

2023 年高中組特優作品

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一、教學單元設計簡介

| | | | |
|---------------|--|----------------------|----------------|
| 單元名稱 | To go or not to go: Trash in the ocean 帶不走的垃圾：探秘洋流的脈動與哀愁 | | |
| 學生年級 | <input type="checkbox"/> 國小____年級 <input type="checkbox"/> 國中____年級 <input checked="" type="checkbox"/> 高中一年級 <input type="checkbox"/> 高職____年級 | 單元時間 (包含評量活動執行時間) | 共 2 節 (100 分鐘) |
| 學習領域 (可複選) | <input checked="" type="checkbox"/> 語文 <input type="checkbox"/> 科技 <input type="checkbox"/> 自然科學 <input type="checkbox"/> 數學 <input type="checkbox"/> 綜合活動 <input type="checkbox"/> 生活 <input type="checkbox"/> 健康與體育 <input type="checkbox"/> 藝術 <input checked="" type="checkbox"/> 社會 <input type="checkbox"/> 全民國防教育 <input checked="" type="checkbox"/> 其他：海洋議題、SDG 14: 永續海洋與保育 | | |
| 第一節 | | | |
| 教學活動簡介 | <p>Teaching Procedures</p> <p>[Great Pacific Garbage Patch (reading)]</p> <p>1. Students read the vocabulary glossary to understand the meanings of the words. The teacher guides students to read the article, Great Pacific Garbage Patch, and discuss the following questions. (Article: https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/)</p> <p><u>Discussion questions</u></p> <p>(1) What is the Great Pacific Garbage Patch? What type of trash is found in the Great Pacific Garbage Patch?</p> <p>(2) What are the factors that cause the formation of the Great Pacific Garbage Patch?</p> <p>[See-think-wonder about A Plastic Ocean (video watching)]</p> <p>2. Students watch a video, “A Plastic Ocean Trailer,” listen for main ideas, and do “see-think-wonder” activity. (Video: https://www.youtube.com/watch?v=6zrn4-FfbXw)</p> <p><u>Teacher’s guiding questions for “see-think-wonder”:</u></p> <p>(1) What do you see in the video?</p> <p>(2) What do you think about the ocean?</p> | | |

(3) What do you wonder about the trash in the ocean?

Students discuss the following questions.

Discussion questions:

(1) Why is trash left in the ocean?

(2) Where can the trash flow into? What is its path of movement in the sea?

[Reading, illustrating, and discussing ocean gyres]

3. Students are divided into five groups. Students read the vocabulary glossary to understand the meanings of the words, and then skim through the article, “Over 5 Trillion Pieces of Plastic Currently Litter the Ocean.” Each group of students study the article and discuss the relationship between ocean gyres and the factors that cause trash to float around the ocean.

(Article: <https://theoceancleanup.com/oceans/>)

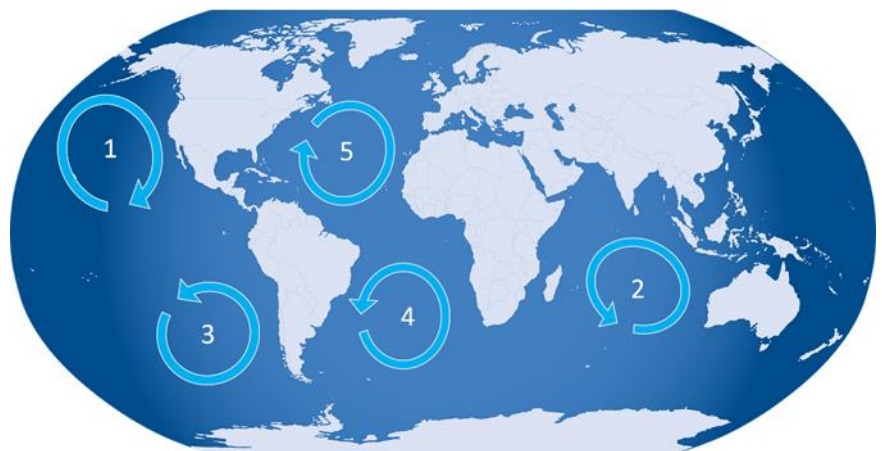
4. Each group draws each movement of ocean gyres numbered 1, 2, 3, 4, and

5. Students discuss the following questions.

Discussion questions:

(1) Which gyre and what ocean currents moves the trash in North Pacific Ocean? Where does the trash float to next? (Each group draws a picture and uses the sentence frames below to demonstrate their answers and understanding)

(2) Where does the plastic trash in Taiwan flow to? What problems may it cause?



