

雙語課程教案設計

The Design of Bilingual Lesson Plan

學校名稱 School	彰化縣竹塘鄉 竹塘國小 Chutang Township Elementary School, Changhua County.	課程名稱 Course	洋菇的歷史與數學之旅」 "The Journey of Mushrooms: History and Math"
單元名稱 Unit	「洋菇探秘：從歷史 到數學的重量之旅」 "Mushroom Discovery: A Journey from History to Math in Weight Calculation"	學科領域 Domain/ Subject	彈性課程 Flexible course
教材來源 Teaching Material	自編教材 Self-authored materials	教案 設計者 Designer	厲彥樺 Li, Yan-Hua
實施年級 Grade	Grade 5	本單元共 <u>3</u> 節 The Total Number of Sessions in this Unit	
教案設計理念 Rationale for Instructional Design	這套教學設計將竹塘鄉的洋菇產業與五年級上學期的小數點數學概念相結合，旨在透過實際情境中的單位換算，讓學生深入理解小數點的運用。同時，透過實地參訪與小組討論，學生能夠在現實中體會數學的實際應用，增進學習的趣味性與實用性。這種跨學科的教學設計，不僅提升了學生的數學技能，也強化了他們對地方農業知識的理解。 This teaching design combines the mushroom industry of Chutang Township with fifth-grade first-semester decimal concepts. By incorporating real-world scenarios such as unit conversions, students can gain a deeper understanding of decimal usage. Through hands-on visits and group discussions, students experience the practical application of math in real life, enhancing both the engagement and relevance of their learning. This interdisciplinary approach not only strengthens students' mathematical skills but also deepens their understanding of local agricultural knowledge.		
學科核心素養 對應內容 Contents Corresponding to the Domain/	總綱 General Guidelines	A1身心素質與自我精進 具備身心健全發展的素質，擁有合宜的人性觀與自我觀，同時透過選擇、分析與運用新知，有效規劃生涯發展，探尋生命意義，並不斷自我精進，追求至善。 A3規劃執行與創新應變	

Subject Core Competences	領綱 Domain/ Subject Guidelines	<p>數-E-A1 具備喜歡數學、對數學世界好奇、有積極主動的學習態度，並能將數學語言運用於日常生活中。</p> <p>數-E-A3 能觀察出日常生活問題和數學的關聯，並能嘗試與擬訂解決問題的計畫。在解決問題之後，能轉化數學解答於日常生活的應用。</p>
	校本素養指標 School-based Competences	<p>依據學校的特色，學生具備在地產業知識的實踐能力，能夠將數學與生活中產業發展緊密結合，培養數據分析、問題解決及跨領域知識整合的能力。</p>
學科學習重點 Learning Focus	學習表現 Learning Performance	<p>n-III-8 理解以四捨五入取概數，並進行合理估算。</p> <p>n-III-11 認識量的常用單位及其換算，並處理相關的應用問題。</p>
	學習內容 Learning Contents	<p>N-5-11 解題：對小數取概數。具體 生活情境。四捨五入法。知 道商除不盡的處理。理解近 似的意義。</p> <p>N-5-13 重量：「公噸」。生活實例 之應用。含與「公斤」的換 算與計算。使用概數。</p>
學生準備度 Students' Readiness	<p>數學準備度：</p> <p>學生應具備理解進位與位值系統的概念以及基本的重量單位（如公斤與公克）準備食材理解與單位換算能力。</p> <p>Mathematical Readiness:</p> <ul style="list-style-type: none"> ● Students should understand the concepts of carrying over and the place value system, as well as basic units of weight (such as kilograms and grams). ● They should also be prepared to apply these concepts when preparing ingredients and converting between different units. <p>自然與社會準備度：</p> <ul style="list-style-type: none"> ● 了解基本的農業背景，特別是有關竹塘鄉的地理知識與農業產業。 ● Science and Social Studies Readiness: Have a basic understanding of agricultural backgrounds, particularly the geographical knowledge of Chutang Township and its agricultural industry. <p>英語準備程度：</p> <ul style="list-style-type: none"> • 基本詞彙：學生應熟悉與重量相關的基本術語（例如「公斤」、「公克」、「重」、「輕」）、以及農業術語（如「蘑菇」和「收成」）。 • 聽力和理解：學生應能夠跟隨用英語進行的指示和解釋，特別是在數學和農業背景下。 	

