

**國小自然領域教學研究中心**  
**第四屆國小自然科學實驗雙語教學影片製作競賽**

領域/科目 Subject	自然	設計者 Designer	郭宥箖
單元名稱 Unit	生活中的力	指導教授 Advisor	丁信中教授
<b>設計依據</b>			
		<b>學科領域 (content)</b>	
學習 重點  Learning focus	學習表現 Students' performance	pe-II-2 能正確安全操作適合學習階段的物品、器材儀器、科技設備及資源，並能觀察和記錄。 tr-II-1 能知道觀察、記錄所得自然現象的結果是有其原因的，並依據習得的知識，說明自己的想法。 ai-II-3 透過動手實作，享受以成品來表現自己構想的樂趣。	1-II-7 能聽懂課堂中所學的字詞。 2-II-3 能說出課堂中所學的字詞。 2-II-6 能以正確的發音及適切的語調說出簡易句型的句子。
	學習內容 Learning content	INa-II-3 物質各有其特性，並可以依其特性與用途進行分類。 INe-II-7 磁鐵具有兩極，同極相斥，異極相吸；磁鐵會吸引含鐵的物體。磁力強弱可由吸起含鐵物質數量多寡得知。	Ac-II-3 第二學習階段所學字詞。 B-II-1 第二學習階段所學字詞及句型的生活溝通。
核心素養 Core competency		<p>自然：</p> <p>自 E-A2 能運用好奇心及想像能力，從觀察、閱讀、思考所得的資訊或數據中，提出適合科學探究的問題或解釋資料，並能依據已知的科學知識、科學概念及探索科學的方法去想像可能發生的事情，以及理解科學事實會有不同的論點、證據或解釋方式。</p> <p>自 E-A3 具備透過實地操作探究活動探索科學問題的能力，並能初步根據問題特性、資源的有無等因素，規劃簡單步驟，操作適合學習階段的器材儀器、科技設備 及資源，進行自然科學實驗。</p> <p>自 E-C2 透過探索科學的合作學習，培養與同儕溝通表達、團隊合作及和諧相處的能力。</p> <p>英文：</p> <p>英-E-A2 具備理解簡易英語文訊息的能力，能運用基本邏輯思考策略提升學習效能。</p> <p>英-E-B1 具備入門的聽、說、讀、寫英語文能力。在引導下，能運用所學、字詞及句型 進行簡易日常溝通。</p>	

<b>議題融入</b> <b>Issue integration</b>	<input type="checkbox"/> 人權教育 <input type="checkbox"/> 法治教育 <input type="checkbox"/> 防災教育 <input type="checkbox"/> 戶外教育 <input type="checkbox"/> 環境教育 <input type="checkbox"/> 科技教育 <input type="checkbox"/> 閱讀素養 <input type="checkbox"/> 多元文化教育 <input type="checkbox"/> 海洋教育 <input type="checkbox"/> 資訊教育 <input type="checkbox"/> 國際教育 <input type="checkbox"/> 性別平等教育 <input type="checkbox"/> 品德教育 <input type="checkbox"/> 能源教育 <input type="checkbox"/> 家庭教育 <input type="checkbox"/> 生涯規劃教育 <input type="checkbox"/> 生命教育 <input type="checkbox"/> 安全教育 <input type="checkbox"/> 原住民教育 <input checked="" type="checkbox"/> 無
<b>與其他領域/科目的連結</b> <b>Connections to other subjects</b>	<input type="checkbox"/> 音樂 <input type="checkbox"/> 體育 <input type="checkbox"/> 藝術 <input type="checkbox"/> 社會 <input type="checkbox"/> 科技 <input type="checkbox"/> 生活 <input type="checkbox"/> 綜合活動 <input type="checkbox"/> 健康與體育 <input type="checkbox"/> 其他： _____
<b>教材來源 Materials</b> <b>參考資料 References</b>	康軒版自然課本3下 <a href="https://youtu.be/icPBJ6Nr9Gs?si=-Mo9svW3iO-TQ7Vj">https://youtu.be/icPBJ6Nr9Gs?si=-Mo9svW3iO-TQ7Vj</a>