Sentence frames:

Simple (for students of lower proficiency level):

| | |
|------------|--|
| | <p>The trash in Great Pacific Garbage Patch is moved by the (name of the gyre). The trash is then moved by the ocean currents, including (name of the current), (name of the current), (name of the current), and (name of the current).</p> <p><u>Advanced (for students of higher proficiency level):</u></p> <p>The (name of the gyre) rotates (clockwise/counter-clockwise) in the (name of the Ocean).</p> |
| 第二節 | |
| 教學活動簡介 | <p>Teaching Procedures</p> <p>[Review of gyres]</p> <ol style="list-style-type: none"> 1. The teacher uses a world map to review the five gyres. The teacher raises questions about the journey of plastic waste in the ocean and guides students to think of its path in the ocean. <p>[SDG 14: Life Below Water]</p> <ol style="list-style-type: none"> 2. Students read the vocabulary glossary to understand the meanings of the words. Students are divided into four groups. Each group are assigned to read one specific target of “SDG 14: Life Below Water” and its descriptions. Four specific targets are: 14.1, 14.2, 14.a, 14.c. (Article: https://sdgs.un.org/goals/goal14) <p><u>Discussion questions:</u></p> <ol style="list-style-type: none"> (1) What is the purpose and aim for SDG 14? (2) What are the aims for each target? <p><u>Task instruction:</u></p> <p>Read the target you are assigned. Highlight the key words of each target and discuss its meaning and what you can connect with.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p style="text-align: center;">Targets of SDG 14 Life Below Water</p> <p>14.1: Reduce marine pollution</p> <p>By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p> <p>14.2: Protect and restore ecosystems</p> <p>By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> </div> |

14.a: Increase scientific knowledge, research and technology for ocean health

Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.

14.c: Implement and enforce international sea law

Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources.

[Initiating action plans: Action Changes Things]

3. The teacher shares an innovative project in Taiwan, Azure Alliance (臺灣湛藍海洋聯盟—海洋湛鬥機), similar to The Ocean Cleanup devised by a young Dutch scientist. Students read the information on the websites and share what they find. Students also explore more about marine innovation worldwide. (Article: <https://azurealliance.org/>)
4. Each student group comes up with a sustainable action plan to tackle ocean plastic waste problems (also for their future service and learning projects and portfolio). Student groups discuss how to reduce plastic waste in their daily lives and how to prevent the waste from flowing into the sea. The action plan has to be feasible, complete, and promotable. Each group has to prepare a bifold/trifold Canva brochure to present their action plan ideas next class.

[Recap & Reflection]

5. The teacher wraps up the main points of the lessons. Students reflect on their use of plastic products and seek ways for improvement. (Write at least 100 words for the reflection)

二、評量設計

評量活動(1)

| 評量目標 | 學科 | 英語 |
|------|--|--|
| | <p>1. Plastic Trash & Great Pacific Garbage Patch (Reading)</p> <p>Students read the article “Great Pacific Garbage Patch” and “Over 5 Trillion Pieces of Plastic Currently Litter the Ocean” to understand the problem of ocean trash pollution as well as the source of trash and its path of movement by gyres.</p>  <p>2. A Plastic Ocean (Listening)</p> <p>Students watch a video “A Plastic Ocean,” listen for main ideas and discuss the reasons why the trash is left in the ocean, where the trash may flow into the sea, and the path of its movement in the sea.</p> | <p>目標語言技能（可複選）： <input checked="" type="checkbox"/>聽 <input checked="" type="checkbox"/>讀 <input checked="" type="checkbox"/>說 <input checked="" type="checkbox"/>寫 其他_____</p> <p>目標字彙與句型（請列表）：</p> <p>1. 字彙</p> <p>(1) Great Pacific Garbage Patch 太平洋垃圾帶</p> <p>(2) plastic 塑膠</p> <p>(3) microplastic 塑膠微粒</p> <p>(4) plastic debris / marine debris 塑料碎片</p> <p>(5) gyre 環流</p> <p>(6) current 洋流</p> <p>(7) Kuroshio 黑潮; North Pacific Current 北太平洋洋流; California Current 加利福尼亞洋流; North Equatorial Current 北赤道洋流</p> <p>註：字彙列於講義側邊，以中、英詞彙表 (glossary) 呈現。</p> <p>2. 句型</p> <p><u>(1) Path of Gyre Movement</u></p> <p><u>Simple (for students of lower proficiency level):</u></p> <p>The trash in Great Pacific Garbage Patch is moved by the <u>(name of the gyre)</u>. The trash is then moved by the ocean currents, including <u>(name of the current)</u>, <u>(name of the current)</u>, <u>(name of the current)</u>, and <u>(name of the current)</u>.</p> <p><u>Advanced (for students of higher proficiency level):</u></p> |