	<p>Readiness of English:</p> <ul style="list-style-type: none"> • Basic Vocabulary: Students should be familiar with basic terms related to weight (e.g., "kilogram," "gram," "heavy," "light") and agricultural terms (e.g., "mushroom" and "harvest"). • Listening and Comprehension: Students should be able to follow instructions and explanations given in English, especially in the context of math and agriculture
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<p>單元學習目標</p> <p>Learning Objectives</p>	<p>第一堂課:</p> <p>1. 了解竹塘鄉的著名農產品，特別是洋菇的特性與生長條件。 Understand the famous agricultural products of Chutang Township, focusing on the characteristics and growing conditions of mushrooms.</p> <p>2. 能夠比較和取概數多位小數，以增強數學運算的靈活性與準確性。 Be able to compare and round multi-digit decimals to enhance flexibility and accuracy in mathematical calculations.</p> <p>第二堂課:</p> <p>1. 學生將了解洋菇栽培的各個階段，包括生長條件和生產方法。 Understand the Mushroom Cultivation Process Students will learn about the various stages of mushroom cultivation, including growing conditions and production methods.</p> <p>2. 學生將在工廠參觀期間積極參與討論並提問，以增進對洋菇生產的理解。 Engage in Interactive Learning Students will actively participate in discussions and ask questions during the factory tour to enhance their understanding of mushroom production.</p> <p>3. 學生將通過分享他們的見解和參觀中最喜歡的部分來反思他們的學習經歷，促進批判性思維和溝通能力。 Reflect on Learning Experiences Students will reflect on their visit by sharing their insights and favorite aspects of the trip, fostering critical thinking and communication skills.</p> <p>第三堂課：製作洋菇蔬菜披薩</p> <p>1. 計算並理解製作 12 吋披薩的材料比例。 Calculate and understand the ingredient proportions for making a 12-inch pizza.</p> <p>2. 按配方製作披薩麵團並完成披薩製作。 Prepare the pizza dough according to the recipe and complete the pizza-making process.</p> <p>3. 正確使用材料比例並品嚐自己製作的披薩。 Accurately use the ingredient proportions and taste the pizza they made.</p>		
	中/英語	教師 Teacher	學生 Students

使用時機 Timing for Using Chinese/ English	<ul style="list-style-type: none">➤ 講解學科相關內容及為學生解惑時使用中文。➤ Greeting: Good morning. Have a seat. How are you today?➤ Classroom control: Eyes on me. Be quiet. Say with me.➤ Question for readiness<ul style="list-style-type: none">- Are you ready?- Who knows the answer?Raise your hand.➤ Question for attention<ul style="list-style-type: none">- Pay attention. Look at the board.➤ Provide feedback<ul style="list-style-type: none">- Good/Great/Well done.			<ul style="list-style-type: none">➤ Greeting Use Chinese and English to answer the questions for greeting.➤ answer T's questions for readiness.➤ Understand T's instruction for activities and classroom order.➤ Students' classroom language:<ul style="list-style-type: none">- Good morning.- Eyes on you.- Yes, I am ready.- Teacher me!										
