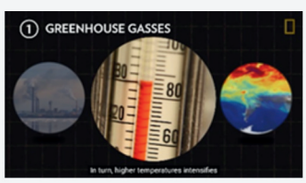
2-1 Air Occupies Space

2-2 Properties of Air

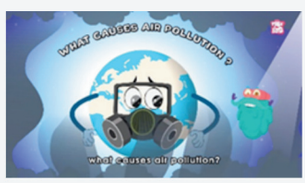
2-2 Characteristics of Air

2-2 Properties of Air and Water

2-3 Air Pollution 101



2-3 Air Pollution



Unit 3
Animals
認識動物

Lesson Overview
課程簡介

Animals come in many types, like mammals, fish, birds, and more. Each type looks and lives differently. Some animals live on land, some in the water. Animals also have cool ways to stay safe. For example, chameleons can change colors to hide, and bright frogs tell others they're dangerous.

動物可以分為哺乳類、兩棲類、魚類、鳥類和爬蟲類等不同種類。每種動物的都有不同的身體特徵和棲息地。有些動物以陸地為家，有些則生活在水中。動物可以透過特殊的方式來保護自己。例如，變色龍可以改變顏色以融入周圍環境，毒箭蛙則用鮮豔的顏色來警告其他動物不要靠近。

Amazing Air
奇妙的空氣

- Animal bodies 動物的身體
  - Common types 常見的動物種類
    - Mammals 哺乳類
    - Amphibians 兩生類
    - Fish 魚類
    - Birds 鳥類
    - Reptiles 爬蟲類
  - Body parts 動物身體構造
    - Head 頭
    - Trunk 軀幹
    - Limb 肢
    - Tail 尾巴
- Animal life 動物的生活
  - Animals need food to live and grow. 動物生長需要食物。
  - Animals can sense changes in their living environments. 動物可以感知生活環境的變化。
- Survival strategies 動物的生存法寶
  - Change its color to match the environment. 隨環境改變顏色。
    - Chameleon 變色龍
  - Use bright colors to warn other animals. 用鮮艷的顏色警告其他動物。
    - Poison dart frog 箭毒蛙

Words and Phrases
單字與片語

3-1 Bodies of animals 動物的身體

animal	動物	body structure	身體構造
function	功能	head	頭
trunk	軀幹	limb	肢
wing	翅膀	tail	尾巴
mammal	哺乳動物	amphibian	兩棲動物
fish	魚類	bird	鳥類
reptile	爬蟲類動物		

3-2 Habitats of animals 動物的棲息地

environment	環境	habitat	棲息地
sky	天空	land	陸地
water	水	food	食物
adaptation	適應		

3-3 Survival strategies of animals 動物的生存法寶

protect	保護	survive	生存
bright colors	鮮豔的顏色	shape	形狀
camouflage	保護色、偽裝		

Key Concepts
課程焦點

3-1 Bodies of animals 動物的身體

(1) There are different types of animals: mammals, amphibians, fish, birds, and reptiles.
動物有不同的種類，如哺乳動物、兩棲動物、魚類、鳥類和爬蟲類動物。
(2) Most animals have a head, a trunk, and limbs.
動物大多有頭、軀幹和四肢。

3-2 Habitats of animals 動物的棲息地

(1) Animals live in different habitats.
不同的動物有不同的棲息地。
(2) Animals can sense changes in their living environment.
動物可以感知生活環境的變化。

3-3 Survival strategies of animals 動物的生存法寶

(1) Some animals have special ways to protect themselves.
有些動物有特殊的自我保護方式。
(2) Chameleons can change their colors to blend with their surroundings.
變色龍可以隨環境改變顏色。
(3) Poison dart frogs use bright colors to warn other animals to stay away.
箭毒蛙利用鮮豔的顏色來警告其他動物不要靠近。

Science Videos
教學參考資源

3-1 Mammals and Birds

3-1 Reptiles, Amphibians, and Fish

3-1 Animal Structures and Functions

3-2 Habitats for Kids

3-2 Animals and Their Food

3-2 Animals in the Environment

3-3 This Is How Animals Defend Themselves against Predators

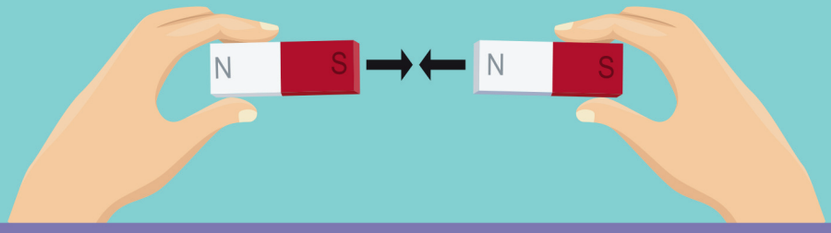
3-3 Animal Protection around the World

Unit 4
Magnets
磁鐵

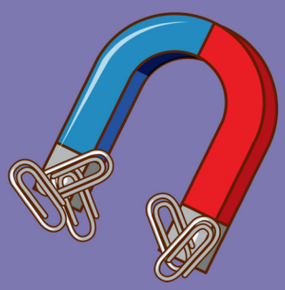
Lesson Overview
課程簡介

Magnets are fun to play with. They can move objects without even touching them. When a thing has an iron in it, magnets can attract it. We call the pull force “magnetism” or simply “magnetic force.” All magnets have two poles: a north pole and a south pole. When we bring two magnets close, the different poles will attract each other and pull together, but if they are the same, they will repel and push away from each other.

