

國立嘉義大學附設實驗國民小學 110 學年度第二學期

五年級自然科學領域沉浸式英文課程 單元一星星的世界教材分析

資料來源	南一版自然與生活科技 第五冊	設計者	何夢青	每週 教學節數	3
		撰寫者	何夢青	單元教學 總節數	12
教材分析	<p>【水溶液的性質】由「溶解」發展到水溶液的酸鹼性、酸鹼交互作用、水溶液的導電性等概念，教導學生使用強酸、強鹼時要注意安全，用電器產品時要如何保護自己避免觸電，並且自製酸鹼指示劑來認識環境中的酸雨問題，再次學習人與環境互動互依的關係。</p> <p>【Aqueous Solutions】</p> <p>* Dissolving means to get completely mixed into a solution.</p> <p>*What are some properties of liquid?</p> <p>*Some solids dissolve ,or mix completely into the liquid.</p> <p>*water solution(acid solution &amp; basic solution)</p> <p>*During a neutralization reaction, an acid and a base react to form water and a salt.</p>				
Part1: dissolving		Part2: water solution(acid or base)		Part3: Conductivity of solutions	
主要學習內容					
<p>INe-III-4物質溶解、反應前後總重量不變。</p> <p>INc-III-4對相同事物做多次測量，其結果間可能有差異，差異越大表示測量越不精確。</p> <p>INa-III-3混合物是由不同的物質所混合，物質混合前後重量不會改變，性質可能會改變。</p>		<p>INe-III-5常用酸鹼物質的特性，水溶液的酸鹼性質及其生活上的運用。</p> <p>INc-III-2自然界或生活中有趣的最大或最小的事物（量），事物大小宜用適當的單位來表示。</p>		<p>INe-III-2 物質的形態與性質可因燃燒、生鏽、發酵、酸鹼作用等而改變或形成新物質，這些改變有些會和溫度、水、空氣、光等有關。改變要能發生，常需要具備一些條件。</p> <p>INf-III-2 科技在生活中的應用與對環境與人體的影響。</p>	
主要學習表現					
<p>an-III-1透過科學探究活動，了解科學知識的基礎是來自於真實的經驗和證據。</p> <p>ai-III-1透過科學探索了解現象發生的原因或機制，滿足好奇心。</p> <p>ah-III-1利用科學知識理解日常生活觀察到的現象。</p>		<p>ai-III-3參與合作學習並與同儕有良好的互動經驗，享受學習科學的樂趣。</p> <p>pe-III-2能正確安全操作適合學習階段的物品、器材儀器、科技設備與資源。能進行客觀的質性觀測或數值量測並詳實記錄。</p> <p>pa-III-2能從（所得的）資訊或數據，形成解釋、發現新知、獲知因果關係、解決問題、或是發現新的問題。並能將自己的探究結果和他人的的結果（例如來自同學）比較對照，檢查相</p>		<p>ai-III-2透過成功的科學探索經驗，感受自然科學學習的樂趣。</p> <p>ai-III-3參與合作學習並與同儕有良好的互動經驗，享受學習科學的樂趣。</p> <p>ah-III-2透過科學探究活動解決一部分生活週遭的問題。</p> <p>an-III-1透過科學探究活動，了解科學知識的基礎是來自於真實的經驗和證據。</p>	

	近探究是否有相近的結果。	
Part1: dissolving and solution 溶解實驗	Part2: Acidic, basic and neutral solutions 水溶液的酸鹼性	Part3: Conductivity of solutions 水溶液的導電性
Vocabulary		
<p>three states of mater: gas. liquid. solid</p> <p>three states of water: water vapor . water. ice</p> <p>dissolve /dissolution 溶解</p> <p>Solubility 溶解度</p> <p>substance 物質</p> <p>molecules 分子</p> <p>spoon. salt. salty. sugar. sweet.</p> <p>溶液 <b>solution</b> 由溶劑 <b>solvent</b> 和溶質 <b>solute</b> 組成。</p> <p>溶劑 (solvent) 是溶液中能溶解其他物質的物質，一般指水，溶劑一般占溶液比例較多。</p> <p>溶質 (solute) 是溶液中被溶解的物質，與溶劑不發生反應。</p>	<p>Acid(acidic solution). sour 酸性</p> <p>Base(basic solution) .bitter 鹼性</p> <p>neutral solution 中性</p> <p>Litmus paper 石蕊試紙</p> <p>Purple cabbage 紫色高麗菜</p> <p>pure water 純水</p> <p>sugar solution 砂糖水</p> <p>saline solution 食鹽水</p> <p>baking soda solution 小蘇打水</p> <p>limewater 石灰水</p> <p>citric acid 檸檬酸</p> <p>vinegar 醋</p> <p>tweezers 鑷子</p> <p>cotton swab 棉花棒</p> <p>pH value 酸鹼值</p>	<p>LED light</p> <p>conductivity 導電性</p> <p>electrolytes 電解質</p> <p>circuit 電路</p> <p>electrical 電器用品</p> <p>appliance</p> <p>paper clip 迴紋針</p> <p>coin 硬幣</p> <p>iron ruler 鐵尺</p>
句型 Sentence		

**\*An aqueous solution is a solution where the solvent is water.**

\*Dissolving-dissolving means to get completely mixed into a solution.

\*Some substances can dissolve easily, while others cannot.

\*the salt /sugar has completely dissolved into the water, we will not be able to see the salt /sugar in the water.

\* The pepper did not dissolve into water. The grains of pepper are lighter than the water so they float on the top.

