

Seppo Teaching Plan - Integrated Science Competition In and Around School

Form: S3

Time: 90 minutes

Learning Objectives:

An end-of-year competition that acts as a comprehensive review of various topics throughout the whole Integrated Science curriculum.

Cognitive Knowledge

Students should be able to:

- K1. recognise the nutritional value and energy value by inspecting food labels of different foods;
- K2. calculate the energy consumption by an electrical appliance in the unit Joule (J) and kilowatt-hour (kWh);
- K3. identify plants with parallel venation and net venation on their leaves.

Psychomotor Skills

Students should be able to:

- S1. measure the sound intensity level using a sound-level meter;
- S2. design and build a solar still, explain the principle to the students.

Values and Attitude

Students should be able to:



- V1. recognise the usefulness of Science by applying in real-life situation.

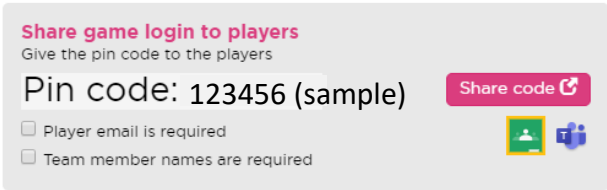
Related Units for the Curriculum:

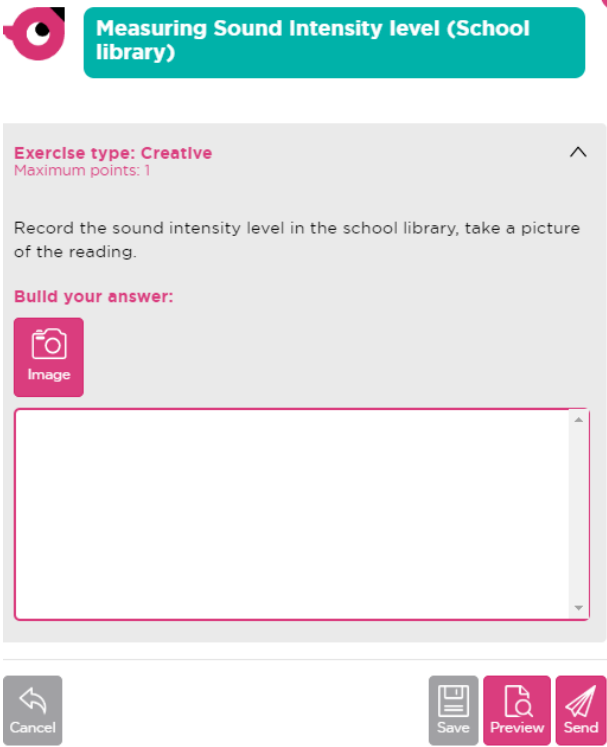
- Unit 2: Water
- Unit 5: Energy
- Unit 7: Living Things and Air
- Unit 8: Making Use of Electricity
- Unit 10: Sensing the Environment

- Unit 12: A Healthy Body: Nutrition and health

Teaching Procedures:

Stages	Time (mins)	Objectives	Procedures	Materials
Preparation 1	-	Teacher creates a map of your school and a neighbouring mall, and build customised activities with checkpoints using Seppo	 <ol style="list-style-type: none"> 1. Take the satellite map of your school from 'Google Map' or use a hand-drawn map. 2. Set the checkpoints for different activities: For the sound intensity task: set checkpoints in the school library and a road near the school. For the food label task: set a checkpoint at a supermarket nearby. 	<ol style="list-style-type: none"> 1. A Seppo instructor account 2. Sample activity: Integrated Science Competition In and Around School 

			<p>For the energy consumption task: set a checkpoint in electronics store nearby.</p> <p>For the leaf venation task: set a checkpoint in the garden/park nearby.</p>	
Preparation 2	-	Students design and construct a solar still	<ol style="list-style-type: none"> 1. One month before this event, form students into groups of 4 to 5. Students design and build a solar still to distill impure water. (Related Unit: Unit 2 Water) 2. Students wrote a report on their design and bring their completed models for this competition. 	<p>Budget of \$100 per group</p> <p>Completed models of solar still and report</p>
Pre-task	10	Brief students on the rules, guidelines and safety concerns of the activities	<ol style="list-style-type: none"> 1. Inform students the tasks and zone of activities. 2. Students place their solar still on the basketball court. 3. Teacher shares the PIN code to students. <div data-bbox="801 705 1406 895" data-label="Image">  </div> <ol style="list-style-type: none"> 4. Students enter PIN and group name to start the activity. 	<p>Smartphones or tablets (one per group), able to open Seppo (https://seppo.io/) (Recommend Chrome or Safari browser)</p>