教學方法 Teaching Methods	講述法、討論法、問答法、發現教學法、發表教學法、合作學習													
教學策略 Teaching Strategies	<ul style="list-style-type: none">● 提問設計● 搭建鷹架● 連結生活經驗● 搭配教師正向語言● 凸顯教材內容特性:● 現實生活的關聯性● 有效組織教材內容● 給予選擇與決定自主權● 展現學習成果(上台發表)● 提供建設性回饋● 運用多媒體影音● 觀察記錄● 計算練習● 實地分享● 品嘗反饋													
教學資源及 輔助器材 Teaching Resources and Aids	<ul style="list-style-type: none">- PPTs、worksheet(self-developed) 課堂簡報、評量單- Video(internet) 洋菇介紹影片- whiteboard、blackboard 白板、黑板- vocabulary flash card 單字閃卡- 9 boxes with displayed weight 九個外盒有顯示重量的盒子													
評量方法 Assessment Methods	<ul style="list-style-type: none">● 課堂問答評量● 觀察紀錄表● 反饋與自評													
評量規準 Rubrics	<table><tr><td>評量標準</td><td>A</td><td>B</td><td>C</td></tr><tr><td>課室英語</td><td>能夠聽得懂課堂</td><td>僅聽得懂老</td><td>無法理解老</td></tr></table>						評量標準	A	B	C	課室英語	能夠聽得懂課堂	僅聽得懂老	無法理解老
評量標準	A	B	C											
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	使用	老師的指令。並且精準回答。	師的指令，但無法用英語回答。	師的課室英語內容。
	課程重點句型與單字	能夠精準運用課堂英語與單字背誦。	僅聽得懂老師的指令，但無法用英語回答。	無法理解老師的課室英語內容。
	課程學習單	完整的完成課程學習單。	完成率一半左右。	無法跟著上學習單的學習。
議題融入 Issues Intergrated	<p>戶外教育:強化與環境的連接感，養成友善環境的態度；發展社會覺知與互動的技能，培養尊重與關懷他人的情操；開啟學生的視野，涵養健康的身心。</p> <p>Outdoor education: Strengthen the sense of connection with the environment and foster an eco-friendly attitude; develop social awareness and interaction skills, and cultivate respect and care for others; broaden students' horizons and nurture a healthy body and mind.</p> <p>環境教育：學生將學習到洋菇栽培中所使用的環保種植方法，例如有機材料的再利用、土地的有效使用以及水資源的節約。此外，課程還會強調洋菇在促進生物多樣性和維持土壤健康方面的作用，讓學生了解在地農業如何為環境保護與永續發展做出貢獻。透過這樣的學習，學生能認識到自己在保護自然資源中的角色。</p> <p>Environmental Education: Students will learn about the eco-friendly farming methods used in mushroom cultivation, such as the recycling of organic materials, efficient use of land, and water conservation. Additionally, the lesson emphasizes the role of mushrooms in promoting biodiversity and maintaining soil health, helping students understand how local agriculture contributes to environmental protection and sustainable development. Through this learning, students will recognize their role in safeguarding natural resources.</p>			
教學流程 Teaching Procedures				
第一節	<p>準備階段 Preparation stage</p> <p>1. Greeting the Students 問候學生</p> <p>2. Introducing the Topic (Famous Agricultural Products in Chutang) 介紹主題（竹塘的著名農產品）</p> <p>In this lesson, tasks are assigned to each group of students. Before the lesson begins, confirm with the students what each person is responsible for during the course.</p> <p>本課程對於小組學生都有任務分配，課程進行前再次跟學生確認每個人在課程中負責的事情。</p> <p>The teacher introduces three famous agricultural products from Chutang: mushrooms, rice, and eggs. The teacher will ask the students to repeat</p>			時間 Time
				5mins

	<p>and spell these three main words. (Three actual products are displayed on the front table.)</p> <p>老師介紹竹塘三樣著名的農產品， 分別是洋菇、米和蛋。Mushroom, rice and eggs. 老師會針對這三個主要單字請學生覆誦並拼讀。 (前方桌上展示三種農產品實體物品)</p> <p style="text-align: center;">發展階段 Development stage</p> <p>1. Activity 1: Geography Exercise (Finding Chutang on a Map) 活動1：地理練習 (在地圖上找竹塘)</p> <p>1-1 The teacher will present a map of Taiwan for the students to identify Changhua County, and then locate Chutang Township, helping students clearly understand the geographical location of their hometown. Two students will use stickers to mark the locations of Changhua County and Chutang Township.</p> <p>1-2 Next, we will guide the students to learn about the development history of mushrooms in Chutang Township and their growing conditions.