| | |
|------|---|
| | <p>The <u>(name of the gyre)</u> rotates <u>(clockwise/counter-clockwise)</u> in the <u>(name of the Ocean)</u>.</p> <p><u>(2) Describing and Drawing the Path of Gyre Movement</u></p> <p>(8) Plastic waste is carried by _____ and collects in one area. It creates a _____.</p> <p>(9) The <u>(name of gyre)</u> mainly <u>moves/transport</u>s plastic trash towards the <u>(name of the garbage patch)</u>.</p> <p>(10) The plastic trash will end up in the <u>(name of the garbage patch)</u> because <u>(reason)</u>.</p> <p>註：句型列於思考與討論問題下方，提供學生應用。</p> |
| 評量目的 | <input checked="" type="checkbox"/> 形成性評量（單元過程中針對學習狀況的評量） <input type="checkbox"/> 總結性評量（單元結束時的一次性評量） <input type="checkbox"/> 其他（請說明_____） |
| 評量流程 | <p>1. 學生閱讀英文文章（真實文本 authentic text）後，先討論海洋垃圾帶的成因和問題，並回答海洋垃圾帶組成垃圾和成為垃圾帶的原因。</p> <p>2. 應用洋流等地理知識討論分析臺灣及周遭的垃圾帶漂流方向和洋流。</p> <p>註：文章中核心字彙以藍色標記；生難字詞後加註中文、以灰體字、縮小，並加以括弧呈現。運用 translanguaging 理念，學生討論可以中、英文同時進行，產出鼓勵以英文為主、中文為輔，但不限制只能全用英文；不因使用中文而扣分。</p> |
| 評量時機 | 隨著課程進行相關知識理解檢核與評量。最後課程總結時進行探究思考任務。 |
| 鷹架支持 | <p>1. Text with comprehension and discussion questions</p> <p>Great Pacific Garbage Patch</p> |

The Great Pacific Garbage Patch is a collection of **marine debris** in the North Pacific Ocean. Also known as the Pacific trash vortex (漩渦), the garbage patch is actually two distinct collections of debris bounded by the massive North Pacific Subtropical Gyre.

The Great Pacific Garbage Patch sits near the surface of the ocean. Dense debris can sink centimeters or even several meters beneath the surface, making the vortex's area nearly impossible to measure.

Most debris in the Great Pacific Garbage Patch is **plastic**. Plastic is not biodegradable (可生物分解的), meaning it does not disintegrate—it simply breaks into tinier and tinier pieces, known as **microplastics**. Microplastics of the Great Pacific Garbage Patch can simply make the water look like a cloudy soup.

Mixed in with microplastics are larger pieces of plastic. Most plastics are refuse from land activities in North American and Asia. Some plastics are accidentally dumped from oceangoing vessels (船隻). All the plastics on this page were culled from the Great Pacific Garbage Patch.

(The passage is cited from National Geographic Education)

(Source: <https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/>)



Glossary - Key Vocabulary Words

- (1) Great Pacific Garbage Patch 太平洋垃圾帶
- (2) plastic 塑膠
- (3) microplastic 塑膠微粒
- (4) plastic debris / marine debris 塑料碎片
- (5) gyre 環流
- (6) current 洋流
- (7) Kuroshio 黑潮; North Pacific Current 北太平洋洋流; California Current 加利福尼亞洋流; North Equatorial Current 北赤道洋流

Comprehension and Discussion Questions

Q1. What is the Great Pacific Garbage Patch?

- (A) An ocean garbage recycle zone
- (B) An ocean creature reproduction zone (繁衍區)

(C) An ocean garbage concentration zone (集中區)

(D) An ocean kitchen waste dumping zone

Q2. What types of garbage are found in the Great Pacific Garbage Patch? (Write down at least three types of garbage. Give three answers in Chinese and three in English.)

Q3. What are the causes of the formation of Great Pacific Garbage Patch? (Discuss in groups and use the sentence frames below to give at least one reason)

Plastic waste is carried by _____ and collects in one area. It creates a _____.