<p>Checkpoint 1: Library/ Roadside</p>	<p>10</p>	<p>Students measure the sound intensity level using a sound-level meter</p>	<p>1. Record the sound intensity level in the school library, take a picture of the reading.</p>  <p>2. Record the sound intensity level of a truck that passes by, take a picture of the reading.</p>	<p>Sound-level meters (one per group) OR Smartphones with sound level measuring apps</p>
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Measuring Sound Intensity level (Roadside)

Exercise type: Creative
Maximum points: 1





Record the sound intensity level of a truck passing through, take a picture of the reading and upload the image.

Build your answer:


 Image







Please answer to creative exercise before sending the answer.

3. MC Question: What is typical sound intensity level during a normal conversation?

Multichoice Exercise Reorder ↑  ^



Audio ↓ Video ▶ i Search from library

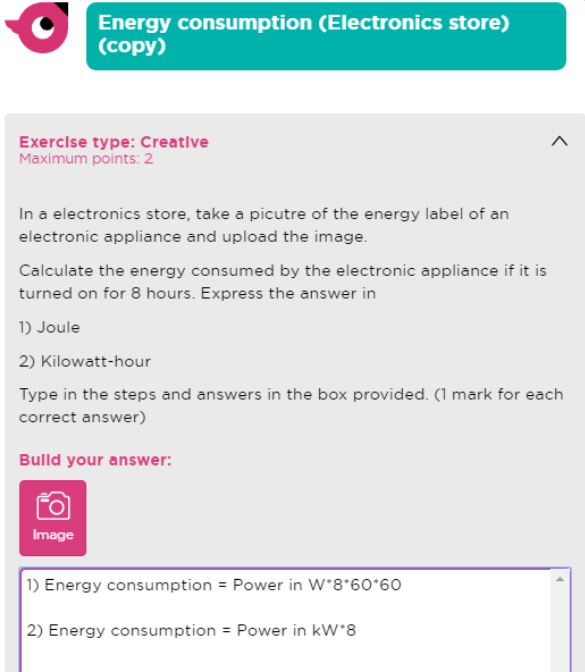
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Bullet list


Answer this question after measuring the sound intensity level inside a library and near a road.

What is typical sound intensity level during a normal conversation?