</p> <p>1-1 老師將會呈現台灣地圖讓學生指認彰化縣，接著再找出竹塘鄉，讓學生清楚了解自己家鄉的地理位置。請兩位學生用貼紙貼出彰化縣及竹塘鄉的位置。</p> <p>1-2 接下來帶領學生認識竹塘鄉洋菇的發展簡史及其生長條件。</p> <p>2. Activity 2: Math Practice (Comparing and Rounding Decimals) 活動2：數學練習（比較與四捨五入小數）</p> <p>2-1 The teacher divided the class into three groups in advance and provided each group with three boxes of mushrooms, each with a different weight: Mushroom box A (90.64g), Mushroom box B (90.89g), and Mushroom box C (90.35g).</p> <p>2-2 (Task 1) Students are asked to write the weights of the boxes on their group worksheets. The teacher will lead everyone in reading the weights of the three boxes in English.</p> <p>2-3 (Task 2) Students are asked to round the weights of the boxes to one decimal place. Once completed, the teacher will calculate and announce the answers together with the students at the front.</p> <p>2-4 (Task 3) Students are to fill in the heaviest and lightest boxes on their worksheets and stick their answer cards on the whiteboard at the front.</p>	<p>8mins</p> <p>20mins</p>
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	<p>2-1老師事先將全班分成三組，每一組發放三種裝著洋菇的盒子，每一個盒子都不同重量，分別為Mushroom box A、Mushroom box B以及Mushroom box C。(A:90.64 B:90.89 C:90.35)</p> <p>2-2 (任務一)請學生將盒子上的重量填寫在各組學習單上，老師帶領大家將三種盒子重量用英語讀出來。</p> <p>2-3 (任務二)請同學將盒子重量四捨五入取概數到小數點後一位。完成後老師將在台上與同學一起計算並公布答案。</p> <p>2-4 (任務三)請學生在學習單上填寫最重與最輕的盒子。並將答案卡紙上台貼在白板上。</p> <p>(提醒學生要寫完整mushroom box A or b or c)</p> <p><i>(Remind the students to say, "Teacher, me!" when they finish.)</i></p> <p>提醒學生如果完成要說"Teacher me!" T:</p> <p>Final Activity: Discussion with Students</p> <p>For example, suppose today Xiaohua goes to the traditional market to buy mushrooms. The scale shows a weight of 630.23 grams. To simplify the calculation, the vendor rounds this weight to the nearest whole number, so Xiaohua ultimately pays for 630 grams of mushrooms.</p> <p>Final Activity: Question to Students</p> <p>Imagine you are a vendor at a traditional market. A customer comes to buy mushrooms, and the total comes to 300.58 dollars. How would you charge the customer?(There are many customers in line waiting to check out, and time is running short.)</p> <p>最後活動：向學生提問</p> <p>想像自己是傳統市場攤販老闆，客人來傳統市場跟我買洋菇，秤量後需要跟客人收 300.58 元，這時候你會怎麼賣給客人?(後面還有非常多客人在排隊結帳，時間很急迫的情況下。)</p> <p style="text-align: center;">總結階段 Summary stage</p> <ol style="list-style-type: none"> 1. Use a PPT to help students review the geographical location of Zhutang Township. 2. Practice the vocabulary of the three main agricultural products from Zhutang Township. 3. Review the decimal weights of the Mushroom boxes A, B, and C. <ol style="list-style-type: none"> 1. 利用PPT幫助學生回顧竹塘鄉的地理位置 2. 竹塘鄉三大農產品的單字做覆誦 <p style="text-align: center;">洋菇盒 ABC 重量小數點數字覆誦</p>	<p style="text-align: center;">7mins</p>
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	<p style="text-align: center;">第一節結束 End of the first session</p>	
第二節	<p style="text-align: center;">Preparation Stage 準備階段</p> <ol style="list-style-type: none"> Greeting the Students 問候學生 <ul style="list-style-type: none"> T: Good morning, students! Are you excited about our trip to the mushroom factory? 老師：早安，同學們！ 你們對我們去洋菇工廠的旅行感到興奮嗎？ Introduce the Itinerary 介紹行程 <ul style="list-style-type: none"> Teacher: Today, we will visit the "Xingjia" Mushroom Factory, known for its giant mushrooms. o We will learn how mushrooms are cultivated and grown. 老師：今天，我們將參觀有巨無霸洋菇之稱的「興家」洋菇工廠， 了解洋菇是如何栽培和生長的。 