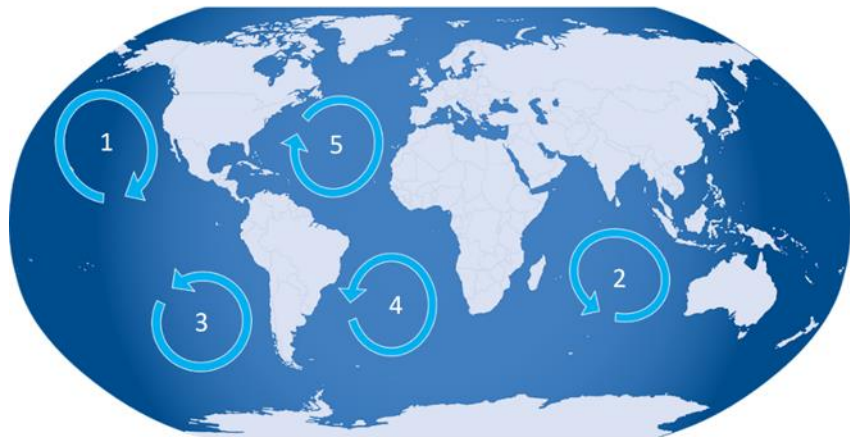
Q4. Look at the picture below. Which gyre and ocean currents may carry the plastic waste of the Great Pacific Garbage Patch to other places? (Draw the ocean currents on the world map, write down the correct English names of the gyre and currents, and use the sentence frame below to answer.)

The (gyre) mainly moves plastic trash towards the (name of the garbage patch).

Q5. If plastic trash from Taiwan floats into the sea, which garbage patch may it finally end up in? What impact will it have on the ocean? (Discuss in groups and come up with the best answer. You can use the sentence frame below to answer.)

The plastic trash will end up in the (name of the garbage patch) because (reason).

2. Describing and Drawing the Path of Gyre Movement




Sentence frames:

(1) Plastic waste is carried by _____ and collects in one area. It creates a _____.

(2) The (name of gyre) mainly moves/transports plastic trash towards the (name of the garbage patch).

(3) The plastic trash will end up in the (name of the garbage patch) because (reason).

| 評量標準 | 學科 | 英語 |
|------|---|--------------------------------|
| | 理解與討論問題的參考答案如下： Q1. (C) An ocean garbage | 英文表達 (英文詞彙與句型使用度) (不看待文法錯誤) |

| concentration zone | Q2. Microplastics, plastic debris, PET bottle, fishing net, plastic bag, straw 微塑膠、塑膠碎片、PET 瓶、漁網、塑膠袋、吸管等。 | Q3. Plastic waste is carried by gyres and <u>collects/accumulates</u> in one area. It creates a garbage patch. 塑膠垃圾隨著洋流漂流，因此集中於一處，導致垃圾帶出現。 | Q4. |  | The North Pacific Gyre mainly <u>moves/transport</u> s the trash towards the Great Pacific Garbage Patch. (本題為核心概念，盡可能讓學生用英文回答) | Q5. The plastic trash will end up in Great Pacific Garbage Patch because Taiwan is close to it. 太平洋垃圾帶，因為臺灣離北太平洋垃圾帶最接近。 | <table><tr><th>A 精熟</th><th>B 優異</th><th>C 尚可</th><th>D 待加強</th></tr><tr><td>能完整運用英文詞彙與句型表達意思與觀點 (達 90-100%)。</td><td>大致能運用英文詞彙與句型表達意思與觀點 (達 70-80%)。</td><td>能部分運用英文詞彙與句型表達意思與觀點 (達 50-60%)。</td><td>無法運用英文詞彙與句型表達意思與觀點 (未達 50%)。</td></tr></table> | A 精熟 | B 優異 | C 尚可 | D 待加強 | 能完整運用英文詞彙與句型表達意思與觀點 (達 90-100%)。 | 大致能運用英文詞彙與句型表達意思與觀點 (達 70-80%)。 | 能部分運用英文詞彙與句型表達意思與觀點 (達 50-60%)。 | 無法運用英文詞彙與句型表達意思與觀點 (未達 50%)。 |
|--|--|--|------------------------------|---|---|---|--|------|------|-------|-------|----------------------------------|---------------------------------|---------------------------------|------------------------------|
| | | | | | | | A 精熟 | B 優異 | C 尚可 | D 待加強 | | | | | |
| 能完整運用英文詞彙與句型表達意思與觀點 (達 90-100%)。 | 大致能運用英文詞彙與句型表達意思與觀點 (達 70-80%)。 | 能部分運用英文詞彙與句型表達意思與觀點 (達 50-60%)。 | 無法運用英文詞彙與句型表達意思與觀點 (未達 50%)。 | | | | | | | | | | | | |
| 註： 1. 英文詞彙本身使用單複數皆可，不因文法錯誤 (如時態、連接詞) 而扣分。 2. 差異化調整：當學生 (特別是低成就學生) 使用英文時，給予鼓勵、額外加分，使用中文不扣分。 | | | | | | | | | | | | | | | |
| 資料來源 | 請表列參考／改寫依據資料： 1. Great Pacific Garbage Patch https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/ 2. Over 5 Trillion Pieces of Plastic Currently Litter the Ocean https://theoceancleanup.com/oceans/ | | | | | | | | | | | | | | |