<p>Checkpoint 2: Supermarket</p>	<p>10</p>	<p>Identify the nutritional value and energy value on food label</p>	<p>1. Select one food item with the highest energy content (in kcal per 100g). Upload a picture of its food label.</p> <div data-bbox="801 252 1406 322">  <p>Nutrition Label (Supermarket)</p> </div> <div data-bbox="801 379 1393 912"> <p>Exercise type: Creative Maximum points: 6</p> <p>In the supermarket, select one food item and one beverage, take pictures of the nutrition label and upload the images.</p> <p>For the food item, try to pick one with the highest energy content (in kcal per 100g).</p> <p>For the beverage, try to pick one with the highest protein content (in g per 100g).</p> <p>For each category:</p> <p>1st place: 3 points 2nd place: 2 points 3rd place: 1 point</p> <p>Build your answer:</p> <div data-bbox="824 826 891 906">  <p>Image</p> </div> </div>
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<p>Checkpoint 3: Electronics Store</p>	<p>10</p>	<p>Calculate the energy consumption of a light bulb</p>	<p>1. Each group select a brand of light bulb and take a picture of its energy label.</p>  <p>2. Upload the image and calculate the energy consumption in joule (J) and kilowatt-hour (kWh) based on selected light bulb. (More instructions can be provided for relatively less capable students, e.g. formula)</p>	<p>Smartphones or tablets</p>
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<p>Checkpoint 4: Garden/Park</p>	<p>10</p>	<p>Identify plants with parallel venation and net venation on the leaves</p>	<p>1. Find two plants, one with parallel venation and the other with net venation.</p> <div data-bbox="974 252 1554 312">  </div> <div data-bbox="974 344 1574 863"> <p>Creative Exercise Points: 2</p> <p>Leaf and vein-type (Garden)</p> <p>In the garden, search for plants with parallel venation and net venation on their leaves, upload the images.</p> <p>Your answer</p>  </div> <p>2. Take pictures of the leaves and upload the images.</p> <ul style="list-style-type: none"> - Flash exercise: 'Gotta catch 'em all' <p>Can you spot as many types of animals as possible in the garden/park? Take a picture of each type of animal and state their class.</p> <div data-bbox="974 1139 1547 1326"> <p>Gotta Catch 'Em All</p> <p>Try to find as many type of animals as possible! Take a picture of each type of animal and upload the images. The group finding the most wins.</p> <p>1st place: 3 points 2nd place: 2 points 3rd place: 1 point</p> </div>	<p>Smartphones or tablets</p>
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Checkpoint 5: Basketball Court / Laboratory	40	Design a solar still and explain the principle behind to the students	<ol style="list-style-type: none"> Students retrieve their solar stills and return to the laboratory to measure the amount of distilled water collected. <div data-bbox="981 268 1205 293" style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;">  Solar still(basketball court) ^ </div> <div data-bbox="1176 308 1736 550" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0; background-color: #f9f9f9;"> <p>Place your solar still here! Then upload a picture of your solar still.</p> <p>After completing all the tasks, come back to find out the result.</p> <p>Compare and discuss the result within your group and among other groups, give a presentation of your design and finding.</p> <p>The presentation will be graded by other groups.</p> <p>Points are rewarded on a scale of 1 to 10.</p> </div> <ol style="list-style-type: none"> Students discuss and compare the result within their own group and then among other groups. Students give a presentation on the design of solar still and report their result. Peer review: Students grade the other groups. 	
Conclusion	5	Conclude the competition and announce the winner	<ol style="list-style-type: none"> Teacher gives a brief review on the knowledge related to the tasks. Teacher computes the total points of each group and announces the winner. 	

Seppo 教學建議 – 在學校與周邊進行綜合科學競賽

年級：S3

時間：90 分鐘

學習目標：

於學期終進行一場綜合科學科比賽，總結及回顧課程中的不同課題。

知識

學生應能

- K1. 檢視食物標籤以找出不同種類食物的營養價值和能量值。
- K2. 以焦 (J) 和千瓦 (kWh) 為單位，計算電器的能量消耗。
- K3. 辨識植物的葉子的脈絡為平行脈絡或網狀脈絡。