Discuss Expectations 討論期望 Teacher: Today, we will explore the cultivation process of giant mushrooms and learn about the various conditions required for their growth. You will also observe how mature mushrooms are harvested and packaged. It is important to pay close attention to these processes and record your observations on the observation sheet. 老師：今天我們將參觀巨無霸洋菇的栽培過程，了解在栽培中所需的各種條件。大家還會觀察到成熟的洋菇是如何被採收和包裝的。這些過程都需要仔細觀察，並記錄在觀察紀錄表上。 <p style="text-align: center;">發展階段 Development stage</p> <ol style="list-style-type: none"> Travel to the Factory 前往工廠 <ul style="list-style-type: none"> Students will travel to the Xingjia Mushroom Factory by bus. 學生將乘坐巴士前往興家洋菇工廠。 Factory Tour 工廠參觀 Teacher: Please pay close attention to the guide from the factory and listen carefully. Be sure to write down what you hear and see on your observation sheet. 老師：請大家要聽工廠介紹人員的引導仔細聆聽，必將所聽所看見的寫在觀察記錄表上。 <p>Activity: Hands-On Experience 活動：動手體驗</p>	<p>5mins</p> <p>10mins</p> <p>25mins</p>

	<p>1. Mushroom Sampling 洋菇品嚐</p> <ul style="list-style-type: none"> ○ After the visit, students will taste dishes made from the mushrooms produced by the factory. 參觀結束後，學生將品嚐工廠生產的洋菇煮出來的料理。 <p>2. Discussion and Reflection 討論與反思</p> <ul style="list-style-type: none"> ○ T: Let's gather together and discuss what we learned today. What was the most surprising thing you saw? Do the students have a deeper understanding of Chutang's mushrooms? 老師：讓我們聚在一起，討論今天學到了什麼。你們看到的最令人驚訝的事情是什麼？ 同學們是否對竹塘的洋菇有更深的認識？ <p style="text-align: center;">總結階段 Summary stage</p> <p>1. Review Key Points 回顧重點</p> <ul style="list-style-type: none"> ○ T: What did we learn today about mushroom cultivation? 老師：我們今天學到了什麼有關洋菇栽培的知識？ <p>2. Thank the Factory Staff 感謝工廠工作人員</p> <ul style="list-style-type: none"> ○ T: Let's thank the staff at Xingjia Mushroom Factory for their hospitality. 老師：讓我們感謝興家洋菇工廠的工作人員對我們的款待。 <p style="text-align: center;">第二節結束 End of the second session</p>	5mins
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	<p>○ 老師: 我們先來準備材料。首先, 稱量剛剛計算出來的洋菇和起司的數量。</p> <p>2. Roll the Dough 擀麵團</p> <p>○ T: Take the calculated amount of pizza dough and roll it out into a circle.</p> <p>○ 老師: 取剛剛計算出的披薩麵團, 將其擀成一個圓形。</p> <p>3. Add the Tomato Sauce 加入番茄醬</p> <p>○ T: Spread the calculated amount of tomato sauce evenly over the dough.</p> <p>○ 老師: 將計算出的番茄醬均勻地塗在麵團上。</p> <p>4. Add the Toppings 加入配料</p> <p>○ T: Now, add the calculated amounts of sliced mushrooms and cheese on top.</p> <p>○ 老師: 現在, 加入計算出的切片洋菇和起司。</p> <p>5. Drizzle Olive Oil 淋上橄欖油</p> <p>○ T: Drizzle the calculated amount of olive oil over the pizza for extra flavor.</p> <p>○ 老師: 在披薩上淋上計算出的橄欖油, 增加風味。</p> <p>6. Bake the Pizza 烘烤披薩</p> <p>○ T: Place the pizza in the oven and bake it at 220°C for 15-20 minutes.</p> <p>○ 老師: 將披薩放入烤箱, 以220°C烘烤15到20分鐘。</p> <p>Math Practice: Weight Conversion 數學練習: 重量換算</p> <p>1. T: Now, let's practice converting between kilograms and grams.</p> <p>○ 老師: 現在, 我們來練習公斤與公克之間的換算。</p> <p>2. Example Problem 範例問題:</p> <p>○ If we need 1.5 kilograms of pizza dough for three pizzas, how many grams is that?</p> <p>○ Ss: 1.5 kilograms = 1,500 grams.</p> <p>○ 學生: 1.5公斤等於1,500公克。</p> <hr/> <p>Summary Stage 總結階段</p> <p>1. T: Today, we learned how to make a mushroom pizza and practiced using kilograms and grams.</p> <p>○ 老師: 今天, 我們學習了如何製作洋菇披薩, 並練習了使用公斤和公克。</p> <p>2. T: Remember, being able to measure and convert units of weight is very useful, not just in cooking but also in many other real-life tasks.</p> <p>○ 老師: 記住, 能夠測量和換算重量單位非常有用, 不僅在烹飪中, 還在許多其他現實生活的任務中。</p>	5mins
參考資料 References	竹塘鄉農會網站	