評量活動(2)

| 評量目標 | 學科 | 英語 |
|------|------------------------------------|---|
| | 1. 學生須了解 SDG 14 的目標，並思考目標的設定背景和原因。 | 目標語言技能 (可複選)： <input type="checkbox"/> 聽 <input checked="" type="checkbox"/> 讀 <input checked="" type="checkbox"/> 說 <input type="checkbox"/> 寫 其他 |

| | | |
|------|---|---|
| | <p>2. 學生須針對 SDG 14 的目標，為自己的生活，設定減少海洋垃圾或清理海洋垃圾的計畫。計畫需具可行性、完整性、可推廣性。</p> | <p>目標字彙與句型（請列表）：</p> <p>1. 字彙</p> <p>(1) Sustainable Development Goals (SDGs) 永續發展目標</p> <p>(2) sustainable 可持續的</p> <p>(3) reduce 減少</p> <p>(4) marine 海洋</p> <p>(5) pollution 汙染</p> <p>(6) restore 恢復</p> <p>(7) ecosystem 生態系</p> <p>(8) implement 實施</p> <p>(9) enforce 執行（法律）</p> <p>(10) conservation 保護、維護</p> <p>註：字彙列於講義側邊，以中、英詞彙表 (glossary) 呈現。</p> <p>2. 句型</p> <p>(1) SDG (number) aims to _____.</p> <p>(2) Target (number) aims to/focuses on _____.</p> <p>(3) SDG (number) is important because (reason).</p> <p>(4) If we achieve SDG (number), we can _____.</p> <p>註：句型列於思考與討論問題下方，提供學生應用。</p> |
| 評量目的 | <p><input checked="" type="checkbox"/>形成性評量（單元過程中針對學習狀況的評量）</p> <p><input checked="" type="checkbox"/>總結性評量（單元結束時的一次性評量）</p> <p><input type="checkbox"/>其他（請說明_____）</p> | |
| 評量流程 | <p>1. 先閱讀 SDG 14 的主旨和目標，並小組討論、分析 SDG 14 的背景和原因。</p> <p>2. 根據 SDG 14 的細項指標，設計永續、可行的減塑及海洋清潔的計畫。</p> <p>註：文章中核心字彙以藍色標記；生難字詞後加註中文、以灰體字、縮小，並加以括弧呈現。運用 translanguaging 理念，學生討論可以中、英文同時進行，產出鼓勵以英文為主、中文為輔，但不限制只能全用英文；不因使用中文而扣分。</p> | |
| 評量時機 | <p>隨著課程進行相關知識理解檢核與評量。</p> | |
| 鷹架支持 | <p>1. Text with comprehension and discussion questions</p> <p>Targets of SDG 14 Life Below Water</p> | |

14.1: Reduce marine pollution

By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

14.2: Protect and restore ecosystems

By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

14.a: Increase scientific knowledge, research and technology for ocean health

Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.

14.c: Implement and enforce international sea law

Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources.

(The passage is cited from the official UN SDG website)

Glossary - Key Vocabulary Words

- | | |
|--|---------|
| (1) Sustainable Development Goals (SDGs) | 永續發展目標 |
| (2) sustainable | 可持續的 |
| (3) reduce | 減少 |
| (4) marine | 海洋 |
| (5) pollution | 汙染 |
| (6) restore | 恢復 |
| (7) ecosystem | 生態系 |
| (8) implement | 實施 |
| (9) enforce | 執行 (法律) |
| (10) conservation | 保護、維護 |

(Source: <https://www.globalgoals.org/goals/14-life-below-water/>)

Comprehension and Discussion Questions

Q1. What is likely to be the aim of ocean sustainability and conservation?

- (A) Protection of marine ecology
- (B) Extensive use of marine resources
- (C) Ban on the use of plastic products
- (D) Ban on human contact with the ocean

Q2. What are the key purposes and essences (重要性) listed in the targets of SDG 14?
(Discuss in groups. Use your own words to describe these targets. You can use the sentence frames below to share your ideas orally.)

Sentence frames:

- (1) SDG (number) aims to _____.
- (2) Target (number) aims to (+V.)/focuses on (+N.)
- (3) SDG (number) is important because (reason).
- (4) If we achieve SDG (number) and the targets, we can _____.