磁鐵十分有趣，可以不接觸物品就使它們移動。只要物品裡含有鐵，磁鐵就能吸引它。磁鐵吸引物品的力量又稱為磁力。磁鐵皆具有兩極，分別為N極和S極。當我們移動兩個磁鐵時，不同磁極靠近會互相吸引；但如果是相同磁極，則會互相排斥。



Magnets
磁鐵



Magnetic force 磁力

- Magnetic objects 能被磁鐵吸引的物品
  - Paper clip, Binder clip, Iron can 迴紋針、長尾夾、鐵罐
- Non-magentic objects 不能被磁鐵吸引的物品
  - Aluminum can, Pencil, Coin 鋁罐、鉛筆、錢幣

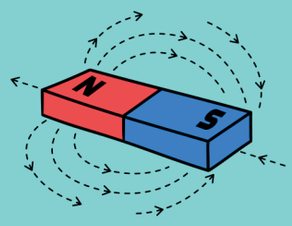
Properties 磁鐵的特性

- The magnetic force is stronger at the ends of the bar magnet. 磁鐵條的兩端磁力較強。
- Like poles repel each other. 同極相斥。
- Unlike poles attract each other. 異極相吸。

Magnets and life 磁鐵與生活

- Everyday use 生活中的應用
  - Purse, Screwdriver, Fridge Magnet 錢包、螺絲起子、冰箱磁鐵
- Special use 特別的應用
  - Put iron plates on two sides of a magnet to make it stronger. 在磁鐵上下兩側增加鐵片可以增強磁力。
- Creative use 創意的應用
  - Create fun games 設計好玩的遊戲

Words and Phrases
單字與片語



4-1 Magnetic force磁力

magnet	磁鐵	magnetism	磁性；磁力
magnetic force	磁力	magnetic pole	磁極
north pole	N極	south pole	S極
strong	強	weak	弱
iron	鐵	iron can	鐵罐
paper clip	迴紋針	binder clip	長尾夾
pencil	鉛筆	eraser	橡皮擦
coin	硬幣	ticket	車票
debit card	金融卡	bankbook	存摺
bookmark	書籤	key ring	鑰匙圈

4-2 Properties of magnets磁鐵的特性

attract	吸引	repel	反抗
push	推	pull	拉

4-3 Magnets and life 磁鐵與生活

purse	錢包	screwdriver	螺絲起子
fridge magnet	冰箱磁鐵	game	遊戲
iron plate	鐵片	sand	沙子

Key Concepts
課程焦點

4-1 Magnetic force磁力

(1) When a thing has iron in it, magnets can attract it.
磁鐵可以吸引鐵製品。
(2) Magnets can move objects without even touching them.
磁鐵可以不接觸物品就使它們移動。
(3) The magnetic force is stronger at the poles of the bar magnet.
磁鐵條的兩極磁力較強。

4-2 Properties of magnets磁鐵的特性

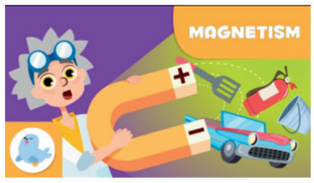
(1) A magnet has north and south poles.
磁鐵有N極和S極。
(2) Like poles of two magnets repel each other.
磁鐵同極相斥
(3) Unlike poles of two magnets attract each other.
磁鐵異極相吸。

4-3 Magnets and life 磁鐵與生活

(1) We use magnets in different ways in our everyday lives.
我們日常生活中應用磁鐵的方式非常多樣。
(2) We can put iron plates on two sides of a magnet to make it stronger.
我們可以在磁鐵上下兩側增加鐵片來增強磁力。
(3) We can use magnets to play fishing games.
我們可以用磁鐵玩釣魚遊戲。