技能

學生應能

- S1. 使用分貝計測量聲音強度。
- S2. 設計並製作蒸餾器，向同學解釋設計原理。

價值觀和態度

學生應能

- V1. 明白科學的用處並將科學知識應用在日常生活中。

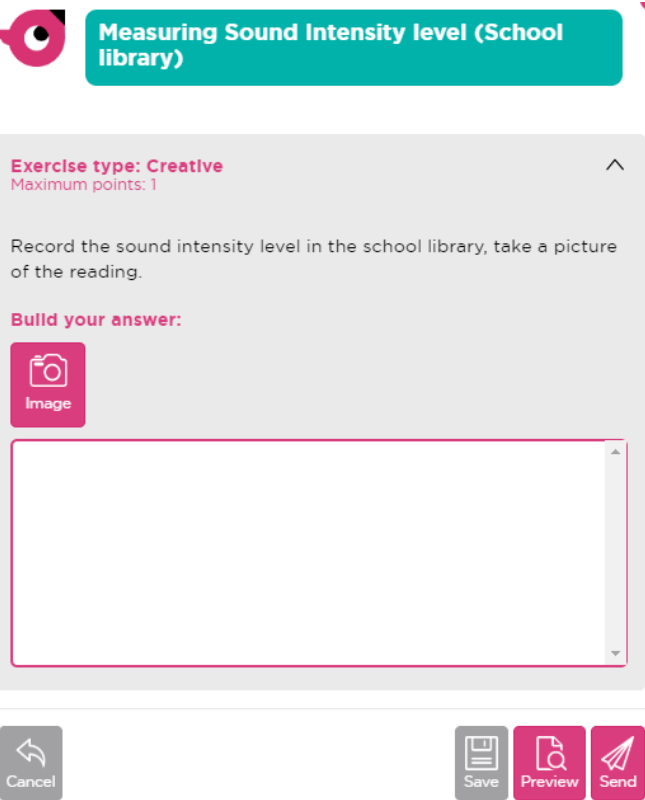
相關課程單元：

- 單元 2：水
- 單元 5：能量
- 單元 7：生物與空氣
- 單元 8：電的使用
- 單元 10：環境的察覺
- 單元 12：健康的身體：營養與健康

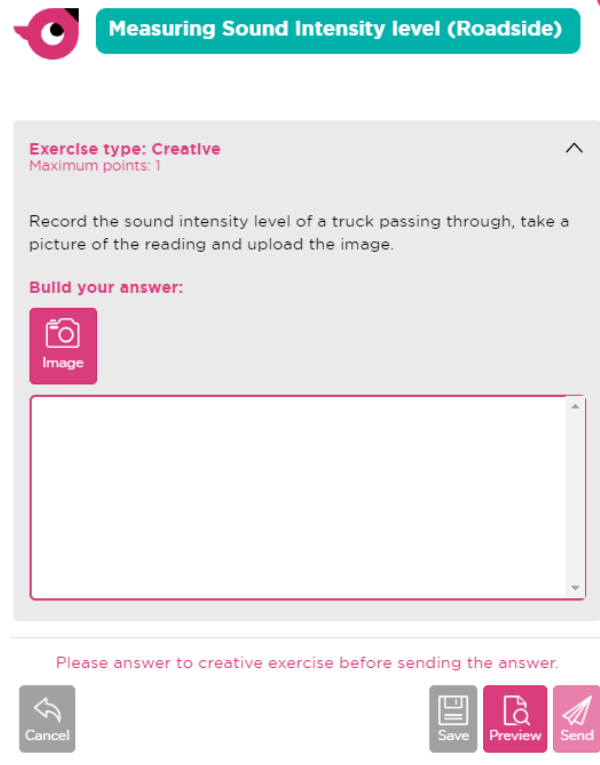
教學步驟：

階段	時間 (分鐘)	目標	步驟	材料
準備一	-	教師使用 Seppo 建立一張學校及周邊商場的地圖並設定任務	 <ol style="list-style-type: none"> 1. 從 Google 地圖選取學校範圍的衛星地圖或使用一張自製地圖。 2. 設置不同活動任務，例如： <ul style="list-style-type: none"> 於學校圖書館與學校旁邊的馬路旁設置聲音強度的任務。 於附近超市設置食品標籤任務。 於附近電器店設置計算能量消耗的任務。 於附近的花園或公園設置葉子與葉脈的任務。 	<ol style="list-style-type: none"> 1. Seppo 帳戶 2. 參考活動（英文版）： Integrated Science Competition In and Around School 

準備二	-	學生設計和製作太陽能蒸餾器	<ol style="list-style-type: none"> 1. 於比賽前一個月，着學生分組（每組 4-5 人）設計並製作太陽能蒸餾器，蒸餾不純淨的水。（相關單元：單元 2 水） 2. 學生預備蒸餾器的設計報告和已完成的蒸餾器模型。 	<ol style="list-style-type: none"> 1. 每組學生\$100 預算 2. 完成的蒸餾器與報告
比賽前	10	教師向學生簡述是次比賽的規則及安全指引	<ol style="list-style-type: none"> 1. 向學生介紹比賽的任務及活動範圍。 2. 着學生將自己製作的蒸餾器放於籃球場上。 3. 教師派發 Seppo 活動 PIN。 <div data-bbox="801 464 1406 651" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p>Share game login to players Give the pin code to the players</p> <p>Pin code: 123456 (例) Share code </p> <p><input type="checkbox"/> Player email is required</p> <p><input type="checkbox"/> Team member names are required</p> <div style="text-align: right; margin-top: 5px;"> </div> </div> <ol style="list-style-type: none"> 4. 學生輸入 PIN 和組別名稱便可開始活動。 	每組學生一部智能手機，需能打開 Seppo 網頁（建議使用 Chrome 或 Safari 瀏覽器） https://seppo.io/ 。

任務一 圖書館／路 邊	10	學生能使用分貝計測量聲音的強度	<p>1. 量度學校圖書館的聲音強度並拍照記錄讀數。</p> 	分貝計（每組一個） 或 已安裝測量聲音強度應用程式的 智能手機
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2. 量度路邊的聲音強度並拍照記錄讀數。




Measuring Sound Intensity level (Roadside)





Exercise type: Creative
Maximum points: 1

Record the sound intensity level of a truck passing through, take a picture of the reading and upload the image.