2. Action plans

Action: Action Changes Things

Based on SDG 14, each group chooses one specific target and comes up with a feasible action plan to tackle ocean plastic waste problems. Discuss in groups how to reduce plastic waste in Taiwan and how to prevent the waste from flowing into the sea.

Note that the action plan has to be feasible, complete, and promotable. Finish the chart and prepare a bifold/trifold Canva brochure to present your ideas next class.

The format of the action plan:

| | |
|--|--|
| SDG Target | |
| Problem statement (current problem to be solved) | |
| Purpose of your plan | |
| Implementation plan | |

Example of a bifold brochure:



3. Reflection

Every student has to reflect on his/her use of plastic products and seek ways for improvement. (Write at least 100 words for this reflection.)

評量標準

學科

理解與討論問題的參考答案如下：

Q1. (A) Protection of marine ecology

Q2. Reduce marine pollution, protect and restore ecosystems, and increase scientific knowledge about ocean health.

Q3.

Example:

| | |
|--|---|
| SDG Target | 14.1 Reducing marine pollution |
| Problem statement (current problem to be solved) | The marine is seriously polluted by plastic. |
| Purpose of your plan | Plastic garbage is floating with ocean currents to various areas. |
| Implementation plan | Reducing plastic waste in the ocean. |
| Problem statement (current problem to be solved) | Design garbage collection tools to collect trash on the Taiwan coast. |

英語

英文表達 (英文詞彙與句型使用度)
(不看待文法錯誤)

| A 精熟 | B 優異 | C 尚可 | D 待加強 |
|---------------------------------|--------------------------------|--------------------------------|-----------------------------|
| 能完整運用英文詞彙與句型表達意思與觀點 (達90-100%)。 | 大致能運用英文詞彙與句型表達意思與觀點 (達70-80%)。 | 能部分運用英文詞彙與句型表達意思與觀點 (達50-60%)。 | 無法運用英文詞彙與句型表達意思與觀點 (未達50%)。 |

註：

1. 英文詞彙本身使用單複數皆可，不因文法錯誤 (如時態、連接詞) 而扣分。
2. 差異化調整：當學生 (特別是低成就學生) 使用英文時，給予鼓勵、額外加分，使用中文不扣分。


| | <p>學生將行動計畫 Action Plan 以 Canva 三折頁手冊呈現，手冊由 (1) 資訊整理與呈現及 (2) 可行性 (feasibility)、完整性 (completeness)、推廣性 (promotability) 面向評估。</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---------------------------------|----------------------|--|------------------|--|--|--|------|------|------|-------|-------------|--|--|--|---------------------------------------|---------------------------------|---------------------------------|------------------|---|--|--|--|-----------------------|-----------------------|-----------------------|----------------------|--|
| | <table><tr><th colspan="4">探究報告 (摺頁手冊) 評定標準</th></tr><tr><th>A 精熟</th><th>B 優異</th><th>C 尚可</th><th>D 待加強</th></tr><tr><th colspan="4">摺頁手冊資訊整理與呈現</th></tr><tr><td>能完整整理資訊，精確列出 5 項重點，且製作邏輯清晰、精確的圖表組織訊息。</td><td>大致能整理資訊，列出 3-4 項重點，且製作清晰圖表組織訊息。</td><td>能整理部分資訊，列出 1-2 項重點，且運用簡易圖表呈現訊息。</td><td>僅整理少數資訊，只列出幾項字詞。</td></tr><tr><th colspan="4">計畫之可行性 (feasibility)、完整性 (completeness)、可推廣性 (promotability) 面向評估</th></tr><tr><td>完整符合可行性、完整性、可推廣性三大面向。</td><td>大致符合可行性、完整性、可推廣性三大面向。</td><td>部分符合可行性、完整性、可推廣性三大面向。</td><td>不符合可行性、完整性、可推廣性三大面向。</td></tr></table> | | | | 探究報告 (摺頁手冊) 評定標準 | | | | A 精熟 | B 優異 | C 尚可 | D 待加強 | 摺頁手冊資訊整理與呈現 | | | | 能完整整理資訊，精確列出 5 項重點，且製作邏輯清晰、精確的圖表組織訊息。 | 大致能整理資訊，列出 3-4 項重點，且製作清晰圖表組織訊息。 | 能整理部分資訊，列出 1-2 項重點，且運用簡易圖表呈現訊息。 | 僅整理少數資訊，只列出幾項字詞。 | 計畫之可行性 (feasibility)、完整性 (completeness)、可推廣性 (promotability) 面向評估 | | | | 完整符合可行性、完整性、可推廣性三大面向。 | 大致符合可行性、完整性、可推廣性三大面向。 | 部分符合可行性、完整性、可推廣性三大面向。 | 不符合可行性、完整性、可推廣性三大面向。 | |
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| A 精熟 | B 優異 | C 尚可 | D 待加強 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 摺頁手冊資訊整理與呈現 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 資料來源 | <p>請表列參考／改寫依據資料：</p> <p>1. SDG 14 Life Below Water https://sdgs.un.org/goals/goal14</p> <p>2. Azure Alliance 臺灣湛藍海洋聯盟 https://azurealliance.org/</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