\*when solids dissolve in water, tiny parts of them known as molecules mixed together with the molecules that make up the water

\*Solutions differ in color and smell. They can be acidic, basic or neutral.不同水溶液的(顏色)、(氣味)和(酸鹼性)等性質不大相同

\*Different things can be used to test if a solution is acidic, basic or neutral.不同的東西可以用來檢測物質的酸鹼性。

\*An acidic solution does not change the color of red litmus paper, but it turns blue litmus paper into red.酸性:紅色石蕊試紙(不變色);藍色石蕊試紙(變紅色)

\*A basic solution does not change the color of blue litmus paper, but it turns red litmus paper into blue.鹼性:紅色石蕊試紙(變藍色);藍色石蕊試紙(不變色)

\*A neutral solution does not change the color of litmus paper.中性:紅色石蕊試紙和藍色石蕊試紙都(不變色)

\* Velvet plant leaves, red rose petals and purple grape skin can also be used to test a solution.(紅鳳菜葉)、(紅玫瑰花瓣)、(紫葡萄外皮)可以用來測試水溶液

\*Use a circuit with LED light, battery and wire to test the conductivity of a solution.

利用(通路)的概念,設計含有(LED 燈)、(電池)和(電線)的電路來檢驗

\* Do not touch electrical appliances when you are wet.

身體(潮溼)時,觸摸電器用品可能會產生觸電的危險



1. Dissolving Experiment \*YOU CAN DO!\* Science for Kids

[https://www.youtube.com/watch?v=r0nNvsB\\_fOw](https://www.youtube.com/watch?v=r0nNvsB_fOw)

2. Dissolve Song

<https://www.youtube.com/watch?v=Kdc51ROgSq4>

3. Solution Solvent Solute - Definition and Difference

<https://www.youtube.com/watch?v=e-2EoyDYamg>



4. Solutions and Solubility | Science for Kids | Grade 3 | Periwinkle

<https://www.youtube.com/watch?v=fc2zyrVR4kA>

5. Aqueous Solution Chemistry

[https://www.youtube.com/watch?v=\\_st-UjrCT3I](https://www.youtube.com/watch?v=_st-UjrCT3I)

6. Acids and Bases and Salts - Introduction | Chemistry | Don't Memorise

<https://www.youtube.com/watch?v=i2x4foEuRcI>

7. Acid and Base | Acids, Bases & pH | Video for Kids

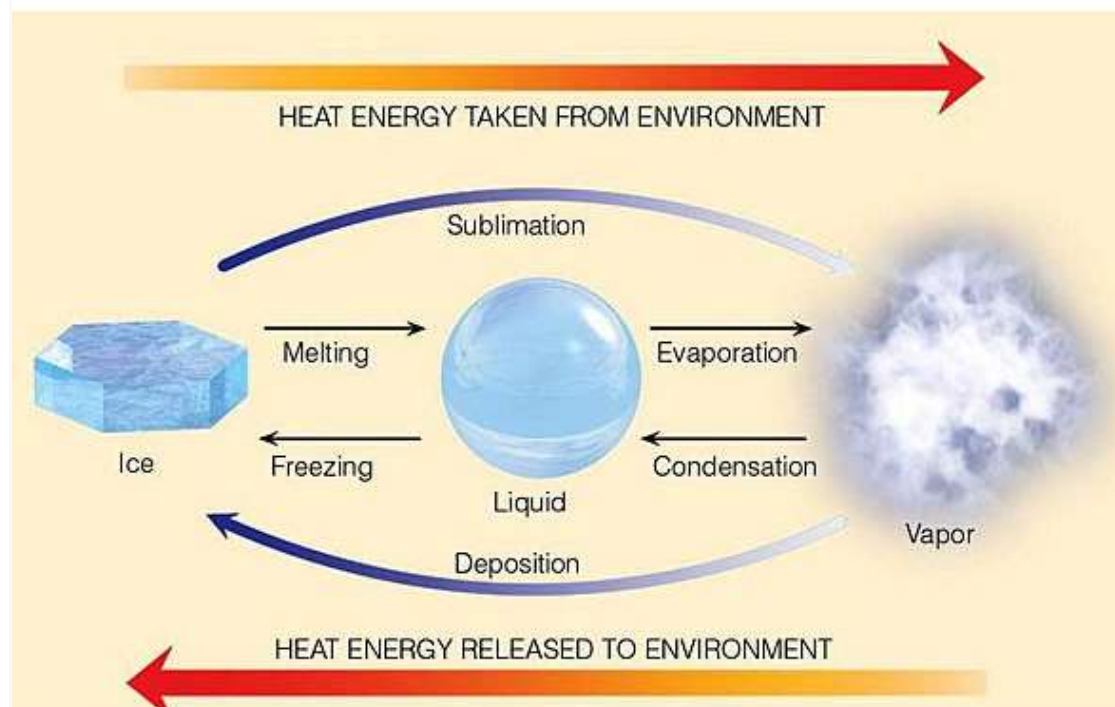
[https://www.youtube.com/watch?v=V5Mq\\_cL9Bck](https://www.youtube.com/watch?v=V5Mq_cL9Bck)

8. What is Litmus? What Does Litmus Mean?

<https://www.youtube.com/watch?v=sEV2TZvCVLI>

9. Conductivity of Solutions

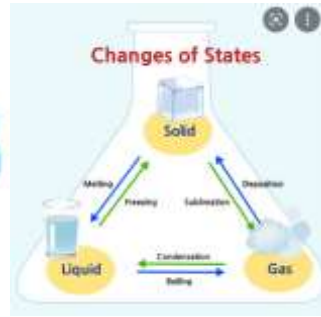
<https://www.youtube.com/watch?v=4WillWjxRWw>



<https://www.youtube.com/watch?v=sty0ifPOqZM>



## States of Matter



## AQUEOUS SOLUTION ?

The word Aqueous is derived from a Latin