Science Videos
教學參考資源

4-1 Magnetism for Kids

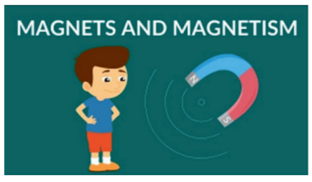


4-1 Magnet Types and How They Work

4-2 Magnetism

4-2 Magnet Interactions—Poles

4-2 Magnets and Magnetism



4-3 Uses of Magnets

4-3 DIY: Fun Magnet Fishing Game

4-3 Magnet Race Car

Unit 1
Planting Vegetables Is Fun
種菜好好玩

Lesson Overview
課程簡介

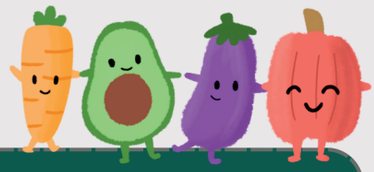
Vegetables come in four different types: roots and stems, leaves, flowers, and fruits. When we plant vegetables, we need to take good care of them. Vegetables go through different stages and changes as they grow. At first, they are just tiny seeds. Then, they sprout and grow leaves. Every day, they get taller and bigger. And guess what happens next? They make pretty flowers and yummy fruits. Finally, they gradually wither away. This is the life cycle of vegetables.

蔬菜有四種不同的類型：根莖類、葉菜類、花菜類和果實類。我們在種植蔬菜時，需要細心照料它們。蔬菜在生長過程中，會經歷不同的階段和變化。起初，它們只是小小的種子。接著，它們發芽長葉，一天天長高長大。接下來呢？它們會開出漂亮的花朵，然後結出美味的果實。最終，它們會漸漸凋零枯萎。這就是蔬菜的生命週期。

Planting Vegetables Is Fun
種菜好好玩

- Types of vegetables 蔬菜的種類
  - Roots and stems 根莖類
    - Carrot 紅蘿蔔
  - Leaves 葉菜類
    - Cabbage 高麗菜
  - Flowers 花菜類
    - Broccoli 青花菜
  - Fruits 果菜類
    - Tomato 番茄
- How to plant vegetables 如何種植蔬菜
  - Find a sunny spot 找陽光充足的地方
  - Plant seeds 播種
  - Water vegetables 澆水
  - Take care of vegetables 照顧種菜
    - Take out some seedlings 間拔
    - Repel pests 除蟲
    - Add fertilizer 施肥
- The growth of vegetables 蔬菜的生長
  - Seeds 種子
  - Sprouting 發芽
  - Growing leaves 長葉
  - Growing taller and bigger 長高長大
  - Flowering 開花
  - Fruiting 結果實
  - Withering 枯萎

Words and Phrases
單字與片語



1-1 What are vegetables? 蔬菜是什麼

plant	植物	vegetable	蔬菜
root	根	stem	莖
leaf	葉子(單數)	leaves	葉子(複數)
flower	花	fruit	果實
seed	種子		

1-2 Plant vegetables 種植蔬菜

sunlight	陽光	water	水
soil	土壤	flower pot	花盆
plant seeds	播種	take care of	照顧
fertilizer	肥料	add fertilizer	施肥
pest	害蟲	repel pest	除蟲

1-3 The growth of vegetables 蔬菜的生長

sprouting	發芽	growing leaves	長葉
getting taller and bigger	長高長大	flowering	開花
		withering	枯萎
fruiting	結果實		

Key Concepts
課程焦點

1-1 What are vegetables? 蔬菜是什麼

(1) There are four types of vegetables: roots and stems, leaves, flowers, and fruits.
蔬菜有四種類別：根莖類、葉菜類、花菜類和果實類。
(2) When we eat vegetables, we are eating different parts of plants.
我們吃蔬菜時，是在吃植物的不同部位。

1-2 Plant vegetables 種植蔬菜

(1) Vegetables need sunlight, air, water, and soil to grow.
蔬菜生長需要陽光、空氣、水和土壤。
(2) If we take good care of vegetables, they can grow big and healthy.
如果我們好好照顧蔬菜，它們就能長得又大又健康。

1-3 The growth of vegetables 蔬菜的生長

(1) Vegetables go through different stages as they grow.
蔬菜生長過程會經歷不同的階段。
(2) The stages of vegetable growth include seeds, sprouting, growing leaves, getting taller and bigger, flowering, fruiting, and withering.
蔬菜的生長階段包含種子、發芽、長葉、長高長大、開花、結果和凋謝。

Science Videos

教學參考資源

1-1 Names of Vegetables

1-1 Classroom Vegetable Lesson

1-1 How Do Fruits and Vegetables Grow?

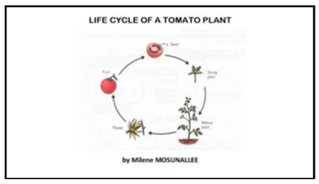
1-2 Grow Your Own Veggies

1-2 How Do Plants Grow

1-2 What Is Seed Germination?

1-2 Phototropism Experiment

1-3 Life Cycle of a Tomato Plant



Unit 2
Effects of Temperature Changes on Matter
溫度影響物質的變化

Lesson Overview
課程簡介

Water can be in three forms: solid (ice), liquid (water), and gas (water vapor). Imagine ice like a cold, hard ice cube, water like the water you drink, and water vapor like steam from a hot shower.

When ice gets warm, it turns into water, like when you leave an ice cube out in the sun. When water gets hot, it becomes water vapor, like how a kettle makes steam.