三、附件（任務素材、網頁、學習單、試卷、評量/回饋意見表等）

1. 課程學習單

(1) Great Pacific Garbage Patch

GREAT PACIFIC GARBAGE PATCH




1. Text with comprehension and discussion questions

The Great Pacific Garbage Patch is a collection of marine debris in the North Pacific Ocean. Also known as the Pacific trash vortex (漩渦), the garbage patch is actually two distinct collections of debris bounded by the massive North Pacific Subtropical Gyre.

The Great Pacific Garbage Patch sits near the surface of the ocean. Dense debris can sink centimeters or even several meters beneath the surface, making the vortex's area nearly impossible to measure.


Most debris in the Great Pacific Garbage Patch is plastic. Plastic is not biodegradable (可生物分解的), meaning it does not disintegrate—it simply breaks into tinier and tinier pieces, known as microplastics. Microplastics of the Great Pacific Garbage Patch can simply make the water look like a cloudy soup.

Mixed in with microplastics are larger pieces of plastic. Most plastics are refuse from land activities in North American and Asia. Some plastics are accidentally dumped from oceangoing vessels (船隻). All the plastics on this page were culled from the Great Pacific Garbage Patch.



Q1. What is the Great Pacific Garbage Patch?


(A) An ocean garbage recycle zone
(B) An ocean creature reproduction zone (繁殖區)
(C) An ocean garbage concentration zone (集中區)
(D) An ocean kitchen waste dumping zone




Q2. What types of garbage are found in the Great Pacific Garbage Patch?
(Write down at least three types of garbage. Give three answers in Chinese and three in English.)

Q3. What are the causes of the formation of Great Pacific Garbage Patch?
(Discuss in groups and use the sentence frames below to give at least one reason)

Plastic waste is carried by _____ and collects in one area. It creates a _____.




GREAT PACIFIC GARBAGE PATCH



Q4. Look at the picture below. Which gyre and ocean currents may carry the plastic waste of the Great Pacific Garbage Patch to other places?
(Draw the ocean currents on the world map, write down the correct English names of the gyre and currents, and use the sentence frame below to answer.)


The _(gyre)_ mainly moves plastic trash towards the _ (name of the garbage patch)_.



Q5. If plastic trash from Taiwan floats into the sea, which garbage patch may it finally end up in? What impact will it have on the ocean?
(Discuss in groups and come up with the best answer. You can use the sentence frame below to answer.)


The plastic trash will end up in the (name of the garbage patch) because (reason).

2. Describing and Drawing the Path of Gyre Movement



Sentence frames:
(1) Plastic waste is carried by _____ and collects in one area. It creates a _____.
(2) The (name of gyre) mainly moves/ transports plastic trash towards the (name of the garbage patch).
(3) The plastic trash will end up in the (name of the garbage patch) because (reason).

(2) Targets of SDG 14 Life Below Water

 Sustainable Development Goals

Targets of SDG 14 Life Below Water

Together, we can save marine life from pollution.

1. Text with comprehension and discussion questions

Targets of SDG 14 Life Below Water

14.1: Reduce marine pollution
By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.

14.2: Protect and restore ecosystems
By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

14.a: Increase scientific knowledge, research and technology for ocean health
Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries.

14.c: Implement and enforce international sea law
Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources.
(The passage is cited from the official UN SDG website)

Comprehension and Discussion Questions

Q1. What is likely to be the aim of ocean sustainability and conservation?
(A) Protection of marine ecology
(B) Extensive use of marine resources
(C) Ban on the use of plastic products
(D) Ban on human contact with the ocean

Q2. What are the key purposes and essences (重要性) listed in the targets of SDG 14? (Discuss in groups. Use your own words to describe these targets. You can use the sentence frames below to share your ideas orally.)