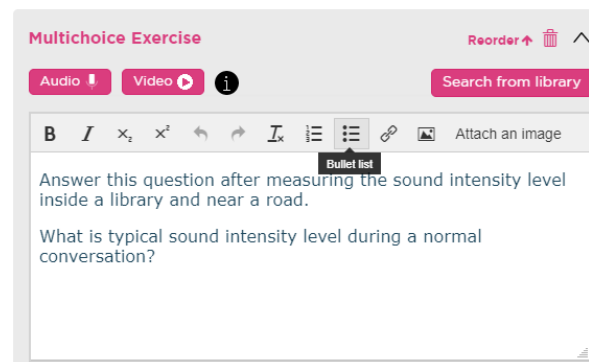
Build your answer:


 Image




Please answer to creative exercise before sending the answer.








   

3. 回答選擇題：一般交談的聲音強度為多少？



Multichoice Exercise Reorder ↑  ^



Audio  **Video**   Search from library

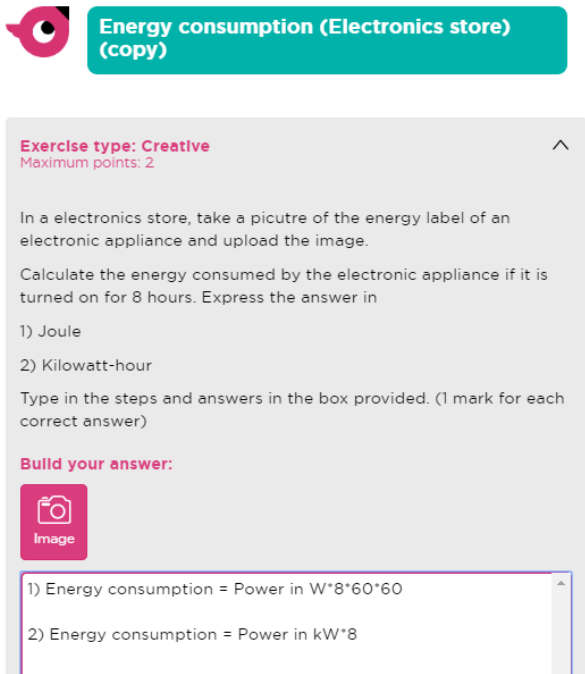
B *I* x_2 x^2        Attach an image

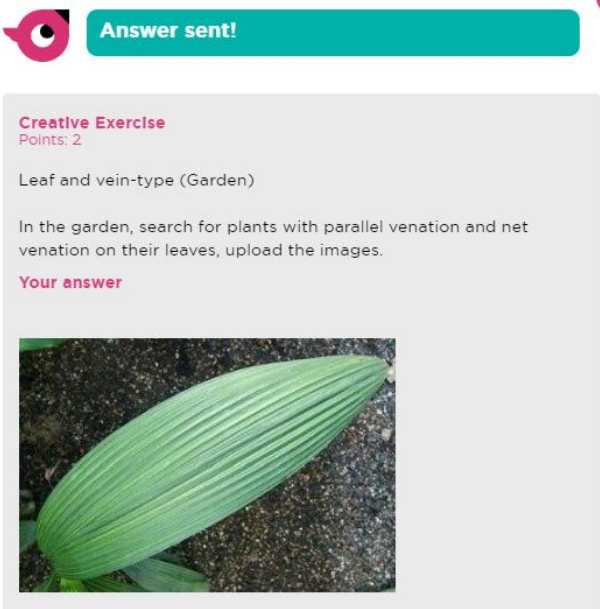

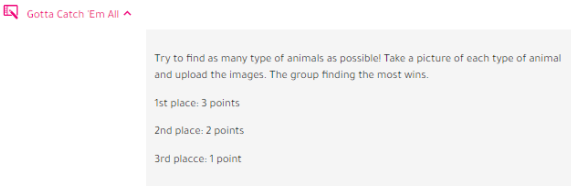
Bullet list


Answer this question after measuring the sound intensity level inside a library and near a road.