When water vapor cools down, it turns back into tiny water droplets, like when you see clouds in the sky. And when water gets really, really cold, it becomes ice again, just like the ice in your freezer.

Now, let's talk about other things like chocolate. If we heat chocolate, it melts and becomes like a yummy chocolate sauce. But if it cools down, it gets hard again, just like a chocolate bar.

Eggs are a bit special. When we cook them, they become hard, like the eggs you eat for breakfast. Unlike water or chocolate, eggs cannot turn back into a liquid after we cook them. They stay hard once they are cooked. So, remember, not everything changes the same way when it gets hot or cold!

水有三種不同的形態，分別是固態（冰）、液態（水）和氣態（水蒸氣）。想像一下，冰是冰冷堅硬的冰塊，水是日常飲用的水，而水蒸氣是洗熱水澡時產生的蒸氣。

當冰遇熱時，會融化成水，就像將冰塊放在太陽下一樣，而水遇熱時，則會蒸發成水蒸氣，就像熱水壺燒開時冒出蒸氣一樣。

當水蒸氣遇冷時，會凝結成小水珠，就像天空中的雲一樣，而水在非常寒冷的條件下，則會凝固成冰，就像冷凍庫中的冰塊。

現在我們來聊點別的物質，比如巧克力。如果我們將巧克力加熱，它會融化，變成美味的巧克力醬，但如果冷卻了，它會再次變硬，就像巧克力棒。

蛋有點特別，如果我們將蛋煮熟，蛋會變硬，就像早餐吃的蛋。蛋不像水和巧克力，它加熱後就無法再恢復成液態。一但被煮熟，蛋將永久變硬，所以請記住，並不是每種物質在受熱或受冷時，都會以相同的方式變化喔！

Effects of Temperature Changes on Matter
溫度影響物質的變化

- Factors of changes 使物質產生變化的因素
  - Air 空氣
  - Water 水
  - Temperature 溫度

- Temperature and water 溫度和水
  - Three states of water 水的三種形態
    - Solid 固態 — Ice 冰
    - Liquid 液態 — Water 水
    - Gas 氣態 — Water vapor 水蒸氣
  - Changes in the state of water 水的形態變化
    - When ice gets hot, it melts into water. 冰遇熱會融化成水。
    - When water gets hot, it evaporates into water vapor. 水遇熱會蒸發成水蒸氣。
    - When water vapor gets cold, it condenses into small droplets. 水蒸氣遇冷會凝結成小水珠。
    - When water gets cold, it freezes into ice. 水遇冷會凝固成冰。

- Effects of temperature changes 溫度變化產生的影響
  - Reversible changes 可逆變化 — Substances can change back to their original form. 物質改變後，可以恢復原來的樣子。 — Chocolate 巧克力
  - Irreversible changes 不可逆變化 — Substances cannot change back to their original form. 物質改變後，無法變回原來的樣子。 — Egg 雞蛋

Words and Phrases
單字與片語

2-1 Factors of changes in matter 使物質產生變化的因素

matter	物質	state	形態
water	水	temperature	溫度
cause	引起、導致	effect	影響、效果

2-2 Temperature and water 溫度和水

rise	上升	drop	下降
solid	固態	ice	冰
liquid	液態	droplet	小水珠
gas	氣態	water vapor	水蒸氣
melting	融化	condensation	凝結
evaporation	蒸發	freezing	凝固

2-3 Effects of temperature changes 溫度變化產生的影響

heat	熱	heating	加熱
cooling	冷卻	reversible change	可逆改變
irreversible change	不可逆改變		

Key Concepts
課程焦點

2-1 Factors of changes in matter 使物質產生變化的因素

(1) Air, water, and temperature can cause substances to change.
空氣、水和溫度可以使物質產生變化。

2-2 Temperature and water 溫度和水

(1) Water has three states: solid, liquid, and gas.
水有三種形態，分別為固態、液態和氣態。
(2) When temperature rises, ice will melt into water, and water will evaporate into water vapor.
溫度上升時，冰會融化成水，水則會蒸發成水蒸氣。
(3) When temperature drops, water vapor will condense into small droplets, and water will freeze into ice.
溫度下降時，水蒸氣會凝結成小水珠，水則會凝固成冰。

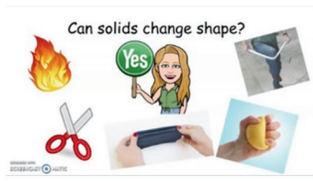
2-3 Effects of temperature changes 溫度變化產生的影響

(1) If we heat chocolate, it melts into liquid, but it can turn solid again if we cool it down.
巧克力加熱後，會融化成液態，不過冷卻後，可以再變回固態。
(2) If we cook an egg, it becomes hard and can never change back to its liquid form.
煎蛋時，蛋會變成固態，而且無法再變回液態。

Science Videos
教學參考資源

2-1 Material Changes

2-1 Changes in Solid Materials



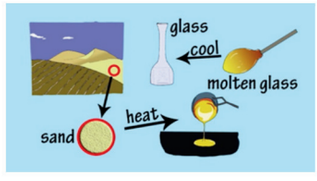
2-2 States of Water

2-2 What Are the States of Matter?

