

# GRADE 11/12 MARINE ECOLOGY PODCAST PROJECT



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## LEARNING PLAN OVERVIEW

<b>Subject(s)</b>	<ul style="list-style-type: none"> <li>• Natural Sciences</li> <li>• Social Sciences</li> <li>• Environmental Education</li> </ul>
<b>Grade Level (s)</b>	High School (ages 14-18)
<b>Systems Tool(s)</b>	Sustainability Compass
<b>Purpose of Using Tool</b>	<ul style="list-style-type: none"> <li>• Research</li> <li>• Inquiry</li> <li>• Critical Thinking</li> </ul>
<b>Summary</b>	<p>This 70-minute lesson plan is designed as the introduction to our Marine Ecology podcast project. To jumpstart students on this podcast project, we will learn about and utilize the Sustainability Compass, creating a habit of mind—a common language—that will allow students to better see the interconnectivity and interdependence of their marine ecosystem challenge to the four directions/systems conditions for Sustainability.</p>

## Learning Objectives

Students will apply their understanding of marine ecosystems to a specific challenge facing a specific marine system. The lesson plan is designed as the introduction to our Marine Ecology podcast project. To jumpstart this podcast project, students will learn about, and utilize the Sustainability Compass, creating a habit of mind - a common language - that will allow them to better see the interconnectivity and interdependence of their marine ecosystem challenge to the four directions of the Sustainability. Through this initial brainstorming process, students will gain a broader view (and appreciation) of their challenge, its complexity, and how it connects to many different facets of society, economies, human wellbeing, and nature.

## Material and Settings

- Indoor or outdoor setting
- Groups of 3-4 students (pre-organized)
- Printed out copies of the Sustainability Compass (larger size is better; e.g. butcher paper)
- Pens, pencils, markers
- Whiteboard with a projector (to demo the Sustainability Compass using specific examples)
- Sustainability Compass slides (to build context/understanding of the tool)
- Internet access

## Learning Context

Six-eighteen high school students (12th grade); end of year podcast project; students are deep in their 'senior spring'; students have ~ 2 weeks to complete and present their podcast on the final day of school; fun/engaging/informal project that allows students to apply learning from class to a topic of their choice.

## Purpose of Using the Systems Thinking Tools

Given the end of the year, as well as the impact of 'senior spring', I was keen to choose a systems tool that was quick to grasp and apply in the context of this course. The Sustainability Compass allowed for just that and was a perfect tool to help students jumpstart their brainstorming around their podcast content, scaffolding, and design. More so, it is an easy tool to push students to think more broadly in respect to their topic of choice, allowing for different students to dig into specific areas of interest (economics, society, wellbeing, nature). Also, it is an easy-to-use tool that allowed for a quick visual for students to work with and also provided an easy way for me to provide feedback as they continued their podcast design.

## Impact on Participant Learning

- Deepened students' understanding of their chosen topic and its connection to the 4 directions of the Sustainability Compass
- Created awareness in the students of the inherent complexity of all marine challenges
- Broadened student understanding of what effective marine conservation solutions look like
- Deepen pool of content for students to choose from when designing their podcast
- Allowed students the chance to dig into specific areas of interest related to one (or more) of the Sustainability Compass directions (e.g. Business-minded student diving into the economics of reef-safe sunscreen)

## Learning Plan Step-by-step Description

- Student welcome/attendance - 2 min
- Introduce plan for the day - 5 min
- Show the podcast project description on the projector; review it in broad strokes - 5 min.
- Sustainability Compass intro (history, context, how to use, demo quick examples, Q/A) - 10 min
- Group work: students break into pre-organized groups and begin filling out a Sustainability Compass template (butcher paper size is ideal, but 8x10 copies can also work)...reiterate to students that this process is meant to not only jumpstart idea generation for their podcast but also to push them to go deeper into the connections between their chosen topic and all directions of the Compass: Nature, Society, Economy, and Wellbeing. The teacher will also float around from group to group to assess the process and answer any questions - 20 min

## REFLECTION

### Plusses

- Deepened students' understanding of their chosen topic and its connection to the 4 directions of the Sustainability Compass
- Create awareness in the students of the inherent complexity of all marine challenges.
- Broaden student understanding of what effective marine conservation solutions look like
- Deepen pool of content for students to choose from when designing their podcast.
- Allowed students the chance to dig into specific areas of interest related to one (or more) of the Sustainability Compass directions (e.g. Business-minded student diving into the economics of reef-safe sunscreen)
  - Sunscreen: with the help of the Sustainability Compass, students could understand how the direct impact of sunscreen (non-reef safe) on the health of coral reefs had a trickle-down impact on everything from cultural fulfilment to healthy eating habits in Palau. As sunscreen decreases the health of living corals, this, in turn, impacts the larger habitat for commercial fish species such as grouper and snappers. Suppose populations of grouper and snapper are impacted. In that case, those lower numbers will decrease the revenues of local fishing communities, limit the amount of cultural fulfilment in communities heavily reliant on fish, and push communities to become more reliant on imported protein sources with low nutritional value.
  - Dolphins: with the help of the Sustainability Compass, students were able to unpack the many layers of complexity of dolphin hunting in Japan. The first step was understanding the role of Japan's exclusive economic zone (EEZ) in granting them rights to hunt dolphins and also knowing that the International Whaling Commission (IWC) did not protect smaller cetaceans such as dolphins. Aside from the ecological impact of removing dolphins from an ecosystem, the Sustainability Compass helped

students understand how community health (especially with children and pregnant women) would also decline as dolphin meat - with excessive levels of mercury - became more available. In this specific example, the Sustainability Compass was most helpful in pushing students to see the most effective solution for this marine challenge. Given the layers of complexity and role of politics, students agreed that the best solution would be diplomatic pressure on Japan from other governments.

## Areas for Improvement

- Introduce the systems tool to students for HW the previous night/class through a quick reading, video, etc.
- Have students offer quick ideas for the examples shared earlier in the class; use a quick pair-share to get more comfortable filling out the template.
- Use butcher paper for the Sustainability Compass templates instead of 8x10 copies...more room equals clearer visuals and more space for idea generation.

## EVIDENCE

[Marine Ecosystems Final Project 2024](#) | [Podcast: Dolphins](#) | [Podcast: Earth Allies](#)