What is typical sound intensity level during a normal conversation?

<p>任務二 超級市場</p>	<p>10</p>	<p>辨識食品營養標籤上的營養值和能量值</p>	<p>1. 尋找並選擇一款高能量食品（每 100 克的卡路里），拍下其營養標籤及上傳圖片。</p> <div data-bbox="801 252 1406 909" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;">  <p style="background-color: #00a68a; color: white; padding: 2px 5px; border-radius: 5px; display: inline-block;">Nutrition Label (Supermarket)</p> </div> <div style="background-color: #f0f0f0; padding: 10px; border: 1px solid #ccc; margin: 10px 0;"> <p>Exercise type: Creative Maximum points: 6</p> <p>In the supermarket, select one food item and one beverage, take pictures of the nutrition label and upload the images.</p> <p>For the food item, try to pick one with the highest energy content (in kcal per 100g).</p> <p>For the beverage, try to pick one with the highest protein content (in g per 100g).</p> <p>For each category:</p> <p>1st place: 3 points</p> <p>2nd place: 2 points</p> <p>3rd place: 1 point</p> <p>Build your answer:</p> <div style="background-color: #e91e63; color: white; padding: 5px; display: inline-block; border-radius: 5px;">  Image </div> </div> <p>2. 尋找並選擇一款高蛋白質含量的飲料（每 100 克的卡路里），並拍下其營養標籤及上傳圖片。</p>	<p>智能手機或平板裝置</p>
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<p>任務三 電器店</p>	<p>10</p>	<p>計算電燈泡的能量損耗</p>	<p>1. 每組學生選擇一款電燈泡並拍下其能源標籤。</p>  <p>2. 上傳圖片，根據其能源標籤的數值，以焦或千瓦為單位計算所選燈泡的能量損耗。（可為能力相對較弱的學生提供協助，例如提供公式。）</p>	<p>智能手機或平板設備</p>
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<p>任務四 花園／公園</p>	<p>10</p>	<p>辨識植物的葉子為平行葉脈或網狀葉脈</p>	<p>1. 每組學生找出兩株植物，一株為平行葉脈，另一株則為網狀葉脈。</p> <div data-bbox="837 252 1435 863">  <p>Answer sent!</p> <p>Creative Exercise Points: 2</p> <p>Leaf and vein-type (Garden)</p> <p>In the garden, search for plants with parallel venation and net venation on their leaves, upload the images.</p> <p>Your answer</p>  </div> <p>2. 拍下兩株植物的葉子並上傳圖片。</p> <p>- 快閃任務：「抓住它們」 你能在花園／公園內看到不同種類的動物嗎？試試拍照並將它們分類。</p> <div data-bbox="837 1091 1406 1278">  <p>Gotta Catch 'Em All</p> <p>Try to find as many type of animals as possible! Take a picture of each type of animal and upload the images. The group finding the most wins.</p> <p>1st place: 3 points 2nd place: 2 points 3rd place: 1 point</p> </div>	<p>智能手機或平板裝置</p>
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<p>任務五 籃球場／ 實驗室</p>	<p>40</p>	<p>設計並製作蒸餾器， 在同學面前演示設計 原理。</p>	<p>1. 學生從籃球場取回太陽能蒸餾器，並返回實驗室量度收集到的蒸餾水量。</p> <div data-bbox="840 268 1592 550" style="border: 1px solid #ccc; padding: 10px; margin: 10px 0;"> <p> Solar still(basketball court) ^</p> <p>Place your solar still here! Then upload a picture of your solar still.</p> <p>After completing all the tasks, come back to find out the result.</p> <p>Compare and discuss the result within your group and among other groups, give a presentation of your design and finding.</p> <p>The presentation will be graded by other groups.</p> <p>Points are rewarded on a scale of 1 to 10.</p> </div> <p>2. 學生於組內討論並比較結果，再與全班分享。</p> <p>3. 學生報告自己的設計及成果。</p> <p>4. 同儕互評：小組之間互相評分及評價。</p>	
<p>總結</p>	<p>5</p>	<p>教師總結並公佈賽果</p>	<p>1. 教師簡述並總結比賽中不同任務的學習重點。</p> <p>2. 教師計算每組學生得到的總分並宣佈賽果。</p>	