2-2 States of Matter

2-2 Water: Solid Liquid and Gas

2-3 Heating and Cooling



2-3 Physical and Chemical Changes due to Temperature

Unit 3
Weather Experts
天氣特派員

Lesson Overview
課程簡介

There are different types of weather, like when it is sunny and bright, or when it is cloudy and gray, and when it rains or snows.

To know more about the weather, we use some special tools. A thermometer tells us if it is hot or cold outside. A rain gauge helps us know how much rain falls from the sky. And an anemometer shows us how fast the wind is blowing.

And guess what? We can even find out what the weather will be like in the coming days! We do this by checking the weather forecast. We can learn about it on TV, the radio, or the internet. This helps us plan fun activities for the days ahead!

天氣有許多不同的類型，如晴朗明媚的天氣、多雲灰暗的天氣，還有下雨或降雪的天氣。

如果我們想更深入瞭解天氣情況，可以借助一些特殊工具。氣溫計可以告訴我們外面有多冷或多熱，雨量計可以測量降雨量的多寡，而風速計可以顯示風速的快慢。

還有，你知道嗎？我們還可以提前知道未來幾天的天氣情況。我們可以查看天氣預報，透過電視、收音機或網路來獲得天氣資訊，這有助於我們根據天氣規劃一些好玩的活動！

Weather Experts
天氣特派員

- Types of weather 天氣的類型
  - Sunny 晴天的
  - Cloudy 多雲的
  - Windy 有風的
  - Rainy 下雨的
  - Foggy 多霧的
  - Snowy 下雪的

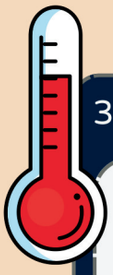
- Observe weather 觀測天氣
  - Temprature 氣溫
  - Rainfall 降雨
  - Wind 風
    - Wind direction 風向
    - Wind force 風力

- Weather forecast 天氣預報
  - Watch weather forecasts on TV 收看電視的天氣預報
  - Listen to the radio 收聽廣播
  - Check the weather on the internet 上網查詢天氣

Words and Phrases
單字與片語

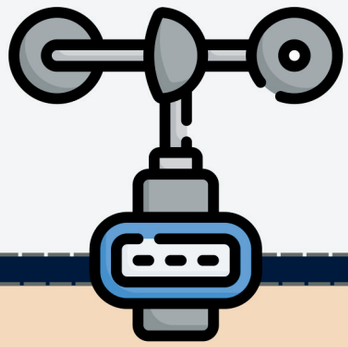
3-1 Types of weather 天氣的類型

weather	天氣	temperature	溫度
hot	熱的	cold	冷的
sun	太陽	sunny	晴天的
cloud	雲	cloudy	多雲的
wind	風	windy	有風的
rain	雨	rainy	下雨的
fog	霧	foggy	有霧的
snow	雪	snowy	下雪的