<b>教學設備/資源</b> <b>Teaching aids/equipment</b>	軟磁片、動動眼、剪刀、西卡紙、撲克牌、雙面膠、學習單		
<b>學生背景</b> <b>Students' Background</b>	<p>此單元為國小三年級的課程，三年級的學生開始接受學校的英語課程及自然課程。</p> <p>自然科學知識方面，學生在二年級生活課程中已經接觸過磁鐵，並對其能夠吸引物品有一定的認識。</p> <p>探究能力的部分，同樣的學生欠缺相關探究的經驗，可能需要教師多一些的引導才能完成。</p> <p>語言方面，因剛受到學校的正式英語教育，大多數的學生僅能聽懂簡單的單字和句型，但有少部分的學生有學習過英語或是補習的經驗，因此語言程度上會有落差。</p>		
<b>學習目標</b> <b>Learning Objectives</b> (請編號)	<b>學科領域 (content)</b> 2-3磁力會應用在生活中的那些地方	<b>英語文 (language)</b> <b>Language of learning</b>	Vocabulary: magnet – 磁鐵 move – 移動 attract – 吸住 repel – 排斥 Sentence pattern: 1. Same poles repel. /Different poles attract. 2. It's the use of magnet force/same poles repel/different poles attract.
			<b>Language for learning</b>
		<b>教師用語 For teachers</b>	<b>學生用語 For students</b>
		1. 問候語 Let's begin our lesson now. / I'm going to call the roll. / Raise your hand and say "Here." when I call your name. 2. 課前準備 (複習)Who can recall what we did? / (視覺輔助)Look at this pictures. 3. 教學活動 (確認理解)Is that clear? / (詢問意見/鼓勵發言)Anybody have any ideas? / (主題轉換) We are going to look at another case. / (舉例)Let's take a look at an easy example. 4. 回饋 (讚美) That was very good. Say it again. / (糾正)You are almost right. 5. 教室管理 (管理秩序)Pay attention, please. 6. 課堂收尾 (下課)Have a nice weekend.	
		<b>Translanguaging</b>	
		For teacher: The teacher will use Chinese, pictures, gestures, and real objects to help students understand difficult words, science ideas, and experiment steps. For students: Students can use Chinese during peer and group discussions or when responding to certain questions.	

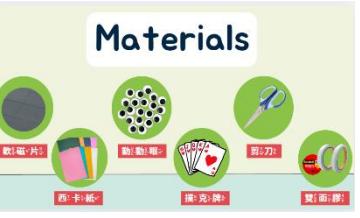
情境脈絡  
(文化/社區/公民實踐)

## 教學活動設計 Classroom procedure

### 教學重點及學科概念說明 Main points of teaching

學科領域 (content)	英語文 (language)
INe-II-7 磁鐵具有兩極，同極相斥，異極相吸；磁鐵會吸引含鐵的物體。磁力強弱可由吸起含鐵物質數量多寡得知。	Ac-II-3 第二學習階段所學字詞。 B-II-1 第二學習階段所學字詞及句型的生活溝通。

對應的學習目標與 學習表現 Learning objectives & Learner performance	教學流程之 POE 對照 POE Teaching Process	學習活動 & 教學步驟 Learning activities & Teaching procedures (依據教學對象的語言能力，呈現使用國語與英語之教學流程)	教學設備/資源 Teaching aids/equipment	時間 Time	評量方式/工具 Assessment
	Warm-up	<p>Greet the students and review the previous lesson (magnetic poles and attract/repel).</p> <p>T: Good morning, everyone!</p> <p>S: Good morning teacher.</p> <p>T:(指學生 1、學生 2、學生 3、學生 4) You are in a group.(老師依人數分組)</p> <p>T: Before we start our class. Let's take a short review. First question: How many poles does a magnet have? When I count to three two one, you heard "one", raise your hands and tell me the answer.</p> <p>S: Two.</p> <p>T: That's right. Give group (two) one point.</p> <p>T: We know a magnet has two poles. And tell me what are they?</p> <p>S: They are North pole and South pole.</p> <p>T: If we put two north poles together, what will happen?</p>	PPT 呈現要問的問題	1mins	口頭問答

tr-II-1 2-II-3	Prediction 預測 (P)	<p>S: They push away!</p> <p>T: Yes! That's called "repel".</p> <p>T: And if we put a north pole and a south pole together?</p> <p>S: They attract!</p> <p>T : Perfect! Say it with me: Same poles repel. Different poles attract.</p> <p>S: (跟讀) Same poles repel. Different poles attract.</p> <p>1. 製作「磁力怪獸」模型。</p> <p>T: Today we are going to make a magnet monster.</p> <p>T: Those are some materials that we need to use. Let's take a look.</p> <p>T: Finder out! Count together! (PPT有六種材料) One, two, three, four, five, six.</p> <p>S: One, two, three, four, five, six</p> <p>T: We need six materials right. Let's take a look what are they?</p> <p>T: A magnet, color paper, eyes, playing cards, scissors and tape. Scissors and tape will on my desk if you need it, raise your hands and tell me. I will give you.</p> <p>(老師發下材料，學生確認是否有拿到)</p> <p>T: The first thing we are going to do is design the shape of a magnet monster.</p> <p>T: Show me your color paper.</p> <p>S:( Show the color paper.)</p>	<p>PPT</p> 	<p>15mins</p> <p>口頭問答</p> <p>軟磁片、動動眼、剪刀、西卡紙、撲克牌、雙面膠</p>
-------------------	-------------------	--	--	---