Sentence frames:
(1) SDG (number) aims to _____.
(2) Target (number) aims to (+V.) / focuses on (+N.)
(3) SDG (number) is important because (reason).
(4) If we achieve SDG (number) and the targets, we can _____.

2. Action plans

Action: Action Changes Things
Based on SDG 14, each group chooses one specific target and comes up with a feasible action plan to tackle ocean plastic waste problems. Discuss in groups how to reduce plastic waste in Taiwan and how to prevent the waste from flowing into the sea.
Note that the action plan has to be feasible, complete, and promotable. Finish the chart and prepare an 8-slide PPT to present your ideas next class.
The format of the action plan:


| SDG Target | Problem statement (current problem to be solved) | Purpose of your plan | Implementation plan |
|------------|--|----------------------|---------------------|
| | | | |
| | | | |
| | | | |

3. Reflection

Every student has to reflect on his/her use of plastic products and seek ways for improvement. (Write at least 100 words for this reflection.)

2. 課程補充網頁

(1) Great Pacific Garbage Patch




PHOTOGRAPH

Microplastics

Most debris in the Great Pacific Garbage Patch is plastic. Plastic is not biodegradable, meaning it does not disintegrate—it simply breaks into tinier and tinier pieces, known as microplastics. Microplastics of the Great Pacific Garbage Patch can simply make the water look like a cloudy soup.

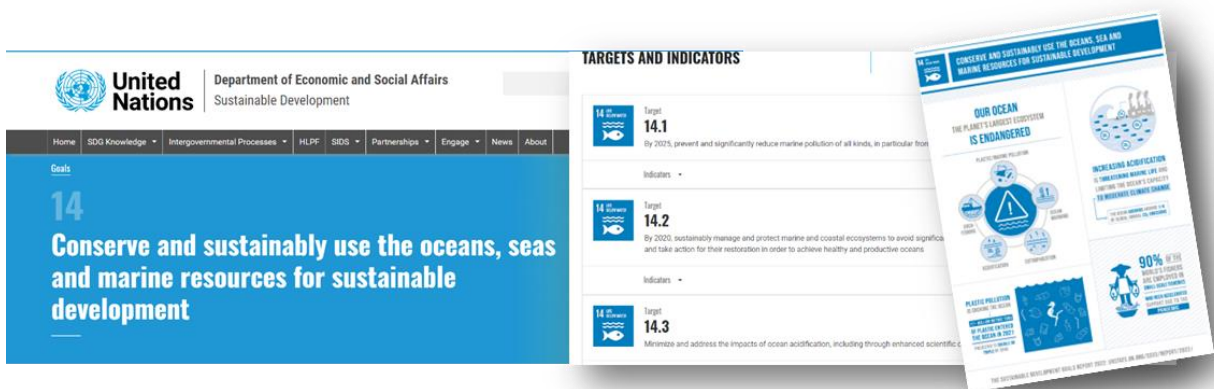
PHOTOGRAPH BY STEPHEN WOOLVERTON, COURTESY OF WIKIMEDIA. THIS FILE IS LICENSED UNDER THE CREATIVE COMMONS ATTRIBUTION-SHARE Alike 3.0 UNPORTED LICENSE.



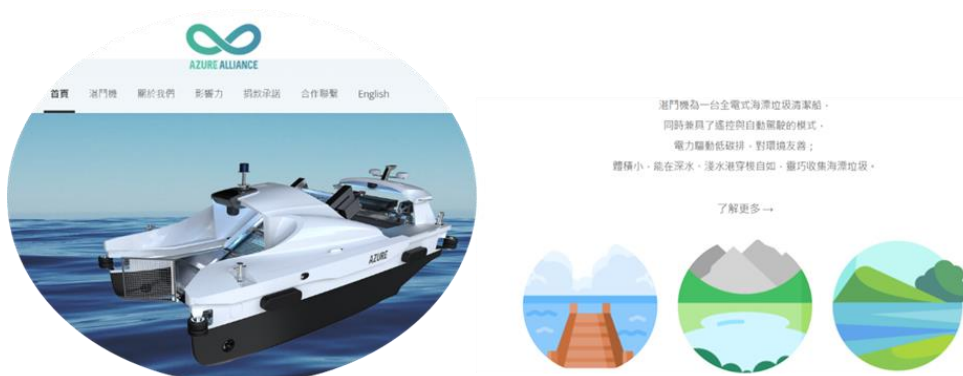
(2) Over 5 Trillion Pieces of Plastic Currently Litter the Ocean



(3) SDG 14 Life Below Water



(4) Azure Alliance 臺灣湛藍海洋聯盟



3. 學生 Canva 摺頁手冊樣貌 (參考範例)