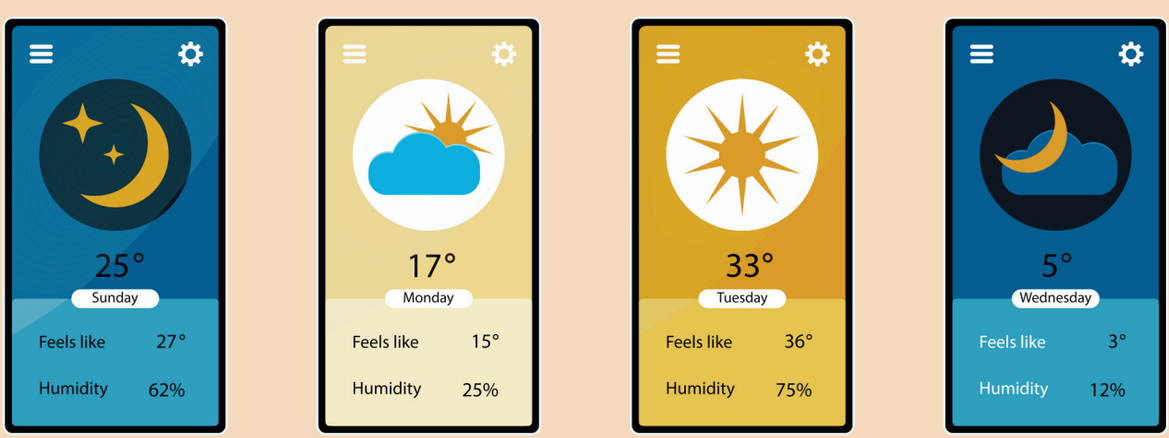
3-2 Observe weather 觀測天氣

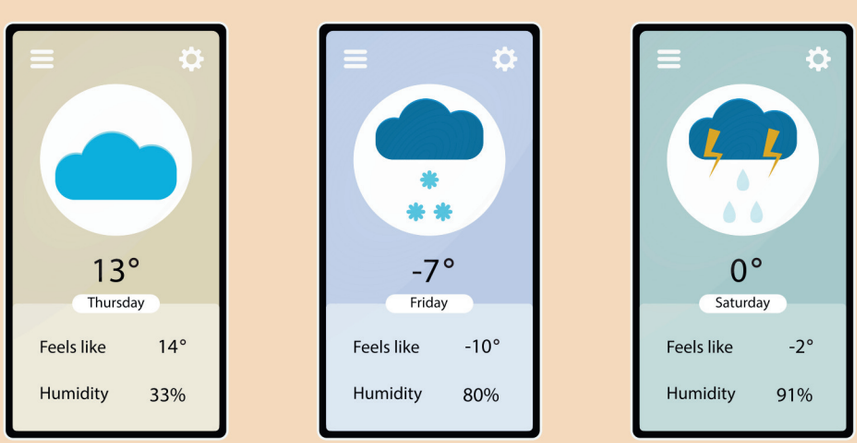
morning	早上	noon	中午
afternoon	下午	night	夜晚
thermometer	溫度計	anemometer	風速計
rain gauge	雨量計	degree	度
degree Celsius	攝氏溫度(℃)		



3-3 Weather forecast 天氣預報

weather forecast	天氣預報	season	季節
climate	氣候	climate change	氣候變遷
television	電視	channel	頻道
radio	收音機	internet	網路





Key Concepts
課程焦點

3-1 Types of weather 天氣的類型

(1) There are different types of weather, like sunny, cloudy, rainy, and snowy days.
天氣有不同的類型，如晴天、多雲、雨天和下雪。
(2) Weather plays a big role in what we do every day.
天氣會影響我們的日常活動。

3-2 Observe weather 觀測天氣

(1) We measure temperature with a thermometer, rain with a rain gauge, and wind with an anemometer.
我們可以用氣溫計測量氣溫、雨量計測量雨量、風速計測量風速。

3-3 Weather forecast 天氣預報

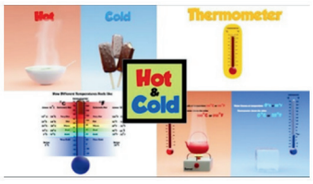
(1) We learn about weather conditions from TV channels, radio, and the internet.
我們可以透過電視頻道、廣播和網路，了解天氣的狀況。

Science Videos
教學參考資源

3-1 How's the Weather?

3-1 The Weather

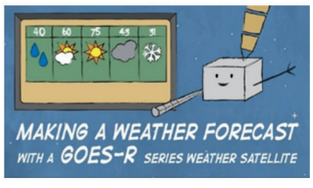
3-2 Hot and Cold for Kids



3-2 Measuring Weather with Weather Tools

3-2 Where Does Wind Come from?

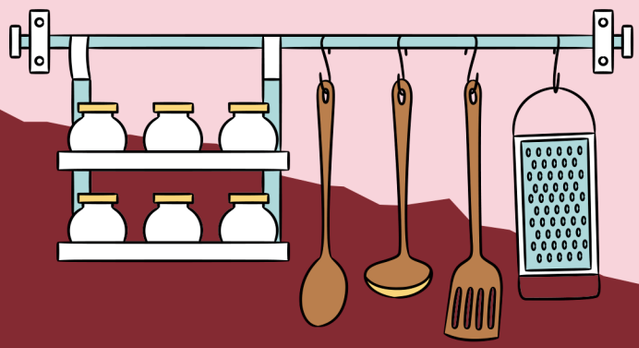
3-3 Making a Weather Forecast with a GOES-R Series Weather Satellite



3-3 Why Are There Seasons?

3-3 Types of Clouds

Unit 4
Science in the Kitchen
廚房中的科學



Lesson Overview
課程簡介

In the kitchen, we have different things we use for cooking, like salt, sugar, baking soda, and flour. These things have their unique features, and we can learn about them using our senses—our eyes, nose, and hands. It's a bit like becoming kitchen detectives!

Now, let's do a cool science experiment. When we mix salt, sugar, or baking soda with water, they seem to disappear into the water. This happens because they dissolve, which means they blend in with the water. But when we try the same with flour, it doesn't mix as well. Flour stays separate in the water because it's different from the others.

Now, let's find out if something is an acid or a base. We can use juice from purple cabbage to help us figure this out. The cabbage juice can change colors, and that's pretty interesting!

When we add lemonade to the cabbage juice, it turns kind of red. That's because lemonade is acidic. But when we add baking soda water, the cabbage juice turns blue-green. That's because baking soda water is basic.