pe-II-2 1-II-7 2-II-6	<p>T: (PPT示圖-長方形 長 20 公分寬 2 公分)Please cut the shape like this. And fold in half. (做動作)</p>  <p>T: (PPT示圖-以黏好的磁力怪獸)Next, stick the tape inside a magnet monster. 注意保留 2 公分的地方不要黏到雙面膠哦!</p>  <p>T: Now you can see monster mouth! And take out eyes put on monster face. I will give you three mintues to decorate a monster. You can draw something on a monster body.</p> <p>T:Okay, times up!</p> <p>T: I will give you a big magnet and a magnet observe card(老師手握這兩樣東西). Now take out a magnet observe card and put on a big magnet.</p> <p>T: What can you see?</p> <p>S: Some many lines.</p> <p>T: Yes, Guess what are they?</p> <p>S: Nouth pole and south pole.</p>	磁鐵觀察片、A4紙張大小的軟性磁片	5mins	口頭分享
-----------------------------	---	-------------------	-------	------

tr-II-1 2-II -3 2-II -6	Explanation 解釋 (E)	<p>T: Great! Group (five) two points.</p> <p>T: Now please take out a small magnet.(以黏好撲克牌的小磁片) Put it on a big magnet. Go up and go down. Go left and go right. What can you heard?</p> <p>S: Go up and go down 有啪啪啪的聲音</p> <p>T: Yes, because same poles repel and different poles attract.</p> <p>T: (PPT示圖-小磁鐵的方向)Find the way to stick inside monster body. If you can't find the direction of a small magnet, (以黏好撲克牌的小磁片) you can use a magnet observe card to help you see it.</p>  <p>T: If you need my help, raise your hands.</p> <p>T: Take your magnet monster and put it on a big maget. What can you see?</p> <p>S: The monster mouth can open and close.</p> <p>T: Yes, you are right! Can anyone try to answer it why? Why does a magnet monster can open his mouth?</p> <p>S: Because same poles repel.</p> <p>T: Right! Group (three) one point.</p> <p>T: How about close his mouth?</p> <p>S: Because different pole attract.</p>	PPT、磁鐵觀察片	5mins 句型口語表達、 口頭分享、教師 回饋
-------------------------------	-----------------------	--	-----------	-----------------------------------

		<p>T: Right! Group (four) one point. Because we use a magnet observe card to see the reason.</p> <p>T: All of you are so smart! Let's do a short challenge. I will give you a worksheet. Please discuss with your group members. Give you five minutes. Later we will check the answe together.</p> <p>T: Okay, times up!</p> <p>T: On the experiment, does the monster use magnets? ✓ or X!</p> <p>S: Yes.</p> <p>T: It's the use of _____?</p> <p>S: It's the use of magnet force, same poles repel. Because on the picture, monster mouth is open.</p> <p>T: Excellent! Group (five) two points.</p> <p>T: Now take a guess, does the light use magnets? ✓ or X!</p> <p>S: No.</p> <p>T: Smart! Group (three) one point.</p> <p>T: How about a can, does it use magnets? ✓ or X!</p> <p>S: Yes.</p> <p>T: It's the use of _____?</p> <p>S: It's the use of magnet force.</p> <p>T: Excellent! Group (one) two points.</p>	學習單	10mins	口頭分享、句型表達正確性、教師回饋
--	--	--	-----	--------	-------------------

		<p>T: The last one. Does it use magnets? ✓ or ✗!</p> <p>S: Yes.</p> <p>T: It's the use of _____?</p> <p>S: It's the use of magnet force and different poles attract.</p> <p>T: Yes, in our real life, we can use many magnets to help us more convenient.</p> <p>T: Let's take a short review for today. (PPT 示圖-學習單最後一張圖) It's the use of?</p>  <p>S: It's the use of magnet force and different poles attract.</p> <p>T: Good! Group (two) one point. That's all for today see you next week. Bye Bye.</p>	PPT	1min	句型表達正確性、教師回饋
--	--	--	-----	------	--------------