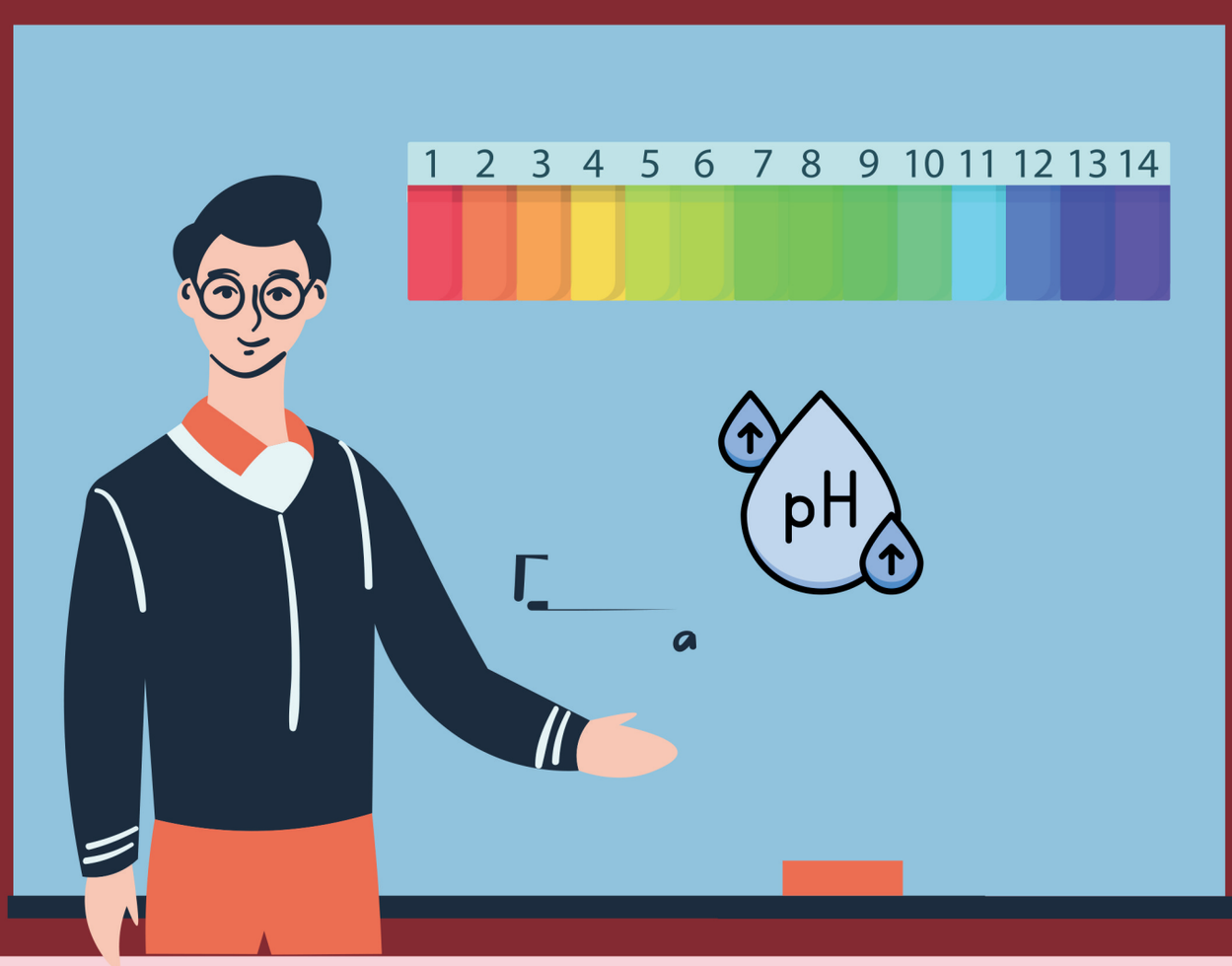
Isn't it cool how we can use things from our kitchen to learn about science? Science is like an exciting adventure where we discover new things!

廚房中有各種我們用來烹飪的材料，像是鹽、糖、小蘇打粉和麵粉。這些材料各有獨特的性質，我們可以透過視覺、嗅覺和觸感，像廚房中的偵探一樣來認識它們。

現在，讓我們來進行一個有趣的科學實驗。當我們將鹽、糖或小蘇打粉加入水中，它們會消失在其中，這是因為它們溶解於水，也就是和水融為一體。然而，如果我們用麵粉做同樣的實驗，它就不會如此順利地融入水中，因為麵粉和其他物質有所不同，會與水分離，不易溶解。

接下來，讓我們來辨識水溶液的酸鹼性，我們可以借助紫高麗菜汁來進行測試。紫高麗菜汁會因酸鹼度不同而變色，十分有趣！如果我們將檸檬汁滴入紫高麗菜汁中，它會變成紅色，這是因為檸檬汁是酸性的。然而，如果我們將小蘇打水加入紫高麗菜汁中，它會變藍綠色，這是因為小蘇打水是鹼性的。

我們可以透過廚房裡的材料來探索科學知識，這是不是很酷？科學就像一場令人驚喜的探索之旅，我們可以在其中發現新奇的事物！



Science in the Kitchen
廚房中的科學

Observe seasonings 觀察調味品

- We use our eyes to look at seasonings.
  眼睛可以用來看調味品。
- We use our hands to touch seasonings.
  手可以用來觸摸調味品。
- We use our nose to smell seasonings.
  鼻子可以用來聞調味品。

Substances and water 物質和水

- Soluble substances 可溶解的物質
  - Salt, sugar, baking soda, and citric acid
    食鹽、砂糖、小蘇打粉和檸檬酸粉
- Insoluble substances 不易溶解的物質
  - Flour
    麵粉

Identify acids and bases 辨識酸鹼

- The purple cabbage juice turns reddish when you add something acidic.
  紫高麗菜汁和酸性物質混合時，會變成偏紅色。
- The purple cabbage juice stays purple when you add something neutral.
  紫高麗菜汁和中性物質混合時，會維持紫色。
- The purple cabbage juice turns blue-green when you add something basic.
  紫高麗菜汁和鹼性物質混合時，會變成藍綠色。

Words and Phrases
單字與片語

4-1 Observe common ingredients 觀察常見的材料

kitchen	廚房	seasoning	調味品
salt	食鹽	sugar	砂糖
powdered ingredient	粉末材料	baking soda	小蘇打粉
flour	麵粉	citric acid	檸檬酸粉
eye	眼睛	see	看
nose	鼻子	smell	聞
hand	手	touch	觸摸

4-2 Substances and water 物質和水

soluble	可溶解的	insoluble	不易溶解的
dissolve	溶解	aqueous solution	水溶液
measuring cylinder	量筒	beaker	燒杯
stirring rod	攪拌棒	sand	沙子
black tea	紅茶	vinegar	醋
lemonade	檸檬汁	soup	湯

4-3 Identify acids and bases 辨識酸鹼

purple cabbage	紫高麗菜	red amaranth leaf	紅鳳菜葉
butterfly pea petal	蝶豆花瓣	purple grape skin	紫葡萄皮
acid	酸	acidic	酸性的
base	鹼	basic	鹼性的
neutral	中性的		

Key Concepts
課程焦點

4-1 Observe common ingredients 觀察常見的材料

(1) We use our eyes to observe the colors of different ingredients.
我們可以用眼睛觀察不同材料的顏色。
(2) We use our nose to smell different ingredients.
我們可以用鼻子聞不同材料的氣味。
(3) We use our hands to touch different ingredients.
我們可以用手觸摸不同材料的觸感。

4-2 Substances and water 物質和水

(1) Salt, sugar, baking soda, and citric acid are easy to dissolve in water.
食鹽、砂糖、小蘇打粉和檸檬酸粉易溶於水。
(2) Flour is difficult to dissolve in water.
麵粉不易溶於水。

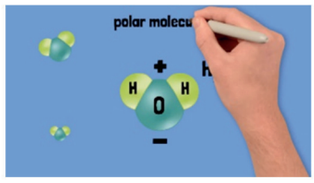
4-3 Identify acids and bases 辨識酸鹼

(1) The purple cabbage juice turns reddish when you add something acidic.
紫高麗菜汁和酸性物質混合時，會變成偏紅色。
(2) The purple cabbage juice turns purple when you add something neutral.
紫高麗菜汁和中性物質混合時，會維持紫色。
(3) The purple cabbage juice turns blue-green when you add something basic.
紫高麗菜汁和鹼性物質混合時，會變成藍綠色。

Science Videos
教學參考資源

4-1 The Herbs, Spices, and Condiments That Are Essential for Every Kitchen

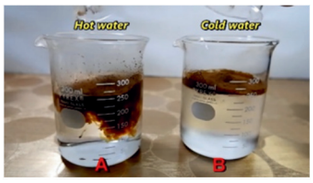
4-2 How Solubility and Dissolving Work



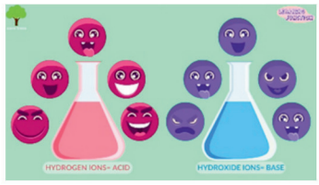
4-2 Soluble and Insoluble Materials

4-2 Dissolve Song

4-2 The Effect of Temperature on Solubility



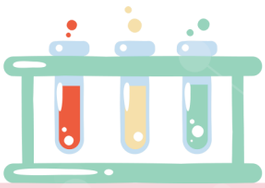
4-3 Acid and Base



4-3 Acids and Bases for Kids

4-3 Experiment DIY pH Indicator from Red Cabbage

NOTES



國小自然領域雙語教學資源手冊:英語授課用語
[三年級]
A Reference Handbook for Elementary School Bilingual Teachers in Natural Sciences : Instructional Language in English
[3rd Grade]

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